Barton & Loguidice

February 27, 2025

Mr. Matthew J. Andrews
Deputy Director of Community and Economic Development
City of Rome
198 North Washinton Street
Rome, New York 13440

Re: NY Old Oneida Road Solar LLC
5792 Old Oneida Road
Rome, New York 13440
Oneida County

Subj: Review of Site Plan Approval Submission – Initial Review Letter

File: 245.017.001

Dear Mr. Andrews:

Barton & Loguidice, D.P.C. (B&L) has completed our initial review of the Site Plan Approval package submitted by NY Rome Old Oneida Road Solar, LLC, a subsidiary of Emeren US, LLC, for the above-referenced solar project. To date, B&L has received the following documents:

- Project Description, prepared by Emeren US, LLC, dated January 6, 2025, not signed;
- Site Plan Drawings (11 Sheets), prepared by C&S Engineers, Inc., dated December 2024, stamped by Eric Kenna, P.E.;
- Site Plan Drawing (1 Sheet), prepared by C&S Engineers, Inc., dated January 2024, not stamped;
- City of Rome Planning Board Application, prepared by Emeren US, LLC, dated November 14, 2024, signed by Mac Moore;
- Stormwater Pollution Prevention Plan (SWPPP), prepared by C&S Engineers, Inc., dated January 2024, stamped by Eric Kenna, P.E.;
- Wetland Delineation Report, prepared by C&S Engineers, Inc., dated May 3, 2023, not signed or stamped;
- Wetland Site Map, prepared by C&S Engineers, Inc., dated April 24, 2023;
- Topographic Survey, prepared by Ianuzi & Romans Land Surveying, P.C., dated August 29, 2023, stamped by Timothy J. Coyer, L.S.;
- Full Environmental Assessment Form, Part 1, prepared by C&S Engineers, Inc., dated January 5, 2024, signed by Bryan A. Bayer;
- Phase 1 Archaeological Survey, prepared by Claire H. Horn, Ph. D., dated July 28, 2023, not signed;
- Correspondence with SHPO, dated May 19, 2023;
- Correspondence with SHPO, dated August 4, 2023, signed by Jessica Vavrasek;
- Endangered Species Technical Memo, prepared by C&S Engineers, Inc., dated July 20, 2023, not signed;

- Wildlife Management Plan, prepared by C&S Engineers, Inc., dated January 2025, not signed;
- Decommissioning Plan, prepared by Emeren US, LLC, dated January 6, 2025, not signed;
- Decommissioning Plan Estimate, prepared by C&S Engineers, Inc. dated January 6, 2025, signed by Eric Kenna, P.E.;
- Operation and Maintenance Manual, prepared by NY Rome Old Oneida Road Solar, LLC, dated January 6, 2025, not signed;
- Glare Simulation, prepared by ForgeSolar, dated April 3, 2024;
- Noise Assessment, prepared by C&S Engineers, Inc., dated January 5, 2024, signed by Eric Kenna, P.E.;
- Visual Rendering Photo Simulations, prepared by C&S Engineers, Inc., dated October 13, 2023;
- Visual Rendering Photo Location Map, prepared by C&S Engineers. Inc., not dated;
- Three-Line Diagram, prepared by Emeren Group Ltd., dated November 14, 2023, not stamped;
- National Grid Interconnection Agreement, dated August 9, 2021; and
- List of Permits & Status, dated November 15, 2024.

Project Description

NY Rome Old Oneida Road Solar, LLC (Applicant) are proposing the construction of a 4.2 megawatt (MW) solar energy facility consisting of one (1) solar array and associated electrical appurtenances on a ± 140-acre parcel located at 5792 Old Oneida Road in the City of Rome, Oneida County, New York (Tax Parcel ID No. 272.-02-36). The narrative indicates that the lease will include 20 acres where the proposed solar facility will be installed. The proposed approximately 17.6-acre facility includes access roads and a fenced-in solar array. The proposed array has a maximum height of 14'6" and is comprised of a single axis tracking system. The project proposes installing solar panels within the leased area consisting currently of primarily agricultural land with a small amount of tree clearing proposed.

Under the City Solar Law, this project is considered a Tier 3 Solar project, requiring a special use permit through the Zoning Board of Appeals, which has already been issued for this project.

B&L offers the following comments to the City of Rome for consideration in its review.

Environmental Review (SEQR)

The proposed solar project is considered a Type 1 action under the provisions of the State Environmental Quality Review Act (SEQRA), as it involves the physical alteration of more than 10 acres of land. As required for a Type 1 Action, coordinated review has been completed and the project has received a negative declaration, indicating that no adverse impacts to the environment are anticipated as a result of this project.

Visual Impact Assessment

The Applicant has performed a visual impact analysis in locations where the solar arrays may be visible to adjoining property owners and/or from nearby roads. The results indicate that there may be moderate visual impacts to travelers along Old Oneida Road. However, these impacts are not likely to be adverse if landscape screening is properly installed and maintained. B&L offers the following comments:

1. It appears that the proposed landscaping buffer is not included in the visual impact assessment. It is recommended to include simulations with the vegetated buffer to demonstrate how it will mitigate the visual impacts. The vegetated buffer should follow the recommendations mentioned in comment 18 below, regarding the landscaping plans.
2. Please justify the number of riser poles proposed and evaluate the feasibility of underground conduit instead of the proposed overhead electric lines to decrease the visual impact of the utility poles.
3. It is recommended that additional visual impact renderings be performed from the residences near the property as opposed to the nearby roadway, as it is anticipated that the impact at the adjacent property boundary will be greater than at the roadway.

Glare Analysis

The Applicant has performed a glare analysis to assess potential impacts of glare on motorists traveling on Henderburg Rd, Old Oneida Rd, and Route 365. The results indicate that there will be no adverse impacts due to glare. B&L offers no further comments on potential glare impacts.

Noise Analysis

The Applicant has performed a noise analysis demonstrating the potential for noise from the electrical equipment proposed to be located throughout the project, evaluating the potential for sound at numerous locations surrounding the project site. The noise analysis concludes that the proposed project is not anticipated to produce noise that will be above existing ambient levels at any nearby residential properties. The study demonstrates that the resulting noise level at the nearest residence is calculated to be 31 decibels, which is similar to the volume of a quiet room. B&L offers no further comments on potential noise impacts.

Stormwater Pollution Prevention Plan

1. Question 4 in the draft NOI specifies that there are 0.8 acres of existing impervious, and a total of 0.6 acres impervious post-construction, for a reduction of impervious area. The SWPPP specifies that the impervious is increased by 0.6 acres, for a total of 1.4 acres of impervious post-construction. Review and revise accordingly.
2. Question 5 of the draft NOI should be revised to specify "Yes" if a 5-acre waiver is planned to be requested for the project.
3. Question 39 of the draft NOI specifies that this project falls into Scenario 2 of NYSDEC's Solar Guidance. It is noted that this project should be under Scenario 1, as long as there is no change in hydrology and any traditional impervious areas are treated appropriately.
4. The wetland and waterway report included as an appendix to the SWPPP should be updated to the most recent version.
5. It is noted that vegetated swales only provide a reduction of 20% of the Water Quality volume, but cannot fully treat runoff. It appears that a majority of the access road flows through vegetated swales on both the east and west sides of the solar array before being discharged directly into onsite wetlands without being fully treated. All runoff should be fully treated prior to discharge into the on-site wetlands or leaving the site.
6. The HydroCAD model should be revised to use the Type II 24-hour storm rainfall distribution curve, per TR-55, as opposed to the NRCC 24-hour curve that is currently utilized.

7. The source of the rainfall depths should be discussed, and should be included in the appendices to the SWPPP in subsequent submissions.
8. The vegetated swales need less than 3 cfs discharging into them in the WQv event, require a retention time minimum of 5 minutes, must convey the WQv at a speed of 1 fps or less, need to maintain a flow depth of below 4 inches for the WQv storm, and maintain a freeboard of 6 inches in the 10-year storm with a velocity less than 5 fps. The vegetated swales should be added to the HydroCAD model to show these requirements are being met.
9. The existing and proposed HydroCAD models use the cover type of "Row crops, straight row", however Section 4.5 of the 2015 SWMDM specifies that if the predevelopment condition is agriculture, the "meadow" cover type should be used for calculations. Review and revise accordingly.
10. The existing condition times of concentration utilize the "Unpaved" shallow concentrated flow condition. It is recommended that a more accurate option be utilized (e.g., grassed waterway, woodland), as in our experience the unpaved shallow concentrated flow option can misrepresent the velocity factor of flow.
11. Calculations should be provided to support the culvert sizing beneath the proposed access road.
12. The proposed HydroCAD model shows an increase of 0.951 of impervious (0.940 acres of Gravel surface and 0.011 of Roofs), compared to the increase of 0.6 acres of impervious mentioned in the SWPPP. This should be reviewed and revised as necessary for consistency and to make sure that the stormwater management practices are adequately sized to address the stormwater runoff.
13. The GI Worksheet shows 0.63 acres of impervious in DA-1 and 0.17 acres of impervious in DA-3 as being treated by Filter Strips. Per the 2015 SWMDM, a max of 5,000 square feet of impervious is recommended to be treated by grass filter strips for them to function properly.
14. The calculation of the RRv provided by the vegetated swales should be revised to show the RRv provided as 20% of the WQv reaching them from the roadway, rather than being based on the volume of the swale.

Site Plan Drawings

General Comments

1. The site plans should be revised to include an existing conditions/demo plan showing the limits of clearing and other site preparation before the site improvements are installed.
2. Typical details should be provided in the plan set including but not limited to: grass filter strip, proposed level spreaders, electrical conduit trench, etc.

Site Plan (Sheet 3 of 11)

3. The extents of the leased land should be shown and called out on the site plan.
4. Dimensions and radii on the access roadway should be provided along with analysis to confirm adequate access for emergency vehicles.
5. A bulk zoning requirements table should be included with the plan, showing the requirements and the provided values.
6. Provide dimensions of all equipment pads proposed.
7. Please provide a section detail for the Typical Equipment Pad.

8. The Point of Interconnection should be called out on the plans.
9. The emergency shutoff location should be called out on the plans.

E&S Plan (Sheet 5 of 11)

10. The proposed gravel diaphragms/level spreaders should be shown on the plans in areas of slope between 5% and 10%. Justification for the spacing proposed to maintain sheet flow should be provided in the SWPPP or as a note on the plans.
11. Swale 1 is shown as having a bottom width of 1.5 feet, the minimum bottom width for a vegetated swale is 2 feet per the 2015 Stormwater Management Design Manual (SWMDM).
12. The areas to utilize filter strips are called out, but clear dimensions are not shown or called out. It should be ensured that the required dimensions per the 2015 SWMDM are called out for adequate treatment.
13. The level spreaders and permeable berms for the grass filter strips should be called out on the plans.
14. Silt fence must be installed parallel to the contour rather than surrounding the project area. This prevents runoff from following the fence and causing blowouts.
15. The silt fencing should be within the limit of disturbance boundary, as installing silt fence creates disturbance.

Landscaping Plan (Sheet 6 of 11)

16. The landscaping plan should be revised to reference the seed mix specified on the E&SC plan for the vegetated swales.
17. The minimum height of the planted screening buffer at time of planting is recommended to be no less than 6 feet, it is currently called out as being between 5 and 6 feet.
18. The Landscaping Plan should be prepared by a registered Landscape Architect with particular consideration for a variety of native trees and shrubs to create a natural looking vegetated buffer that will screen during all seasons. The screening buffer plantings should be staggered and clustered rather than being proposed in a single straight line, to make for a more realistic screening.

Details (Sheets 7-11 of 11)

19. The vegetated swale detail should be revised to include design water elevations for the different design storms as required by the 2015 SWMDM.
20. It is recommended that the proposed fencing be revised to include a minimum 6” gap at the bottom so as to not limit the passage of small animals.

Operation and Maintenance Plan

1. There is some information missing in the contacts and project description that should be completed in subsequent submissions of the O&M Plan.
2. Some information in the Project Description does not match other documentation for the project, it should be reviewed and revised as necessary for accuracy.
3. The O&M Plan should contain timeframes and frequencies for all expected operation and maintenance responsibilities.

4. The O&M Plan should be revised to call out the specific stormwater management practices to be utilized on the site, and the required maintenance for those practices.
5. It is noted that a copy of the Maintenance Agreement should be provided to the Board as a condition of final approval.
6. The O&M Plan should include a map indicating the limits of maintenance for the operator/owner.
7. A description of the anticipated operation and maintenance requirements for the proposed landscaping should be included in the O&M Plan, including a timeframe for replacing dead trees.
8. It is recommended that the O&M Plan indicate that the owner/operator, for the first five (5) years of operation, provide a report to the City, summarizing the annual landscaping inspection and identifying any areas that have not thrived and/or need to be replaced by the owner/operator.

Decommissioning Plan

1. Please add a photographic log to the decommissioning plan to document the existing conditions/original state of the site.
2. It is recommended that the decommissioning plan should be revised to include a statement that at least 60 days prior to the end of each successive five year period after the execution of this Agreement, the Owner shall provide the City with an updated decommissioning plan, setting forth an updated estimate for the Decommissioning of the Project, subject to review and approval by the City, after which the Security is to be changed to reflect the updated estimate.

Additional Information and Anticipated Permits/Coordination

In addition to the items noted in the comments above, B&L anticipates the following information and/or documents be submitted in support of the application:

1. Per City Code, Payment in Lieu of Taxes (PILOT) and Host Community Agreements.
2. County and State Permits, as required, including those for work performed within the right-of-way. County permits will include a county driveway permit and a county highway work permit. State permits will include the NYSDEC SPDES Permit for Stormwater Discharges.
3. Provide a letter from the City of Rome Fire Department acknowledging receipt of the Site Plan Drawing, verifying approval of proposed access for fire and emergency vehicles.
4. Maintenance Agreement, Decommissioning Bond and Indemnity Agreement.
5. It is anticipated that escrow for construction inspection and ongoing O&M will be established as a condition of final approval.
6. A “Roads Use Agreement” is recommended to describe roads to be used for truck transportation during construction, including provisions for baseline survey and necessary repairs.
7. A copy of the lease agreement is requested to be provided as part of subsequent submissions.
8. Specification sheets for the proposed solar panels and other equipment beyond what has been included in the Noise Study should be provided in subsequent submissions.

Please provide the above requested information at your earliest convenience. For efficient review of subsequent materials, B&L requests an itemized response to the comments provided herein. Additionally, B&L requests a full size hard copy of the revised set of plans.

If you have any questions, please do not hesitate to contact the City or me.

Sincerely,

BARTON & LOGUIDICE, D.P.C.

Sterling L. DePaul, P.E.
Project Engineer

SLD/jjb

cc: City of Rome Board Members
City Attorney

March 20, 2025

Mr. Matthew J. Andrews
Deputy Director of Community and Economic Development
City of Rome
198 North Washington Street
Rome, New York 13440

Re: Review of Emeren US, LLC Special Use Permit and Site Plan Application

Dear Mr. Andrews:

We have received the review letter of our Site Plan Approval application submission developed by Barton and Loguidice dated February 27, 2025. We have updated our submission documents and addressed their comments, with our responses found below.

Visual Impact Assessment

1. It appears that the proposed landscaping buffer is not included in the visual impact assessment. It is recommended to include simulations with the vegetated buffer to demonstrate how it will mitigate the visual impacts. The vegetated buffer should follow the recommendations mentioned in comment 18 below, regarding the landscaping plans.

Response: Updated visual simulations have been provided that include the proposed vegetation and fencing screening.

2. Please justify the number of riser poles proposed and evaluate the feasibility of underground conduit instead of the proposed overhead electric lines to decrease the visual impact of the utility poles.

Response: As discussed at the Planning Board meeting on Mar 4, 2025, a correspondence from National Grid is provided in the dataroom that demonstrates that the utility's preferred method of interconnection is overhead/pole mounted.

3. It is recommended that additional visual impact renderings be performed from the residences near the property as opposed to the nearby roadway, as it is anticipated that the impact at the adjacent property boundary will be greater than at the roadway.

Response: Additional photo simulations as requested are provided.

Stormwater Pollution Prevention Plan

1. Question 4 in the draft NOI specifies that there are 0.8 acres of existing impervious, and a total of 0.6 acres impervious post-construction, for a reduction of impervious area. The SWPPP specifies that the impervious is increased by 0.6 acres, for a total of 1.4 acres of impervious post-construction. Review and revise accordingly.

Response: After reviewing the drainage areas, the impervious areas have been updated to better reflect the existing and proposed conditions. A portion of the existing access road into the site will be utilized as the access road for the site. The existing impervious area was not used for calculation of water quality treatment.

2. Question 5 of the draft NOI should be revised to specify "Yes" if a 5-acre waiver is planned to be requested for the project.

Response: The NOI has been updated to reflect the intention for a 5-acre waiver request.

3. Question 39 of the draft NOI specifies that this project falls into Scenario 2 of NYSDEC's Solar Guidance. It is noted that this project should be under Scenario 1, as long as there is no change in hydrology and any traditional impervious areas are treated appropriately.

Response: It is our understanding that the project falls under Scenario 2 as the hydrology of the site is altered through the construction of impervious surfaces, hence the need to develop post-construction stormwater practices.

4. The wetland and waterway report included as an appendix to the SWPPP should be updated to the most recent version.

Response: The updated wetland report is included in Appendix A.

5. It is noted that vegetated swales only provide a reduction of 20% of the Water Quality volume, but cannot fully treat runoff. It appears that a majority of the access road flows through vegetated swales on both the east and west sides of the solar array before being discharged directly into onsite wetlands without being fully treated. All runoff should be fully treated prior to discharge into the on-site wetlands or leaving the site.

Response: The vegetated swales have been modified to dry swales to meet WQv volumes within site restraints.

6. The HydroCAD model should be revised to use the Type II 24-hour storm rainfall distribution curve, per TR-55, as opposed to the NRCC 24-hour curve that is currently utilized.

Response: The HydroCAD model utilizes the NRCC 24-hour curve consistent with Section 4.9 of the 2024 New York State Department of Conservation Stormwater Design Manual.

7. The source of the rainfall depths should be discussed and should be included in the appendices to the SWPPP in subsequent submissions.

Response: The rainfall data has been provided in Appendix C.

8. The vegetated swales need less than 3 cfs discharging into them in the WQv event, require a retention time minimum of 5 minutes, must convey the WQv at a speed of 1 fps or less, need to maintain a flow depth of below 4 inches for the WQv storm, and maintain a freeboard of 6 inches in the 10-year storm with a velocity less than 5 fps. The vegetated swales should be added to the HydroCAD model to show these requirements are being met.

Response: The swales have been modeled in HydroCAD with the WQv event as a rainfall event.

9. The existing and proposed HydroCAD models use the cover type of "Row crops, straight row", however Section 4.5 of the 2015 SWMDM specifies that if the predevelopment condition is agriculture, the "meadow" cover type should be used for calculations. Review and revise accordingly.

Response: The HydroCAD has been updated to remove "Row crops, straight row" and utilize meadow for existing conditions.

10. The existing condition times of concentration utilize the "Unpaved" shallow concentrated flow condition. It is recommended that a more accurate option be utilized (e.g., grassed waterway, woodland), as in our experience the unpaved shallow concentrated flow option can misrepresent the velocity factor of flow.

Response: The surface description has been updated from "Unpaved" to "Short Grass Pasture" to better reflect the existing farm field for existing conditions and the meadow conditions for proposed conditions.

11. Calculations should be provided to support the culvert sizing beneath the proposed access road.

Response: Calculations have been provided in Appendix C to show the conveyance of a storm event similar to the 10-year cfs for the whole site.

12. The proposed HydroCAD model shows an increase of 0.951 of impervious (0.940 acres of Gravel surface and 0.011 of Roofs), compared to the increase of 0.6 acres of impervious mentioned in the SWPPP. This should be reviewed and revised as necessary for consistency and to make sure that the stormwater management practices are adequately sized to address the stormwater runoff.

Response: The existing gravel/dirt road will be repaved with asphalt with an increase of size, and the existing roofs from the structures on site are modeled in existing and proposed. The GI worksheet only includes the proposed asphalt road and does not include the existing impervious surfaces from the houses.

13. The GI Worksheet shows 0.63 acres of impervious in DA-1 and 0.17 acres of impervious in DA-3 as being treated by Filter Strips. Per the 2015 SWMDM, a max of 5,000 square feet of impervious is recommended to be treated by grass filter strips for them to function properly.

Response: The areas that are upstream of the filter strips are less than 5,000 square feet.

14. The calculation of the RRv provided by the vegetated swales should be revised to show the RRv provided as 20% of the WQv reaching them from the roadway, rather than being based on the volume of the swale.

Response: The calculations have been updated with the change in practices.

Site Plan Drawings

General Comments

1. The site plans should be revised to include an existing conditions/demo plan showing the limits of clearing and other site preparation before the site improvements are installed.

Response: There will be minimal demolition required as part of the project. An existing conditions plan has been provided with a callout for tree clearing area.

2. Typical details should be provided in the plan set including but not limited to: grass filter strip, proposed level spreaders, electrical conduit trench, etc.

Response: These details have been provided on sheet C-502 consistent with the NYSDEC details and the Maryland DEP Stormwater Design Guidance for Solar Panel Installations as referenced by the NYSDEC 2018 Memorandum for Solar Panel Construction Stormwater Permitting/SWPPP Guidance.

Site Plan (Sheet 3 of 11)

3. The extents of the leased land should be shown and called out on the site plan.

Response: The leased area is the extent of the Limits of Disturbance. The leased area will include the project area and any area needed for maintenance.

4. Dimensions and radii on the access roadway should be provided along with analysis to confirm adequate access for emergency vehicles.

Response: The width and raddi of the roadway was included in a callout on the site plan. The plans have been reviewed by the Fire Department and their comments have been incorporated into this submission.

5. A bulk zoning requirements table should be included with the plan, showing the requirements and the provided values.

Response: A bulk zoning table has been included on sheet C-102.

6. Provide dimensions of all equipment pads proposed.

Response: Design of equipment pads has not been finalized. A typical equipment pad detail has been provided, with final design to be incorporated for building permit submission.

7. Please provide a section detail for the Typical Equipment Pad.

Response: See above response.

8. The Point of Interconnection should be called out on the plans.

Response: The Point of Interconnection is shown on C-101.

9. The emergency shutoff location should be called out on the plans.

Response: The emergency shutoff is shown on C-102.

E&S Plan (Sheet 5 of 11)

10. The proposed gravel diaphragms/level spreaders should be shown on the plans in areas of slope between 5% and 10%. Justification for the spacing proposed to maintain sheet flow should be provided in the SWPPP or as a note on the plans.

Response: The majority of the site is not between 5% and 10%, thus limited. A level spreader has been added in the area of disturbance within the solar array that is between 5% and 10%.

11. Swale 1 is shown as having a bottom width of 1.5 feet, the minimum bottom width for a vegetated swale is 2 feet per the 2015 Stormwater Management Design Manual (SWMDM).

Response: The swale has been updated to be compliant with the SWMDM.

12. The areas to utilize filter strips are called out, but clear dimensions are not shown or called out. It should be ensured that the required dimensions per the 2015 SWMDM are called out for adequate treatment.

Response: Filter strip areas are dimensioned.

13. The level spreaders and permeable berms for the grass filter strips should be called out on the plans.

Response: The level spreader has been called out on the site plan, grading plan, and erosion and sediment control plan.

14. Silt fence must be installed parallel to the contour rather than surrounding the project area. This prevents runoff from following the fence and causing blowouts.

Response: Silt fence on C-104 has been updated to comply with Blue Book

15. The silt fencing should be within the limit of disturbance boundary, as installing silt fence creates disturbance.

Response: The limits of disturbance have been updated to encompass the silt fence.

Landscaping Plan (Sheet 6 of 11)

16. The landscaping plan should be revised to reference the seed mix specified on the E&SC plan for the vegetated swales.

Response: The landscaping plan has been updated for this callout.

17. The minimum height of the planted screening buffer at time of planting is recommended to be no less than 6 feet, it is currently called out as being between 5 and 6 feet.

Response: The landscaping plan has been updated to show a minimum planting height of 6'.

18. The Landscaping Plan should be prepared by a registered Landscape Architect with particular consideration for a variety of native trees and shrubs to create a natural looking vegetated buffer that will screen during all seasons. The screening buffer plantings should be staggered and clustered rather than being proposed in a single straight line, to make for a more realistic screening.

Response: The plants proposed are all native plants consistent with Cornell Cooperative Extension Native Plants List for New York. As discussed, the plantings have been selected by a registered Landscape Architect who specifically chose the proposed planting list to include native plantings, shrubs that would not pose shade risk by growing too tall, are evergreen and provide year round viewshed screening, and are less prone to wildlife browsing.

Details (Sheets 7-11 of 11)

19. The vegetated swale detail should be revised to include design water elevations for the different design storms as required by the 2015 SWMDM.

Response: The swales are now updated to dry swales.

20. It is recommended that the proposed fencing be revised to include a minimum 6" gap at the bottom so as to not limit the passage of small animals.

Response: A 6" gap is not compliant with National Electric Safety Codes (NESC). The details still show a 1.5" gap.

Below is a detail from the NESC that depicts "Fence mesh must be tight enough and so close to the ground that entry cannot be affected without permanent deformation of the fence materials":

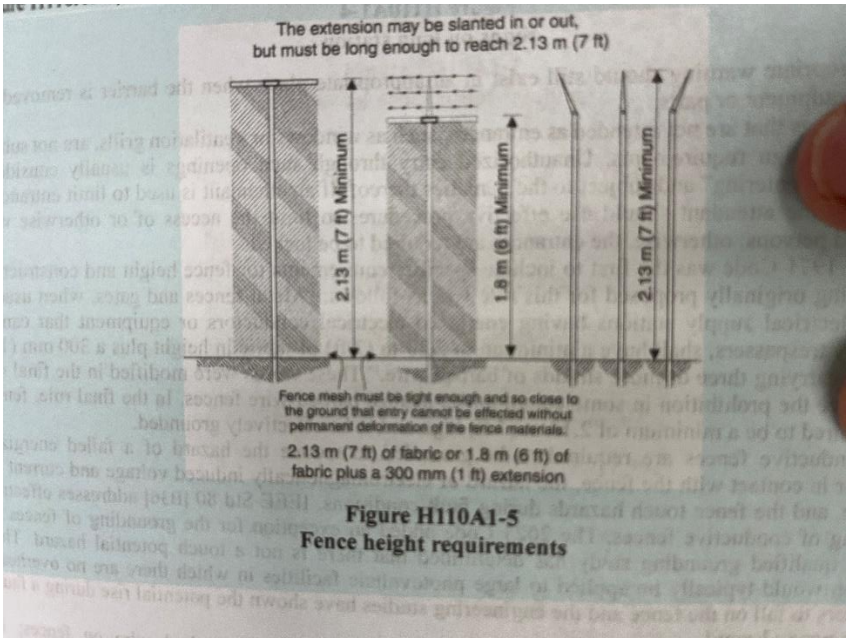

Figure H110A1-5
Fence height requirements

Operation and Maintenance Plan

1. There is some information missing in the contacts and project description that should be completed in subsequent submissions of the O&M Plan.

Response: Updated in the O&M plan.

2. Some information in the Project Description does not match other documentation for the project, it should be reviewed and revised as necessary for accuracy.

Response: Updated in the O&M plan.

3. The O&M Plan should contain timeframes and frequencies for all expected operation and maintenance responsibilities.

Response: Updated in the O&M plan.

4. The O&M Plan should be revised to call out the specific stormwater management practices to be utilized on the site, and the required maintenance for those practices.

Response: Updated in the O&M plan.

5. It is noted that a copy of the Maintenance Agreement should be provided to the Board as a condition of final approval.

Response: As discussed at the Planning Board meeting on Mar 4, 2025, a maintenance agreement can be a condition of the Building Permit.

6. The O&M Plan should include a map indicating the limits of maintenance for the operator/owner.

Response: Updated in the O&M plan.

7. A description of the anticipated operation and maintenance requirements for the proposed landscaping should be included in the O&M Plan, including a timeframe for replacing dead trees.

Response: Updated in the O&M plan.

8. It is recommended that the O&M Plan indicate that the owner/operator, for the first five (5) years of operation, provide a report to the City, summarizing the annual landscaping inspection and identifying any areas that have not thrived and/or need to be replaced by the owner/operator.

Response: Updated in the O&M plan.

Decommissioning Plan

1. Please add a photographic log to the decommissioning plan to document the existing conditions/original state of the site.

Response: Added to the Decommissioning Plan.

2. It is recommended that the decommissioning plan should be revised to include a statement that at least 60 days prior to the end of each successive five year period after the execution of this Agreement, the Owner shall provide the City with an updated decommissioning plan, setting forth an updated estimate for the Decommissioning of the Project, subject to review and approval by the City, after which the Security is to be changed to reflect the updated estimate.

Response: Added to the Decommissioning Plan.

Additional Information and Anticipated Permits/Coordination

In addition to the items noted in the comments above, B&L anticipates the following information and/or documents be submitted in support of the application:

1. Per City Code, Payment in Lieu of Taxes (PILOT) and Host Community Agreements.

Response: We have submitted our application to the Oneida County IDA.

2. County and State Permits, as required, including those for work performed within the right-of-way. County permits will include a county driveway permit and a county highway work permit. State permits will include the NYSDEC SPDES Permit for Stormwater Discharges.

Response: As discussed at the Planning Board meeting on Mar 4, 2025, these permits will be pulled before construction.

3. Provide a letter from the City of Rome Fire Department acknowledging receipt of the Site Plan Drawing, verifying approval of proposed access for fire and emergency vehicles.

Response: The City of Rome Fire Department has received, reviewed and provided comments on our plans and the request to add a Knox Box and a sign containing project information to be visible from Old Oneida Road, have been added to the plan set.

4. Maintenance Agreement, Decommissioning Bond and Indemnity Agreement.

Response: As discussed at the Planning Board meeting on Mar 4, 2025, these agreements and decommissioning bond will be in place before the start of construction.

5. It is anticipated that escrow for construction inspection and ongoing O&M will be established as a condition of final approval.

Response: As discussed at the Planning Board meeting on Mar 4, 2025, the City of Rome will require a construction security bond prior to start of construction.

6. A "Roads Use Agreement" is recommended to describe roads to be used for truck transportation during construction, including provisions for baseline survey and necessary repairs.

Response: As discussed at the Planning Board meeting on Mar 4, 2025, we will do a preexisting condition report in conjunction with the City to establish a baseline. Any damages to the road due to the construction activities for the Solar project will be repaired, inspected by the City and signed off. The preexisting conditions report will be created right before construction.

7. A copy of the lease agreement is requested to be provided as part of subsequent submissions.

Response: Redacted Lease has been added to the dataroom.

8. Specification sheets for the proposed solar panels and other equipment beyond what has been included in the Noise Study should be provided in subsequent submissions.

Response: Datasheets added to the dataroom.

Sincerely,

C&S ENGINEERS, INC.

Bryan A. Bayer, PWS
Department Manager, Planning & Compliance

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Rome, NY 13440

Photo Location Plan

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SITE PLAN DRAWINGS

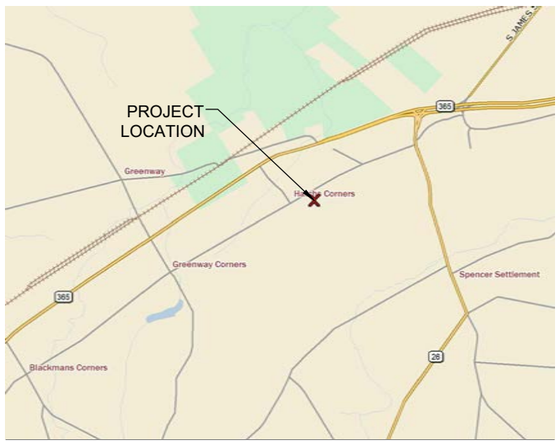
SITE NAME: NY ROME OLD ONEIDA ROAD SOLAR, LLC

OLD ONEIDA ROAD
ROME, NY

C&S PROJECT: V32.007.002

LOCATION MAP

DIRECTIONS TO SITE: (FROM SYRACUSE INTERNATIONAL AIRPORT) TAKE I-90 EAST TO EXIT 3 AND HEAD TOWARDS SR365 NORTH. FOLLOW SR365 TO A RIGHT ONTO HENDERBURG ROAD THEN A LEFT ONTO OLD ONEIDA ROAD. SITE IS ON THE RIGHT.



VICINITY MAP

PROJECT INFORMATION

PROPERTY OWNER:	JAMES ELLIOT 6536 HENDERBURG ROAD ROME, NY 13440
SITE NAME:	NY ROME OLD ONEIDA ROAD SOLAR, LLC
SITE ADDRESS:	OLD ONEIDA ROAD ROME, NY 13440
TAX MAP #:	272.-02-36
LIMITS OF DISTURBANCE:	20.21 ACRES
PARCEL SIZE:	154.6 ACRES
ZONING JURISDICTION:	TOWN OF ROME
ZONING DISTRICT:	TBD
COUNTY:	ONEIDA COUNTY

PROJECT DIRECTORY

APPLICANT:	NY ROME OLD ONEIDA ROAD SOLAR, LLC 850 CANAL ST, SUITE 3D STAMFORD, CT 06902
CONTACT:	BRADLEY DAVIS
PHONE:	(645) 624-4566
EMAIL:	bradley.davis@renesolapower.com
CIVIL ENGINEERING FIRM:	C&S ENGINEERS INC. 499 COL. EILEEN COLLINS BLVD. SYRACUSE, NY 13212
CONTACT:	ERIC N. KENNA P.E.
PHONE:	(315) 455-2000
POWER COMPANY:	NATIONAL GRID
PHONE:	1 (800) 892-2345

GENERAL NOTES

THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE; NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE IS PROPOSED.

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PHONE #: 1-800-962-7962 OR 811

WEBSITE: HTTP://WWW.DIGSAFELYNEWYORK.COM

DRAWING LIST

SHEET NO.	SHEET NAME	REV	DATE
GENERAL			
G-001	TITLE SHEET	0	12-03-24
CIVIL			
C-101	AERIAL PLAN	0	12-03-24
C-102	SITE PLAN	0	12-03-24
C-103	GRADING PLAN	0	12-03-24
C-104	EROSION AND SEDIMENT CONTROL PLAN	0	12-03-24
C-105	LANDSCAPING PLAN	0	12-03-24
C-106	LANDSCAPING DETAILS	0	12-03-24
C-501	EROSION AND SEDIMENT CONTROL DETAILS	0	12-03-24
C-502	EROSION AND SEDIMENT CONTROL DETAILS	0	12-03-24
C-503	FENCE DETAILS	0	12-03-24
C-504	SIGNAGE DETAILS	0	12-03-24

DECEMBER 2024

STATE OF NEW YORK
ERIC KENNA
088339
LICENSED PROFESSIONAL ENGINEER
EXCELSIOR

TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF THE PLANS AND SPECIFICATIONS FOR THIS PROJECT ARE IN COMPLIANCE WITH THE NEW YORK STATE ENERGY CONSERVATION CONSTRUCTION CODE AND THE BUILDING CODE OF NEW YORK STATE

NO ALTERATION PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW

G-001

Mar 20, 2025 - 2:26pm
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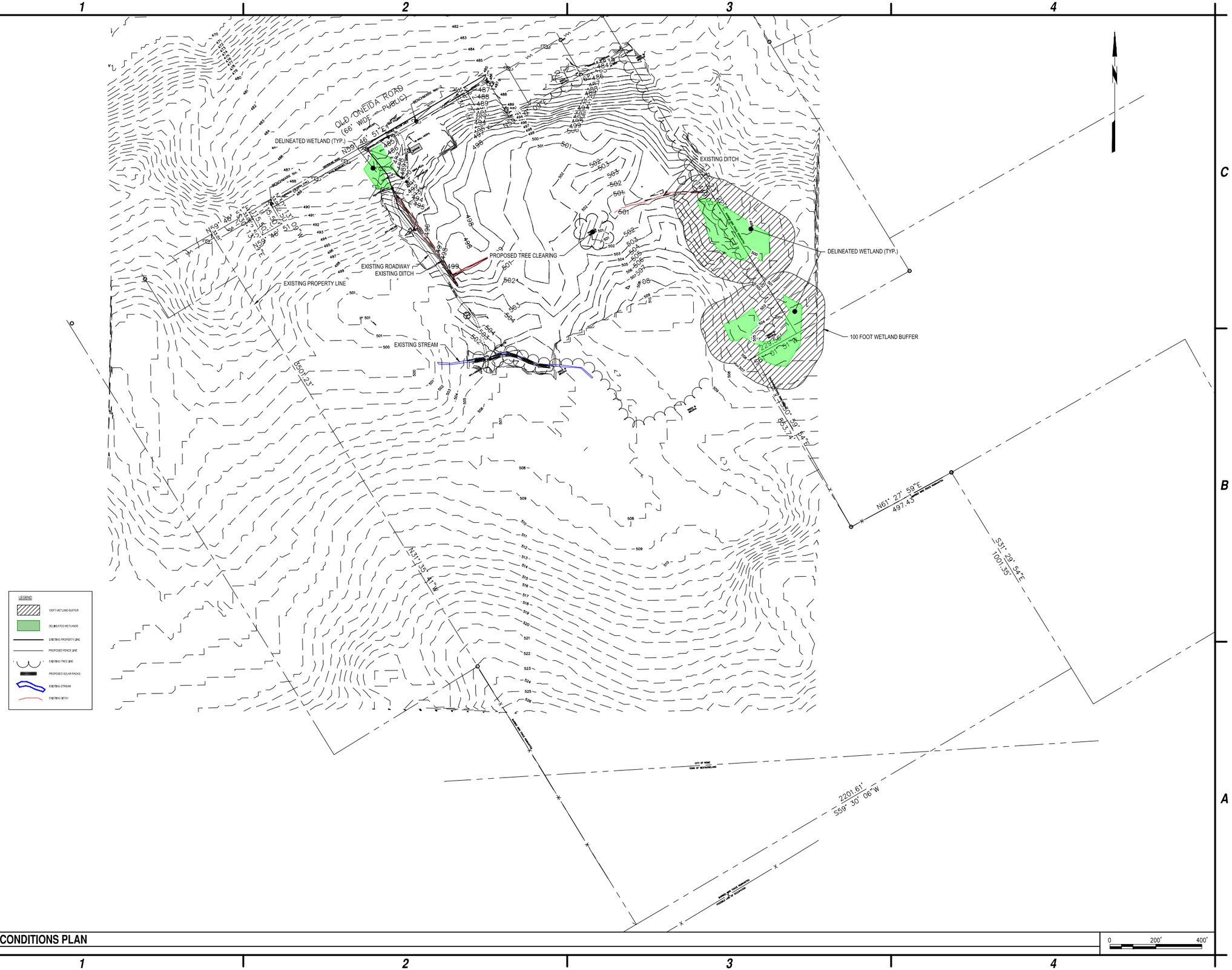

A1 **EXISTING CONDITIONS PLAN**
SCALE: 1" = 200'

0 200' 400'

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5792 OLD ONEIDA ROAD
ROME, NY 13440
ONEIDA COUNTY

MARK	DATE	DESCRIPTION
REVISIONS		

PROJECT NO:	V32.007.002
DATE:	DECEMBER 2024
DRAWN BY:	B. BUCKINGHAM
DESIGNED BY:	
CHECKED BY:	

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EXISTING CONDITIONS PLAN

C-100

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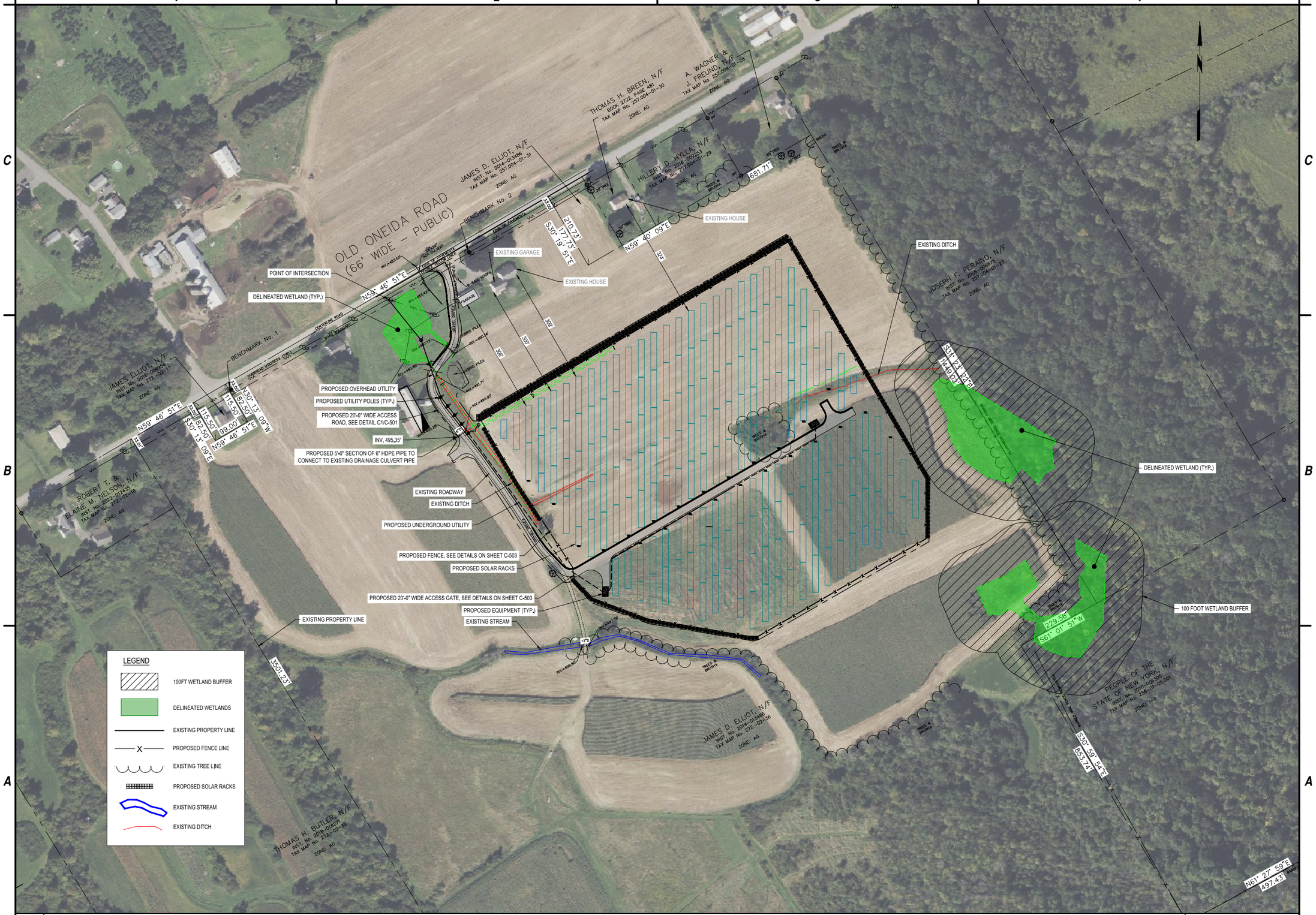

A1 **AERIAL PLAN**
SCALE: 1" = 120'

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MARK	DATE	DESCRIPTION

REVISIONS

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DATE:	DECEMBER 2024
DRAWN BY:	B. BUCKINGHAM
DESIGNED BY:	
CHECKED BY:	

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AERIAL PLAN

C-101

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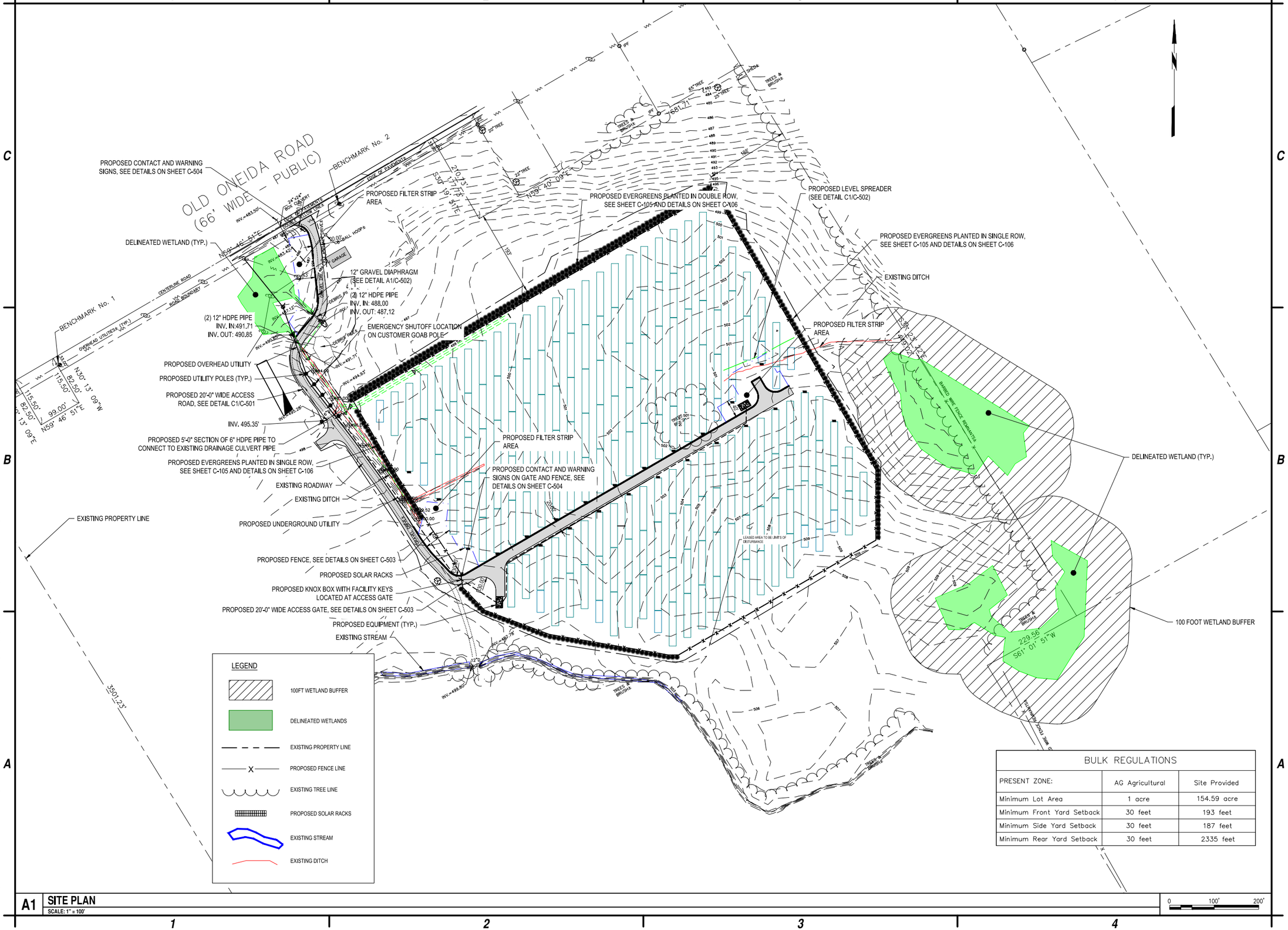

BULK REGULATIONS		
PRESENT ZONE:	AG Agricultural	Site Provided
Minimum Lot Area	1 acre	154.59 acre
Minimum Front Yard Setback	30 feet	193 feet
Minimum Side Yard Setback	30 feet	187 feet
Minimum Rear Yard Setback	30 feet	2335 feet

A1 **SITE PLAN**
SCALE: 1" = 100'

0 100' 200'

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ONEIDA COUNTY

MARK	DATE	DESCRIPTION
		REVISIONS

PROJECT NO:	V32.007.002
DATE:	DECEMBER 2024
DRAWN BY:	B. BUCKINGHAM
DESIGNED BY:	
CHECKED BY:	

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SITE PLAN

C-102

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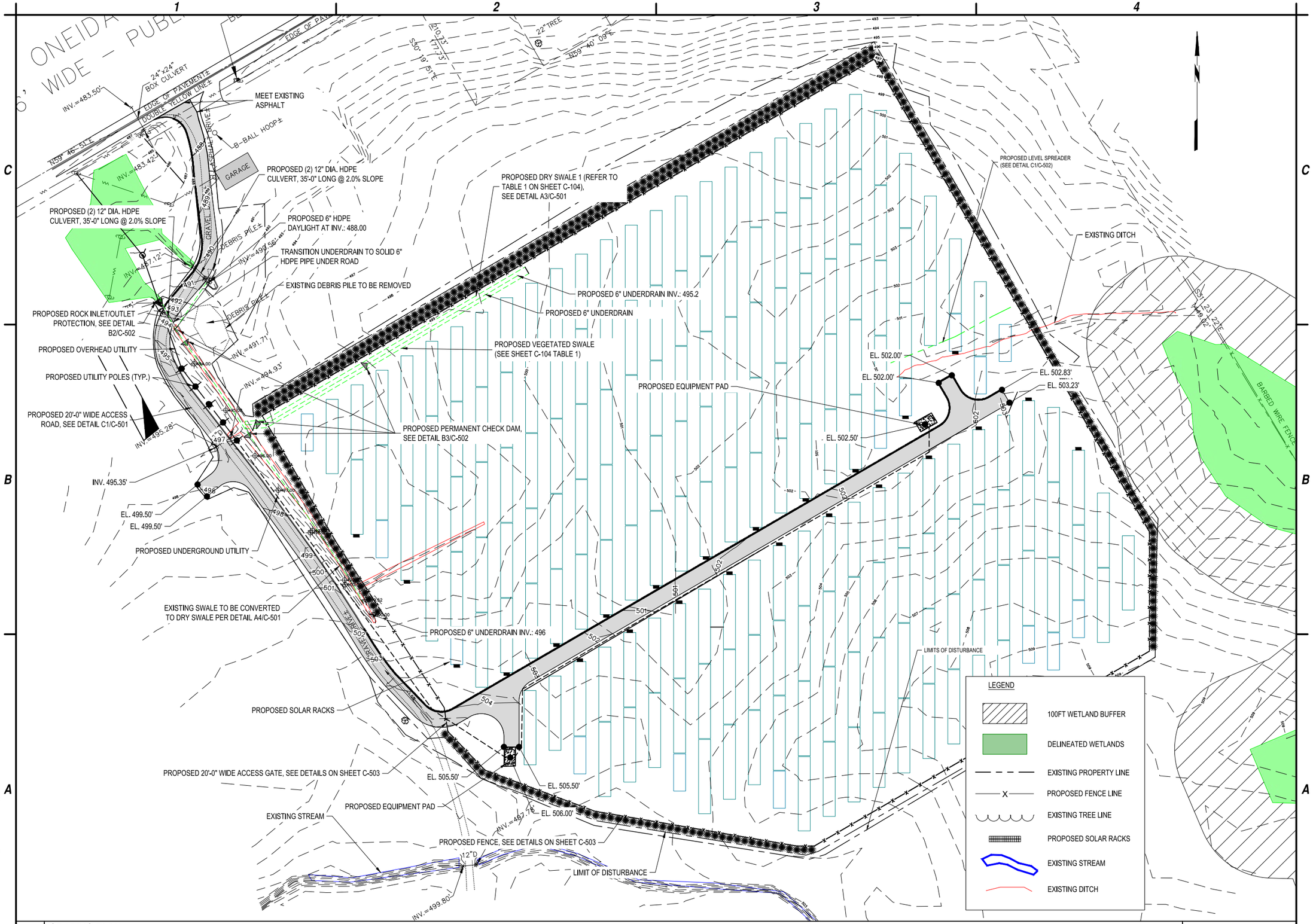

A1 **GRADING PLAN**
SCALE: 1" = 60'

0 60' 120'

Mar 20, 2025 — 5:03pm
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ONEIDA COUNTY

MARK	DATE	DESCRIPTION
		REVISIONS

PROJECT NO:	V32.007.002
DATE:	DECEMBER 2024
DRAWN BY:	B. BUCKINGHAM
DESIGNED BY:	
CHECKED BY:	

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GRADING PLAN

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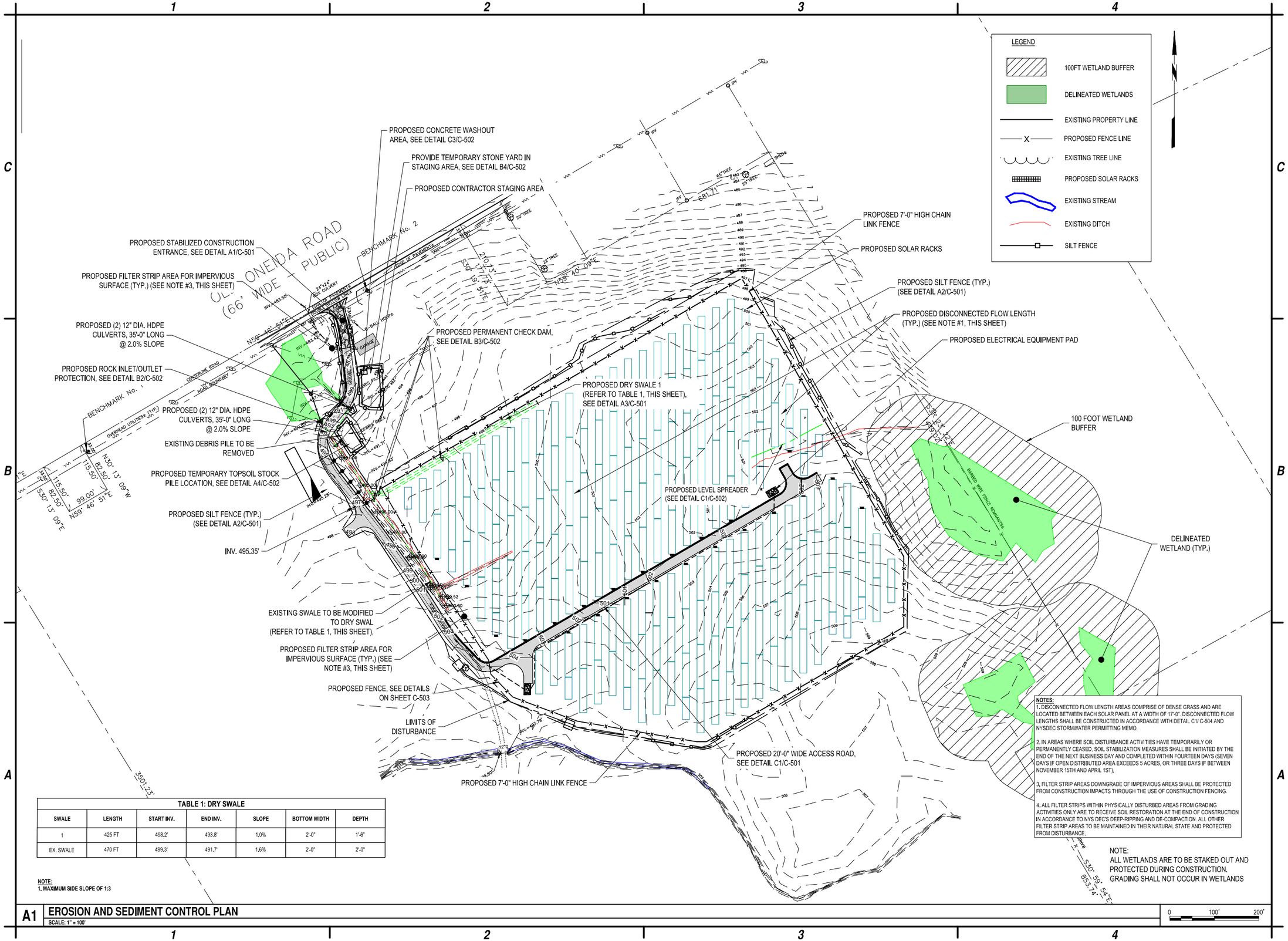

TABLE 1: DRY SWALE						
SWALE	LENGTH	START INV.	END INV.	SLOPE	BOTTOM WIDTH	DEPTH
1	425 FT	498.2'	493.8'	1.0%	2'-0"	1'-6"
EX. SWALE	470 FT	499.3'	491.7'	1.6%	2'-0"	2'-0"

NOTE:
1. MAXIMUM SIDE SLOPE OF 1:3

A1 EROSION AND SEDIMENT CONTROL PLAN
SCALE: 1" = 100'

0 100' 200'

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STATE OF NEW YORK ERIC KENTA LICENSED PROFESSIONAL ENGINEER 058339

emeren Empowering Renewables

NY ROME OLD ONEIDA ROAD SOLAR, LLC
5792 OLD ONEIDA ROAD
ROME, NY 13440
ONEIDA COUNTY

MARK	DATE	DESCRIPTION
		REVISIONS

PROJECT NO: V32.007.002
DATE: DECEMBER 2024
DRAWN BY: B. BUCKINGHAM
DESIGNED BY:
CHECKED BY:

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EROSION AND SEDIMENT CONTROL PLAN

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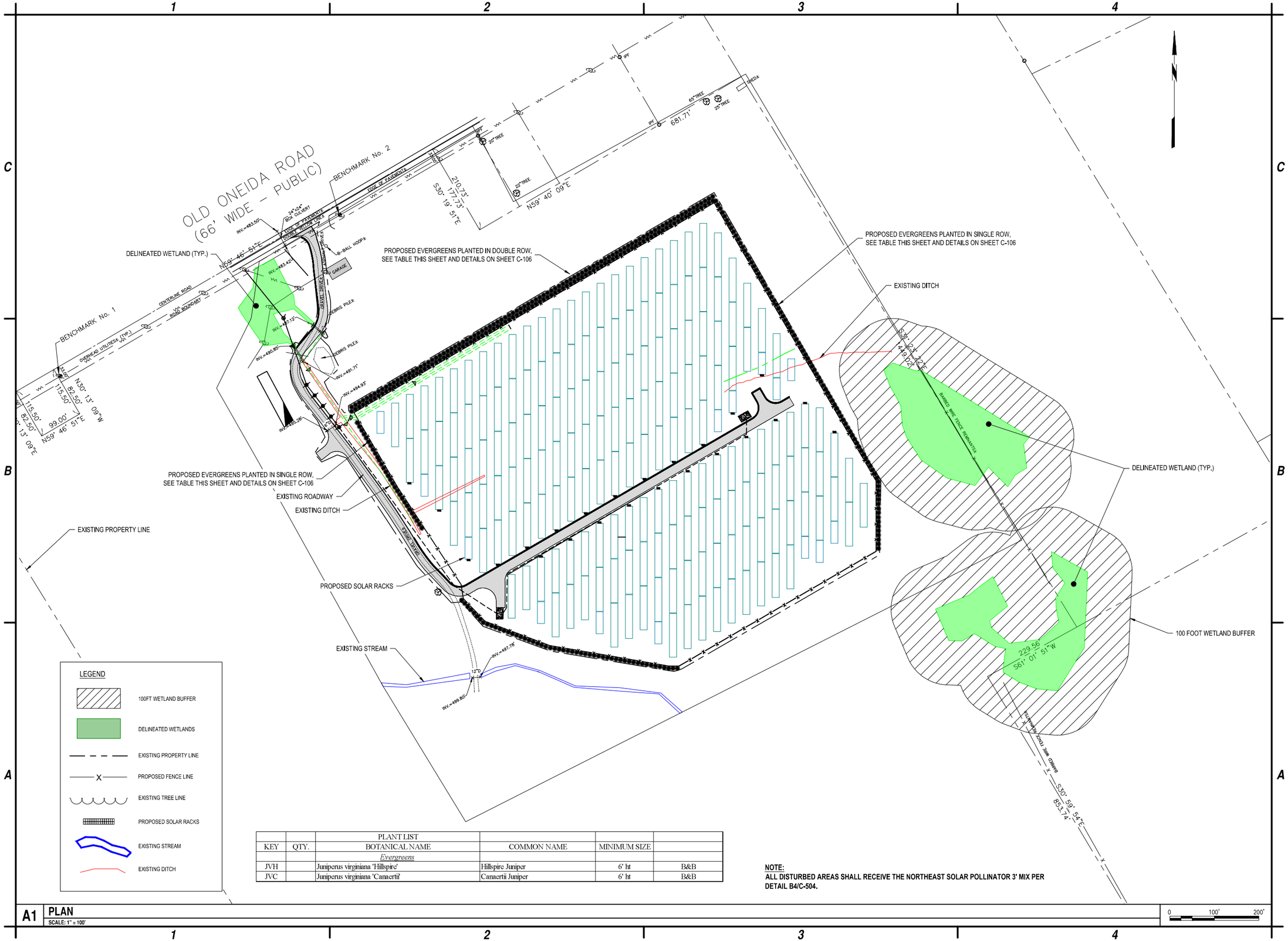

PLANT LIST					
KEY	QTY.	BOTANICAL NAME	COMMON NAME	MINIMUM SIZE	
		Evergreens			
JVH		Juniperus virginiana 'Hillspire'	Hillspire Juniper	6' ht	B&B
JVC		Juniperus virginiana 'Canaertii'	Canaertii Juniper	6' ht	B&B

NOTE:
ALL DISTURBED AREAS SHALL RECEIVE THE NORTHEAST SOLAR POLLINATOR 3' MIX PER DETAIL B4/C-504.

A1 **PLAN**
SCALE: 1" = 100'

0 100' 200'

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LANDSCAPING PLAN

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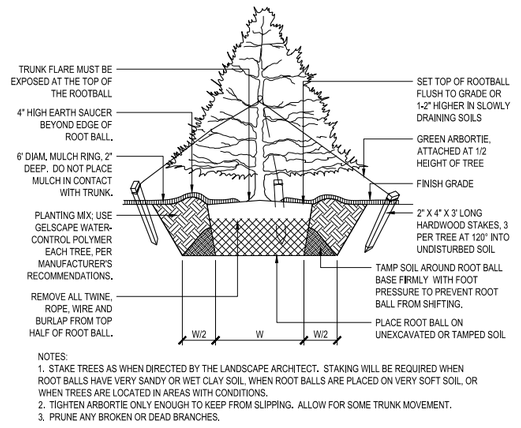
B1 HILLSPIRE JUNIPER
NTS

B2 NOT USED
NTS

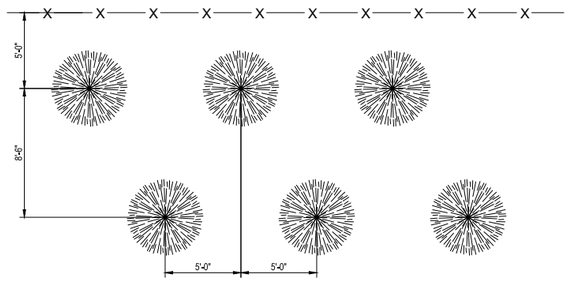
C2 NOT USED
NTS

C3 NOT USED
NTS



NOTES:
1. STAKE TREES AS WHEN DIRECTED BY THE LANDSCAPE ARCHITECT. STAKING WILL BE REQUIRED WHEN ROOT BALLS HAVE VERY SANDY OR WET CLAY SOIL. WHEN ROOT BALLS ARE PLACED ON VERY SOFT SOIL, OR WHEN TREES ARE LOCATED IN AREAS WITH CONDITIONS.
2. TIGHTEN ARBORTIE ONLY ENOUGH TO KEEP FROM SLIPPING. ALLOW FOR SOME TRUNK MOVEMENT.
3. PRUNE ANY BROKEN OR DEAD BRANCHES.

B3 TREE PLANTING DETAIL
NTS



A1 PLANTING LAYOUT
NTS

A3 CANAERTII JUNIPER
NTS

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ROME, NY 13440
ONEIDA COUNTY

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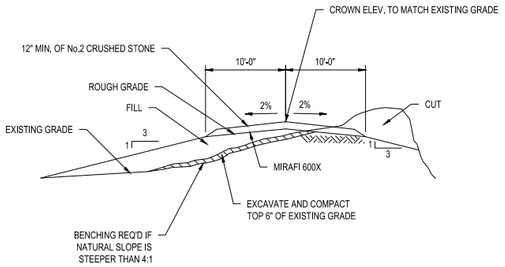
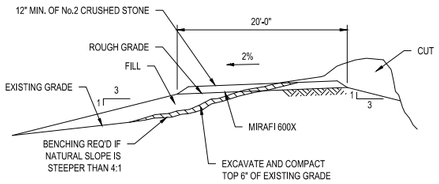




NOTE:
REMOVE ANY SOFT SOILS EXCAVATED DURING INSTALLATION OF ACCESS ROAD.

C1 ACCESS DRIVE DETAIL

SCALE: NOT TO SCALE

1. SCHEDULE A PRE-CONSTRUCTION MEETING THAT SHALL BE ATTENDED BY THE QUALIFIED INSPECTOR, AND INVOLVED SUBCONTRACTORS TO DISCUSS RESPONSIBILITIES AS THEY RELATE TO THE IMPLEMENTATION OF THE SWPPP MEASURES TO AVOID AND MINIMIZE IMPACTS TO PROTECTED SPECIES DURING REMEDIATION, DEMOLITION AND CONSTRUCTION.
2. INSTALL THE STABILIZED CONSTRUCTION ENTRANCE FOR THE PROJECT AS SHOWN ON THE PLANS.
3. DELINEATE THE LIMITS OF DISTURBANCE FOR THE PROJECT, TO INCLUDE THE STAKEOUT AND INSTALLATION OF WETLAND PROTECTIONS OF WETLANDS ON SITE OR THAT COULD BE IMPACTED BY CONSTRUCTION. CONTRACTOR TO ENSURE DELINEATION OF WETLAND BOUNDARIES AND INSTALLATION OF PROTECTIONS REMAINS THROUGHOUT DURATION OF CONSTRUCTION EFFORTS TO PROTECT WETLANDS FROM DISRUPTION AS A RESULT OF CONSTRUCTION ACTIVITIES.
4. ESTABLISH LOCATION FOR STAGING AREA AND SOIL STOCKPILE AS SHOWN ON THE PLANS. IF THESE AREAS ARE NOT CONDUCIVE DUE TO ANY UNFORESEEN CONDITIONS, THE CONTRACTOR SHALL IDENTIFY A NEW LOCATION FOR REVIEW AND APPROVAL BY THE ENGINEER.
5. INSTALL ALL SILT / CONSTRUCTION FENCE FOR THE PROJECT AS SHOWN ON THE PLANS INCLUDING THE INSTALLATION OF SILT FENCE SURROUNDING THE PERIMETER OF THE SOIL STOCKPILE, STAGING AREA, AND AT THE DOWN GRADIENT SIDE OF ALL SOLAR PANEL ARRAYS LOCATIONS.
6. SELECTIVELY CLEAR ONLY THE AREAS REQUIRED FOR THE FOLLOWING: INSTALLATION OF THE STABILIZED FACILITY ENTRANCE, PLACEMENT OF THE CONSTRUCTION OFFICE TRAILER AND PARKING AREAS, PLACEMENT OF TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES, CONSTRUCTION STAGING AREA, THE SOIL STOCKPILE, AND THE MINIMAL AREAS IDENTIFIED TO BE GRADED.
7. INSTALL ALL SWALES /BASINS AND BERMS AS SHOWN ON THE PLANS. TOPSOIL, SEED, AND MULCH THE SWALES. ROLLED EROSION CONTROL FABRICS, TURF REINFORCEMENT MATS, MULCH ANCHORING TO BE INSTALLED AS NEEDED AND IN AREAS OF CONCENTRATED FLOW.
8. CONTRACTOR TO INSTALL LEVEL SPREADERS AS SHOWN ON THE GRADING AND EROSION AND SEDIMENT CONTROL PLAN, COVERING THE LEVEL SPREADER WITH PLYWOOD OR MUD MATS IN LOCATIONS WHERE THEY MUST BE CROSSED DURING CONSTRUCTION IS REQUIRED.
9. CONTRACTOR TO INSTALL THE ACCESS ROADWAYS AS SHOWN ON THE PLANS.
10. PROVIDE TEMPORARY SEEDING AND STABILIZATION MEASURES OF ANY DISTURBED AREAS IN ACTIVE AREAS ON THE NEXT BUSINESS DAY AND COMPLETED IN FOURTEEN DAYS.
11. INSTALL POSTS, BRACKETS, MOUNTING STRUCTURES, AND MODULES. CONTRACTOR SHALL LIMIT SOLAR ARRAY SUPPORTS AND MODULE INSTALLATION TO AREAS AND SECTIONS WHERE TEMPORARY STABILIZATION CAN BE MANAGED AND CONTROLLED AT ALL TIMES. A 5-ACRE WAIVER REQUEST WILL BE SUBMITTED TO THE TOWN OF AFTON AS AN MS4 COMMUNITY TO ALLOW THE SITE CONTRACTOR TO TRAVERSE THE SITE WITH THE SOLAR SUPPORT INSTALLATION EQUIPMENT ONLY. CONVENTIONAL EARTH MOVING AND MASS GRADING ACTIVITIES ARE NOT PROPOSED. PLEASE REFER TO THE 5-ACRE WAIVER LETTER IN APPENDIX A-7. SEEDING AND STABILIZATION MEASURES OUTLINED IN STEP 10 SHALL BE IMPLEMENTED BEFORE MOVING ONTO THE NEXT SECTION OF SOLAR PANEL INSTALLATIONS.
12. COMPLETE OVERALL ON-SITE STABILIZATION.
13. CONTRACTOR TO RAKE OUT ANY AREAS OF LEVEL SPREADERS THAT ARE PACKED WITH MUD AND REMOVE AND REPLACE STONE AS NECESSARY.
14. UPON ESTABLISHMENT OF SUBSTANTIAL VEGETATIVE COVER (85% MIN.) REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROLS. SEED AND MULCH THE REMAINING DISTURBED AREAS (RESULTING FROM TEMPORARY EROSION CONTROL MEASURE REMOVAL).
15. REMOVE SILT FENCING ONLY AFTER DISTURBED SURFACES ARE STABILIZED.
16. UPON FINAL STABILIZATION, AND CERTIFICATION BY THE NYSDEC AND THE QUALIFIED PROFESSIONAL RETAINED TO PERFORM THE REQUIRED SITE INSPECTIONS, THE OWNER SHALL FILE THE NOTICE OF TERMINATION (NOT) WITH THE NYSDEC.

C3 CONSTRUCTION SEQUENCE

SCALE: NOT TO SCALE

STABILIZED CONSTRUCTION ENTRANCE NOTES:

1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.

2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).

3. THICKNESS - NOT LESS THAN SIX (6) INCHES.

4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.

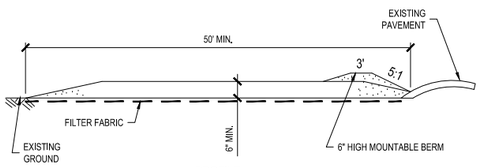
5. FILTER FABRIC - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.

6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.

7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF- WAY MUST BE REMOVED IMMEDIATELY.

8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.



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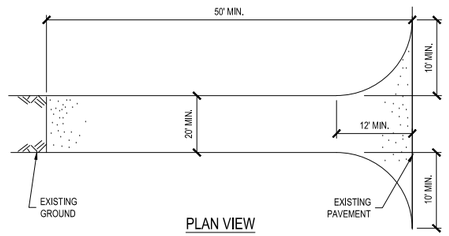
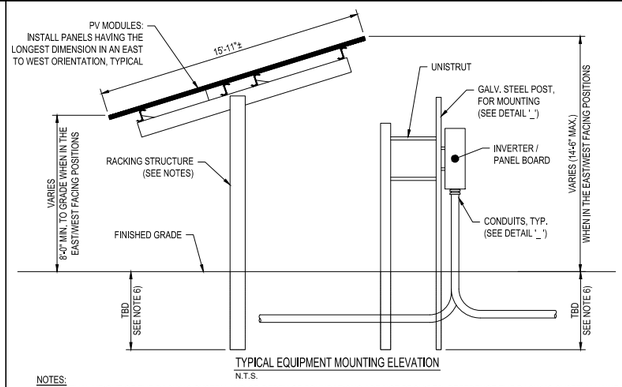


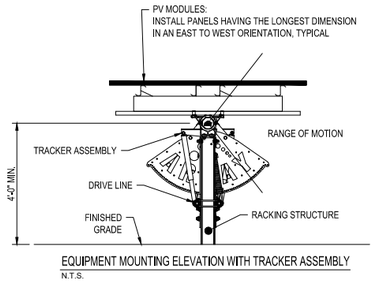
PLAN VIEW

A1 STABILIZED CONSTRUCTION ENTRANCE DETAIL

SCALE: NOT TO SCALE



TYPICAL EQUIPMENT MOUNTING ELEVATION
N.T.S.

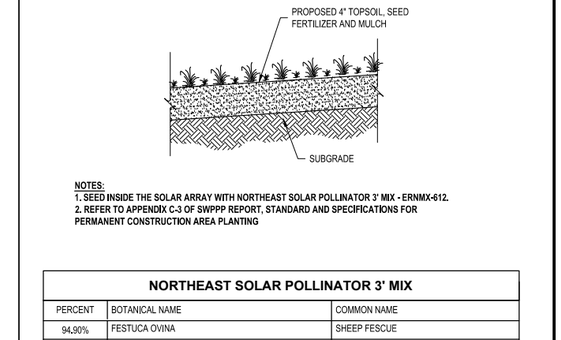


EQUIPMENT MOUNTING ELEVATION WITH TRACKER ASSEMBLY
N.T.S.

NOTES:
1) ACTUAL HEIGHT OF THE RACKING SYSTEM AND OR DEPTH OF FOUNDATIONS ARE NOT PROVIDED. REFERENCE THE RACKING SYSTEM MANUFACTURER'S PRODUCT DATA AND INSTRUCTIONS FOR INFORMATION. RACKING STRUCTURE IS SHOWN AS REPRESENTATIVE ONLY.
2) EQUIPMENT SHALL BE PROVIDED / MOUNTED SUCH THAT IT DOES NOT CAUSE ANY SHADING OF THE PHOTOVOLTAIC (PV) MODULES.
3) CONDUITS SHALL BE ROUTED SUCH THAT CONFLICT WITH ARRAY FOUNDATIONS IS AVOIDED.
4) ENCLOSURE SHALL BE MOUNTED SUCH THAT ALL CODE REQUIRED CLEARANCES ARE MET AND COMPLIED TO. (REFERENCE NEC ARTICLE 110.32)
5) REFER TO RACKING MANUFACTURER'S MANUAL FOR ADDITIONAL INFORMATION.
6) EMBEDMENT DEPTH VARIES, PER GEOTECHNICAL AND STRUCTURAL CALCULATION DETERMINATION.

B2 EQUIPMENT MOUNTING SECTION - ELEVATION

SCALE: NOT TO SCALE



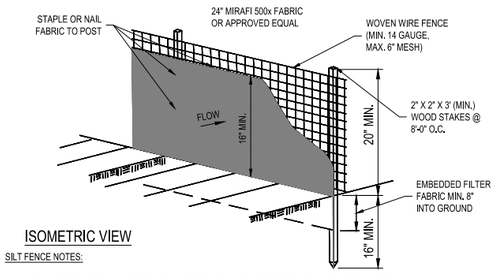
NOTES:
1. SEED INSIDE THE SOLAR ARRAY WITH NORTHEAST SOLAR POLLINATOR 3' MIX - ERNMX-612.
2. REFER TO APPENDIX C-3 OF SWPPP REPORT, STANDARD AND SPECIFICATIONS FOR PERMANENT CONSTRUCTION AREA PLANTING

NORTHEAST SOLAR POLLINATOR 3' MIX

PERCENT	BOTANICAL NAME	COMMON NAME
94.90%	FESTUCA OVINA	SHEEP FESCUE
2.50%	ASCLEPIAS TUBEROSA	BUTTERFLY MILKWEED
2.00%	CHAMAECRISTA FASCICULATA, PA ECOTYPE	PARTRIDGE PEA, PA ECOTYPE
0.30%	OENOTHERA FRUTICOSA VAR. FRUTICOSA	SUNDROPS
0.30%	TRADESCANTIA VIRGINIANA, SOUTHERN PA/ NORTHERN VA	VIRGINIA SPIDERWORT, SOUTHEASTERN PA/ NORTHERN VA BLEND

B4 GRASS RESTORATION DETAIL

SCALE: NOT TO SCALE



ISOMETRIC VIEW

SILT FENCE NOTES:

1. WOVEN WIRE FENCE SHALL BE SECURELY FASTENED TO FENCE POSTS WITH WIRE TIES OR STAPLES.

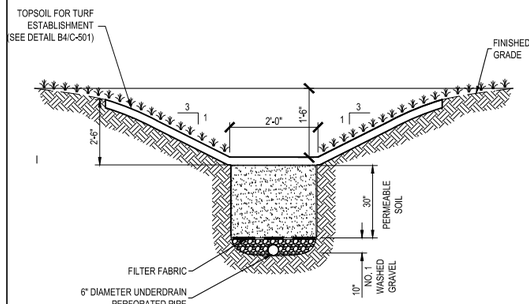
2. SILT FENCE FABRIC SHALL BE SECURELY FASTENED TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID-SECTION, WHEN TWO SECTIONS OF SILT FENCE FABRIC ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY 6" AND FOLDED.

3. MAINTENANCE SHALL BE PROVIDED BY THE CONTRACTOR AS DIRECTED BY ENGINEER AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

4. CONTRACTOR SHALL REMOVE THE SILT FENCE AT THE APPROPRIATE TIME, DRESS THE DISTURBED AREAS, AND DISPOSE OF THE SILT FENCE.

A2 SILT FENCE DETAIL

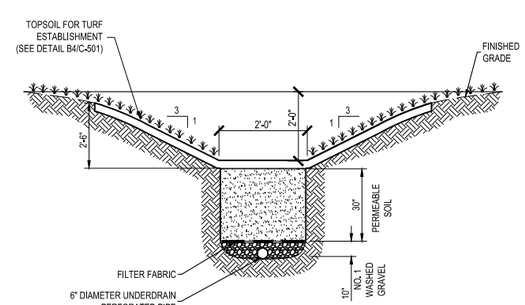
SCALE: NOT TO SCALE



NOTE:
1. DRY SWALE PLANTING SOIL TO BE 80- 85% SAND (MEDIUM- COARSE GRADED, CONFORMING TO ASTM C-33), 8-12% SILT LOAM, AND 3-4% ORGANIC MATERIAL MAX.
2. PERMANENT CHECK DAMS SHALL BE INSTALLED IN ACCORDANCE WITH DETAIL B4/C-504.

A3 DRY SWALE 1

SCALE: NOT TO SCALE



NOTE:
1. DRY SWALE PLANTING SOIL TO BE 80- 85% SAND (MEDIUM- COARSE GRADED, CONFORMING TO ASTM C-33), 8-12% SILT LOAM, AND 3-4% ORGANIC MATERIAL MAX.
2. PERMANENT CHECK DAMS SHALL BE INSTALLED IN ACCORDANCE WITH DETAIL B4/C-504.

A4 EXISTING SWALE TO BE CONVERTED TO DRY SWALE

SCALE: NOT TO SCALE

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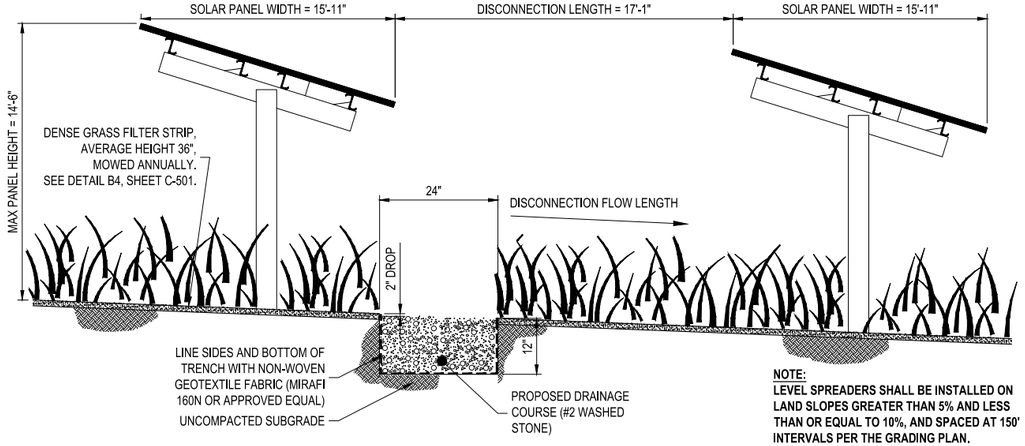
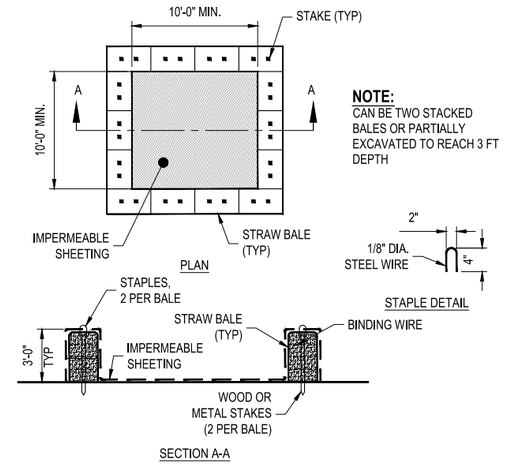


NOTE:
LEVEL SPREADERS SHALL BE INSTALLED ON LAND SLOPES GREATER THAN 5% AND LESS THAN OR EQUAL TO 10%, AND SPACED AT 150' INTERVALS PER THE GRADING PLAN.

C1 LEVEL SPREADER TYPICAL DETAIL
SCALE: NOT TO SCALE

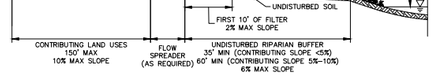


NOTE:
CAN BE TWO STACKED BALES OR PARTIALLY EXCAVATED TO REACH 3 FT DEPTH

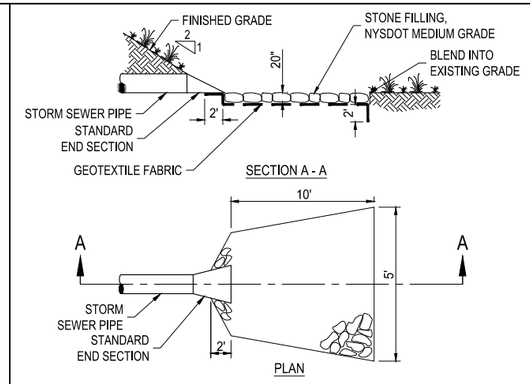
C3 TEMPORARY CONCRETE WASH-OUT AREA (STRAW BALE) DETAIL
SCALE: NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

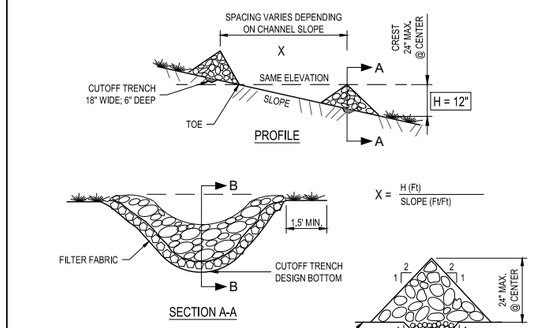
1. LOCATE WASHOUT STRUCTURE A MINIMUM OF 50 FEET AWAY FROM OPEN CHANNELS, STORM DRAIN INLETS, SENSITIVE AREAS, WETLANDS, BUFFERS AND WATER COURSES AND AWAY FROM CONSTRUCTION TRAFFIC.
2. SIZE WASHOUT STRUCTURE FOR VOLUME NECESSARY TO CONTAIN WASH WATER AND SOLIDS AND MAINTAIN AT LEAST 4 INCHES OF FREEBOARD. TYPICAL DIMENSIONS ARE 10 FEET X 10 FEET X 3 FEET DEEP.
3. PREPARE SOIL BASE FREE OF ROCKS OR OTHER DEBRIS THAT MAY CAUSE TEARS OR HOLES IN THE LINER. FOR LINER, USE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING, FREE OF HOLES AND TEARS OR OTHER DEFECTS THAT COMPROMISE IMPERMEABILITY OF THE MATERIAL.
4. PROVIDE A SIGN FOR THE WASHOUT IN CLOSE PROXIMITY TO THE FACILITY.
5. KEEP CONCRETE WASHOUT STRUCTURE WATER TIGHT. REPLACE IMPERMEABLE LINER IF DAMAGED (E.G., RIPPED OR PUNCTURED), EMPTY OR REPLACE WASHOUT STRUCTURE THAT IS 75 PERCENT FULL, AND DISPOSE OF ACCUMULATED MATERIAL PROPERLY. DO NOT REUSE PLASTIC LINER. WET-VACUUM STORED LIQUIDS THAT HAVE NOT EVAPORATED AND DISPOSE OF IN AN APPROVED MANNER.
6. PRIOR TO FORECASTED RAINSTORMS, REMOVE LIQUIDS OR COVER STRUCTURE TO PREVENT OVERFLOWS. REMOVE HARDENED SOLIDS, WHOLE OR BROKEN UP, FOR DISPOSAL OR RECYCLING. MAINTAIN RUNOFF DIVERSION AROUND EXCAVATED WASHOUT STRUCTURE UNTIL STRUCTURE IS REMOVED.



B1 GRASS FILTER STRIP DETAIL
SCALE: NOT TO SCALE

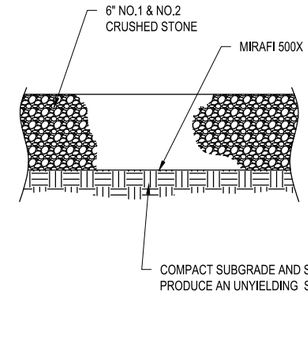


B2 ROCK INLET/OUTLET PROTECTION DETAIL
SCALE: NOT TO SCALE

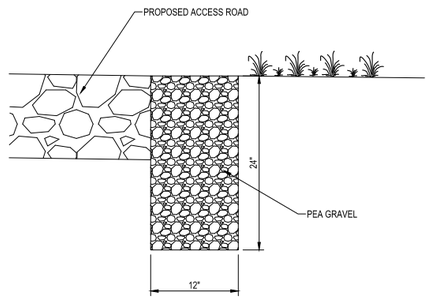


NOTES:
1. ROCK DAM SIZING IS SPECIFIC TO SWALE CONDITIONS.
2. SPECIFICALLY, THE HEIGHT OF THE CHECK DAM (H) IS 12".
3. REFER TO THE PLAN SHEETS FOR CHECK DAM SPACING.

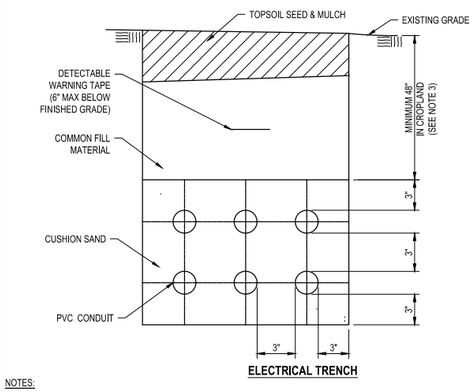
B3 CHECK DAM DETAIL
NOT TO SCALE



B4 TYPICAL STONE YARD DETAIL (FOR STAGING AREA)
SCALE: NOT TO SCALE

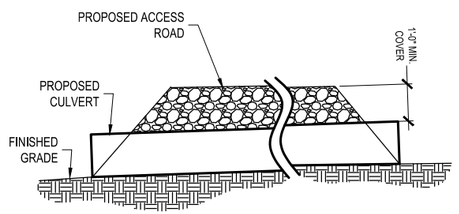


A1 PEA GRAVEL DIAPHRAGM
SCALE: NOT TO SCALE

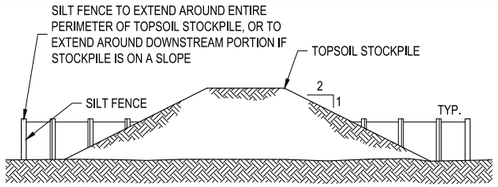


NOTES:
1. TO BE USED IN TURFED ARES AND UNDER SIDEWALKS UNLESS OTHERWISE SHOWN.
2. NUMBER OF CONDUITS AS PER PLANS.
3. ELECTRICAL CONDUIT BURIED ADJACENT TO ACCESS ROAD MUST HAVE A MINIMUM OF 24" BURIAL DEPTH. BURIED ELECTRIC CONDUCTORS MUST HAVE A MINIMUM BURIAL DEPTH OF 48-INCHES OF COVER IN AREAS OF CROPLAND, HAYLAND, AND IMPROVED PASTURE. IN CASE WHERE BEDROCK IS LESS THAN 48", CONDUIT TO BE INSTALLED ON TOP OF BEDROCK.

A2 ELECTRICAL TRENCH DETAIL
SCALE: NOT TO SCALE



A3 TYPICAL CULVERT DETAIL
SCALE: NOT TO SCALE



TEMPORARY TOPSOIL STOCKPILE NOTES:
1. REFER TO SILT FENCE DETAIL FOR MATERIALS AND INSTALLATION METHODS.
2. IF THE STOCKPILE IS TO REMAIN FOR MORE THAN 14 DAYS, IT SHALL BE STABILIZED WITH BURLAP MATTING OR SEEDED WITHIN 7 DAYS OF COMPLETION TO MINIMIZE EROSION.
3. INSPECTION OF SILT FENCE SHALL BE AT LEAST ONCE PER WEEK AND AFTER RAIN EVENTS IN EXCESS OF 1/2". REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
4. SEDIMENT TRAPPED BY THE SILT FENCE SHALL BE REMOVED AND PROPERLY DISPOSED OF WHENEVER SIGNIFICANT ACCUMULATION OCCURS.
5. SILT FENCE SHALL BE MAINTAINED IN PLACE UNTIL TOPSOIL STOCKPILE HAS BEEN ELIMINATED AND SHALL BE REMOVED ONLY WHEN DIRECTED BY THE ENGINEER.
6. TOPSOIL STOCKPILE LOCATION SHALL BE DETERMINED BY THE CONTRACTOR AND APPROVED BY THE OWNER OR AN AUTHORIZED REPRESENTATIVE

A4 TYPICAL TOPSOIL STOCKPILE DETAIL
SCALE: NOT TO SCALE

C&S COMPANIES
C&S Engineers, Inc.
499 Col. Eileen Collins Blvd.
Syracuse, New York 13212
Phone: 315-455-2000
Fax: 315-455-9667
www.cscos.com

STATE OF NEW YORK ERIC KENNA LICENSED PROFESSIONAL ENGINEER 058339

emeren Empowering Renewables

NY ROME OLD ONEIDA ROAD SOLAR, LLC
5792 OLD ONEIDA ROAD
ROME, NY 13440
ONEIDA COUNTY

MARK	DATE	DESCRIPTION
		REVISIONS

PROJECT NO:	V32.007.002
DATE:	DECEMBER 2024
DRAWN BY:	M. BUCKINGHAM
DESIGNED BY:	E.N.KENNA P.E.
CHECKED BY:	

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EROSION AND SEDIMENT CONTROL DETAILS

C-502

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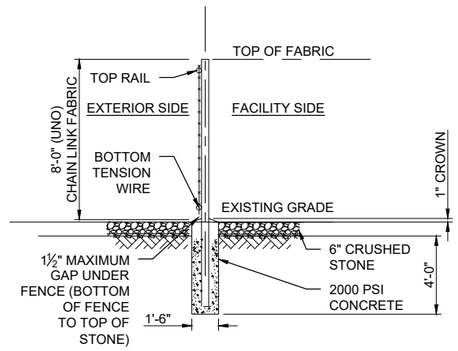
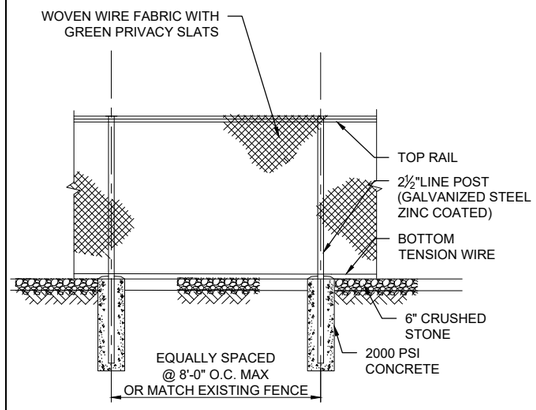
C1 NOT USED
NOT TO SCALE

C2 NOT USED
NOT TO SCALE

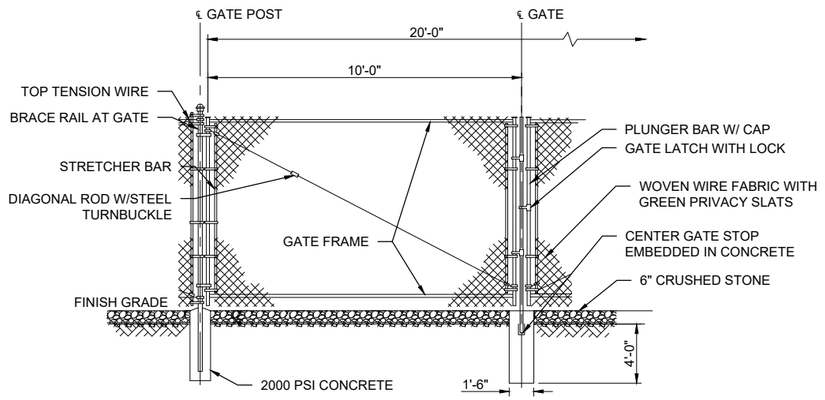


C3 WOVEN WIRE FENCE DETAIL
NOT TO SCALE



C4 WOVEN WIRE FENCE DETAIL
NOT TO SCALE

B1 NOT USED
NOT TO SCALE



A1 WOVEN WIRE DOUBLE SWING GATE DETAIL
NOT TO SCALE

A3 WOVEN WIRE CORNER, GATE, END OR PULL POST DETAIL
NOT TO SCALE

(INSTALL FENCING PER ASTM F-567, SWING GATES PER ASTM F- 900)

1. GATE POST: 4" DIA. SCHEDULE 40 PER ASTM-F 1083, GALVANIZED STEEL ZINC COATED.
2. CORNER AND TERMINAL OR PULL POST: 3" DIA. SCHEDULE 40 PER ASTM-F 1083, GALVANIZED STEEL ZINC COATED.
3. LINE POST: 2½" DIA. SCHEDULE 40 PIPE PER ASTM-F 1083, GALVANIZED STEEL ZINC COATED.
4. GATE FRAME: 1½" DIA. SCHEDULE 40 PIPE PER ASTM-F 1083, GALVANIZED STEEL ZINC COATED.
5. TOP RAIL AND BRACE RAIL: 1½" DIA. SCHEDULE 40 PIPE PER ASTM-F 1083, GALVANIZED STEEL ZINC COATED.
6. FABRIC: 9 GA. CORE WIRE SIZE 2" MESH, CONFORMING TO ASTM-A392 WITH GREEN PRIVACY SLATS.
7. TIE WIRE: MINIMUM 9 GA. GALVANIZED STEEL AT POSTS AND RAILS A SINGLE WRAP OF FABRIC TIE AND AT TENSION WIRE BY HOG RINGS SPACED MAXIMUM 24" INTERVALS.
8. TENSION WIRE: 6 GA. MIN. GALVANIZED STEEL, SHOULD BE CONTINUOUS.
9. GATE LATCH: 1-⅜" O.D. PLUNGER ROD WITH MUSHROOM TYPE CATCH AND LOCK, KEYED ALIKE FOR ALL SITES.
10. HEIGHT = 8' VERTICAL (UNLESS NOTED OTHERWISE) OR MATCH EXISTING FENCE (IF APPLICABLE).
11. MAXIMUM 1½" GAP UNDER FENCE.
12. ALL OPEN POSTS REQUIRE CAPS.

A4 TYPICAL WOVEN WIRE FENCING NOTES
NOT TO SCALE

C&S COMPANIES
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499 Col. Eileen Collins Blvd.
Syracuse, New York 13212
Phone: 315-455-2000
Fax: 315-455-9667
www.cscos.com

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emeren Empowering Renewables

NY ROME OLD ONEIDA ROAD SOLAR, LLC
5792 OLD ONEIDA ROAD
ROME, NY 13440
ONEIDA COUNTY

MARK	DATE	DESCRIPTION
		REVISIONS

PROJECT NO:	V32.007.002
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DRAWN BY:	M. BUCKINGHAM
DESIGNED BY:	
CHECKED BY:	E.N. KENNA, P.E.

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FENCE DETAILS

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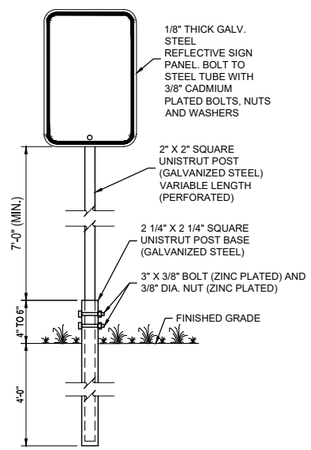
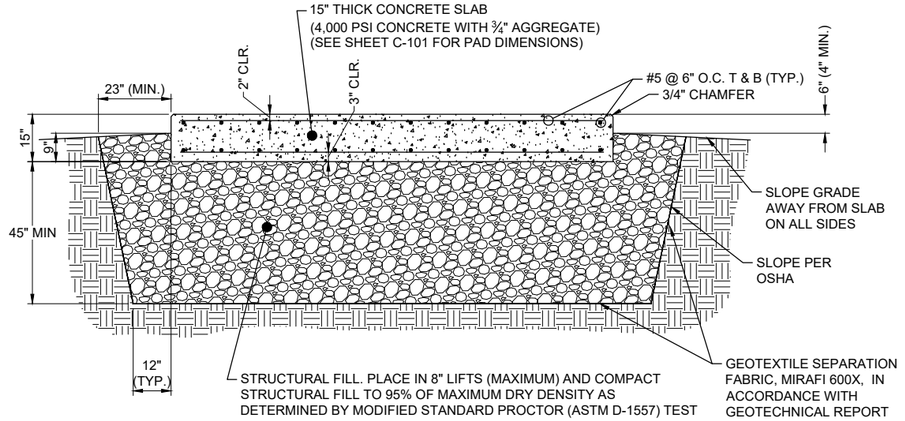


B1 TYPICAL SIGNAGE POST DETAIL
NOT TO SCALE



B2 TYPICAL EQUIPMENT PAD SECTION
NOT TO SCALE

NY ROME OLD ONEIDA ROAD SOLAR, LLC

SITE NAME: NY ROME OLD ONEIDA ROAD SOLAR, LLC
FACILITY OWNER: TBD
EMERGENCY CONTACT: TBD

PRIVATE PROPERTY - NO TRESPASSING

A1 EMERGENCY CONTACT SIGN
NOT TO SCALE

14"x10" OUTDOOR DURABLE ALUMINUM

A3 HIGH VOLTAGE SIGN
NOT TO SCALE

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emeren Empowering Renewables

NY ROME OLD ONEIDA ROAD SOLAR, LLC
5792 OLD ONEIDA ROAD
ROME, NY 13440
ONEIDA COUNTY

MARK	DATE	DESCRIPTION

REVISIONS

PROJECT NO:	V32.007.002
DATE:	DECEMBER 2024
DRAWN BY:	M. BUCKINGHAM
DESIGNED BY:	-
CHECKED BY:	E.N. KENNA, P.E.

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SIGNAGE DETAILS

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NY ROME OLD ONEIDA ROAD SOLAR, LLC PV Solar Generator Facility
Decommissioning & Reclamation Plan

5792 Old Oneida Road, Rome, NY 13440

Contact Information:

NY ROME OLD ONEIDA ROAD SOLAR, LLC

149 Water St.; Suite 302

Norwalk, CT 06854

arif.alam@emeren.com

Telephone: (647) 643-7821

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1. INTRODUCTION

The purpose of this document is to outline the operation, maintenance, and the decommissioning plan for Emeren US LLC's (Emeren) proposed 4.2 MW AC photovoltaic solar electric generating facility (PVSGF) NY ROME OLD ONEIDA ROAD SOLAR, LLC. This plan covers the initial commissioning, long-term operation, and outlines decommissioning the facility at the end of its service. The PVSGF will be built on private land owned by James Elliott. NY ROME OLD ONEIDA ROAD SOLAR, LLC has entered into an agreement to lease the land for 30 years.

The photovoltaic solar electric generating system will be a facility that participates in National Grid's Community Distributed Generation (CDG) Program

The facility generates electricity by harvesting the sun's energy through 13,488 anti-reflective with 500 W direct current (DC) photovoltaic bi-facial panels. The PVSGF would generate clean renewable energy from solar power. The generated energy would be sold to various local off-takers. The PVSGF project is in the application process for a Special Use Permit and Site Plan Review approval from the City of Rome, NY under the project company name NY ROME OLD ONEIDA ROAD SOLAR, LLC.

SYSTEM DESCRIPTION

System Description: 4.2 MW Solar photovoltaic power system

Location: 5792 Old Oneida Road, Rome, NY 13440

Utility Granting Operating Permission: National Grid

Operator Representative: Arif Alam

Emergency Contacts for Site: To be determined once an O&M provider is chosen

LOCATION

The Solar Farm project site is located on approximately 20 acres of a 140 acre site in the City of Rome.

2. Procedures for Decommissioning after Ceasing Operation

The Project has an estimated useful lifetime of 35 years or more, with an opportunity for a lifetime of 50 years or more with equipment replacement and repowering. This section, however, assumes that at the end of the 25 year power generation contract with National Grid, the system will be completely

dismantled and the site restored to its preconstruction state unless the power purchase agreement is extended or otherwise transitioned over to the compensation structure in effect at that time.

Emeren is committed to improving the global environment. Therefore, as a renewable energy developer, is dedicated to recycling as many of the products as possible throughout the project site. Along with the recycling of the used equipment on the project we will minimize waste throughout the decommissioning process.

The decommissioning and reclamation plan is intended to provide a secure mechanism for the removal of the solar energy equipment at the end of the life cycle of the system and restoring the land to its previous condition, estimated to take approximately 120-150 days.

Prior to the start of decommissioning of the project, Local, County and State Agencies will be notified as to the impending work on site.

The project will impact water courses. The site will continue with the revised courses at project completion.

2.1 PV Module Collection and Recycling

NY ROME OLD ONEIDA ROAD SOLAR, LLC will be utilizing solar PV modules with recycling plans to promote the collection and recycling of modules and to minimize the potential for modules to be disposed of as municipal waste. Alternatively, solar panels with remaining useful life can be sold for other applications. The module recycling program includes the glass and the encapsulated semiconductor material, which will be collected by the manufacturer and recycled into new solar modules or other products.

Some key elements of recycling PV Modules include:

- Collection: NY ROME OLD ONEIDA ROAD SOLAR, LLC will manage the logistics of collecting the modules and provide packing and transportation to the recycling center. The module owner's only requirement is to dismantle and package the modules in accordance with the Mann Engineering's instructions.
- Recycling: The module manufacturer, or a comparable recycler, will recycle or reuse as much of the module as possible. All recycling processes are monitored to ensure compliance with applicable regulatory requirements regarding occupational health & safety, recycling, waste management, etc. Any elements that cannot be recycled will be disposed of outside the project location's municipality and in an environmentally friendly way.

Managing the product life cycle, from raw material sourcing through end-of-life collection and recycling, enables NY ROME OLD ONEIDA ROAD SOLAR, LLC to create a sustainable product life cycle that strives to provide the most environmental benefits.

2.2 Facility Dismantling and Site Restoration

The Project consists of numerous recyclable materials, including glass, semiconductor material, steel, and wiring. When the Project reaches the end of its operational life, the component parts can be dismantled and recycled. The Project components will be dismantled and removed using minimal impact conventional construction equipment and recycled or disposed of safely. All components shall be removed from the site using experienced local subcontractors.

2.3 Decommission / Reclamation Methodology:

Please note that no hazardous materials will be stored onsite. The Decommissioning Plan shall consist of the following:

1) A timeline of 120-150 days, including weather delay, comprised of the following phases:
   a) Phase 1: Decommission (30 days).
      i) Removal of solar modules, racking and driven posts or ballast blocks (10 days).
      ii) Removal of the PowerStation electrical equipment (5 days).
      iii) Removal of the below-grade conduits and associated cables (5 days).
      iv) Removal of the concrete pad under the PowerStation or PowerStation ground screws, where applicable (5 days, concurrent with step (iii) above).
      v) Removal of fences and any remaining equipment including but not limited to 3 power poles, security camera, weather station anemometer, rainfall catchment cup, irradiance meter(s), etc. (5 days, concurrent with step (iii) above).
      vi) Removal and haul off of gravel contained in any roads added as part of the Project plus the underlying aggregate, unless the land adjacent to the Premises as defined in the site lease is used for livestock grazing or non-tilled farming such as alfalfa, hay, and/or other grasses in which case the gravel shall be removed to a level of 12” below the surface and the underlying aggregate beneath shall remain in place (10 days).
      vii) No grading will be required
      viii) Note: in the event that the landowner elects to keep the fence and/or the gravel road(s) installed as part of the Project the landowners approve such request in writing either as a part of this permit application or at a later date, NY Old Oneida Road Solar LLC and its assigns shall comply with that request and remove all other equipment pursuant to this Plan.
   b) Phase 2: Reclamation (35 to 55 days).
      i) Order the appropriate Crop seeds (30 days prior to the end of the Term).
      ii) Prepare the soil as needed to plant the Crop (15 days).
      iii) Prepare any necessary temporary irrigation, such as a temporary water tank, hose, or rental of a watering truck to nurture the Crop seeds after planting (15 days, concurrent with step (iv) above).
      iv) Plant the Crop seeds (5 days).
      v) Water and fertilize as needed, using agricultural grade probiotics and if needed additional non-toxic fertilizers (15-35 days).
   c) Weather delay allowance, needed only for below grade removal as described in Phase 1, sections (iii), (iv), and (vi) (20 days).

2.4 Decommissioning Security

For the purposes of decommissioning, a financial security will be provided by NY Old Oneida Road in the form of a bond, cash collateral, security deposit, escrow account, letter of credit or other form of acceptable financial surety in the amount of $91,619/MW AC (which is 125% of the estimated cost of removal) annually for the life of the facility plus 2% annual inflation. The bond will be issued at the time of commencement of construction of the project. Once decommissioning activities have been completed, any remaining portion of the financial surety not used is expected to be returned to NY ROME OLD ONEIDA ROAD SOLAR, LLC.

At least 60 days prior to the end of each successive five year period after the project starts operating, NY ROME OLD ONEIDA ROAD SOLAR, LLC. shall provide the City Of Rome with an updated decommissioning plan, setting forth an updated estimate for the Decommissioning of the Project, subject to review and approval by the City, after which the Security is to be changed to reflect the updated estimate.

Appendix 1 – Existing Conditions Photo Log

Photo 1
Comments: Access road to proposed site looking south.

Photo 2
Comments: Looking at proposed solar area in a northern direction.

Photo 3
Comments: Proposed access road on western side of property.

Photo 4
Comments: Looking north across the proposed solar area.

Photo 5
Comments: Asphalt driveway off Old Oneida Road.

Photo 6
Comments: Looking south along southern border of proposed solar area.

Photo 7
Comments: Looking at proposed solar area facing south.

Photo 8
Comments: Looking south across proposed solar area.

Photo 9
Comments: Proposed access road looking south toward Old Oneida Road.

Photo 10
Comments: Looking north at bordering agricultural fields.

Photo 11
Comments: Residential property south of proposed solar project area along Old Oneida Road.

Photo 12
Comments: AST on bordering property to the west of access road. No product in tank and no staining visible.

Photo 13
Comments: AST on bordering property to the west of access road. No product in tank and no staining visible.

Photo 14
Comments: Looking at northern portion of proposed solar area.

Operation and Maintenance Manual

NY ROME OLD ONEIDA ROAD SOLAR, LLC

March 20, 2025

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  - **Inverter(s)**
- **Warranties for all major components**
  - **Racking System**
  - **Panels**
  - **Inverter(s)**
  - **Monitoring System**
- **Complete AS-Recorded Documents (with stamp on each)**
  - **SLD**
  - **Ballast Drawing (If Applicable)**
- **Equipment Specifications/Shop drawing**
  - **Racking System**
  - **Panels**
  - **Inverter(s)**
  - **Monitoring System**
- **Fuse/Breaker schedule**
- **Replacement parts list**
- **Monitoring Installation Checklist**

1 Introduction

Project Proponents

NY ROME OLD ONEIDA ROAD SOLAR, LLC the "Project", have prepared this operation and maintenance plan ("O&M Plan") for the proposed installation of a solar photovoltaic facility ("Solar Facility") located at 5792 Old Oneida Road, Rome, NY 13440 ("Project Site"). This Plan has been developed to describe the activities that will be undertaken during operation and maintenance and complies with the City of Rome Zoning Code and applicable federal, state and local operating permits.

1-1 Purpose of Operation and Maintenance Manual

The purpose of this manual is to outline the minimal procedures and precautions that need to be taken to ensure proper operations and maintenance of the solar system installed at project site listed below. The manual covers the importance of safety and the steps to properly operate and maintain the main system components. Additionally, it provides troubleshooting and operation aspects of the system. It is the system O&M contractor responsibility to ensure proper maintenance of the solar system and document (including photo documentation) of all maintenance activity for the life of the system, failure to do so could jeopardize the safety and performance of the system and void NY ROME OLD ONEIDA ROAD SOLAR LLC workmanship warranty.

1-2 Terminology

The table below defines the common solar terminology used in this Manual (not limited to).

Terminology
• **PV Modules** Photovoltaic solar panels used for this project are 570 Watt, Jinko 72HL4-BDV
• **Source Circuit Combiner Panels** Junction panel mounted in the ground that combines the photovoltaic AC source circuits to a single output. Main disconnect for Combiner located at switchgear and local inverter breakers within correlating panel.
• **DC Disconnect** There are 16-32 DC switches localized at inverter that provides a disconnecting means to the photovoltaic inputs. NOTE*: DC wiring is still live within breaker. Proceed with proper PPE and arc flash protocol when servicing DC strings.
• **DC to AC Inverters** ABB PVS-166-TL US & ABB PVS-175-TL US inverters that converts DC to AC current for feeding into the electrical grid.
• **AC Disconnect** A safety switch as part of the inverter that provides a disconnecting means to the AC input. This lockable, open blade safety switch qualifies as the utility-required PV System Master Disconnect. AC disconnects are also located on AC side in switchgear and combiner panels.
• **Data Acquisition System (DAS)** Manufactured by AlsoEnergy, the Data Acquisition system collects current weather and system AC output conditions and sends the data via communications line to the internet display.

- **Main Distribution Panel / AC Switchgear**
  The main electrical d i s t r i bu t i o n p a n e l for the Solar Farm that contains circuit breakers & main disconnect for the farm's electrical system.
- **SEL 735 Metering**
  The point where the local PPA utility measures the output of the photovoltaic system.
- **Interconnection Point**
  the location where the PV system output is connected to the utility grid.

1-3 Contact List

Primary Contact	
Name	**Arif Alam**
Company	**NY ROME OLD ONEIDA ROAD SOLAR, LLC**
Address	**149 Water St.; Suite 302, Norwalk, CT 06854**
Phone / Email	(647) 643-7821 / arif.alam@emeren.com

Electrician Contact / Photovoltaic Module Installer	
Name	To be Determined
Company	
Address	
Phone / Email	

Inverter Supplier	
Name	To be Determined
Company	**Fimer (ABB)**
Address	9633 S 48th Street, Suite 230, Phoenix, Arizona 85044
Phone / Email	1-877-261-1374 / 1-855-718-5872

Racking Supplier	
Name	To be Determined
Company	Nextracker
Address	6200 Paseo Pkwy, Fremont, CA 94555
Phone / Email	(510) 793-8388

Photovoltaic Module Supplier	
Name	To be Determined
Company	Jinko Solar
Address	595 Market St, San Francisco, CA 94105, United States
Phone / Email	(215) 180-8777

1- 4 Warranty Obligations

Terms:

Free from defects in materials and workmanship for the term specified below (see attached Warranty documents attached).

The installing contractor will provide a varied warranty (1-5 year(s)) on the completed system including liaison with the manufacturers on the facilities behalf regarding their 'pass-through' component warranties. In addition, the manufacturer's warranty covers components of the generating s y s t e m against degradation in electrical o u t p u t from their original rated electrical output. This warranty covers the costs, not including labor of repair or replacement of defective components of system.

For all m a n u f a c t u r e r s ' warranty information please refer to their respective documents attached or table below.

Major Components – Manufacturers' Warranties

	Warrantor	Term (Years)	Start Definition	Start Day
System Installation	**To be determined**	**2**	**Final Completion**	*To be Announced*
Photovoltaic Modules	**Jinko**	**25**	**Delivery Date**	*To be Announced*
Inverter(s)	**Fimer (ABB)**	**10**	**Startup Date**	*To be Announced*
Racking System	**Nextracker**	**15**	**Delivery Date**	*To be Announced*

For more details please refer to the manufacturing reference documents provided

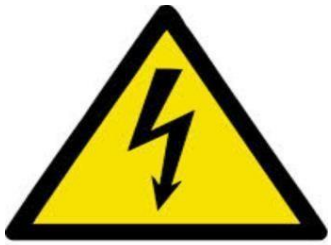
1-5 Safety Key Points

**No unauthorized persons shall shut down the solar electric system or open any system enclosure.

**Never disconnect any wires under load.

**Never work on the solar electric system alone or without authorization.

**Never walk, lean or sit on the solar panels.



2 System Description

2-1 General System Overview

The solar electric system installed on the ground of the project site is an array designed to minimize spacing between modules while avoiding shading. PV Modules are mounted directly on the single tracking g r o u n d m o u n t rack system. The inverter converts the DC electricity produced by the PV system to AC power. The solar generated electricity is back fed into the grid and measured power is analyzed at the SEL meter located at the transformer pad.

2-2 Project Description

Project Owner	**NY Rome Old Oneida Road Solar LLC**
Project Address	**5792 Old Oneida Road, Rome, NY 13440**
Project DC Size	**5.45 MWs**
Project AC size	**4.2 MWs**
Approximate acreage	**20 Acres**
Type of Photovoltaic (PV) Modules	**Jinko 72HL4-BDV 570W**
Number of PV Modules	**9,562**
Type of Inverter	**Fimer (ABB) PVS-166-TL US & PVS-175-TL US**
Number of Inverters	**24**
Racking System	**Nextracker**

2-3 System Configuration

Solar system is configured in the following manor.

Configuration
• The Photovoltaic Modules are ground mounted using Nextracker Racking.
• The Modules are electrically connected in series of 26 (forming source circuits) using weatherproof electrical multi contact quick-connects (MC4).
• The source circuit wiring exits each array and into inverter (adjacent to racking) MPPT terminals insider lower part of inverter and converted to AC. DC disconnect for source circuit located on correlating inverter.
• The combined AC source circuit outputs then run in conduit from inverter to AC combiner Panel or directly back to switchgear. AC disconnects located at inverter (lockable) or Combiner/Switchgear level (breaker).
• The inverter's AC output, Racking data, meter data interfaces with the Data Acquisition System (DAS) which is localized at basic station located next to Switchgear pad. All relative data outputs are sent to the internet display.
• The measured PV system output is connected to the utility grid at the Interconnection Point. SEL 735 meter reads PV system output for PPA revenue reading.
• Point of Interconnection though on dip pole can be considered on most sites at the Transformer primary side. All transformers are NY Rome Old Oneida Road Solar LLC owned. Request for primary shut down is required to be coordinated with local Utility

2-4 System Electrical Specifications and Inverter operation specification

2-4-1 System Electrical Specifications

System Array	
Power Rating	Maximum Rated Output
	4.20 MW

Photovoltaic Modules	
Manufacturer	Tallmax
Model	Jinko 72HL4-BDV 570W
Module open circuit voltage (Voc)	48.51 V
Module peak power voltage (Vmp)	39.65 V
Module short circuit current (Isc)	11.51 A
Module peak power current (Imp)	10.81 A

Photovoltaic Array (STC)	
Number of modules per source circuit	26
Number of source circuits	201
Total number of modules	9,562
String open circuit voltage	49.1 V
String peak power voltage	38.5 V
String short circuit current	8.36 A
String peak power current	9.86 A
Total Rated Power at STC	570 W

2-4-2 Inverter Operating Specifications

The PV system consists of PV Powered Inverters. Refer to Inverter Operation and Maintenance Manual for the specifications.

3 Site Safety and Operation Specifications

! WARNING !

- **The equipment contains lethal AC and DC voltages!**
- **Site access is intended for authorized personnel only!**
- **These servicing instructions are for use by qualified personnel only!**
- **Equipment is supplied from multiple sources; photovoltaic and utility!**
- **The inverters contain energy storage devices (capacitors) that require 15 minutes after they are switched off to safely discharge lethal voltages!**

DO NOT VIOLATE SITE SAFETY AND OPERATION PROCEDURES

3-1 Site Safety Procedure

The following describes safety procedures to be followed when performing installations, operations, services, repairs and tests of the Photovoltaic System. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture and intended use of the equipment. NY ROME OLD ONEIDA ROAD SOLAR, LLC Solar assumes no liability for the customer's failure to comply with these requirements.

3-2 First Aid

Do not work on the PV modules or components unless another person capable of rendering first aid and cardiopulmonary resuscitation (CPR) is also present.

3-3 Warning

The installation, adjustment, repairs or testing of the Photovoltaic System involves possible contact with **potentially lethal voltages and currents**. No attempt to install or service the system should be made by anyone who is not a qualified, trained technician familiar with power electronic equipment. Always open disconnect devices and tag-out/lock-out AC and DC power sources. Always wait at least fifteen (15) minutes after turning off the DC power source and utility AC power to allow internal energy storage devices to discharge prior to working on the inverter system. Read the Inverter Operation and Maintenance Manual, prior to servicing the inverter unit.

3-4 Inverter Start / Re-Start

Use the following procedures for system start-up and restart (follow all or a part of the instructions that may apply):

1. Remove the tag-out/lock-off tag and move the DG System Disconnect Switch to **ON**.
2. Remove the tag-out/lock-off tag and move the DC Disconnects to **ON**.
3. Turn the Stop switch to **ON**.

4. The inverter will come back on after a short delay where the inverter confirms proper DC and AC operating specifications. If either the DC or AC electrical characteristics are out of range, the inverters will not operate properly.

After a short initialization period, the inverters will transition to "initial Startup" provided that the PV voltage is greater than the PV voltage Start set point. After another short period (typically 5 minutes) the system will start up (Run).

3-5 Inverter Shutdown

Use the following procedures for system shutdown (follow all or a part of the instructions that may apply):

1. Turn the AC switch to immediately stop AC output. The switch will remain in that position until manually reset.
2. Once the AC switch is in the OPEN position, it will present fault and the unit enters Standby state (screen clears) and resumes **5 min.** start sequence once powering on again.
3. Move the DC System Disconnect Switch to **OFF/OPEN** and apply a tag-out/lock off tag.

3-6 Substitute Parts

Because of the danger of introducing unknown hazards, **DO NOT** substitute parts or perform unauthorized modification to the equipment.

3-7 Procedures While in the Vicinity of the Photovoltaic System

1. Safety glasses and electrical insulating gloves must be worn when handling or working near the array, modules, electrical boxes, or wiring.
2. Two persons shall always be present when working on the array or handling modules. Do not attempt service or adjustment unless another person capable of rendering first aid and cardiopulmonary resuscitation (CPR) is also present.
3. Any accidents/incidents must be reported immediately to the supervisor & owner.
4. The modules are made of glass and can be broken. Dropping or banging the modules may cause them to break, as may any impact with sharp, hard, or heavy objects. Along with the electrical hazard, sharp edges or broken glass can cause injury. Be careful not to break modules and take care to properly handle and dispose of modules if they are cracked or broken.
5. Any crack or hole in a module can expose the person touching the

module to the full voltage and current of the array. If the module is wet, touching a cracked module anywhere will expose the person to the full voltage and current of the array. Do not touch module when the module or panel is exposed to the sun without wearing electrical insulating gloves. Do not touch a wet cracked module anywhere without wearing electrical insulating gloves.

6. A module may contain an unknown crack or wire or connector failure. Do not touch, handle, or carry any wet module without wearing electrical insulating gloves.

3-8 Procedures When Handling Modules

1. Prior to handling any module it should be visually inspected for cracks, loose wires, or improperly mounted connectors. If there are any of these conditions, document the findings and resolve with an authorized person. Anomalous modules are to be handled with electrical insulating gloves and removed from the work area and covered (i.e. modules should be covered whenever they are not being used) or placed out of the sun. They are to be marked with a tag noting their condition.
2. Wearing electrical insulating gloves is mandatory when handling a single module or when handling modules that are electrically attached to other modules.

3-9 Hazardous Locations

The following are deemed hazardous (animals, insects, spiders, bees, snakes, electrical voltage, mechanical movement, etc) locations:

1. Within the **Main Electrical Switch Gear** where all Medium Voltage gear is located.
2. **Inverter and AC Combiner Disconnects**: Stand clear of inverter and disconnects. For Hazardous locations within the inverter, refer to the Inverter's Operation and Maintenance Manual.
3. **Close Proximity of the Photovoltaic Array.**
4. **Field Wiring, Electrical Junction Boxes and Electrical Fuses.**
5. **High Grass Areas.**

4 Operation Performance and Maintenance Repair

!WARNING!

- **The equipment contains lethal AC and DC voltages!**
- **Site access is intended for authorized personnel only!**
- **These servicing instructions are for use by qualified personnel only!**
- **Equipment is supplied from multiple sources; photovoltaic and utility!**
- **The inverters contain energy storage devices (capacitors) that require 15 minutes after they are switched off to safely discharge lethal voltages!**

DO NOT VIOLATE SITE SAFETY AND OPERATION PROCEDURES

4-1 Adjustment and Servicing Assistance

For assistance in servicing the Photovoltaic System, contact NY ROME OLD ONEIDA ROAD SOLAR, LLC or appropriate vendor contact. (Please refer to project contact section)

4-2 Facility Access

The acreage where the PV systems are located shall be treated as private property and is accessible only by authorized personnel after permission has been granted. Access to the farm and to any equipment should be arranged by contacting the Site Access Contact. (Please refer to project contact section)

4-3 Tools and Materials Required

The following tools and materials are required when performing routine maintenance:

1. Appropriate Mechanical and Electrical PPE (personal protective equip.)
2. Standard MV (med. Voltage), LV (low voltage), DC and mechanical tools.
3. DC Ammeter
4. Multi-meter
5. Full, OSHA required, electrical shut-down suit if working on or near the low voltage switchgear, metering cabinet or transformer.
6. Torque wrenches required to tighten electrical connections, see product manuals for specifications.

4-4 Inspection

The following preventive maintenance procedures are recommended for the Photovoltaic Systems:

4-4-1 Regular System Output Checks

Customer should regularly view the logged data from the DAS system web page to verify PV array output. If equipment is not working or identifies an

alert, a site visit will be necessary to confirm that the system is in a proper operation mode.

4-4-2 O&M Scope of Services

Scope of services provided by O&M contract will follow the direct scope identified & agreed upon during contract negotiations. Scope of services described in section 5 of this document.

4-4-3 Maintenance Records

A separate Binder should be created for Inspection and Maintenance records, which should be filed correlating and in conjunction with this Operation and Maintenance Manual.

4-5 Maintenance Proposal

This maintenance proposal contains:

- General Preventative Maintenance
- Combiner Preventative Maintenance
- Module Preventative Maintenance
- Inverter & Recombiner Preventative Maintenance
- MV Pad Mount Transformer Preventative Maintenance
- Tracker/Racking Preventative Maintenance
- Monitoring/MET Station Preventative Maintenance
- MV Substation/Gen-tie Preventative Maintenance
- Remote Operations Center (ROC) Preventative Maintenance
- Issue Resolution and On-site requests
- Service Support
- Documentation and Reporting

4-5-1 General Good Practices for Visual Inspection and Cleaning

- Inspect the PV arrays for any modules for any debris that may be on them or on the surrounding adjacent surfaces.
- If excessive dirt or grime is observed on the array, follow the cleaning instructions listed in the scope management plan.
- Verify that all the clips, fasteners and brackets securing the modules and deflectors are tight and not out of place, missing or loose. Confirm that all wiring is still bundled and secured.
- Verify that all fuses are set properly within the inverter enclosures. Inspect the interior of the enclosures for debris or moisture. A continuity test should be performed to test fuses that could be blown.
- Inspect the components on the electrical pad and basic station. Confirm that all the electrical equipment is clear of any obstructions or vegetation.
- Verify that the inverters are operating properly. This is done by inspecting the LCD display on the front of the inverter. Read the message that is being displayed and then consult the inverter manual for a

description of the code identification (if applicable).

- Verify that all DC and AC disconnects are in the “on” or closed position.

4-5-2 General Good Practice for Visual Inspection and Cleaning

Regular maintenance is required to keep modules clear of snow, bird droppings, seeds, pollen, leaves, branches, dirt spots and dust. Rainfall will have a self-cleaning effect and generally make it not necessary to wash the modules. When there is a noticeable buildup of soiling deposits on the module surface; wash PV array using best practices and during the cooler part of the day. Dirt must never be scraped or rubbed away when dry; this will cause micro- scratches.

- DO NOT clean PV modules during the middle of the day when the glass is hot. Thermal shock of cold water on hot, tempered glass can shatter the glass. Clean only at dawn/dusk when the module glass is cool or when ambient module temperatures are relatively safe to avoid thermal shock. It is good practice to have the water and the PV modules at a similar temperature to avoid thermal shock.
- DO NOT clean PV modules if the local inverter is identifying a “Ground Fault” code. Address the ground fault first to avoid potentially hazardous conditions or harm.
- If snow is present; soft bristle brushes can be used to clean the surface of module.
- Always inspect the system wiring attachments on racking and supports to confirm bundling is intact and not causing issue or defect.

If you need electrical or mechanical inspection or maintenance, it is recommended to have an authorized professional (plus assisting personnel) to carry out the job to avoid hazards of electrical shock or injury.

4-5-3 Power Production Check

Use the DAS remote portal to check that the inverters are producing power relative to the installed PV nameplate. Also check that the power of each inverter is in the right range for the current weather conditions. The power produced by the inverters is directly proportional to the amount of sunlight that falls on the array. During a bright, sunny, spring or fall day, the inverters will be reaching their optimum production of 80-85% STC. In addition, the current ambient temperature, wind speed and sun location relative to each of the arrays will affect the production of the solar. The PV cells operate best when they are cool. Hot, non-windy summer days will not necessarily produce the highest energy levels due to excessive heat. Trends of PV production are another way to determine if the system is producing optimum power. The user of the DAS page can choose different views to compare system performance on an hourly, daily, weekly, monthly and yearly basis. The array should perform similarly for different periods with similar weather and sun location conditions. Additional data, such as instantaneous irradiance,

ambient temperature, wind speed, and estimated greenhouse gases avoided, is also stored on the DAS web portal. This information is tabular and is helpful for diagnostics and troubleshooting. Contact NY ROME OLD ONEIDA ROAD SOLAR, LLC for additional instruction to access this information.

4-6 System Controls

System controls consist of:

- AC Source Circuit Combiners
- AC Source Circuit Breakers
- AC Main Distribution (Switchgear) Disconnect
- DC Disconnect Switch (Inverter level)
- AC Disconnect Switch (Inverter level)

4-7 Component Status Indicators

Component Status Indicators include:

- Inverter display on the face of the inverter
- Meter
- Online DAS/SCADA portal

4-8 System Shutdown / Startup Procedure

Any work done on the solar electric system must be approved in writing and/or performed by authorized personnel with previous experience with solar generation systems. The inverters need to be off and tagged out in order to work on the DC side of the system. To work on the DC side of the solar system or to reset the inverter, use steps outlined in section 3 or from manufacturer manual attached to this document.

4-9 Electrical System Troubleshooting

The following describes possible problems and recommended procedures when making repairs to the Photovoltaic System. Please note that problems outlined here are common and resolutions are basic. All appropriate troubleshooting should be evaluated and verified against troubleshooting manuals from manufacturer attached to this document:

4-9-1 Common Troubleshooting – System Not Producing Power Properly

Refer to error code in manual for identification of issue.

- Inverter LCD screen has ability to tell technician the current operating status and error code by holding down enter button on LCD for 2secs before releasing.
- Check DC & AC disconnects are on or in the closed position.
- Check AC main source circuit disconnects to make sure there is no trip fault.
- Check proper AC voltage at each termination point (inverter, combiner, main breaker)
- Check DC voltage of the affected source circuit(s)
- Always follow up with manufacturer technical support if outside knowledge area.

4-9-2 Common Troubleshooting – Suspected Array Imbalance

The most effective way to determine if the system is working properly is to compare system inverter output:

- Use the DAS web portal to check that the inverter is producing power relative to the installed PV array. Also check that the power of the inverter is in the right range for the current weather conditions.
- Each of the source circuits in the array will see the same sun levels (irradiance) at a specific time of day (10-3pm). Early in the morning and late in the afternoon the irradiance will vary across the array because of the low sun angle and potential for shading.
- The power produced by the inverter is directly proportional to the amount of sunlight that falls on the arrays. During a bright sunny spring or fall day, the inverter will be reaching its optimum production of 80 - 85% of STC. In addition, the current ambient temperature, wind speed and sun location relative to the array will affect the production of the solar electric systems.

4-9-3 Common Troubleshooting – Suspected Array Imbalance

Check Source Circuit Voltage Levels:

- Testing source circuit voltage can be extremely dangerous, even after shutting the array down. Inspect the DC MPPT Terminals for nominal DC voltages of each source circuit.
- These readings should be compared to one of the confirmed properly working source circuits or As-builts to judge if they are correct.
- If a source circuit voltage is low, there may be a bad module, faulty electrical connector, a connector may be disconnected, or a module could be obscured by debris or excessive shading.
- Visually inspect the modules of the faulty source circuit for an indication of surface cracking, debris or a loose or faulty connector.

Check Source Circuit Current Levels:

- If the array voltages are similar, then a short circuit test will need to be performed. Despite the array being disconnected, with the use of multimeter, technicians can still determine a short circuit reading on the source circuit. This current is potentially harmful to the technician.

4-9-4 Common Troubleshooting – DAS Not Functioning Properly

To troubleshoot the DAS, consult and contact monitoring manufacturer. Coordination with NY Old Oneida Road Solar LLC is an additional tool in the event of no response from manufacturer while on-site.

4-9-5 Common Troubleshooting – Low AC Output

For concerns about the performance of the solar electric system contact NY ROME OLD ONEIDA ROAD SOLAR, LLC. If there is an abrupt decrease in AC power output over time or the system stops producing power all together; an onsite inspection of the system may be needed. If there is a gradual decrease in AC power output, it is possible that one or more of the PV system source circuits are not functioning properly. In this case, please contact NY ROME OLD ONEIDA ROAD SOLAR, LLC to aid in troubleshooting and remedying the problem.

4-9-6 Inverter Troubleshooting

Inverter operational status is displayed on the front panel. If the inverter fails to turn on, there should be a fault code. Please refer to ABB Operation and Maintenance manual, after following these simple troubleshooting steps:

- Confirm that there are no obstructions on modules
- Verify that there is enough sun to run the system.
- Verify that the inverter is switched in the "**ON**" position.
- Verify that the AC and DC disconnects are in the "**ON**" position.
- Confirm proper startup voltage is present on DC bus. (Qualified Technicians ONLY).
- Confirm proper AC voltage is present on AC bus (Qualified Technicians ONLY).

4-10 System Testing Procedures

4-10-1 Open Circuit voltage Test

The purpose of this test is to ensure that all source circuits are producing the same operating current according to specifications. It is essential that adequate sunlight is present during this test. A source circuit that contains problem cells or poor electrical connections will sometimes show proper Voc; yet produce little current due to the voltage drop through the poor connections.

Equipment:

- Ammeter/Voltmeter
- High voltage gloves
- Engineering specs for short circuit current and short circuit voltage

Procedure:

1. Shut off AC & DC disconnects at inverter
2. Open lower portion of inverter where MPPT terminals are located.
3. Remove all the fuses on specific source circuit. Keep in

mind that source circuits are still live.

4. Close one fuse and measure the short circuit current and voltage.
5. Compute the average panel current and voltage.
6. If the resultant values deviate by more than 5% from the value specified by the manufacturer, check the individual string to find the defective panel.
7. Record the serial number of that panel
8. Open the closed fuse, and repeat steps 1 through 6 for the remaining fuses in the inverter.
9. Repeat steps 1 through 7 for all inverters in the system.

4-10-1 Open Circuit voltage Test

If a low power source circuit is identified it is time to isolate the defective module(s) or string. This is accomplished by dividing the common ampacity of a properly working source circuit and dividing it by the number of PV modules in series. This result will give the technician what each module should be contributing to the circuit. Remove one module at a time from the defective source circuit until the correct power is measured relative to the number of modules left in the circuit. As indicated by the safety procedures above, disconnecting any module or combiner connection needs to be done while the corresponding system is off or LOTO (Lock Out/Tag Out). No connection should be broken under load. The only way to safely isolate the defective module is turning on and off the inverter before and after each testing operation.

5 Maintenance of Land inside of Leased Area

The Project will operate and maintain the Solar Facility in accordance with this Operation and Maintenance Scope ("O&M Scope"). The Project will be responsible for maintenance of the limit of disturbance which is outlined in the map provided in Appendix 1 of this document. While the Project, through their Operation Manager, will be the primary party undertaking activities to fulfill this O&M Scope, subcontractors will also be used.

The O&M Scope will include essential works and services needed for the proper operation and maintenance of the Solar Facility and maintenance of the Project Site. The O&M Scope will include at least, but not be limited to, the following items:

- Compliance with the local, state and federal rules, codes, regulations and laws regarding the health and safety of any operation and maintenance work;
- Control and remote monitoring of the Solar Facility 24/365, including system failure monitors, and coordination with the local fire department and law enforcement;
- Maintain and operate all the infrastructure, equipment and

facilities related to the Solar Facility required for proper operation;

- Provide reports to Operation Manager (monthly and yearly) of any major unexpected event;
- Administer and manage suppliers' guarantees and warranties;
- Management and paperwork involved with third party site visits such as insurers and governmental agencies;
- Annual infrared thermography field test of modules and the electrical panels, for system performance monitoring;
- Spare parts stock management, including all associated costs such as insurance, security or transportation;
- Maintenance of access roads (including snow removal); and
- Vegetation maintenance.

5-1 Solar Facility Operation and Maintenance

Preventative and corrective maintenance programs will be designed to direct the O&M Scope. The O&M Scope of work will occur primarily during scheduled site visits, but unscheduled site visits may also be required.

5-2 Preventative and Corrective Maintenance

The preventive and corrective maintenance programs to maintain and operate the Solar Facility will include:

- Inspect, test, and clean equipment, including cleaning PV modules as required;
- Stock and manage all spare parts, supplies and consumables necessary for performance of the O&M Contract according to the Preventive and Corrective Maintenance scope and the manufacturer's user manual;
- Perform field tests and repair any potential failures that arise;
- Provide a monthly report to the Operation Manager including: energy estimate, energy production, onsite weather station information, preventive maintenance services performed, corrective maintenance services performed including spare parts and consumables used. Monthly reports will also include a description of:
- Any material failure covered by any warranties, action plan and expected timeframe to cover the incident;
- Any violation of any applicable law, applicable permit, or prudent industry practice due to the O&M practices, including environmental laws, rules, or regulations enforced by governmental agencies;
- Any adverse events or conditions that may affect normal Solar

Facility operation;

- Record of all tests and reviews performed to maintain systems in compliance with the manufacturer user manual, including name of company involved and nature of service.
- Administer and manage suppliers' guarantees and warranties, including without limitation any claims or remedies against any subcontractors or suppliers; and
- Comply with and maintain all permits required for operation and maintenance of the Solar Facility.

5-3 Scheduled Service Visits: Preventative Maintenance and Inspections

Routine Solar Facility maintenance will occur during normal business hours (8:00 A.M. to 5:00
P.M. Eastern Standard Time) with overtime as required. Periodic maintenance will be performed each year, including:

- Interim maintenance visits:
  - Solar Facility field inspection: visual, electrical and mechanical as determined by Supplier's recommendations.

- Annual full maintenance visit, which may include:
  - System testing and verification of data acquisition systems.
  - Module cleaning as determined by Operations personnel;
  - Inverter cleaning and servicing to ensure proper operation;
  - Data acquisition system maintenance as needed; and
  - Scheduled maintenance and testing required to maintain all manufacturers' warranties on Solar Facility components.

5-4 Unscheduled ServiceVisits: Corrective Maintenance and Repairs

Unscheduled maintenance visits will generally occur if:

- An emergency occurs that would endanger the health and/or safety of workers onsite, or to the surrounding area, or
- A disruption to the Solar Facility occurs that degrades electricity generation that does not create an Emergency Situation, such as failure of Solar Facility components, vandalism, or fallen trees.

In the event of an emergency, the O&M Contractor and/or the Project will contact the appropriate emergency response personnel (fire department, police department) to inform them of the emergency. Knox boxes will be installed at each gate for the emergency response personnel. The Connecting Utility Owner (National Grid) may also be contacted or may already be aware through remote monitoring of the system, depending on the type of emergency. The O&M Contractor, the Projects, and/or National Grid will dispatch appropriate personnel to the Project Site as soon as possible.

In the event of a disruption, the O&M Contractor will schedule a corrective maintenance visit as soon as possible, making all reasonable efforts to schedule any such maintenance activities between 8:00 A.M and 5:00 P.M. Eastern Standard Time.

5-5 Project Site Maintenance

The O&M Contractor will also be responsible for maintaining the Project Site. All routine Project Site maintenance will occur during normal business hours (8:00 A.M. and 5:00 P.M. Eastern Standard Time).

5-6 General Maintenance

The O&M Contractor will be responsible for maintaining the Project Site. This will include general maintenance tasks such as:

- access road maintenance, including snow removal; and
- maintenance of gates, fences, and any locks or other security devices used to secure these.

5-6-1 Maintenance for Stormwater Management

Filter Strip, Level Spreader, and Gravel Diaphragm will be maintained as follows

- Inspect level spreaders and gravel diaphragm for sediment buildup. Remove sediment and debris when noted.
- Inspect plant composition and health and replace as needed. Reseed bare spots of grass area.
- No heavy vehicle traffic shall occur on the vegetated filter strip.
- Mow filter strip twice a year to prevent vegetation from growing so tall runoff cannot enter or is getting concentrated.
- Check for evidence of rills or gullies forming and fill with soil, compact, and add seed and straw to establish vegetation.

5-6-2 Vegetation Management

The O&M personnel will be responsible for maintaining vegetation within the

Solar Facility's lease area, both within and immediately outside the Project Site fence line encompassing the screening plantings. Mowing will be done throughout the year to comply with the City Code.

Vegetated Swale Maintenance will be done as follows:

- Fertilize and lime as needed to maintain dense vegetation.
- Mow as required during the growing season to maintain grass heights at 4 inches to 6 inches.
- Remove any sediment or debris buildup by hand if possible, in the bottom of the channel when the depth reaches 2 inches.
- Inspect for pools of standing water. Regrade to restore design grade and revegetate.
- Repair rills in channel bottom with compacted topsoil, anchored with mesh or filter fabric. Seed and mulch.
- Use of heavy equipment for mowing and removing plants/debris should be avoided to minimize soil compaction. Disturbed areas should be stabilized with seed and mulch, or revetment, as necessary.

5-6-3 Ecosystem-Based Management Soil Practices

During operation vegetation will be managed following ecosystem based management soil practices with the aim of promoting soil health by reducing soil compaction, improving the water cycle, and increasing soil organic matter. Implementing these management practices over the life of the Project will also maximize carbon sequestration at the Project Site. The ecosystem based management soil practices intended to be implemented at the Project Site include:

- Seeding the fenced area with a mix of no-tillage perennial grasses and pollinator-friendly plantings;
- Limiting fertilizer and pesticide use, following the New York State Integrated Pest Management process (see below); and
- Maintaining a mowing schedule in order to keep the sod active and prevent oversized growth.

5-6-4 Integrated Pest Management

Weed and pest management will follow the New York State Integrated Pest Management ("IPM") process, which outlines the following steps:

- Identify the weeds/pests;
- Monitor the weeds/pest to understand patterns of the weeds/pests in the space;
- Act – develop an action threshold at the first sign of pests to

determine when pest control action should be taken;

- Explore – consider and research all possible pest management strategies before taking action; and
- Evaluate - consider how the IPM tools worked or how they could be improved for next time.

If, through following this process, the application of herbicide or pesticide becomes necessary to manage vegetation the Projects will provide the City of Rome with the proposed herbicide/pesticide type, manufacturer, and application details prior to any application being made. Application of any herbicides or pesticides will only be done by licensed professionals with New York State Department of Environmental Conservation ("NYSDEC") certification.

5-6-5 Mowing & Trimming

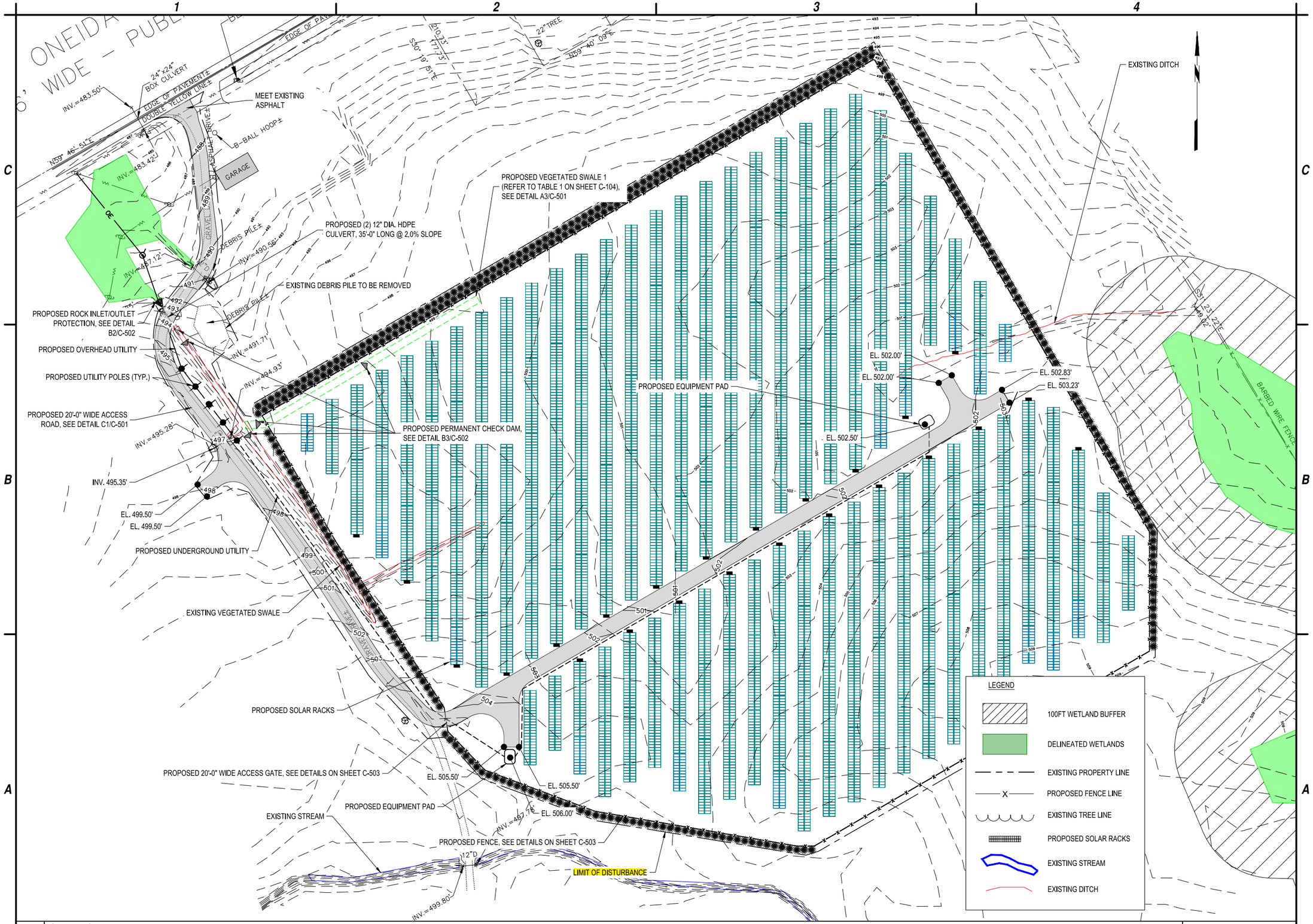
Maintenance of the ground cover within the fence will follow the mowing schedule set-up for the Project Site, weather depending. Vegetation outside of the fence may also need to be trimmed.

In the event there is any damage to ground cover or vegetation due to maintenance activities (other than caused by normal maintenance activities), the affected areas and vegetation will be repaired in the next appropriate season such repair can be made. In the event there are dead trees within the screening plantings, they will be replaced in the next appropriate season.

5-6-6 Reporting

Annual reports for the first five (5) years of operation, will be completed and submitted to the City Of Rome, describing all vegetation maintenance activities completed in the previous year and outlining activities for the upcoming year. The report will also identify any areas of the screening plantings that have not thrived and/or need to be replaced by the Project.

Appendix 1 – Maintenance Area Map



A1 **GRADING PLAN**
SCALE: 1" = 60'

0 60' 120'

Feb 10, 2025 – 1:13pm
F:\Projects\V32 – Renewable Power Holdings, LLC\V32007002 – Old Oneida Site Permitting\Design\CADD\Sheet Files\V32007002_C-103 Grading Plan.dwg

C&S COMPANIES

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499 Col. Eileen Collins Blvd.
Syracuse, New York 13212
Phone: 315-455-2000
Fax: 315-455-9667
www.cscos.com

STATE OF NEW YORK ERIC KENT LATA 088339 LICENSED PROFESSIONAL ENGINEER

emeren Empowering Renewables

NY ROME OLD ONEIDA ROAD SOLAR, LLC
5792 OLD ONEIDA ROAD
ROME, NY 13440
ONEIDA COUNTY

MARK	DATE	DESCRIPTION
		REVISIONS

PROJECT NO:	V32.007.002
DATE:	DECEMBER 2024
DRAWN BY:	B. BUCKINGHAM
DESIGNED BY:	
CHECKED BY:	

NO ALTERATION PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK EDUCATION LAW

GRADING PLAN

C-103

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FIMER

Solar inverter PVS-175-TL

The PVS-175-TL is FIMER's innovative three-phase string inverter, delivering a six-in-one solution to enhance and optimize solar power generation for ground mounted utility scale applications.

175 kW

High power density
This new high-power string inverter with the highest power density within the 1500 Vdc segment, delivers up to 185 kVA at 800 Vac. This not only maximizes the ROI for ground-mounted utility-scale applications but also reduces Balance of System costs (i.e. AC side cabling) for small to large scale, free field ground mounted PV installations.

Design flexibility
The inverter comes equipped with 12 MPPT, the highest available in the market, assuring maximum PV plant design flexibility and increasing yields also in case of complex installations.

Installer friendly design
Quick and easy installation, thanks to plug and play connectors, as the existing PV module's mounting systems can be used to install the inverters, thus saving time and cost on site preparation and hire of plant.
The fuse and combiner free design eliminates the need for external components, such as separate DC combiner boxes and AC first level combiners, thanks to the integrated DC disconnect and AC wiring compartment with optional AC disconnect.
The Advanced Cooling Concept preserves the lifetime of the system and minimizes O&M costs thanks to internal heavy-duty inverter cooling fans. These can be easily removed during scheduled maintenance cycles whilst the power module can be easily replaced without removing the wiring box.

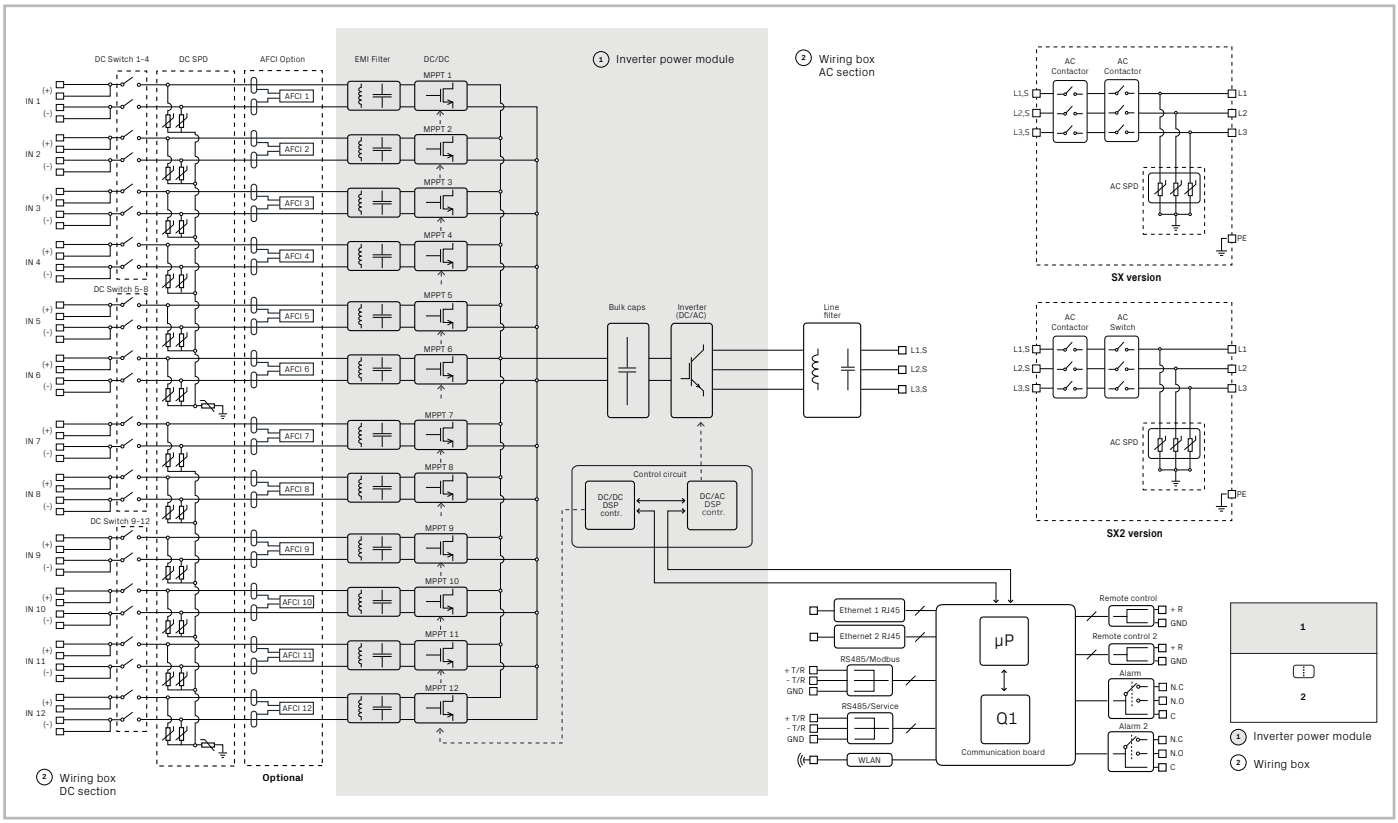
Advanced communication for O&M
Standard wireless access from any mobile device makes the configuration of inverter and plant easier and faster. Improved user experience thanks to a built-in User Interface (UI) enables access to advanced inverter configuration settings.
The Installer for Solar Inverters mobile APP and configuration wizard enable a quick multi-inverter installation and commissioning thus reducing the time spent on site.

Fast system integration
Industry standard Modbus (RTU/TCP)/SUNSPEC protocol enables fast system integration.
Two Ethernet ports enable fast and future-proof communication for PV plants.

Protect your assets
Monitoring your assets is made easy, as every inverter is capable to connect to Aurora Vision cloud platform and thanks to the state-of-the-art cybersecurity and Arc Fault Detection option, your assets and profitability are secure in the long term.

Highlights
- Up to 185 kW power rating, highest in class
- All-in-one combiner and fuse free design
- Separate power module and wiring compartment for fast swap and replacement
- Easy access to consumables for fast inspection and replacement
- 12 MPPT and wide input voltage range for maximum energy yield
- WLAN interface for commissioning and configuration
- Remote monitoring and firmware upgrade via the Aurora Vision cloud platform (logger free)
- Free of charge standard access to Aurora Vision cloud

PVS-175-TL string inverter block diagram



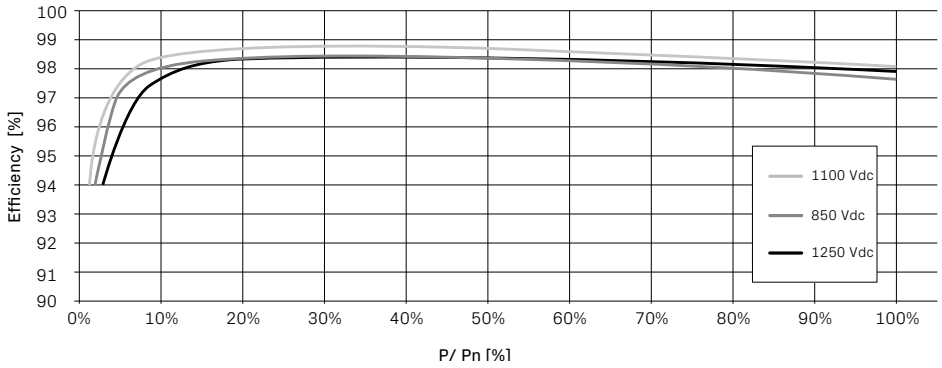
Technical data and types

Type code	PVS-175-TL
Input side	
Absolute maximum DC input voltage ($V_{max,abs}$)	1500 V
Start-up DC input voltage (V_{start})	750 V (650...1000 V)
Operating DC input voltage range (V_{dcmin}...V_{dcmax})	0.7 x Vstart...1500 V (min 600 V)
Rated DC input voltage (V_{dcr})	1100 Vdc
Rated DC input power (P_{dcr})	188000 W @ 30°C - 177000 W @ 40°C
Number of independent MPPT	12
MPPT input DC voltage range ($V_{MPPTmin}$...$V_{MPPTmax}$) at P_{acr}	850..1350 V
Maximum DC input current for each MPPT ($I_{MPPTmax}$)	22 A
Maximum input short circuit current for each MPPT (I_{SCmax})	30 A
Number of DC input pairs for each MPPT	2 DC inputs per MPPT
DC connection type	PV quick fit connector [1]
Input protection	
DC Series Arc Fault Circuit Interrupter [2]	Type I acc. to UL 1699B with single-MPPT sensing capability
Reverse polarity protection	Yes, from limited current source
Input over voltage protection for each MPPT	Type 2 with monitoring
Photovoltaic array isolation control (insulation resistance)	Yes, acc. to IEC 62109-2
Residual Current Monitoring Unit (leakage current protection)	Yes, acc. to IEC 62109-2
DC Load Breaking Disconnect Switch (rating for each MPPT)	20 A/1500 V - 50 A/1000 V
Fuse rating	N/A, No fuses
String current monitoring	MPPT-level current sense
Output side	
AC Grid connection type	Three phase 3W+PE (TN system)
Rated AC power (P_{acr} @cosφ=1)	175 000 W @ 40°C
Maximum AC output power (P_{acmax} @cosφ=1)	185 000 W @≤ 30°C
Maximum apparent power (S_{max})	185 000 VA
Rated AC grid voltage ($V_{ac,r}$)	800 V
AC voltage range	(552...960) [3]
Maximum AC output current ($I_{ac,max}$)	135 A
Rated output frequency (f_r)	50 Hz/60 Hz
Output frequency range (f_{min}...f_{max})	45...55 Hz/55...65 Hz [3]
Nominal power factor and adjustable range	> 0.995, 0...1 inductive/capacitive with maximum S_{max}
Total current harmonic distortion	< 3%
Max DC current injection (% of In)	< 0.5%*In
Maximum AC Cable outer diameter / multi core	1 x 53 mm (1 x M63 cable gland)
Maximum AC Cable outer diameter / single core	3 x 32 mm (3 x M40 cable gland)
AC connection type [4]	Copper Busbar for lug connections with M10 bolts (included)
Output protection	
Anti-islanding protection	According to local standard
Maximum external AC overcurrent protection	200 A
Output overvoltage protection - replaceable surge protection device	Type 2 with monitoring
Operating performance	
Maximum efficiency (η_{max})	98.7%
Weighted efficiency (EURO/CEC)	98.4%
Communication	
Communication interfaces	1xRS485, 2x Ethernet (RJ45) [5]
Local user interface	4 LEDs, Web User Interface, Mobile APP
Communication protocol	Modbus RTU/TCP (Sunspec compliant)
Commissioning tool	FIMER Installer for solar inverters mobile app/Embedded Web User Interface
Remote monitoring services	Aurora Vision, Plant Portfolio Platform
Advanced features	Built-in Export Limitation control algorith/Integrated data logging for iverters and accessories / Remote FW update

Technical data and types

Type code	PVS-175-TL
Environmental	
Operating ambient temperature range	-25...+60°C/-13...140°F with derating above 40°C/133 °F
Relative humidity	4%...100% condensing
Sound pressure level, typical	65dB(A) @ 1m
Maximum operating altitude without derating	2000 m / 6560 ft
Physical	
Environmental protection rating	IP 65 (IP54 for cooling section)
Cooling	Forced air
Dimension (H x W x D)	867x1086x419 mm / 34.2"x42.7"x16.5" for, -SX model 867x1086x458 mm / 34.2"x42.7"x18.0" for, -SX2 model
Weight	~76 kg / 167,5 lbs for power module; ~77 kg / 169,7 lbs for Wiring box Overall max ~153 kg / 337,2 lbs
Mounting system	Mounting bracket (vertical support only)
Safety	
Isolation level	Transformerless
Marking	CE
Safety and EMC standard	IEC/EN 62109-1, IEC/EN 62109-2, EN 61000-6-2, EN 61000-6-4, EN 61000-3-11, EN 61000-3-12, EN 301 489-1, EN 301 489-17, EN 300 328, EN 62311,
Grid standard [6]	CEI 0-16, UTE C 15 712-1, JORDAN IRR-DCC-MV and IRR-TIC, BDEW, VDE-AR-N 4110, VDE-AR-N 4120, P.O. 12.3, DRRG D.4, AS/ NZS4777.2
Available product variants	
Inverter power module	PVS-175-TL-POWER MODULE
24 quick fit connector pairs (2 each MPPT) + DC switches + SPD Type 2 (DC & AC)	WB-SX-PVS-175-TL
24 quick fit connector pairs (2 each MPPT) + DC switches + AC disconnection switch + SPD Type 2 (DC & AC)	WB-SX2-PVS-175-TL
Optional available	
DC Series Arc Fault Circuit Interrupter	Type I acc. to UL 1699B [2] with single-MPPT sensing capability
AC Plate, Single Core Cables	Plate with 4 individual AC cable glands: 3 x M40: Ø 22...32mm, 1 x M32: Ø 18...25mm
AC Plate, Multi Core Cables	Plate with 2 individual AC cable glands: 1 x M63: Ø 37...53mm, 1 x M32: Ø 18...25mm
Pre-Charge [7]	Night time operation with restart capability
Anti-PID [8]	Based on night time polarization of the array

Efficiency curves of PVS-175-TL



1) Multicontact MC4-Evo2. Cable couplers may accept up to 10mm^2 (AWG8)
2) Available as an option. Performance in line with the relevant requirements of the Draft IEC 63027 standard
3) The AC voltage and frequency range may vary depending on specific country grid standard
4) Use of aluminum cables is possible via bi-metallic cable lugs
5) As per IEEE 802.11 b/g/n standard, 2.4 GHz
6) Check your sales channel for availability of the applicable grid standard for your country
7) The Inverter cannot verify the photovoltaic array isolation resistance before connection during Night time. When this accessory is present, the inverter must be installed and operate in "restricted areas (access limited to qualified personnel)" according to IEC 62109-2
8) Cannot operate simultaneously with the night mode

Remark. Features not specifically listed in the present data sheet are not included in the product

FIMER

For more information please contact your local FIMER representative or visit:

fimer.com

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PVS-175-TL_EN REV. C 09-06-2021

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Solar JinKO
Building Your Trust in Solar

Tiger Neo N-type 72HL4-BDV

550-570 Watt

BIFACIAL MODULE WITH DUAL GLASS

N-Type

Positive power tolerance of 0~+3%

IEC61215(2016), IEC61730(2016)

ISO9001:2015: Quality Management System

ISO14001:2015: Environment Management System

ISO45001:2018
Occupational health and safety management systems

Key Features

SMBB Technology

Better light trapping and current collection to improve module power output and reliability.

Hot 2.0 Technology

The N-type module with Hot 2.0 technology has better reliability and lower LID/LETID.

PID Resistance

Excellent Anti-PID performance guarantee via optimized mass-production process and materials control.

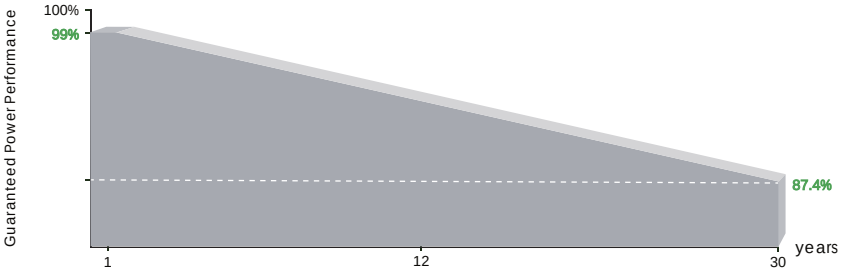
Enhanced Mechanical Load

Certified to withstand: wind load (2400 Pascal) and snow load (5400 Pascal).

Higher Power Output

Module power increases 5-25% generally, bringing significantly lower LCOE and higher IRR.

LINEAR PERFORMANCE WARRANTY

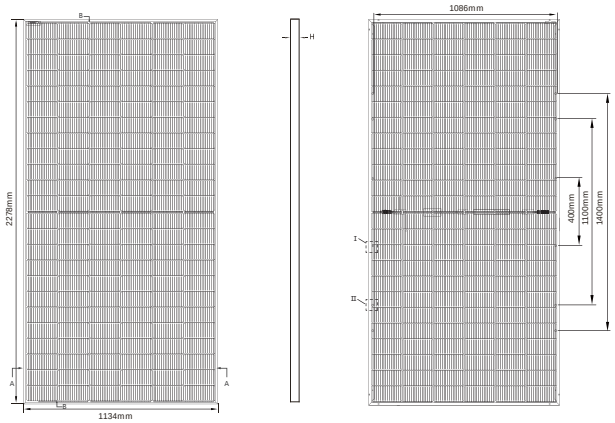


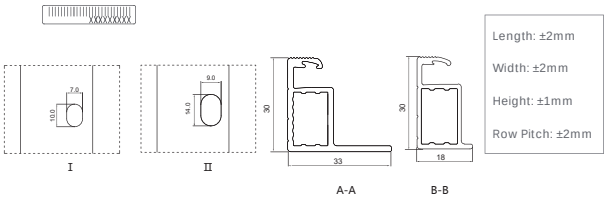
12 Year Product Warranty

30 Year Linear Power Warranty

0.40% Annual Degradation Over 30 years

Engineering Drawings



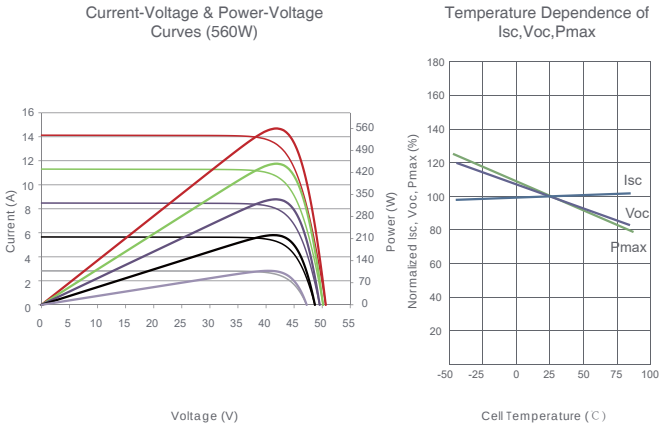


Packaging Configuration

(Two pallets = One stack)

36pcs/pallets, 72pcs/stack, 720pcs/ 40'HQ Container

Electrical Performance & Temperature Dependence



Mechanical Characteristics

Cell Type	N type Mono-crystalline
No. of cells	144 (6×24)
Dimensions	2278×1134×30mm (89.69×44.65×1.18 inch)
Weight	32 kg (70.55 lbs)
Front Glass	2.0mm, Anti-Reflection Coating
Back Glass	2.0mm, Heat Strengthened Glass
Frame	Anodized Aluminium Alloy
Junction Box	IP68 Rated
Output Cables	TUV 1×4.0mm² (+): 400mm , (-): 200mm or Customized Length

SPECIFICATIONS

Module Type	JKM550N-72HL4-BDV		JKM555N-72HL4-BDV		JKM560N-72HL4-BDV		JKM565N-72HL4-BDV		JKM570N-72HL4-BDV	
	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax)	550Wp	414Wp	555Wp	417Wp	560Wp	421Wp	565Wp	425Wp	570Wp	429Wp
Maximum Power Voltage (Vmp)	41.58V	39.13V	41.77V	39.26V	41.95V	39.39V	42.14V	39.52V	42.29V	39.65V
Maximum Power Current (Imp)	13.23A	10.57A	13.29A	10.63A	13.35A	10.69A	13.41A	10.75A	13.48A	10.81A
Open-circuit Voltage (Voc)	50.27V	47.75V	50.47V	47.94V	50.67V	48.13V	50.87V	48.32V	51.07V	48.51V
Short-circuit Current (Isc)	14.01A	11.31A	14.07A	11.36A	14.13A	11.41A	14.19A	11.46A	14.25A	11.50A
Module Efficiency STC (%)	21.29%		21.48%		21.68%		21.87%		22.07%	
Operating Temperature(℃)	-40℃~+85℃									
Maximum system voltage	1500VDC (IEC)									
Maximum series fuse rating	30A									
Power tolerance	0~+3%									
Temperature coefficients of Pmax	-0.30%/℃									
Temperature coefficients of Voc	-0.25%/℃									
Temperature coefficients of Isc	0.046%/℃									
Nominal operating cell temperature (NOCT)	45±2℃									
Refer. Bifacial Factor	80±5%									

BIFACIAL OUTPUT-REARSIDE POWER GAIN

5%	Maximum Power (Pmax)	578Wp	583Wp	588Wp	593Wp	599Wp
	Module Efficiency STC (%)	22.36%	22.56%	22.77%	22.97%	23.17%
15%	Maximum Power (Pmax)	633Wp	638Wp	644Wp	650Wp	656Wp
	Module Efficiency STC (%)	24.48%	24.71%	24.93%	25.15%	25.37%
25%	Maximum Power (Pmax)	688Wp	694Wp	700Wp	706Wp	713Wp
	Module Efficiency STC (%)	26.61%	26.86%	27.10%	27.34%	27.58%

*STC: Irradiance 1000W/m² Cell Temperature 25°C AM=1.5

NOCT: Irradiance 800W/m² Ambient Temperature 20°C AM=1.5 Wind Speed 1m/s

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Specifications included in this datasheet are subject to change without notice.

NX Gemini

Two-in-Portrait Smart Solar Tracker

The NX Gemini™ two-in-portrait (2P) solar tracker helps project developers and asset owners get the most from their power plant at the most challenging sites. The Gemini architecture minimizes pier count for difficult soils and maximizes density in sites with irregular boundaries. Its patented self-locking distributed drive system ensures stability in extreme winds without the use of dampers. Horizontal high wind and flood stow minimizes module wind pressures and keeps modules elevated above floods caused by extreme weather.

Capitalize on Challenging Sites with NX Gemini

NX Gemini minimizes pier count for difficult soil conditions with only seven foundation piers in a typical four-string 540-watt module tracker row. Its flexible 2P module configuration maximizes layout density in irregularly shaped sites while preserving vehicle access between rows.

Pair with TrueCapture and Bifacial for Maximum Performance

NX Gemini is optimized for the latest PV module advances, including bifacial and large-format modules. It is integrated with the entire Nextracker controls and software ecosystem, including the TrueCapture™ smart control and energy yield enhancement platform. NX Gemini builds on >50 GW of Nextracker installations to deliver predictable performance for customers.

The Nextracker team has always collaborated with us during their product development process, resulting in trackers that are faster to build, compatible for more sites and easier to maintain. NX Gemini is a strong tracker option for sites with challenging topography and geotechnical conditions.

– George Hershman,
CEO, SOLV Energy

Features and Benefits

Industry-leading

2P design that minimizes foundation posts per megawatt

Flexible

for use on sites with challenging soils and irregular boundaries

Reliable

In extreme wind events with patented self-locking distributed drive

Hurricane-ready

with horizontal wind and flood stow, keeping modules and electronics safe

TrueCapture

available to boost energy yield

GENERAL AND MECHANICAL

Tracking type	Horizontal single-axis, independent row
Module configuration	2 in portrait. 4 strings of crystalline silicon modules. Partial length trackers available
Typical row size	Up to 120 modules, depending on module
Modules supported	Most utility-scale crystalline silicon modules First Solar Series 6/6+
Module attachment	Self-grounding, electric tool-actuated fasteners standard.
Array height	Rotation axis elevation: 1.9 to 2.6 m / 6'2" to 8'8"
Ground coverage ratio (GCR)	Typical range 28-60%
Tracking range of motion	±50°
Motor type	48V brushless DC motor
Drive type	NX-patented self-locking, distributed drive
Operating temperature range	SELF-POWERED: -30°C to 55°C (-22°F to 131°F) AC POWERED: -40°C to 55°C (-40°F to 131°F)
Materials	Galvanized steel
Allowable wind speed	Configurable up to 233 kph (145 mph) (3-sec gust, 10 m AGL)
Wind protection	Intelligent wind stowing with self-locking, distributed drive system for maximum array stability in all wind conditions
High wind stow angle	0° (horizontal)
Flood stow	0° (horizontal). Sensitive components are positioned min. 1.68 m (5.5 ft) above ground. Pier height can be optionally increased.
Foundations	Standard W8 section foundation posts. Typically, 100 - 150 piers/MW.

ELECTRONICS AND CONTROLS

Solar tracking method	Astronomical algorithm with backtracking. TrueCapture™ upgrades available for diffuse tracking mode
Control electronics	NX tracker controller with in-built inclinometer and backup battery
Communications	Zigbee wireless communications to all tracker rows and weather stations via network control units (NCUs)
Nighttime stow	Yes
Power supply	SELF-POWERED: Nextracker-supplied solar module for tracker power AC POWERED: Nextracker-supplied AC power supply with customer-provided AC circuit

INSTALLATION, OPERATIONS AND SERVICE

PE stamped structural calculations and drawings	Included
Onsite training and system commissioning	Included
Installation requirements	Simple assembly using swaged fasteners and bolted connections. No field cutting, drilling, or welding.
Monitoring	NX Data Hub™ centralized data aggregation and monitoring
Module cleaning compatibility	Compatible with virtually all standard cleaning systems
Warranty	10-year structural 5-year drive and control components
Codes and standards	UL 2703 / UL 3703 / IEC 62817

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AMENDED AND REINSTATED OPTION AND LEASE AGREEMENT

This Amended and Reinstated Option and Lease Agreement (the "New Agreement") effective as of the _15th__ day of November, 2024 by and between Emeren US, LLC [f/k/a ReneSola Power Holdings, LLC], a Delaware limited liability company ("Lessee") and The Estate of James Elliott_ ("Lessor").

RECITALS

1. Lessee and Lessor were parties to an Option and Lease Agreement dated June 2, 2022, pursuant to which Lessee has an exclusive Option to Lease certain property of Lessor ("Original Agreement") attached hereto as Exhibit A.

2. The Original Agreement has since expired.

3. Lessee and Lessor wish to enter into a New Agreement, being bound under the same terms and conditions, but with a new Option Period Effective Date.

4. Lessee has since changed its name from ReneSola Power Holdings, LLC to Emeren US, LLC.

NOW, THEREFORE, in consideration of the above premises, and the mutual promises in the Agreement and this Amendment, Lessor and Lessee agree as follows.

AGREEMENT

1. Definitions. Capitalized terms used in this New Agreement shall have the meanings given to them in the Original Agreement unless otherwise expressly defined in this New Agreement.

2. New Agreement. The Amended and Reinstated Agreement shall consist of all the terms of the Original Agreement amended as follows:

a. On the Cover Sheet, the Effective Date shall be November __15__, 2024.

b. In the first Paragraph, the Effective Date shall be November __15__, 2024.

3. Effective Date. The effective date of this New Agreement shall be November 15 , 2024.

4. Payment of Option Extension Payments. Lessee shall make payments for the Option Payment under the New Agreement, totaling [redacted], to Lessor contemporaneously with the execution of this New Agreement.

5. Valid and Effective. Except as otherwise expressly amended by this New Agreement, the terms of the Original Agreement are in full force and effect. Lessee and Lessor each confirm that their respective representations and warranties in the Original Agreement are true and correct as of the date of this New Agreement.

Emeren US, LLC
[f/k/a ReneSola Power Holdings, LLC,]
a Delaware limited liability company

By: _____
Its: Executive Vice President

Estate of James Elliott

By: _____
Wendell Elliott

Its: Co- Executor of Estate

By: _____
Austin Elliott

Its: Co- Executor of Estate

EXHIBIT A

[Attach Original Agreement]

COVER SHEET

OPTION AND LEASE AGREEMENT

Effective Date		
Lease Commencement Date[1]		
Lessor	James H. Elliot 6536 HENDERBERG RD, ROME, NY 13440-1608	
Lessee	ReneSola Power Holdings, LLC	
Property address	5792 Old Oneida Rd, Rome NY 13440	
Premises	**Up to 30 acres in a location to be mutually approved by the parties, with agreed boundaries to be surveyed and marked by Lessee at its cost**	
Initial Option Payment	[redacted] J.E. J.E.	
1-Year Option Extension	[redacted] ollars at Lessee's sole discretion to be paid in two semi-annual installments of [redacted] J.E. J.E.	
Option Expiration	1 years	
Rent	[redacted] per acre of the Site and the Setback Areas.On increased in an amount equal to one (1) percent annually for the first ten (10) years, one-and-a-half (1.5) percent annually Rent thereafter.	
Lease Term[2]	20 years with 3 extensions at 5 years per extension Twenty (20) years following the Commercial Operations Date (the "Initial Term"). Tenant shall have the option to extend the Initial Term for three (3) additional five (5) year periods.	
Expiration Date[3]		
Extension Exercise Notice Deadline[4]		
Addresses for Notices	Lessee: ReneSola Power Holdings, LLC 850 Canal Street, Third Floor Stamford, CT 06902 With a copy to	Lessor: James H. Elliot 6536 Henderberg Road Rome, NY 13440 With a copy to:

[1] Parties agree to write in once Exercise Notice is delivered.
[2] Note: It is essential that the lease term is at least as long as the associated PPA.
[3] Parties agree to write in once Exercise Notice is delivered.
[4] Parties agree to write in once Extension Exercise Notice is delivered.

OPTION AND LEASE AGREEMENT

This Option and Lease Agreement ("***Lease***") is dated as of June 2, 2022 (the "***Effective Date***"), and is entered into by and between JAMES H. ELLIOT ("***Lessor***") and RENESOLA POWER HOLDINGS, LLC, a Delaware limited liability company ("***Lessee***") (each a "***Party***" and together, the "***Parties***").

A. The real property owned by Lessor that is the subject of this Lease including access rights and Easements ("***Premises***") and the property on which the Premises is located, if larger, ("***Property***"), is more particularly described in the attached **Exhibit A.**

B. Lessee desires to obtain the exclusive right to occupy the Premises and to enjoy all the rights necessary for Lessee to occupy, develop, design, engineer, access, construct, monitor, install, own, maintain and operate the System to be located upon, on and within the Premises as well as all the rights necessary or desirable for Lessee to sell the energy generated by such System and any and all other credits, solar renewable energy credits, and any other environmental financial attributes created as a result of such energy generation.

NOW, THEREFORE, in consideration of the foregoing and the mutual covenants and agreements herein contained, the receipt and sufficiency of which is acknowledged, and intending to be legally bound hereby, Lessee and Lessor hereby agree to the foregoing recitals and as follows:

1. **Definitions.** Capitalized terms not otherwise defined in this Lease or on the Cover Sheet have the meanings assigned to them in Exhibit C.

2. **Option to Lease the Premises.**

(a) Grant of Option. In consideration of receipt of the Initial Option Payment and subsequent annual Option Payments, Lessor hereby grants to Lessee the exclusive option to Lease the Premises on the terms and conditions set forth in this Lease (the "***Option***").

(b) Option Payment. The Initial Option Payment of Two Thousand five hundred dollars ($2,500) shall be paid by Lessee to Lessor within thirty (30) Business Days of Lessee receiving a positive determination on a "Capacity Screening" that Lessee will submit to the Local Electric Utility for processing within fifteen (15) days of the Effective Date of this Lease. If Lessee receives a negative determination on the "Capacity Screening" from the Local Electric Utility, Lessee will notify Lessor that the System cannot be connected to the grid and the Option shall be terminated. The subsequent Option Payments of [redacted] shall be made on a semi-annual basis throughout the term of the Option, paid within fifteen (15) Business Days of each six (6) month anniversary of the Effective Date. If the Option is exercised by Lessee prior to the expiration of the Option Term, the Option Payment will be pro-rated on a daily basis and any portion thereof applicable to the remaining Option Term shall be credited to the first Rent payment.

(c) Time and Manner of Exercise of the Option. The Option shall be for an initial term of two (2) years from the Effective Date (as it may be extended, the "***Option Term***"). The Option Term may be extended by Lessee in its sole discretion for up to one (1) additional and successive period of one (1) year. Any such extension shall be exercised by Lessee upon written notice to Lessor at any time prior to the end of the initial Option Term. The Option Extension Payment of [redacted] dollars shall be paid by Lessee to Lessor in two semi-annual [redacted] dollar installments. The first installment of the Option Extension Payment shall be paid within fifteen (15) Business Days before the Expiration Date of the initial term.

(d) Lessor Cooperation. Lessor shall cooperate with (i) the performance of Tests, (ii) the obtaining by Lessee, at Lessee's expense, of all licenses and Permits or authorizations required for Lessee's use of the Premises from all applicable government and/or regulatory entities (collectively, "***Governmental***

Approvals") and (iii) the securing by Lessee at Lessee's expense of all other leases, rights of way, agreements, licenses and Permits or authorizations that relate to other Property or Premises. Lessor agrees to use reasonable efforts in assisting Lessee to acquire necessary utility service at the Premises, at Lessee's expense. In the event that a utility company requires an easement in connection with Lessee's use of the Premises, Lessor shall grant such necessary easement to the utility company, provided that such easement is in a commercially reasonable and recordable form. For the avoidance of doubt, Lessor shall not be responsible for any expenses associated with the activities mentioned in this Section 2(d). If there are any such expenses, they will be borne by Lessee.

(e) Termination of the Option. Notwithstanding anything to the contrary herein, Lessee may terminate the Option immediately upon notice to Lessor without penalty or further liability at any time after the Effective Date: (i) if Lessee determines that the System cannot be installed and operated according to the investment criteria of Lessee's debt or equity financing sources and the provisions of the applicable power purchase agreement and interconnection agreement, (ii) if Lessee receives unacceptable Test results, or (iii) if Lessee does not obtain, maintain or otherwise forfeits or cancels any necessary license, permit or Governmental Approval. All Option payments paid to Lessor as set forth in Section 2(b) above are non-refundable.

3. **Exercise of Option; Leased Premises and Related Rights.**

(a) In order to exercise the Option, Lessee must deliver to Lessor a notice of exercise (the "***Exercise Notice***"), accompanied by the first quarterly Rent payment, prior to the expiration of the Option Term. The date of the Exercise Notice shall be the commencement of the Lease Term (the "***Lease Commencement Date***"). Subject to receipt of the Exercise Notice and first quarterly Rent payment, Lessor hereby leases the Premises to Lessee to occupy, develop, design, engineer, construct, access, monitor, install, own, operate and maintain the System for the generation and distribution of electrical power. Lessor hereby also grants to Lessee and the applicable utility company, at all times on a 24-hours-a-day, 7-days-a-week basis, for any purposes reasonably connected with this Lease for a period co-terminus with the Lease, an easement which is irrevocable during the Lease Term for access, ingress, egress, utilities and related rights to the Premises and/or any surrounding or nearby property owned or leased by Lessor, passage through which is necessary or convenient to install, operate or gain access to the System or the Premises (the "***Easements***"). The Easements are generally depicted on Exhibit A attached hereto and incorporated herein. In the event that Lessee or the utility company desires to make such Easements a public record, Lessor shall execute and have notarized a commercially reasonable recordable document to memorialize the Easement, which Lessee may record in the office where real estate records are customarily filed in the jurisdiction of the Premises.

In the event Lessee must use a portion of the Property that is not part of the Premises for storage or implementation of utilities on a temporary basis during construction of the System, Lessee shall only do so if mutually agreed by both Parties and Lessee shall compensate Lessor for the acreage used in excess of the Premises at the per acre rate on a pro rata basis for as long as the excess acreage is being used by Lessee.

(b) Lessee shall have the right to install utilities, at Lessee's expense, and to improve the present utilities on the Property (including, but not limited to, the installation of emergency power generators).

4. **Rents**. Lessee shall pay the first year Rent in the amount of [redacted] per acre, escalating at [redacted] per annum for the first 10 years, [redacted] per annum for the subsequent ten years, and [redacted] per annum thereafter, to Lessor for rental of the Premises ("***Rent***") in equal quarterly installments, in advance, commencing on the Lease Commencement Date and on the first (1st) day of each calendar quarter thereafter during the Lease Term. If the Lease Commencement Date occurs on a date other than the first (1st) day of a calendar quarter, or if the last day of the Lease Term occurs on a day other than the last day of a calendar quarter, then the quarterly installment of Rent for such calendar quarters(s) shall be prorated on a per diem basis based on the number of days in such calendar quarters(s). Lessor, its successors, assigns and/or designee, if any, shall submit to Lessee any documents required by Lessee in connection with the payment of Rent, including, without limitation, an IRS Form W-9.

5. **Term and Termination; Removal.**

(a) The Lease Term shall be Twenty (20) years, and commence on the Lease Commencement Date and terminate on the Expiration Date, as it may be extended pursuant to the terms of Section 6.

(b) Notwithstanding anything to the contrary herein, Lessee may terminate this Lease immediately upon notice to Lessor without penalty or further liability: (i) within one hundred twenty (120) days following the Lease Commencement Date if Lessee determines, in its sole and absolute judgment, that the System cannot be installed and operated according to the investment criteria of Lessee's debt or equity financing sources and the provisions of the applicable power purchase agreement and interconnection agreement, (ii) if Lessee receives, in its sole and absolute judgment, unacceptable Test results, or (iii) if Lessee does not obtain, maintain or otherwise forfeits or cancels any necessary license, permit or Governmental Approval. In addition to the foregoing and any other right or option of Lessee to terminate this Lease set forth in this Lease or available at law, Lessee may terminate this Lease for any reason by giving Lessor not less than 180 days' prior notice of such termination. If Lessee gives such notice to Lessor, then the Lease Term shall end on the date set forth in such notice.

(c) If this Lease expires or is terminated by Lessee in accordance with Section 5(b), Lessee shall complete the removal of the System and repair of any damage caused to the Premises by the installation or removal of the System on or before the Removal and Restoration Date. The removal and restoration shall be at Lessee's sole expense. In connection with such removal and restoration, Lessor shall continue to provide Lessee and its Affiliates and subcontractors with access to the Premises until the Removal and Restoration Date.

(d) Removal of System at Expiration/Termination. In the event Lessee fails to complete the removal of the System and restoration of the Premises by the Removal and Restoration Date, Lessor may provide notice to Lessee stating that Lessee has failed to remove the System (the "***Abandonment Notice***"). If Lessee fails to remove the System within sixty (60) days after receipt of the Abandonment Notice, Lessor shall have the right, at its option, in its sole discretion, to cause the removal of the System by a qualified licensed contractor and complete restoration of the Premises, at Lessee's cost and expense. In the event Lessee is not required to post a Decommissioning Bond for the System by the County as a part of its approval process, fifteen (15) days prior to the start of construction, Lessee shall obtain a Decommissioning Bond in the amount of [redacted] with respect to its obligations as set forth in Section 5 of this Lease. Such decommissioning bond shall remain in full force and effect for the life of the System and for a period of six (6) months after the termination of the Lease.

(e) Lessee's obligation to pay Rent shall not terminate until the removal of the System has been completed and such Rent obligations shall be calculated on a pro rata basis determined by how many days were required to complete the removal.

6. **Extension Option.** Lessee shall have the option to extend the Lease Term for one (1) additional year (an "***Extension Option***") beginning on the day following the expiration of the then-current Term (each, an "***Extension Term***"), by giving notice (the "***Extension Exercise Notice***") to Lessor not less than ninety (90) days prior to the Expiration Date, and without the requirement of any further action on the part of either Lessor or Lessee. The Rent during the Extension Term shall be the continuation of the Rent during the Lease Term, unless the Parties have agreed to separate Extension Term Rent provisions as outlined in the Cover Sheet and this Section.

7. **System Construction; Lessor Acknowledgment.** Prior to commencement of construction of the System by Lessee, Lessee shall obtain the necessary Permits. Throughout the Lease Term, Lessee shall have the right to clean, repair, replace and dispose of part or all of the System as Lessee in its sole discretion determines to be necessary. Lessor acknowledges and understands that the System shall consist of a solar

photovoltaic electric generating system, designed to produce electricity and deliver such electricity to the electric interconnection point, including without limitation all of the following: installation equipment; generation facilities, including inverters, fuses, transformers, wiring and output breakers; facilities necessary to connect to the electric interconnection point; protective and associated equipment; and other improvement reasonably necessary for the construction, operation, monitoring and maintenance of the system. Except as may otherwise be specifically agreed upon by the Parties or as expressly set forth herein, Lessee shall be responsible for all costs of design, permitting, construction, installation, operation, maintenance and removal of the System.

8. **Access to, and Improvements on, Premises.**

(a) Commencing on the Effective Date and throughout the Option Term and Lease Term, Lessee shall have the exclusive right during the Option Term to enter upon the Property to perform all effort and labor necessary to carry out tests, inspections, surveys, investigations, and design ("***Tests***"), and after Exercising the Option pursuant to Section 3 shall have the exclusive right to, engineer, construct, install, inspect, test, operate, upgrade, repair and maintain the System on the Premises. If the performance of any Tests results in crop damage, Lessee shall reimburse Lessor at the rate of [redacted] per acre of damaged crops. Lessee shall use space within the Premises for the temporary storage and staging of tools, materials and equipment and for the parking of construction crew vehicles and temporary construction trailers and facilities reasonably necessary during the furnishing, installation, testing, commissioning, deconstruction, disassembly, decommissioning and removal of the System and access for rigging and material handling, and including a temporary, reasonable area for construction laydown, as further described on Exhibit B. If Lessee desires to have access to additional space for these construction related requirements, beyond the boundaries of the Premises, Lessee may request such space from Lessor. Lessee shall make additional temporary space available, so long as (i) there is available space and the use of the temporary space would not unduly burden Lessor or Lessor's Property, and (ii) Lessee leases the space at the initial Rent rate per excess acre used prorated for the amount of time the excess space is in use by Lessee. Lessor and its authorized representatives shall at all times have access to and the right to observe the installation of the System, subject to compliance with Lessee's safety rules and Applicable Laws, and subject at all times to the sole and absolute discretion of Lessee's construction manager; provided, however, that Lessor shall not interfere with the installation of the System or enter onto, move, adjust, alter, tamper with or otherwise handle any Lessee equipment or any component of the System.

(b) Lessee and Lessee Parties shall at all times conduct themselves in a professional manner at the Premises and shall observe the reasonable requests of Lessor. Lessee shall use reasonable care in entering and exiting the Premises, and in its storage of equipment and materials at the Premises or Property.

(c) If Lessee does not exercise the Option within the Option Term, Lessee shall, at Lessee's sole cost and expense, promptly remove any and all liens, improvements, personal property, equipment, goods, and other property, and all trash, debris, and other refuse from the Premises that is the result of Tests, and shall have no other rights in and to the Premises or Property.

(d) In connection with System installation, Lessee shall be permitted to excavate, remove and export material, grade, level, and fill the land, remove trees and shrubs, lay gravel, concrete and/or asphalt, install foundations, roadways and walkways and install utilities.

(e) In connection with System installation, Lessee shall seek to minimize disturbance to topsoil when practical. Lessee shall not remove topsoil from the Property. Lessee will communicate with Lessor regarding any redistribution of topsoil if Lessee deems redistribution of topsoil to be necessary to complete the System.

9. **Statutory and Regulatory Compliance**. Lessee, Lessee Parties, Lessor and the Lessor Parties shall each comply with all applicable provisions of all Applicable Laws of the locality in which the Property is located.

10. **Lessee's Ownership of System and Output.** The System is personal property, whether or not the same is deemed real or personal property under Applicable Law, and shall not attach to or be deemed a part of, or a fixture to, the Premises or Property. Lessee shall be the legal and beneficial owner of the System at all times and Lessor shall have no right, title or interest in the System or any component thereof, notwithstanding that any such System may be physically mounted or adhered to the Premises or Property. Lessor covenants that it will use commercially reasonable efforts to place all parties having an interest in or lien upon the Property on notice of the ownership of the System and the legal status or classification of the System as personal property. If there is any mortgage or fixture filing against the Property or Premises which could reasonably be construed as attaching to the System as a fixture of the Property or Premises, Lessor shall provide a disclaimer or release from such lien holder. Lessor, as the fee owner of the Property, consents to the filing by Lessee, on behalf of Lessor, of a disclaimer of the System as a fixture of the Property or Premises in the office where real estate records are customarily filed in the jurisdiction of the Property. Further, Lessor acknowledges and agrees that Lessee is the exclusive owner of all electricity and all utility credits generated by the System and owner of all Environmental Attributes and Incentives attributable to the System. In the absence of an additional agreement to the contrary, all electricity generated by the System will be connected to the distribution grid and sold by Lessee to third parties. Electricity generated will not be available to Lessor or any other occupant at the Property. Without the express consent of Lessee, Lessor shall not make or publish any public statement or notice regarding any Environmental Attribute or Incentive relating to the System or the electricity generated by the System. The Parties acknowledge and agree that the System shall not be considered an electric public utility, an investor owned utility, a municipal utility, or a merchant power plant otherwise known as an exempt wholesale generator.

11. **Representation and Warranties of the Parties as to Authorization and Enforceability**

Each Party represents and warrants that the execution and delivery by such Party of, and the performance of its obligations under, this Lease have been duly authorized by all necessary action, do not and will not require any further consent or approval of any other Person, and do not contravene any provision of, or constitute a default under any indenture, mortgage or other material agreement binding on such Party or any valid order of any court, or regulatory agency or other body having authority to which such Party is subject. This Lease constitutes a legal and valid obligation of such Party, enforceable against it in accordance with its terms, except as may be limited by a Bankruptcy Event, reorganization, insolvency, bank moratorium or laws relating to or affecting creditors' rights generally and general principles of equity where such enforceability is considered in a proceeding in equity or at law.

12. **Representations, Warranties and Covenants of the Lessor**

(a) Lessor's Title to Premises. Lessor represents, warrants and covenants that Lessor has a lawful fee simple interest in title to the Property, including the Premises, and that Lessee shall have quiet and peaceful possession of the Premises free from any claim of any entity or Person of superior title thereto without hindrance to or interference with or molestation of Lessee's quiet enjoyment thereof, throughout the Lease Term. Lessor shall not sell, lease, assign, mortgage, pledge or otherwise alienate or encumber the Property unless Lessor shall have given Lessee at least thirty (30) days' prior notice thereof, which notice shall identify the transferee, the area of the Property to be so transferred and the proposed date of transfer. Lessor agrees that this Lease and the Easements granted in this Lease shall run with the Property and survive any transfer of all or any portion of the Property. In furtherance of the foregoing, Lessor shall cause any purchaser, lessee, assignee, mortgagee, pledge, secured party or party to whom a lien on the Premises or Property has been granted to execute and deliver to Lessee a commercially reasonable document pursuant to which such party acknowledges and consents to the Lessee's rights in the Premises as set forth herein including, without

limitation, an acknowledgement by the transferee that it has no interest in the System, or any work related to such System, and shall not gain any interest in the System by virtue of the Lessor's transfer.

(b) No Interference With and Protection of System. Lessor will not conduct activities on, in or about the Property or Premises that have a reasonable likelihood of causing damage, impairment or otherwise adversely affecting the System or operation thereof. Lessor shall provide reasonable assistance to Lessee to limit access to the Premises, which may include signing documents required by Lessee to limit access to the Premises, providing notice of any potential developments in the adjacent area known to the Lessor, or the installation of a fence on the Property in the event Lessee's fence around the Premises is insufficient to protect the System. The System shall be operated, maintained and repaired by Lessee at its sole cost and expense; provided, that any repair or maintenance costs incurred by Lessee as a result of Lessor's (or Lessor's Affiliate's) negligence, misconduct or breach of its obligations hereunder shall be promptly reimbursed to Lessee by Lessor.

(c) Non-Disturbance Agreements. Lessor shall obtain a non-disturbance agreement ("***NDA***") in favor of Lessee from any third party who now has or may in the future obtain an interest in the Property or Premises, including, without limitation, any lenders to Lessor, which NDA shall: (i) acknowledge and consent to the Lessee's rights to the Premises, the System and any Easement Areas under this Lease and any Easement; (ii) acknowledge that the third party has no interest in the System and shall not gain any interest in the System by virtue of the Parties' performance or breach of this Lease or any Easement; (iii) acknowledge that the third party's interest in the Premises and/or any Easement Areas (if any) is subject and subordinate to Lessee's interest under this Lease in and to the Premises and the Easement Areas; (iv) waives any lien the third party may have in and to the System; and (v) agrees not to disturb Lessee's possession, use or occupancy of the Premises or any Easement Area or the conduct of its business thereon.

(d) Insolation. Lessor acknowledges and agrees that access to sunlight ("***insolation***") is essential to the value to Lessee of the leasehold interest granted hereunder and is a material inducement to Lessee in entering into this Lease. Accordingly, Lessor shall not permit any interference with insolation on and at the Premises within their control. Without limiting the foregoing, Lessor shall not construct or permit to be constructed any structure on or adjacent to the Premises or on any adjacent property owned by any Affiliate of Lessor that could adversely affect insolation levels, permit the growth of foliage that could adversely affect insolation levels, or directly emit or permit the emission of suspended particulate matter, smoke, fog or steam or other air-borne impediments to insolation. If Lessor becomes aware of any potential development or other activity on adjacent or nearby properties that could diminish the insolation to the Premises, Lessor shall promptly advise Lessee of such information and reasonably cooperate with Lessee in taking measures to preserve average levels of insolation at the Premises as they existed as of the Lease Commencement Date. Such measures may include, but not be limited to, obtaining a solar access easement. In case such measures are required, Lessee shall assume any related financial costs incurred as a result of this Section. In the event any such obstruction occurs and is not promptly removed, Lessee shall have the right to terminate this Lease without penalty or further liability, upon notice to Lessor. Notwithstanding any other provision of this Lease, the Parties agree that (i) Lessee would be irreparably harmed by a breach of the provisions of this Section 12(d), (ii) an award of damages might be inadequate to remedy such a breach, and (iii) Lessee shall be entitled to equitable relief, including specific performance, to compel compliance with the provisions of this Section 12(d). Lessor further represents and warrants that, to the best of its knowledge, there are no developments pending or in progress on adjacent or nearby properties that could diminish the insolation to the Premises.

(e) Hazardous Substances. Lessor represents and warrants that to its knowledge there are no Hazardous Substances present on, in or under the Property or Premises in violation of any Applicable Law.

(f) Condition of Premises. Except as otherwise expressly set forth herein Lessee accepts the Premises "as is" without benefit of any improvements or modifications to be made by Lessor. Lessor represents and warrants to Lessee that Lessor is not aware of any site conditions that Lessor believes would materially hinder, impede, or prevent development of the Premises (whether due to cost or otherwise).

(g) Notice of Damage or Emergency. Lessor shall immediately notify Lessee if Lessor becomes aware, through discovery or receipt of notice: (i) of any damage to or loss of the use of the System; (ii) of any event or circumstance that poses an imminent risk to human health, the environment, the System or the Premises; or (iii) of any interruption or material alteration of the energy supply to or from the Premises or the System.

(h) Liens. Lessor shall not directly or indirectly cause, create, incur, assume or suffer to exist any mortgage, pledge, lien (including mechanics', labor or materialman's lien), charge, security interest, encumbrance or claim on or with respect to the System or any interest therein. Lessor shall provide Lessee with notice if it receives notice of any such claims. Lessor further agrees to discharge or bond, at its sole expense, any such encumbrance or interest that attaches to the System and to indemnify, defend and hold harmless Lessee from any costs, losses, expenses or liabilities arising from the same, including, without limitation, Lessee's attorneys' fees and court costs. Lessor waives any and all lien rights it may have, statutory or otherwise, concerning the System or any portion thereof.

(i) Security Interest in System. Lessor has been advised that part of the collateral securing the financial arrangements for the System may be the granting of a first priority perfected personal property security interest under the Uniform Commercial Code (the "***Security Interest***") in the System to one or more Financing Parties and Lessor hereby consents to such Security Interest. In connection therewith, Lessor represents and warrants as follows: (i) the granting of the Security Interest will not violate any term or condition of any covenant, restriction, lien, financing agreement, or security agreement affecting the Premises; (ii) there is no existing lease, mortgage, security interest or other interest in or lien upon the Premises that could attach to the System as an interest adverse to or senior to Lessee's Financing Parties' Security Interest therein; and (iii) there exists no event or condition which constitutes a default, or would, with the giving of notice or lapse of time, constitute a default under the Lease. Further, Lessor agrees to execute, acknowledge and deliver, and agrees to cause any and all of Lessor's lenders to execute, acknowledge and deliver, such commercially reasonable subordination agreements, consents, estoppels and other acknowledgements of the foregoing as Lessee or the Financing Parties may reasonably request. Lessor further agrees to modify the terms of this Lease as may be reasonably requested by such Financing Parties. Lessor agrees that if requested by Lessee, Lessor will furnish the Financing Parties with a counterpart of each notice or other document delivered by Lessor to Lessee in connection with this Lease.

(j) Utilities. At Lessee's request, Lessor shall grant Lessee the right to have electric current and water provided to the perimeter of the Premises at Lessee's sole expense, including any separate meters that shall be installed for any such utilities. Lessee shall be responsible for all utility expenses.

13. **Representations, Warranties and Covenants of Lessee.**

(a) Regulatory Status. Lessee represents and warrants that it is not an electric public utility, investor-owned utility, a municipal utility, a merchant power plant or electrical corporation as defined under the laws of the State of New York.

(b) Liens. Except for the Financing Party's Security Interest in or ownership of Lessee's interest in this Lease, Lessee's personal property or the System, Lessee shall not directly or indirectly cause, create, incur, assume or suffer to exist any mortgage, pledge, lien (including mechanics', labor or materialman's lien), charge, security interest, encumbrance or claim on or with respect to the Premises and agrees to discharge or bond, at its sole expense, any such encumbrance or interest that attaches to the Premises within one hundred and eighty (180) days, to the extent that such encumbrance or interest arises from or is related to Lessee's performance or non-performance of its obligations hereunder.

(c) Crops. Lessee shall notify Lessor prior to March 1st of each calendar year during the Option Period with respect to whether it intends to construct the System during that particular calendar year. If the proposed construction schedule during such calendar year would prevent Lessor from benefiting from the

entire agricultural season, Lessee agrees to pay Lessor crop rent equal to [redacted] dollars per farmed acre per year for any land within the Premises that would have been farmed if not for the commencement of construction. Such crop rent will change to the Lease Term Rent upon the Lease Commencement Date as identified in Section 3(a), prorated based on the number of months remaining in the calendar year. In the event, Lessee does not provide a proposed construction schedule that would impact the agricultural season, Lessor retains the right to use the Premises and Property for conventional uses customary to the Premises, such as farming. However, if due to unforeseen circumstances, Lessee's proposed construction schedule changes Lessee retains the right to remove any crops currently planted on the Premises in the event it executes the Option pursuant to Section 3. Under these circumstances, Lessee will pay for the removal of the crops and compensate Lessor at a rate of [redacted] dollars per farmed acre, if the crops are unable to be harvested for sale at the time the Option is exercised. For the avoidance of doubt, this Section shall be construed as a reservation of the Lessor's right to continue to farm the Premises, directly or through an Affiliate, during the Option Term subject to this Section 13(c).

14. **Hazardous Substances; Environmental Representations.**

(a) Neither Party shall introduce or use any Hazardous Substances on, in or under the Premises or Property in violation of any Applicable Law. If a Party becomes aware of any such Hazardous Substances, it shall promptly notify the other Party of the type and location of such Hazardous Substances in writing. Each Party agrees to indemnify, defend and hold harmless the other Party from and against any and all Environmental Claims including, but not limited to, damages, costs, expenses, assessments, penalties, fines, losses, judgments and reasonable attorney fees that such Parties may suffer or incur due to any actions, that relate to or arise from such Party's activities on the Premises, except to the extent directly attributable to the negligent acts or omissions or willful misconduct of the other Party. The indemnifications in this Section 14(i) specifically include, without limitation, costs incurred in connection with any investigation of site conditions or any cleanup, remedial, removal or restoration work required by any governmental authority. Each Party shall be responsible for, and shall promptly, jointly conduct any investigation and remediation as required by any Applicable Law, all spills or other releases of any Hazardous Substance, that have occurred or which may occur on the Property or Premises, and each Party shall be financially responsible for its comparative fault in causing said spill or other release of any Hazardous Substance. In furtherance of the foregoing, each Party shall indemnify, defend and hold harmless the other Party (and in the case of Lessee, all of the Lessee Parties and the Financing Parties) from and against any and all damages, costs, expenses, assessments, penalties, fines, losses, judgments, additional costs incurred by the other Party (and in the case of Lessee to install or operate the System (or to otherwise use, occupy and/or operate the Premises for any of the Permitted Uses)) and reasonable attorney fees, arising out of or relating to Pre-Existing Environmental Conditions to the extent of each Party's comparative fault. Each Party agrees to indemnify, defend and hold Lessee harmless from Environmental Claims resulting from actions on the Property not caused by Either Party. This Section 14 shall survive the termination or expiration of this Lease.

(b) Lessor represents, warrants and covenants to its knowledge that (i) Lessor and the Property (including the Premises) are, and during the past ten (10) years have been, in material compliance with Environmental Laws applicable to the Property; (ii) except with respect to matters that have been settled or resolved with no ongoing liabilities or obligations, Lessor has not received notice of (and has no knowledge of) any notice of any proceeding regarding any actual or alleged violation of, or liability under, Environmental Laws, or any investigatory, remedial or corrective obligations under Environmental Laws, in each case with respect to the Property, nor is any such proceeding threatened to Lessor's best knowledge; (iii) Lessor has not caused the release of Hazardous Substances at, on, about, under or from any of the Property which would reasonably expected to give rise to any liability under Environmental Laws; and (iv) there are no events, and there have been no events: (x) that would prevent continued compliance by Lessor with Environmental Laws and the requirements of any Permits applicable to it or to Lessee, or (y) that would result in the liability of Lessor or Lessee under any applicable Environmental Laws.

(c) Lessor represents, warrants and covenants to its knowledge that within the Premises there are no buried pipelines, electric lines, communication lines, or drainage tile lines owned or controlled by any private or public entity except Lessor.

15. **Maintenance**. Throughout the Lease Term, any Extension Term and through the Removal and Restoration Date, Lessee shall have the right: (i) to add to, remove or modify the System or any part thereof, and (ii) to perform (or cause to be performed) all tasks necessary or appropriate, as reasonably determined by Lessee, to carry out the activities set forth in this Lease, including, but not limited to, the right to clean, repair, replace and dispose of all or a part of the System as Lessee in its sole discretion determines to be necessary, without prior notice to or consent of Lessor, and all at the sole cost and expense of Lessee. Lessee, at its expense, may use any and all appropriate means of restricting access to the System and Premises, including without limitation, the construction of a fence.

16. **Insurance.**

(a) Generally. At all times during the Lease Term, the following insurance shall be obtained and maintained in force by Lessee or Lessee's Affiliates (if applicable): (i) Commercial General Liability insurance including, but not limited to, coverage for premises/operations, explosion, collapse and underground hazards, products/completed operations, property damage and bodily injury, providing for minimum limits of at least $1,000,000 per occurrence and $2,000,000 annual aggregate; (ii) Workers' Compensation insurance as required by state and federal laws, in all cases either through insurance policies or self-insured programs reasonably acceptable to Lessee. Each Party, upon request, but not more than once in any twelve (12) month period, shall furnish current certificates evidencing that the coverage required is being maintained.

(b) Waiver of Subrogation. Each Party hereby waives any right of recovery against the other for injury or loss to personal property due to hazards to the extent covered by insurance obtained with respect to the Property or Premises, including the improvements and installations thereon.

(c) System Loss. In the event of any harm to the System that, in the reasonable judgment of Lessee, results in total damage, destruction or loss of the System ("***System Loss***"), Lessee shall, within twenty (20) Business Days following the occurrence of such System Loss, notify Lessor whether Lessee is willing, notwithstanding such System Loss, to repair or replace the System and to continue the Lease. In the event that Lessee notifies Lessor that Lessee is not willing to repair or replace the System, the Lease will terminate automatically effective upon the date of such System Loss, and Lessee shall be entitled to all proceeds of its insurance policies with respect to the System Loss and Lessor shall promptly return to Lessee any prepaid but unearned rent. In the event of such termination, Lessee shall remove and restore in accordance with Section 5(c).

17. **Taxes**. Lessee shall pay any increase in real estate or personal property taxes, possessory interest taxes, business or license taxes or fees, service payments in lieu of such taxes or fees, annual or periodic license or use fees, excises, assessments, bonds, levies, fees or charges of any kind which are assessed, levied, charged, confirmed, or imposed by any public authority which are directly attributable to Lessee's occupancy and use of the Premises (or any portion or component thereof, including, but not limited to the System) and ownership of the System. Lessor shall pay, when due, all (i) real and personal property taxes relating to the Property which are not the responsibility of Lessee hereunder, (ii) inheritance or estate taxes imposed upon or assessed against the Property, or any part thereof or interest therein, (iii) taxes computed upon the basis of the net income or payments derived from the Premises by Lessor or the owner of any interest therein, and (iv) taxes, fees, service payments, excises, assessments, bonds, levies, fees or charges of any kind which are adopted by any public authority after the date hereof, other than those expressly assumed by Lessee hereunder. In the event that Lessor fails to pay any such taxes or other fees and assessments for which it is responsible under this Lease, Lessee shall have the right, but not the obligation, to pay such owed amounts and deduct them from Rent amounts due under this Lease. If Lessor receives notice of any personal property or real property tax assessment against Lessor, which may affect Lessee and is directly attributable to Lessee's installation, Lessor shall provide timely notice of the assessment to Lessee sufficient to allow Lessee to consent to or challenge such assessment,

whether in a court, administrative proceeding, or other venue, on behalf of Lessor and/or Lessee. Further, Lessor shall provide to Lessee any and all documentation associated with the assessment and shall execute any and all documents reasonably necessary to effectuate the intent of this Section 17.

18. **Liability and Indemnity.**

(a) Indemnification. Each Party as indemnitor shall indemnify, defend, and hold harmless the other Party and its Affiliates against and from any and all loss, liability, damage, claim, cost, charge, demand, or expense (including reasonable attorneys' fees) for injury or death to Persons, including employees of either Party, and physical damage to property arising out of or in connection with the negligent acts or omissions or willful misconduct of the indemnitor or a breach of any obligation of the indemnitor under this Lease, except to the extent caused by the negligent acts or omissions or willful misconduct of the indemnified party.

(b) Pre-Existing Violations. Lessee shall not be responsible to Lessor or any third party, for any claims, costs or damages, including fines or penalties, attributable to any pre-existing violations of Applicable Laws by any party other than Lessee.

(c) Survival. This Section 18 shall survive the termination of this Lease.

19. **Casualty**. In the event the System, the Premises or access thereto shall be so damaged or destroyed by fire or other casualty so as to make the use of the Premises impractical, as determined by Lessee in its sole and absolute discretion, then Lessee may elect to terminate this Lease without penalty or further liability upon notice to Lessor effective as of the date of such damage or destruction. In the event of such termination, Lessee shall remove and restore in accordance with Section 5(c). If Lessee does not elect to terminate this Lease, Lessee shall have the sole responsibility for restoration of the Premises and System.

20. **Condemnation.** In the event the Premises or Property are transferred to a condemning authority pursuant to a taking of all or a portion of the Property sufficient in Lessee's determination to render the Premises unsuitable for Lessee's use or to negatively impact the access to the Premises, Lessee shall have the right to terminate this Lease immediately upon notice to Lessor. Sale to a purchaser with the power of eminent domain in the face of the exercise of the power shall be treated as a taking by condemnation. In the event of an award related to eminent domain or condemnation of all or part of the Premises, each Party shall be entitled to take from such an award that portion as allowed by law for its respective property interest appropriated as well as any damages suffered thereby.

21. **Assignment**

Lessee shall have the right to assign any of its rights, duties or obligations under this Lease without the prior consent of Lessor. An assignment by either Party in accordance with this Section 21 shall relieve the assignor of its obligations hereunder, except with respect to undisputed payments due by the assignor as of the effective date of the assignment, which obligations shall be performed by assignor or assignee as a condition precedent to such assignment. Lessee shall cooperate in signing an estoppel if requested by Lessor in connection with an assignment of this Lease.

22. **Defaults and Remedies.**

(a) Default. A Party shall be in default (the "***Defaulting Party***") if it fails to perform any covenant or obligations hereunder or commits a material breach of this Lease (each an "***Event of Default***") and fails to cure such Event of Default within twenty (20) Business Days after receiving notice from the other Party (the "***Non-Defaulting Party***") regarding the failure to perform such covenant or obligation set forth in this Lease or the material breach, stating with particularity the nature and extent of such Event of Default and specifying the method of cure (a "***Notice of Default***"); provided, however, that if the nature or extent of the obligation or

obligations is such that more than twenty (20) Business Days are required to complete the cure, despite the exercise of commercially reasonable diligence, then the Defaulting Party shall not be in default if it commences such performance within such twenty (20) Business Day period and thereafter pursues the same to completion with commercially reasonable diligence.

(b) Bankruptcy. It shall also be an Event of Default by either Party if such Party becomes subject to a Bankruptcy Event.

(c) Remedies. If the Event of Default is not cured within the cure period provided for in this Lease, the Non-Defaulting Party shall have and shall be entitled to exercise any and all remedies available to it at law or in equity, including damages, specific performance and/or the right to terminate the Lease upon notice to the Defaulting Party without penalty or further liability, all of which remedies shall be cumulative.

23. **Notices**. All Notices under this Lease shall be made in writing to the Addresses and Persons specified on the Cover Sheet. Notices shall be delivered by hand delivery, regular overnight delivery service, sent by registered or certified mail, return receipt requested or email. Email notices shall require confirmation of receipt. Notices shall be deemed to have been received when delivered as shown on the records or manifest of such courier, delivery service or the U.S. Postal Service. Rejection or refusal to accept delivery of any notice shall be deemed to be the equivalent of receipt of any notice given hereunder. A Party may change its address by providing notice of the same in accordance with the provisions of this Section 23. Failure to comply strictly with the terms of this Section 23 shall not be held against the Party claiming to have given notice so long as such Party substantially complied with this provision and can demonstrate that the notice in question was received.

24. **No Waiver**. The waiver by either Party of any breach of any term, condition, or provision herein contained shall not be deemed to be a waiver of such term, condition, or provision, or any subsequent breach of the same, or any other term, condition, or provision contained herein.

25. **Remedies Cumulative**. No remedy herein conferred upon or reserved to Lessee or Lessor shall exclude any other remedy herein or by law or in equity or by statute provided, but each shall be cumulative and in addition to every other remedy given hereunder or now or hereafter existing at law or in equity or by statute.

26. **Headings**. The headings in this Lease are solely for convenience and ease of reference and shall have no effect in interpreting the meaning of any provision of this Lease.

27. **Choice of Law**. This Lease shall be construed in accordance with the laws of the State of New York, without regard to its conflict of law principles.

28. **Binding Effect**. This Lease and its rights, privileges, duties and obligations shall bind and inure to the benefit of and be binding upon each of the Parties hereto, together with their respective heirs, personal representatives, successors and permitted assigns.

29. **Counterparts**. This Lease may be executed in any number of counterparts, which shall together constitute one and the same agreement. Lessor and Lessee (a) intend to be bound by the signatures on any document sent by facsimile or electronic mail, (b) are aware that the other Party will rely on such signatures, and (c) hereby waive any defenses to the enforcement of the terms of this Lease based on the foregoing forms of signature.

30. **Entire Lease**. This Lease, including the Cover Sheet and all Exhibits, represents the full and complete agreement between the Parties hereto with respect to the subject matter contained herein and therein and supersede all prior written or oral negotiations, representations, communications and agreements between said parties with respect to said subject matter. This Lease may be amended only in writing signed by both Lessee and Lessor or their respective successors in interest. Lessor and Lessee each acknowledge that in

executing this Lease that party has not relied on any verbal or written understanding, promise, or representation which does not appear in this document. The Cover Sheet and all of the Exhibits attached to this Lease are incorporated in and made a part of this Lease, but in the event of any inconsistency between the terms and provisions of this Lease and the terms and provisions of the Cover Sheet and Exhibits hereto, the terms and provisions of this Lease shall control.

31. **Further Assurances**. Upon the receipt of a request from the other Party or a Financing Party, each Party shall execute such commercially reasonable additional documents, instruments and assurances and take such additional actions as are reasonably necessary to carry out the terms and intent hereof, including at the requesting Party's expense, entering into any consents, assignments, affidavits, estoppels and other documents as may be reasonably required by such Party's lender to create, perfect or preserve its collateral interest in such Party's property or such party's rights and obligations under this Lease. Neither Party shall unreasonably withhold, condition or delay its compliance with any reasonable request made pursuant to this Section 31.

32. **Dispute Resolution.** Any dispute arising from or relating to this Lease shall be arbitrated in New York. The arbitration shall be administered by JAMS in accordance with its Comprehensive Arbitration Rules and Procedures, and judgment on any award may be entered in any court of competent jurisdiction. If the Parties agree, a mediator may be consulted prior to arbitration. The prevailing party in any dispute arising out of this Lease shall be entitled to reasonable attorneys' fees and costs.

33. **Force Majeure.**

Except as otherwise specifically provided in the Lease, neither Party shall be considered in breach of the Lease or liable for any delay or failure to comply with the Lease (other than the failure to pay amounts due hereunder), if and to the extent that such delay or failure is attributable to the occurrence of a Force Majeure Event; provided, that: (i) the Party affected by such Force Majeure Event, as soon as reasonably practicable after obtaining knowledge of the occurrence of the claimed Force Majeure Event, gives the other Party prompt oral notice, followed by a written notice reasonably describing the Force Majeure Event; (ii) the suspension of or extension of time for performance is of no greater scope and of no longer duration than is required by the Force Majeure Event; and (iii) the Party affected by such Force Majeure Event uses all reasonable efforts to mitigate or remedy its inability to perform as soon as reasonably possible. The Lease Term shall be extended day for day for each day performance is suspended due to a Force Majeure Event. If a Force Majeure Event shall have occurred that has prevented either Party from performing any of its material obligations hereunder and that has continued for a continuous period of one hundred twenty (120) days, then either Party shall have the right, but not the obligation, to terminate the Lease upon sixty (60) days' prior notice to the other Party without penalty or further liability. If at the end of such sixty (60) day period, such Force Majeure Event shall still continue and the material obligation has not been able to be resumed to the reasonable satisfaction of the affected Party, the Lease shall terminate. Upon such termination due to a Force Majeure Event, neither Party shall have any liability to the other (other than any such liabilities that have accrued prior to such termination or those which expressly survive the termination or expiration of the Lease pursuant to the terms hereof). If, at the end of such sixty (60) day period such Force Majeure Event is no longer continuing, the Lease shall remain in full force and effect, and the Party's termination notice shall be deemed to have been withdrawn. Rent shall abate for any period during which Lessee is not able to operate the System in the manner contemplated herein.

34. **Confidentiality**. Lessor and Lessee each agree to use commercially reasonable efforts to keep confidential, and not publicly disclose, the terms of this Lease and any information provided by Lessor to Lessee or by Lessee to Lessor in relation to the transaction contemplated hereby; provided, however, that either Party may disclose the existence and terms of this Lease to: (a) its consultants, agents, architects, independent contractors, or attorneys in connection with the execution of this Lease and the transactions contemplated herein, (b) any bona fide potential purchaser, assignee, subtenant or lender of the Property, the Premises, this Lease or the System who agrees to keep such information confidential, (c) to any Person that has a *bona fide* business necessity for such disclosure (*e.g.* in connection with the preparation of tax returns, in response to an acquirer's due diligence inquiries, in response to request for an estoppel certificate or similar instrument, etc.)

who agrees to keep such information confidential, (d) any third party to whom both Parties hereto have given their prior written consent for such a disclosure, or (e) Governmental Authorities (including administrative, regulatory or judicial authorities) in the investigation of the compliance of the Premises and/or the System with applicable legal requirements; and provided, further, that the non-disclosure obligations contained in this Section shall not apply to any such information that (i) is or becomes generally available to the public other than as a result of a disclosure by Lessee or Lessor, or their employees, agents or representatives, or (ii) Lessor or Lessee is compelled to disclose pursuant to any judicial, statutory or regulatory authority. The provisions of this Section 34shall survive the expiration of the Lease Term or earlier termination of this Lease.

35. **Notice of Lease**. To the extent Lessee requests, Lessor and Lessee shall promptly execute, acknowledge and deliver to the other (a) a memorandum of the Option component of this Lease and (b) upon the exercise of the Option, a memorandum of the lease component of this Lease, both in form suitable for recording and otherwise in form and content reasonably satisfactory to Lessee, together with such instruments as are then required for the recording of such memorandum(a), either in form and content as set forth in **Exhibits E-1** and **E-2**, respectively, or, at Lessee's option in such other form and content as is reasonably satisfactory to Lessee. Lessee may record either or both of such memorandum (or memoranda), and have same returned to Lessee or Lessee's attorney. In the event this Lease is hereafter from time to time amended, modified or supplemented, then, at Lessee's request, Lessor and Lessee simultaneously shall execute, acknowledge and deliver to the other a memorandum of such amendment to the Option or the lease component of this Lease, as the case may be, together with such instruments as are then required for the recording of such memorandum, and Lessee may thereupon record such memorandum, and have same returned to Lessee or Lessee's attorney. Lessor agrees to execute and deliver any other documents as may be reasonably necessary to record any of the foregoing. Lessee shall pay any and all recording fees and costs associated with the recording of a memorandum of the Option or of the lease component of this Lease or of any amendment to this Lease. Lessee shall also pay up to one thousand dollars ($1,000) for reasonable legal fees incurred by Lessor for the review of each Amendment, if any, sought by Lessee.

1. **No Brokers**. Lessor and Lessee hereby represent and warrant to the other that no real estate broker or agent is entitled to a commission in connection with this Lease. In the event any broker or other party claims a commission, the party responsible for the contact with that claimant shall indemnify, defend and hold the other party harmless from that claim, including, without limitation, the payment of any attorneys' fees and costs incurred.

2. **No Partnership**. This Lease is not intended and shall not be construed to create any partnership or joint venture or any other relationship other than one of 'lessor' and 'lessee', and neither Party shall be deemed the agent of the other Party nor have the authority to act as agent for the other Party.

REMAINDER OF PAGE INTENTIONALLY LEFT BLANK – SIGNATURE PAGE FOLLOWS

IN WITNESS WHEREOF, the Parties have executed this Lease on the day and year set forth above as the Effective Date, set forth on the Cover Sheet.

LESSOR(s): James Elliot

Signature: James E Elliot

Date: 6/2/22

Signature: _____

Date: _____

LESSEE: RENESOLA POWER HOLDINGS, LLC

By: _____

Name: John Ewen

Title: 05/17/2023

i)

CamScanner

EXHIBIT A
DESCRIPTION OF PROPERTYAND PREMISES

Legal description of the Property and Premises
including a parcel map and/or an abstract of survey, if available.

The Property on which the Premises will be located is described as follows:

County: Onieda, State of New York , Tax ID: 272-000-0002-036-000-0000

EXHIBIT B
SYSTEM SPECIFICATIONS AND SITE PLAN

[Insert drawing showing the proposed general arrangement of the System on the Premises to be provided prior to the exercise of the option by Lessee]

EXHIBIT C
DEFINITIONS

"***Affiliate***" means, as to any Person, any other Person that, directly or indirectly, is in control of, is controlled by or is under common control with such Person or is a director or officer of such Person or of an Affiliate of such Person.

"***Applicable Law***" means, with respect to any Person, any constitutional provision, law, statute, rule, regulation, ordinance, treaty, order, decree, judgment, decision, certificate, holding, injunction, registration, license, franchise, permit, authorization, guideline, Governmental Approval, Environmental Law, consent or requirement of any Governmental Authority having jurisdiction over such Person or its property, enforceable at law or in equity, including the interpretation and administration thereof by such Governmental Authority.

"***Bankruptcy Event***" means with respect to a Party, that either: such Party has (A) applied for or consented to the appointment of, or the taking of possession by, a receiver, custodian, trustee or liquidator of itself or of all or a substantial part of its property; (B) admitted in writing its inability to pay its debts as such debts become due; (C) made a general assignment for the benefit of its creditors; (D) commenced a voluntary case under any bankruptcy law; (E) filed a petition seeking to take advantage of any other law relating to bankruptcy, insolvency, reorganization, winding up, or composition or readjustment of debts; (F) taken any corporate or other action for the purpose of effecting any of the foregoing; or (G) a proceeding or case has been commenced without the application or consent of such Party in any court of competent jurisdiction seeking (A) its liquidation, reorganization, dissolution or winding-up or the composition or readjustment of debts or, (B) the appointment of a trustee, receiver, custodian, liquidator or the like of such Party under any bankruptcy law, and such proceeding or case has continued undefended, or any order, judgment or decree approving or ordering any of the foregoing shall be entered and continue unstayed and in effect for a period of one hundred eighty (180) days.

"***Business Day***" means any day other than Saturday, Sunday or any other day on which banking institutions in the state where the Property is located are required or authorized by Applicable Law to be closed for business.

"Capacity Screening" means a study ordered by Lessee with Xcel Energy to determine the available capacity for the relevant substation of Xcel Energy to accept the power that will be generated by the proposed System. Xcel's Capacity Screening guidelines state they shall respond to a Capacity Screening request within fifteen (15) to thirty (30) days.

"Effective Date" means the date both Parties have agreed the Agreement has taken effect, usually it will be the date both parties have signed the contract, but the Parties may agree to a separate date if desired.

"***Environmental Attributes and Incentives***" means any emissions, air quality or other environmental attribute, aspect, characteristic, claim, credit, benefit, reduction, offset or allowance, howsoever entitled or designated, directly or indirectly resulting from, attributable to or associated with the generation of energy by a solar renewable energy facility, whether existing as of the date of any Effective Date or thereafter, and whether as a result of any present or future local, state or federal laws or regulations or local, state, national or international voluntary program.

"***Environmental Claims***" means any and all administrative and judicial actions and rulings, claims, causes of action, demands and liability, including, but not limited to, damages, costs, expenses,

assessments, penalties, fines, losses, judgments and reasonable attorney fees that any Party may suffer or incur due to the existence of any Hazardous Substances on the Property or the migration of any Hazardous Substance to other properties or the release of any Hazardous Substance into the environment, that relate to or arise from such Party's activities on the Property.

"***Environmental Law***" means and includes, without limitation, any present or future federal, state or local law, whether under common law, statute, rule, regulation or otherwise, requirements under Permits or other authorizations issued with respect thereto, and other orders, decrees, judgments, directive or other requirements of any Governmental Authority relating to or imposing liability or standards of conduct, disclosure or notification with regard to the protection of human health, the environment, ecological conditions, Hazardous Substances or any activity involving Hazardous Substances.

"***Expiration Date***" has the meaning set forth on the Cover Sheet, as such date may be extended in accordance with the Lease.

"***Financing Party***" means, as applicable (i) any Person (or its agent) from whom Lessee (or an Affiliate of Lessee) leases the System or (ii) any Person (or its agent) who has made or will make a loan to or otherwise provide capital to Lessee (or an Affiliate of Lessee) with respect to the System. Lessee shall give Lessor notice of and the contact information for any such Financing Party within one hundred twenty (120) days after the Lease Commencement Date and shall confirm any change in such contact information upon request of Lessor.

"***Force Majeure Event***" means, when used in connection with the performance of a Party's obligations under this Lease, any events or circumstances beyond the affected Party's reasonable control that arise after the Effective Date, to the extent not caused by the acts or omissions of (and are otherwise unavoidable, or beyond the reasonable control of, and could not have been prevented or overcome by the reasonable efforts and diligence of) such Party and which materially and adversely affects such Party's performance of its obligations under this Agreement. Force Majeure Event includes but is not limited to the following: (i) war, riot, acts of a public enemy or other civil disturbance; (ii) acts of God, including but not limited to, earthquakes, tornados, typhoons, lightning, blizzards, hurricanes and landslides of the type which would, under normal circumstances and typical insurance policies, constitute an event of insurable loss; (iii) acts of, or unreasonably excessive failures to act by, any Governmental Authority including changes in Applicable Law after the Effective Date (other than acts of Governmental Authorities in response to a Party's failure to comply with existing Applicable Laws as required in connection with performance under this Agreement); and (iv) strikes, walkouts, lockouts or similar industrial or labor actions or disputes not caused by, specific to employees of, or the result of an unfair labor practice or other unlawful activity by the asserting Party.

"***Governmental Approval***" means any approval, consent, franchise, permit, certificate, resolution, concession, license, or authorization issued by or on behalf of any applicable Governmental Authority.

"***Governmental Authority***" means any federal, state, regional, county, town, city or municipal government, whether domestic or foreign, or any department, agency, bureau or other administrative, regulatory or judicial body of any such government.

"***Hazardous Substances***" means and includes, without limitation any substance, chemical, material or waste: (i) the presence of which causes a nuisance or trespass of any kind under any applicable Environmental Law; (ii) which is regulated by any Governmental Authority; (iii) is likely to create liability under any Environmental Law because of its toxic, flammable, corrosive, reactive, carcinogenic, mutagenic, infectious, radioactive, or other hazardous property or because of its effect on the environment, natural resources or human health and safety, including but not limited to, flammables and

explosives, gasoline, petroleum and petroleum products, asbestos containing materials, polychlorinated biphenyls, lead and lead-based paint, radon, radioactive materials, microbial matter, biological toxins, mylotoxins, mold or mold spores or any hazardous or toxic material, substance or waste which is defined by those or similar terms or is regulated as such by any Governmental Authority; or (iv) which is designated, classified, or regulated as being a hazardous or toxic substance, material, pollutant, waste (or a similar such designation) under any federal, state or local law, regulation or ordinance, including under any Environmental Law.

"***Lease Term***" means the term of years that commences on the Lease Commencement Date and expires at 11:59 p.m. on the Expiration Date.

"***Lessee Party***" or "***Lessee Parties***" means, individually or collectively, Lessee, its Affiliates and any of their authorized representatives, agents, employees, managers, contractors, architects and engineers, and each of their respective officers, directors, partners, members, managers, agents, employees, representatives and invitees.

"***Lessor Parties***" means, individually or collectively, Lessor, its Affiliates and any of their authorized representatives, agents, employees, managers and each of their respective officers, directors, partners, members, managers, agents, employees, and representatives.

"***Local Electric Utility***" means the local electric distribution owner and operator providing electric distribution services to Lessee and also providing electric distribution and interconnection services to Lessee for Lessee's System.

"***Permits***" means all applications, approvals, authorizations, consents, filings, licenses, orders, permits or similar requirements imposed by any Governmental Authority which are required in order to develop, construct, operate, maintain, improve, refurbish and retire the System or to schedule and deliver the electric energy produced by the System to the Local Electric Utility, including an authorization to construct or a conditional use permit.

"***Person***" means any individual, corporation, partnership, limited liability company, joint venture, estate, trust, unincorporated association, any other person or entity, and any federal, state, county or municipal government or any bureau, department or agency thereof and any fiduciary acting in such capacity on behalf of any of the foregoing.

"***Pre-Existing Environmental Conditions***" means the any and all Hazardous Substances which are on the Premises as of the Effective Date.

"***Removal and Restoration Date***" means the date not be later than one hundred-eighty (180) days after either the Expiration Date or the date of earlier termination of this Lease, if applicable, when Lessee shall complete the removal of all of its tangible property comprising the System from the Premises and restore the Premises to its original condition, normal wear and tear excepted and provided that Lessee shall not be required to restore the Premises to its original grade.

"***System***" means the solar photovoltaic System installed and operating at the Premises, as more particularly described and depicted in **Exhibit B** attached hereto and incorporated herein, together with all electrical production, transmission and distribution facilities, hardware and materials, including without limitation, overhead and underground transmission, distribution or collector lines, circuit breakers, meters, conduit, footings, cabling, wires, overhead and underground control, communications and radio relay systems, interconnection facilities and/or switching facilities, transformers and current inverters,

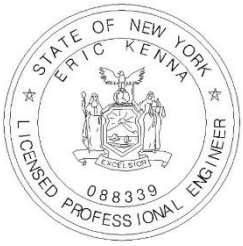
control boxes and computer monitoring equipment systems, structures, features and improvements necessary to produce electric energy at such facility (excluding power to the Property).

STORMWATER POLLUTION PREVENTION PLAN FOR THE CONSTRUCTION OF

NY OLD ONEIDA SOLAR FARM, LLC
5792 OLD ONEIDA ROAD
ROME, NY 13440

ONEIDA COUNTY, NEW YORK

Prepared by:
C&S ENGINEERS, INC.
499 COL. EILEEN COLLINS BOULEVARD
SYRACUSE, NEW YORK 13212



Eric Kenna, P.E.
N.Y.S.P.E. License No. 088339

JANUARY 2024
Revised March 2025

STORM WATER POLLUTION PREVENTION PLAN

FOR THE CONSTRUCTION OF

NY OLD ONEIDA SOLAR FARM, LLC
5792 OLD ONEIDA ROAD
ROME, NY 13440

ONEIDA COUNTY, NEW YORK

JANUARY 2024

Revised March 2025

C&S ENGINEERS, INC.

499 COL. EILEEN COLLINS BOULEVARD

SYRACUSE, NEW YORK 13212

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APPENDICES

Appendices

Appendix A

A-1: - NYSDEC SPDES General Permit (GP-0-20-001)
A-2: - Notice of Intent Form (eNOI)
A-3: - NYSDEC Acknowledgement Letter (To be inserted)
A-4: - Notice of Termination (NOT)
A-5: - SEQR Resolution (To be inserted)
A-6: - SHPO Correspondence (To be inserted)
A-7: - Wetlands Summary
A-8: - 5-Acre Waiver Letter

Appendix B

B-1: - Location Plan
B-2: - Aerial Image
B-3: - USGS Topographic Map
B-4: - USDA NRCS Soils Report

Appendix C

C-1: - Grading Plan
C-2: - Erosion and Sediment Control Plan and Details
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C-4: - Existing and Proposed Conditions Drainage Plans
C-5: - HydroCAD Stormwater Output (Drainage Analysis)
C-6: - WQv and RRv Calculations

Appendix D

D-1: - Contractor's Certification Statement
D-2: - Weekly Erosion & Sediment Control Inspection Form
D-3: - Deep Ripping and De- Compaction Requirements

Appendix E

E-1: - Maryland Design Guidance for Solar Panel Installation
E-2: - Long Term Maintenance Recommendations
E-3: - NYSDEC Solar Panel Construction Stormwater Permitting Memorandum

1.0 INTRODUCTION

The Clean Water Act states that storm water discharges associated with an industrial activity from a point source, including through a separate municipal storm sewer system, are unlawful unless authorized by a National Pollutant Discharge Elimination System (NPDES) permit. In New York State, the New York State Department of Environmental Conservation (NYSDEC) administers the NPDES through the State Pollution Discharge Elimination System (SPDES) program. According to the SPDES General Permit, construction sites or common plans of development that result in disturbance of one or more acres are subject to permitting requirements.

This plan outlines measures to reduce the potential of storm water runoff pollution during construction activities and assigns responsibilities to ensure that the contractor and his/her subcontractors implement the requirements of the Storm Water Pollution Prevention Plan (SWPPP). The SWPPP was developed based on the SPDES General Permit (GP-0-20-001) for Storm Water Discharges from Construction Activities that are classified as “Associated with Construction Activity”, effective January 29, 2020.

2.0 NOTICE OF INTENT REQUIREMENTS

To obtain coverage under a general permit, a Notice of Intent (NOI) must be submitted by the owner at least five days prior to commencement of construction activities. A copy of the completed NOI for this project will be included in Appendix A upon filing.

3.0 STORM WATER POLLUTION PREVENTION PLAN

This Storm Water Pollution Prevention Plan (SWPPP) was developed to set operating guidelines during construction activities. A copy of this SWPPP shall be retained at the construction site throughout the duration of this project.

The Contractor shall meet all conditions of this SWPPP and all conditions within the NYSDEC SPDES General Permit for Stormwater discharges from Construction Activities - Permit No. GP-0-20-001 effective date January 29, 2020.

During the course of the project and upon approval by the owner, the contractor shall amend the plan whenever there is a change in construction, operation, or maintenance, which may have an effect on the potential for the discharge of pollutants. In addition, if a new subcontractor is utilized at the site who will implement tasks included in the plan, the SWPPP shall be amended.

4.0 SITE DESCRIPTION

NY Old Oneida Solar Farm LLC, is proposing the construction of a tracker rack system solar farm and associated electrical appurtenances within the City of Rome in Oneida County, New York. The project is located at 5792 Old Oneida Road, Rome, NY 13440 and is located on a 144.27 -acre parcel. For purposes of the drainage model analysis, a total of 36.75 acres for this site were studied, and 20.21 acres comprise the limits of disturbance for this project. Within this report, the term site will refer to areas within the limits of disturbance.

The site is mostly comprised of agricultural fields with some wooded areas to the south and east of the parcel. There is a federal wetland to the northwest of the site by the road entrance and two state wetlands along the eastern border of the site, all delineated by C&S Engineers, Inc. There is a small stream that runs east to west through the center of the site. The proposed solar array footprint is established to avoid all these areas to include any 100’ wetland buffer. Temporary structural practices will be in place during construction to prevent the runoff of any sediment to these sensitive areas.

Generally, runoff moves from the south end of the site and north towards Old Oneida Road and then to a tributary of Mud Creek and eventually to the Erie Canal. The delineation of the onsite wetland was performed by a licensed professional, and the delineated drainage boundary can be found in Appendix C.

Based off existing conditions, the site was delineated into two Drainage Areas (DA-1and DA-2). These catchment boundaries remain the same from existing to proposed conditions. The general discharge from DA-1 travels north towards Old Oneida Road and then through under road culverts towards the larger watershed of the Erie Canal, while Drainage Area 2 drains towards an on-site stream. The purpose

of this report is to analyze and design the underline conditions and implement the plan for during and after construction to treat runoff quality and manage any increase to storm rates before leaving the site and pollute and/or flood downstream areas. Most land cover in the drainage areas under existing conditions were classified as meadow due to the existing farmland use, with some dirt road and impervious surface for the existing farm road and structures. Under proposed conditions, most land cover will be classified as meadow, non-grazed for pervious cover and as paved/gravel for impervious cover. Soils on site were mapped by the U.S. Department of Agriculture, Natural Resource Conservation Service (NRCS) Web Soil Survey. According to the soil survey, approximately 100% of soils within the drainage areas classified as B. A copy of this soils report can be found in Appendix B.

Drainage Area 1 (DA-1) encompasses 28.72 acres of area, and 17.95 acres of which are located within the limits of disturbance. This area comprises the majority of the limits of disturbance and is located in the north east part of the parcel. Runoff generally travels from the high elevation in the center of the site and then north towards Old Oneida Road. There is an existing vegetated swale that spans the western side of the drainage area that flows north towards the onsite wetland. This swale was analyzed and implemented for one of the quality control measures under proposed conditions.

Drainage Area 2 (DA-2) encompasses 8.03 acres of area, and 1.35 acres of which are located within the limits of disturbance. This area comprises the southern half of the portion of development. Runoff generally travels south toward the existing stream. This area has a delineated stream that intersects from east to west with the limits of disturbance being north of this stream.

The only areas of the site that would require grading would be that around the proposed access road and equipment pads. A majority of the site will be graded to bring contour slopes to 10% or less within the footprint of the panel modules. If panels were to be installed on grades greater than 10%, there would be considered as impervious surfaces. Any disturbed areas without an increase to impervious cover will be re-planted with dense grass growth to create a vigorous land cover that promotes

infiltration. These boundaries are as shown the Proposed Conditions Drainage Plan in Appendix C.

Land cover will change from row crops and will be meadow after proposed conditions. In addition, one gravel access road will be constructed off of Old Oneida Road. Three turn-a-round points will be constructed on site at the end of the access road for fire truck and emergency access along with two equipment pads.

All water quantity and quality practices for the site will be constructed prior to any other elements of the solar array sites to include grading, gravel access roads, and the solar panels. This is to provide the necessary treatment for the site during and after construction.

Installation of solar arrays in delineated wetlands does not constitute site or wetland disturbance per the USACE. No solar panels are proposed to be installed within any of the delineated wetlands on site. As a result, the delineated watershed boundary remains the same in both existing and proposed conditions; and the areas identified as wetlands also remain the same in both conditions.

The lands in the vicinity of the project are shown on FEMA Flood insurance Rate Map (FIRM) Panel 545 of 926, Map Number 36065C0545F effective date September 27, 2013. The project is outside of any flood hazard area.

5.0 WATER QUALITY:

As a result of the proposed gravel access road and equipment pads there is a net increase, of 0.62 acres, in impervious surface areas within the site when comparing to existing conditions. There is a total of 0.97 acres of proposed impervious, as some of the existing dirt/gravel access road will be replaced and widened with the proposed access road to the solar site. There are also existing structures on site that will remain in proposed conditions and were not counted toward the water quality values. This increase in impervious area is graded to not disrupt the natural flow of runoff across the site. The manning's n-value increases which slows the runoff velocity in each respective drainage area. The WQv and peak post-development rates have both been addressed in the following sections.

In accordance with the NYSDEC stormwater design criteria, this increased impervious runoff requires water quality treatment in addition to runoff reduction. The water quality volume (WQv) and runoff reduction volume (RRv) were calculated for the drainage areas within the site. These calculations can be found in Appendix C.

For Drainage Areas 1 and 2, runoff from the proposed access road will flow towards the existing and proposed dry swales. Certain segments of the access road will be treated with the swales while the remainder will have designated filter strip areas as shown on the Erosion and Sediment Control Plan. All portions of the access road are within Drainage Area 1 but the segments being treated by dry swales were subtracted out and shown separately in the analysis for treatment purposes. The following table summarizes the water quality requirements for the site:

Table 1: Water Quality Summary Table

Discharge Point	WQv Required (ac.-ft.)	WQv Provided (ac.-ft.)	Min. RRv Required (ac.-ft.)	RRv Provided (ac.-ft.)	Practice
DA-1	0.11	0.11	0.012	0.11	Filter Strip
DA-2	0.03	0.03	0.00	0.03	Filter Strip
Eastern Road Segment	0.038	0.00	0.008	0.038	Proposed Dry Swale
Western Road Segment	0.042	0.000	0.0114	0.042	Existing Swale

5.1 Filter Strip/ Riparian Buffer:

In accordance with the Maryland Department of the Environment's Design Guidance for Solar Panel Installation Document, (refer to Appendix E-1 for more detail), the water quality volume and runoff reduction volume were addressed for the entire site. The average slope under the solar panels is approximately 1.5%, with some locations greater than 5% but never exceed a 10% slope.

The NY Old Oneida Solar Farm, LLC site includes solar tracker panel systems where the rack support is installed in a north-south direction, and the panels themselves rotate from east to west throughout the day following the sun; thus,

dispersing runoff evenly across the surrounding ground. This system limits the disturbance and maximizes the area of dense vegetations across the site. The rack systems are installed with a post driving machine which also minimizes site disturbance. Grading activities are planned to only construct the access road. Each row of solar panels has a width of 16'- 0" and the panels are spaced 17'- 0" apart, which complies with the Maryland Design Guidance Document. This practice disconnects the runoff from the solar panel arrays and treats the runoff through groundcover vegetation (i.e. filter strips).

The filter strips will be installed in accordance with NYSDEC requirements. In addition, stone energy dissipaters, or level spreaders will be installed downhill from all land slopes that contain slopes ranging between 5 and 10%. They will be installed parallel to site contours. This will provide a disconnection flow path of dense grasses (average height of 18-24", mowed annually) to reduce runoff velocities and thereby promote onsite infiltration into underlying soils and allowing the filter strips to perform as intended. Please refer to Sheets C-103 Grading Plan, C-104 Erosion and Sediment Control Plan, and C-502, Detail B2 for exact locations and details on the level spreaders (Refer to Appendix C). In addition, a buffer zone comprised of undisturbed land is located downstream of the drainage areas. This will also reduce velocities and promote infiltration prior to runoff from the solar panels leaving the site. These will remain undisturbed agricultural lands and woods. This undisturbed, forever wild land will serve as a buffer by both filtering and infiltrating runoff, prior to discharging flow into offsite surface waters.

5.2 Dry Swales:

A system of two (2) dry swales (one existing and one proposed) were implemented for treating runoff from specific segments of the proposed access road. The existing swale will be modified to be compliant with NYSDEC dry swale design guidelines, including the installation of an underdrain pipe to provide the necessary water quality treatment for the segment of the proposed access road that runs parallel to the length of the swale. The proposed dry swale runs perpendicular to and discharges into the existing swale. This is meant to collect and treat the runoff from

the eastern segment of the road from the 90 degree turn to the most eastern end of the road. Dry Swales being open channels that collect runoff and allows for infiltration and diversion specifically for certain segments of the access road. Permanent check dams will be installed as indicated on the plans in order to slightly increase treatment before discharging into the onsite wetland, even though there are no slopes greater than 2% within the swales.

The table below describes all proposed dry swales proposed and dimensions of existing swales utilized on site.

Table 2: Drainage Area 2 Dry Swale Summary Table

Swale	Length (ft.)	Start Inv.	End Inv.	Slope	Bottom Width (ft.)	Depth (ft.)
1	350’	497.4’	493.8’	1.0%	2’-0”	1’-6”
Ex. Swale	470’	499.3’	491.7’	1.6%	2’-0”	2’-0”

5.3 Water Quality Summary:

An existing drainage map, and a proposed drainage map have been included in Appendix C in addition to the Erosion and Sediment Control Plan and Details. The soil erosion and sediment control plan and details identify controls to be utilized for this project. The project’s design and mitigation meets the current requirements of the General Permit for Stormwater Discharges and the parameters set forth in the NYSDEC Design Manual.

This Storm Water Pollution Prevention Plan will minimize the potential for storm water pollution during construction activities for the site infrastructure. Pollution prevention during construction includes the protection from soil disturbance induced pollution as well as potential chemical pollution from construction materials and equipment stored on-site during the construction of this project. This Storm Water Pollution Prevention Plan will minimize the potential for storm water pollution during construction activities for the site infrastructure.

6.0 WATER QUANTITY

In addition to water quality, water quantity requirements must be met. Within New York State, these requirements include the channel protection volume (CPv), the overbank flood (Qp) and the extreme storm (Qf). In proposed conditions, the discharge rate must be less than or equal to the predevelopment discharge rate. The following table provides a summary of pre and post development flow rates for all year storm events:

Table 3: Drainage Area 1: Pre- and Post- Development Discharge

Rainfall Event	EX-DA 1 Peak Discharge	PRO-DA 1 Peak Discharge
	(cfs)	(cfs)
1-yr	0.24	0.19
2-yr	0.86	0.60
5-yr	2.94	1.96
10-yr	5.77	3.85
25-yr	11.97	7.93
50-yr	18.84	12.47
100-yr	28.13	18.57

Table 4: Drainage Area 2: Pre- and Post- Development Discharge

Rainfall Event	EX-DA 2 Peak Discharge	PRO-DA 2 Peak Discharge
	(cfs)	(cfs)
1-yr	0.05	0.05
2-yr	0.23	0.23
5-yr	0.88	0.88
10-yr	1.82	1.82
25-yr	4.07	4.07
50-yr	6.61	6.61
100-yr	10.11	10.11

The total Overbank Flood Control Criteria is the sum of 10-year rainfall event amounts throughout the entire site and the total Extreme Flood Control Criteria is the

sum of the 100-year rainfall event amount. Post-development amounts must be less than or equal to the pre-development amounts. The combined overbank flood (Qp) pre-development accruing from the drainage areas above totals 7.59 cfs and the combined post-development is 5.67 cfs. The combined extreme flood (Qf) pre-development is 38.24 cfs and the combined post-development is 28.68 cfs.

The hydrological soil type is mostly type B and most surface cover in an around the limits of disturbance remained meadow from existing to proposed.

In order to ensure peak flow rates remain the same or less at each of the drainage analysis points, a mix of native grasses and meadow plants will be planted in all of the site work area and disturbed areas.

This cover type will allow greater infiltration of stormwater than the agricultural use that preceded it, thus reduction runoff discharge and volume leaving the site. All vegetated areas between the panels will be mowed annually to maintain a desired 18-24” height. Adding multiple permanent level spreaders on slopes greater than 5% will promote infiltration and reduce runoff velocity.

Summary:

An existing drainage map, and a proposed drainage map have been included in Appendix C in addition to the Erosion and Sediment Control Plan and Details. The soil erosion and sediment control plan and details identify controls to be utilized for this project. The project’s design and mitigation meet the current requirements of the General Permit for Stormwater Discharges and the parameters set forth in the NYSDEC Design Manual.

This Storm Water Pollution Prevention Plan will minimize the potential for storm water pollution during construction activities for the site infrastructure. Pollution prevention during construction includes the protection from soil disturbance induced pollution as well as potential chemical pollution from construction materials and equipment stored on-site during the construction of this project. This Storm Water Pollution Prevention Plan will minimize the potential for storm water pollution during construction activities for the site infrastructure.

The Owner during construction will be:
NY Old Oneida Solar Farm, LLC
5792 Old Oneida Road
Rome, NY 13440

The Contact person for the project is:
Mac Moore
(916) 712-7203
Mac.moore@emeren.com
149 Water St, Suite 302
Norwalk, CT 06854

*All Erosion and Sediment Control practice descriptions can be found below. Locations and sizing are identified in the drawings prepared by C&S Engineers, Inc.

7.0 CONTROLS

The Contractor shall be required to construct and maintain the following controls in accordance with this document and the associated Contract Documents for this project.

7.1 Construction Sequence

* All drawings referenced within the construction sequence can be found in the drawings prepared by C&S Engineers, Inc.

1. Schedule a pre-construction meeting that shall be attended by the qualified inspector, and involved subcontractors to discuss responsibilities as they relate to the implementation of the SWPPP measures to avoid and minimize impacts to protected species during remediation, demolition and construction.
2. Install the stabilized construction entrance for the project as shown on the plans.
3. Delineate the limits of disturbance for the project, to include the stakeout and installation of wetland protections of wetlands on site or that could be impacted by construction. Contractor to ensure delineation of wetland boundaries and

installation of wetland protections remains throughout the duration of construction to protect wetlands from disturbance as a result of construction activities.

4. Establish location for staging area and soil stockpile as shown on the plans. If these areas are not conducive due to any unforeseen conditions, the contractor shall identify a new location for review and approval by the engineer.
5. Install all silt / construction fence for the project as shown on the plans including the installation of silt fence surrounding the perimeter of the soil stockpile, staging area, and at the down gradient side of all solar panel arrays locations.
6. Selectively clear only the areas required for the following: installation of the stabilized facility entrance, placement of the construction office trailer and parking areas, placement of temporary sediment and erosion control measures, construction staging area, the soil stockpile, and the minimal areas identified to be graded.
7. Install all swales, basins, and berms as shown on the plans. topsoil, seed, and mulch the swales. Rolled erosion control fabrics, turf reinforcement mats, mulch anchoring to be installed as needed and in areas of concentrated flow.
8. Contractor to install level spreaders as shown on the grading and erosion and sediment control plan. Covering the level spreader with plywood or mud mats in locations where they must be crossed during construction is required.
9. Contractor to install the access roadways as shown on the plans.
10. Provide temporary seeding and stabilization measures of any disturbed areas in active areas on the next business day and completed in fourteen days.
11. Install posts, brackets, mounting structures, and modules. Contractor shall limit solar array supports and module installation to areas and sections where temporary stabilization can be managed and controlled at all times. A 5-acre waiver request will be submitted to the NYSDEC to allow the site contractor to traverse the site with the solar support installation equipment only. Conventional earth moving and mass grading activities are not proposed. Please refer to the

5-acre waiver letter in Appendix A-8. Seeding and stabilization measures outlined in step 10 shall be implemented before moving onto the next section of solar panel installation.

12. Complete overall on-site stabilization.
13. Contractor to rake out any areas of level spreaders that are packed with mud and remove and replace stone as necessary.
14. Upon establishment of substantial vegetative cover (85% min.) remove all temporary erosion and sediment controls. Seed and mulch the remaining disturbed areas (resulting from temporary erosion control measure removal).
15. Remove silt fencing only after disturbed surfaces are stabilized.
16. Upon final stabilization, and certification by the NYSDEC and the qualified professional retained to perform the required site inspections, the Owner shall file the Notice of Termination (NOT) with the NYSDEC.

7.2 Stabilization Practices

7.2.1 Seeding

Immediately after completion of grading operations, topsoil shall be replaced where it is required and all areas disturbed from grading operations shall be seeded in an effort to stabilize the site. Stabilization measures (including top-soiling, seeding and mulching) shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity if that portion of the site has temporarily or permanently ceased, except as noted below:

- Where the initiation of stabilization measures by the 7th day after construction activity temporarily or permanently ceased is precluded by snow cover. In this situation, stabilization measures shall be initiated as soon as possible.
- Where construction activity will resume on a portion of the site within 14 days from when activities ceased, (e.g. the total time period that construction activity is temporarily ceased is less than 14 days) then stabilization measures do not have to be initiated on that portion of site by the 14th day after construction activity temporarily ceased.

- In areas where soil disturbance activities have temporarily or permanently ceased, soil stabilization measures shall be initiated by the end of the next business day and completed within fourteen says (seven days if open disturbed area exceeds 5 acres, or three days if between November 15th and April 1st).
    - If construction will occur between November 15 through April 1 additional erosion and sediment controls must be implemented in accordance with the NYS Erosion and Sediment Control Standards and Specifications "Standards and Specifications for Winter Stabilization" included in Appendix C of this report.
- The staging area shall be restored to original grade and stabilized with seed and mulch.

7.2.2 Mulching

Directly after seeding, all disturbed areas shall be mulched to prevent surface compaction, reduce runoff and erosion, control weeds and help establish plant cover.

7.2.3 Preservation of Vegetation

The contractor shall make every effort to protect trees, shrubs, ground cover and any other vegetation adjacent to the work areas that is not shown to be removed as part of this project. The purpose of preserving existing vegetation where obtainable is to reduce soil erosion and enhance water quality.

7.2.4 Stabilized Construction Entrance

A stabilized construction entrance shall be constructed where traffic will be entering or leaving a construction site to or from a public street, alley, sidewalk or parking area. The purpose of the stabilized construction entrance is to reduce or eliminate the tracking of sediment onto public streets.

7.2.5 Construction Vehicle Wash Area

A construction vehicle was area shall be constructed at the egress point(s) of the site from public roadways. As well as in all areas sensitive to sediment deposition by construction vehicle traffic. Each was area shall be comprised of a gravel "containment" area, and shall have access to a water supply source – potable or portable water truck/tank. Accumulations of sediment shall be washed from vehicle sides and undercarriages prior to leaving the site or entering a sensitive area.

7.2.6 Dust Control

- Dust resulting from land-disturbing activities shall be controlled to prevent surface and air movement of dust from disturbed soil surfaces.
- Dust control measures shall be employed on construction roads, access points and other disturbed areas subject to dust movement.
- On non-driving areas, measures such as vegetative cover, mulch or sprayed adhesives shall be employed.
- On driving areas, water shall be applied by sprinkling until the surface is wet.
- Dust control measures shall be applied constantly through dry weather until all disturbed areas are stabilized.

7.3 Structural Practices

7.3.1 Silt Fence

Silt fence shall be installed to intercept sediment laden runoff from small drainage areas of disturbed soil. Areas below gradient of the silt fence shall be undisturbed or stabilized immediately after disturbance.

- Maintenance shall be performed as needed. Material shall be removed and replaced when bulges develop in the silt fence or when the sediment has accumulated to ½ the height of the silt fence.

7.4 Good Housekeeping and Control of Construction Wastes and Chemicals

7.4.1 Good Housekeeping

It is anticipated that construction materials such as concrete, asphalt, petroleum based products, stone, and fertilizers will be present on-site at various stages during the project. In order to prevent the conveyance to and contamination of any adjacent and/or downstream property, lands or water bodies, good housekeeping practices shall be employed. Such precautions shall include:

- Storing of only enough materials to complete the project, or active phases of the project;
- Materials stored on-site shall be stored in a neat and orderly manner and in their appropriate containers and, if possible, under a covered area or enclosed structure;

- The manufacturer's recommendations for use and disposal shall be followed at all times;
- The project site superintendent shall inspect the site daily to ensure proper use, storage and disposal of all materials on-site.

7.4.2 Hazardous Products

- Hazardous products shall be maintained in their original containers when possible, and be kept with their original labels and applicable MSD sheets;
- All petroleum product spills, if such occurs, shall be cleaned up immediately, the source of the spill is repaired or removed, and contained material shall be disposed of as required by applicable law;
- Fertilizers shall only be applied as recommended by the manufacturer, and once applied shall be worked into the soil to limit exposure to storm water runoff. Storage shall be within an enclosed or covered area; Paints, coatings and sealants shall be maintained in a tightly enclosed, leak-proof container at all times. Excess materials shall be disposed of as required by applicable laws and regulations;
- Excess concrete material shall be removed and disposed of off-site in an appropriate manner. Concrete wash water shall not be allowed to discharge to any storm water conveyances;
- Concrete washout shall only occur at the designated concrete washout area as designated by the Owner or Owner's Representative
- Excess asphalt material (excavated asphalt chunks) shall be removed and disposed of off-site in an appropriate manner.
- NYS DEC Spills Hotline (1-800-457-7362). All petroleum spills that occur within New York State (NYS) must be reported to the NYS Spill Hotline (1-800-457-7362) within 2 hours of discovery, except spills which meet **all of the following criteria:**
- The quantity is known to be less than 5 gallons; and
- The spill is contained and under the control of the spiller; and
- The spill has not and will not reach the State's water or any land; and
- The spill is cleaned up within 2 hours of discovery; and
- A spill is considered to have not impacted land if it occurs on a paved surface such as asphalt or concrete. A spill in a dirt or gravel parking lot is considered to have impacted land and is reportable.

More details on notification and reporting requirements can be found at the NYSDEC Website (http://www.dec.ny.gov/chemical/8428.html).

8.0 STORM WATER MANAGEMENT

The best approach to storm water management for construction activities is through the use of a project specific designed Storm Water Pollution Prevention Plan (SWPPP). The development of the SWPPP is to prevent erosion and pollutants from the construction materials mixing with storm water runoff and being discharged from the project site.

Specific requirements for management of storm water and maintaining water quality include, but are not limited to:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural condition;
2. There shall be no suspended, colloidal, and settle-able solids that will cause deposition or impair the waters for their best usages, and;
3. There shall be no residue from oil and floating substances, visible oil film, globules or grease.

9.0 OTHER REQUIREMENTS/ PERMITS

1. Any discharges other than storm water must be in compliance with the appropriate SPDES permit (other than this permit).
2. All construction activities shall be in compliance with all federal, state and local laws as required.
3. The contractor shall be responsible to ensure that the plan has been approved by local officials or any authorized agency.

9.1 Inspections

Inspections are important for visually evaluating potential storm water runoff pollution sources at the facility. All projects should be inspected periodically to ensure contaminants are not present in the storm water exiting a project site. On projects which apply for coverage under the SPDES General Permit, a qualified professional (professional engineer, soil scientist, registered landscape architect or certified professional in erosion and sediment control) must inspect and evaluate the site. The

qualified inspector retained to conduct site inspections shall meet the requirements set forth in Part IV.C of the General Permit. These inspections shall occur at least once every seven calendar days. If more than 5 acres are disturbed at one time, inspections shall be performed twice per week with a minimum separation of 2 days. Where portions of the construction area have been finally stabilized, the inspection of such portions shall be conducted at least once every month (30 days), until the entire site is finally stabilized. A copy of the weekly soil erosion and sediment control inspection form has been included in Appendix D.

Each inspection shall, at the minimum, include the following:

- Disturbed areas must be inspected for evidence of, or the potential for, pollutants entering the drainage system.
- Erosion and sediment control measures shall be inspected to ensure they are operating correctly.
- Discharge locations shall be inspected to ensure erosion control measures are effective in preventing significant impacts to receiving waters.
- Location where vehicles enter or exit the site shall be inspected for evidence of off-site sediment tracking.

The process for conducting the evaluation shall follow these steps:

- Review the Storm Water Pollution Prevention Plan and draw up a list of any items of concern.
- List all specified control measures and areas covered in the plan.
- Conduct inspections to determine whether all storm water pollution prevention measures are accurately identified in the plan, are in place, and working properly.
- Document findings. The inspection report shall meet the requirements set forth in Part IV.C.3 of the General Permit.
- Modify SWPPP as appropriate. (Note: The plan shall only be modified by the plan preparer. Modifications shall be acknowledged and agreed to by the site contractor, site inspector and owner within 7 days of the modification).
- The inspector shall send an electronic copy of the SWPPP inspection report to the City Engineer at a minimum of once per month for the duration of the project.

10.0 MAINTENANCE

The contractor is required to inspect and maintain all soil erosion and sediment controls throughout the duration of the project and until final stabilization of the site. "Final Stabilization" means that all soil disturbing activities at the site have been completed, and that a uniform, perennial vegetative cover with a density of 85% has been obtained.

Maintenance shall include, but not be limited to; repair or replacement of any existing controls, removal of sediment and any other measures deemed necessary which would reduce soil erosion and sediment runoff. Refer to Section 7.0 for maintenance of individual control.

10.1 Contractors

The general site contractor, and all other contractors which will perform activities with potential to result in soil and vegetative disturbances on site, must sign a SWPPP Contractor's Certification Form before undertaking any construction activity at the site. The contractor is responsible for any and all subcontractors working on the SWPPP. A copy of the Contractor's Certification Form has been included in Appendix D.

The general site contractor shall have a trained contractor (requirements set forth in Part IV.C of the General Permit) onsite at all times to inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. All deficiencies shall be identified immediately and the contractor shall implement corrective actions within one business day. The corrective actions shall be completed in a reasonable time frame.

10.2 Record Retention

A copy of the SWPPP, NOI, and NOI Acknowledgement Letter shall be retained at the job site throughout the duration of the project. The Owner shall retain copies of the SWPPP, all reports, and records of data used to complete Notice of Intent, for five (5) years from the date the site is finally stabilized.

11.0 NOTICE OF TERMINATION

When the project is completed and the site has been stabilized, a Notice of Termination (NOT) shall be submitted to the NYS Department of Environmental Conservation, certifying completion and final stabilization of the project, and compliance with the approved Storm Water Pollution Prevention Plan (SWPPP). The NOT form shall be submitted to the following address:

NYS Department of Environmental Conservation

Division of Water

625 Broadway, 4th Floor

Albany, NY 12233-35

APPENDIX A

Permit Documents

Appendix A-1: NYSSPDES General Permit No. GP-0-20-001 for Stormwater Discharges from Construction Activities

Appendix A-2: Notice of Intent Form (NOI)

Appendix A-3: NYSDEC Acknowledgement Letter (To be inserted)

Appendix A-4: Notice of Termination (NOT)

Appendix A-5: SEQR Resolution (To be inserted)

Appendix A-6: SHPO Correspondence

Appendix A-7: Wetlands Summary

Appendix A-8: 5-acre Waiver Letter

APPENDIX A-1

NYSSPDES General Permit No. GP-0-20-001 for Stormwater Discharges from Construction Activities

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

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

of the Environmental Conservation Law

Effective Date: January 29, 2020

Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator

1-23-20

Authorized Signature

Date

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PREFACE

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

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

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

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

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Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

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

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

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

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

B. Effluent Limitations Applicable to Discharges from Construction Activities

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(i) Wastewater from washout of concrete;

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

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

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

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

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

C. Post-construction Stormwater Management Practice Requirements

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

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

a. Sizing Criteria for New Development

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

c. Sizing Criteria for Redevelopment Activity

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

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

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

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

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

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

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

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

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

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

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

D. Maintaining Water Quality

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

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

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

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

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

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

E. Eligibility Under This General Permit

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

d. Documentation that:

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

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

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

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

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

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

B. Notice of Intent (NOI) Submittal

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

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

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

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

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

C. Permit Authorization

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

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

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

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

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

c. the final SWPPP has been prepared, and

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

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

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

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

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

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

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

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

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

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

D. General Requirements For Owners or Operators With Permit Coverage

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

F. Change of Owner or Operator

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

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

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

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

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

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

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

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

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

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

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

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

d. to document the final construction conditions.

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

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

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

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

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

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

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

B. Required SWPPP Contents

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

e. Infiltration test results, when required; and

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

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

C. Required SWPPP Components by Project Type

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

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

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

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

B. Contractor Maintenance Inspection Requirements

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

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

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

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

C. Qualified Inspector Inspection Requirements

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

a. Date and time of inspection;

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

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

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

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

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

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

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

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

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

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

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

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

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

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

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

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

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

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

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

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

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

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

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

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

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

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

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

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

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

B. Addresses

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

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

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

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

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

B. Continuation of the Expired General Permit

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

C. Enforcement

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

D. Need to Halt or Reduce Activity Not a Defense

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

E. Duty to Mitigate

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

F. Duty to Provide Information

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

G. Other Information

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

H. Signatory Requirements

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

I. Property Rights

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

J. Severability

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

K. Requirement to Obtain Coverage Under an Alternative Permit

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

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

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

L. Proper Operation and Maintenance

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

M. Inspection and Entry

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

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

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

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

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

N. Permit Actions

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

O. Definitions

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

P. Re-Opener Clause

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

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

Q. Penalties for Falsification of Forms and Reports

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

R. Other Permits

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

APPENDIX A – Acronyms and Definitions

Acronyms

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

Definitions

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank* Flood (Qp), and Extreme Flood (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

Steep Slope – means land area designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%) , or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Streambank – as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the *construction site*; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and *nonpoint source*s. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for *point source* discharges, load allocations (LAs) for *nonpoint source*s, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed

training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

APPENDIX B – Required SWPPP Components by Project Type

Table 1
Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:

- Single family home not located in one of the watersheds listed in Appendix C or not *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions with 25% or less impervious cover at total site build-out and not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E
- Construction of a barn or other *agricultural building*, silo, stock yard or pen.

The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:

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

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains
- Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects
- Pond construction
- Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover
- Cross-country ski trails and walking/hiking trails
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development;
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path.
- Slope stabilization projects
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics

Table 1 (Continued) CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Spoil areas that will be covered with vegetation
- Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *alter hydrology from pre to post development* conditions,
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established, and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

Table 2
CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family home that disturbs five (5) or more acres of land
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) and structural practices as identified in Table II in the “Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State” that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW’s, water treatment plants, and water storage tanks
- Office complexes
- Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surface
- Road construction or reconstruction, including roads constructed as part of the construction activities listed in Table 1

Table 2 (Continued)

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover,* and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- All other construction activities that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual ("Design Manual").

- Entire New York City Watershed located east of the Hudson River - Figure 1
- Onondaga Lake Watershed - Figure 2
- Greenwood Lake Watershed -Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

Figure 1 - New York City Watershed East of the Hudson

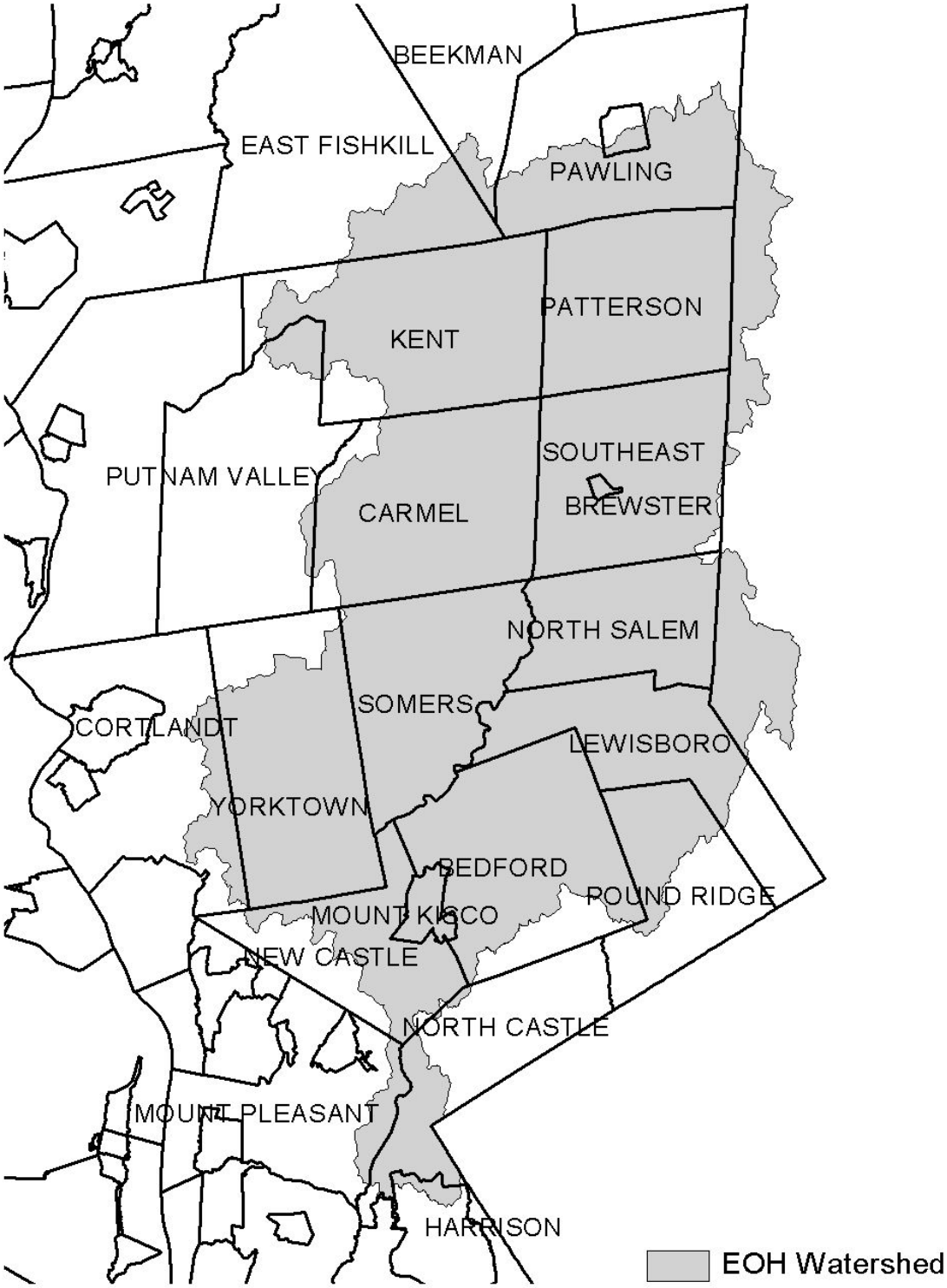


Figure 2 - Onondaga Lake Watershed

Figure 3 - Greenwood Lake Watershed

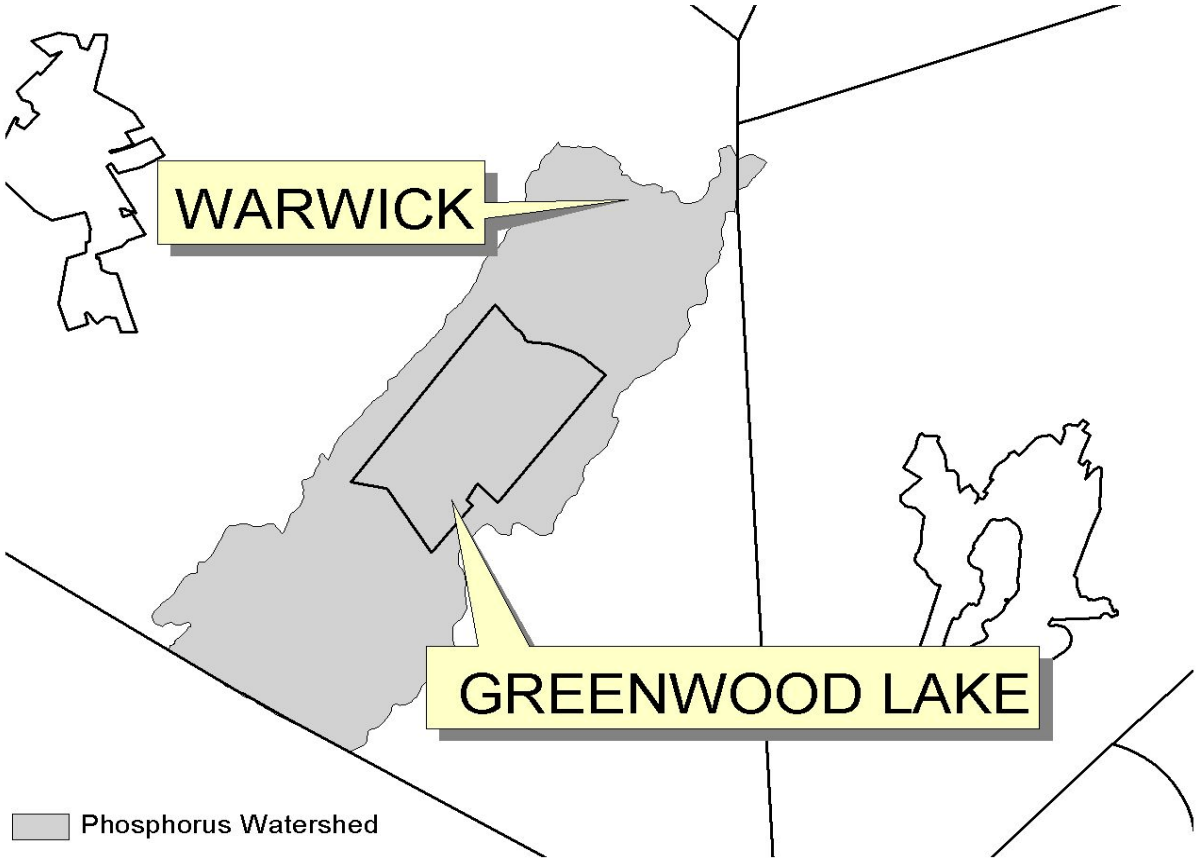


Figure 4 - Oscawana Lake Watershed

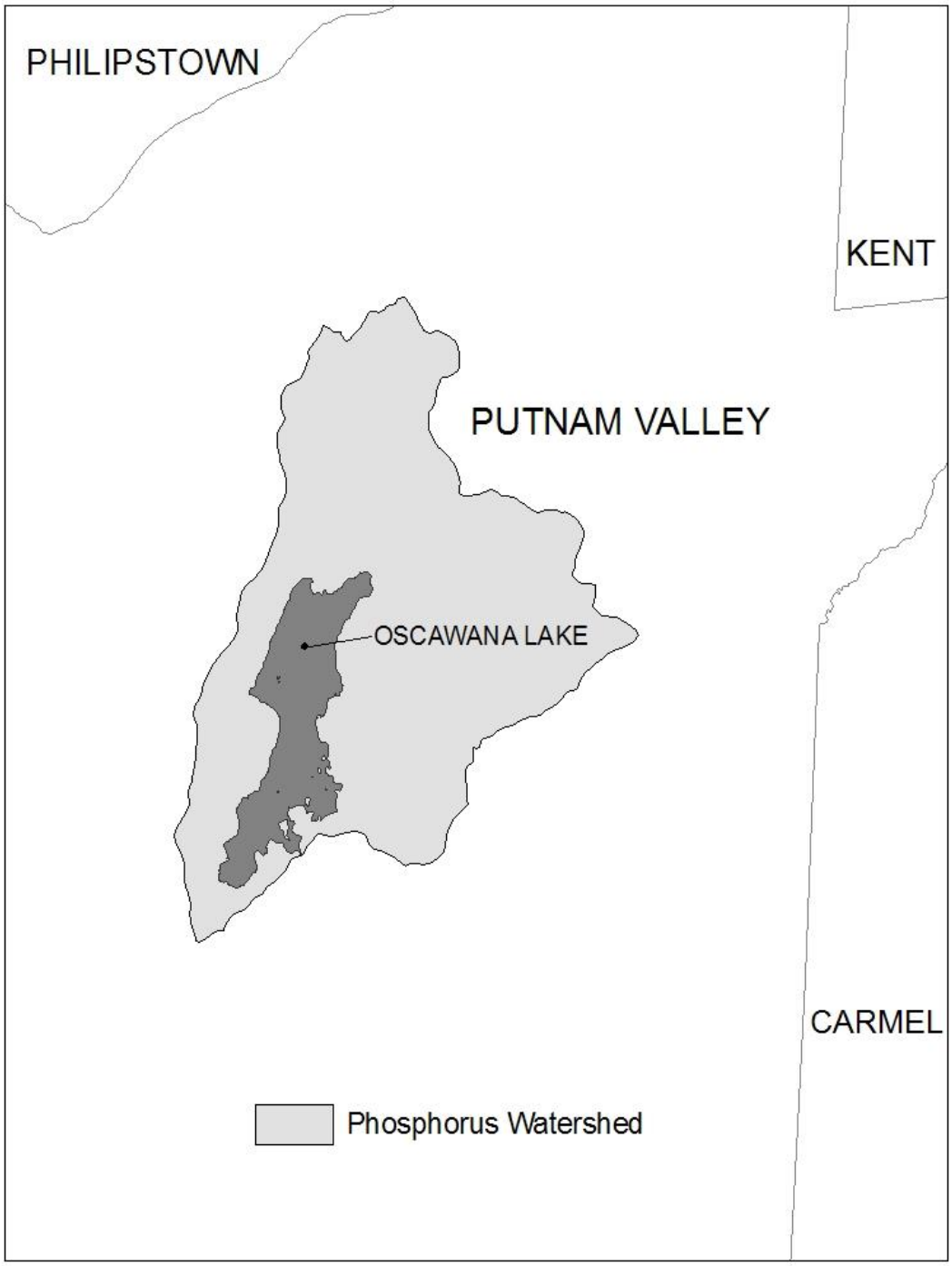
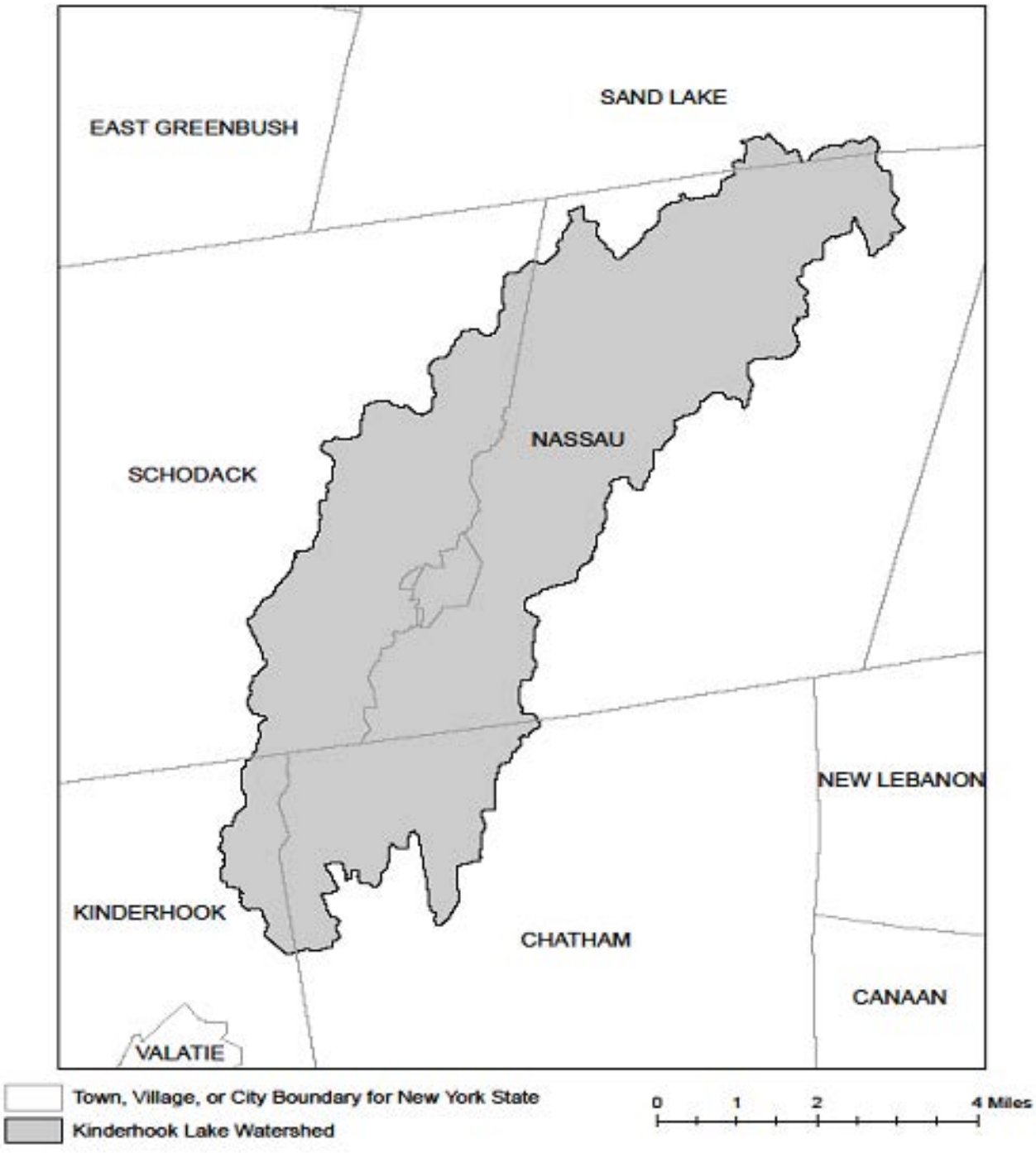


Figure 5 - Kinderhook Lake Watershed



APPENDIX D – Watersheds with Lower Disturbance Threshold

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River - See Figure 1 in Appendix C

APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

COUNTY	WATERBODY	POLLUTANT
Albany	Ann Lee (Shakers) Pond, Stump Pond	Nutrients
Albany	Basic Creek Reservoir	Nutrients
Allegany	Amity Lake, Saunders Pond	Nutrients
Bronx	Long Island Sound, Bronx	Nutrients
Bronx	Van Cortlandt Lake	Nutrients
Broome	Fly Pond, Deer Lake, Sky Lake	Nutrients
Broome	Minor Tribs to Lower Susquehanna (north)	Nutrients
Broome	Whitney Point Lake/Reservoir	Nutrients
Cattaraugus	Allegheny River/Reservoir	Nutrients
Cattaraugus	Beaver (Alma) Lake	Nutrients
Cattaraugus	Case Lake	Nutrients
Cattaraugus	Linlyco/Club Pond	Nutrients
Cayuga	Duck Lake	Nutrients
Cayuga	Little Sodus Bay	Nutrients
Chautauqua	Bear Lake	Nutrients
Chautauqua	Chadakoin River and tribs	Nutrients
Chautauqua	Chautauqua Lake, North	Nutrients
Chautauqua	Chautauqua Lake, South	Nutrients
Chautauqua	Findley Lake	Nutrients
Chautauqua	Hulburt/Clymer Pond	Nutrients
Clinton	Great Chazy River, Lower, Main Stem	Silt/Sediment
Clinton	Lake Champlain, Main Lake, Middle	Nutrients
Clinton	Lake Champlain, Main Lake, North	Nutrients
Columbia	Kinderhook Lake	Nutrients
Columbia	Robinson Pond	Nutrients
Cortland	Dean Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Dutchess	Fall Kill and tribs	Nutrients
Dutchess	Hillside Lake	Nutrients
Dutchess	Wappingers Lake	Nutrients
Dutchess	Wappingers Lake	Silt/Sediment
Erie	Beeman Creek and tribs	Nutrients
Erie	Ellicott Creek, Lower, and tribs	Silt/Sediment
Erie	Ellicott Creek, Lower, and tribs	Nutrients
Erie	Green Lake	Nutrients
Erie	Little Sister Creek, Lower, and tribs	Nutrients
Erie	Murder Creek, Lower, and tribs	Nutrients
Erie	Rush Creek and tribs	Nutrients
Erie	Scajaquada Creek, Lower, and tribs	Nutrients
Erie	Scajaquada Creek, Middle, and tribs	Nutrients
Erie	Scajaquada Creek, Upper, and tribs	Nutrients
Erie	South Branch Smoke Cr, Lower, and tribs	Silt/Sediment
Erie	South Branch Smoke Cr, Lower, and tribs	Nutrients
Essex	Lake Champlain, Main Lake, South	Nutrients
Essex	Lake Champlain, South Lake	Nutrients
Essex	Willsboro Bay	Nutrients
Genesee	Bigelow Creek and tribs	Nutrients
Genesee	Black Creek, Middle, and minor tribs	Nutrients
Genesee	Black Creek, Upper, and minor tribs	Nutrients
Genesee	Bowen Brook and tribs	Nutrients
Genesee	LeRoy Reservoir	Nutrients
Genesee	Oak Orchard Cr, Upper, and tribs	Nutrients
Genesee	Tonawanda Creek, Middle, Main Stem	Nutrients
Greene	Schoharie Reservoir	Silt/Sediment
Greene	Sleepy Hollow Lake	Silt/Sediment
Herkimer	Steele Creek tribs	Silt/Sediment
Herkimer	Steele Creek tribs	Nutrients
Jefferson	Moon Lake	Nutrients
Kings	Hendrix Creek	Nutrients
Kings	Prospect Park Lake	Nutrients
Lewis	Mill Creek/South Branch, and tribs	Nutrients
Livingston	Christie Creek and tribs	Nutrients
Livingston	Conesus Lake	Nutrients
Livingston	Mill Creek and minor tribs	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs	Nutrients
Monroe	Buck Pond	Nutrients
Monroe	Cranberry Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Monroe	Lake Ontario Shoreline, Western	Nutrients
Monroe	Long Pond	Nutrients
Monroe	Mill Creek and tribs	Nutrients
Monroe	Mill Creek/Blue Pond Outlet and tribs	Nutrients
Monroe	Minor Tribs to Irondequoit Bay	Nutrients
Monroe	Rochester Embayment - East	Nutrients
Monroe	Rochester Embayment - West	Nutrients
Monroe	Shipbuilders Creek and tribs	Nutrients
Monroe	Thomas Creek/White Brook and tribs	Nutrients
Nassau	Beaver Lake	Nutrients
Nassau	Camaans Pond	Nutrients
Nassau	East Meadow Brook, Upper, and tribs	Silt/Sediment
Nassau	East Rockaway Channel	Nutrients
Nassau	Grant Park Pond	Nutrients
Nassau	Hempstead Bay	Nutrients
Nassau	Hempstead Lake	Nutrients
Nassau	Hewlett Bay	Nutrients
Nassau	Hog Island Channel	Nutrients
Nassau	Long Island Sound, Nassau County Waters	Nutrients
Nassau	Massapequa Creek and tribs	Nutrients
Nassau	Milburn/Parsonage Creeks, Upp, and tribs	Nutrients
Nassau	Reynolds Channel, west	Nutrients
Nassau	Tidal Tribs to Hempstead Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Silt/Sediment
Nassau	Tribs to Smith/Halls Ponds	Nutrients
Nassau	Woodmere Channel	Nutrients
New York	Harlem Meer	Nutrients
New York	The Lake in Central Park	Nutrients
Niagara	Bergholtz Creek and tribs	Nutrients
Niagara	Hyde Park Lake	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Oneida	Ballou, Nail Creeks and tribs	Nutrients
Onondaga	Harbor Brook, Lower, and tribs	Nutrients
Onondaga	Ley Creek and tribs	Nutrients
Onondaga	Minor Tribs to Onondaga Lake	Nutrients
Onondaga	Ninemile Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Middle, and tribs	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Onondaga	Onondaga Lake, northern end	Nutrients
Onondaga	Onondaga Lake, southern end	Nutrients
Ontario	Great Brook and minor tribs	Silt/Sediment
Ontario	Great Brook and minor tribs	Nutrients
Ontario	Hemlock Lake Outlet and minor tribs	Nutrients
Ontario	Honeoye Lake	Nutrients
Orange	Greenwood Lake	Nutrients
Orange	Monhagen Brook and tribs	Nutrients
Orange	Orange Lake	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Oswego	Lake Neatahwanta	Nutrients
Oswego	Pleasant Lake	Nutrients
Putnam	Bog Brook Reservoir	Nutrients
Putnam	Boyd Corners Reservoir	Nutrients
Putnam	Croton Falls Reservoir	Nutrients
Putnam	Diverting Reservoir	Nutrients
Putnam	East Branch Reservoir	Nutrients
Putnam	Lake Carmel	Nutrients
Putnam	Middle Branch Reservoir	Nutrients
Putnam	Oscawana Lake	Nutrients
Putnam	Palmer Lake	Nutrients
Putnam	West Branch Reservoir	Nutrients
Queens	Bergen Basin	Nutrients
Queens	Flushing Creek/Bay	Nutrients
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Nutrients
Queens	Kissena Lake	Nutrients
Queens	Meadow Lake	Nutrients
Queens	Willow Lake	Nutrients
Rensselaer	Nassau Lake	Nutrients
Rensselaer	Snyders Lake	Nutrients
Richmond	Grasmere Lake/Bradys Pond	Nutrients
Rockland	Congers Lake, Swartout Lake	Nutrients
Rockland	Rockland Lake	Nutrients
Saratoga	Ballston Lake	Nutrients
Saratoga	Dwaas Kill and tribs	Silt/Sediment
Saratoga	Dwaas Kill and tribs	Nutrients
Saratoga	Lake Lonely	Nutrients
Saratoga	Round Lake	Nutrients
Saratoga	Tribs to Lake Lonely	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Schenectady	Collins Lake	Nutrients
Schenectady	Duane Lake	Nutrients
Schenectady	Mariaville Lake	Nutrients
Schoharie	Engleville Pond	Nutrients
Schoharie	Summit Lake	Nutrients
Seneca	Reeder Creek and tribs	Nutrients
St.Lawrence	Black Lake Outlet/Black Lake	Nutrients
St.Lawrence	Fish Creek and minor tribs	Nutrients
Steuben	Smith Pond	Nutrients
Suffolk	Agawam Lake	Nutrients
Suffolk	Big/Little Fresh Ponds	Nutrients
Suffolk	Canaan Lake	Silt/Sediment
Suffolk	Canaan Lake	Nutrients
Suffolk	Flanders Bay, West/Lower Sawmill Creek	Nutrients
Suffolk	Fresh Pond	Nutrients
Suffolk	Great South Bay, East	Nutrients
Suffolk	Great South Bay, Middle	Nutrients
Suffolk	Great South Bay, West	Nutrients
Suffolk	Lake Ronkonkoma	Nutrients
Suffolk	Long Island Sound, Suffolk County, West	Nutrients
Suffolk	Mattituck (Marratooka) Pond	Nutrients
Suffolk	Meetinghouse/Terrys Creeks and tribs	Nutrients
Suffolk	Mill and Seven Ponds	Nutrients
Suffolk	Millers Pond	Nutrients
Suffolk	Moriches Bay, East	Nutrients
Suffolk	Moriches Bay, West	Nutrients
Suffolk	Peconic River, Lower, and tidal tribs	Nutrients
Suffolk	Quantuck Bay	Nutrients
Suffolk	Shinnecock Bay and Inlet	Nutrients
Suffolk	Tidal tribs to West Moriches Bay	Nutrients
Sullivan	Bodine, Montgomery Lakes	Nutrients
Sullivan	Davies Lake	Nutrients
Sullivan	Evens Lake	Nutrients
Sullivan	Pleasure Lake	Nutrients
Tompkins	Cayuga Lake, Southern End	Nutrients
Tompkins	Cayuga Lake, Southern End	Silt/Sediment
Tompkins	Owasco Inlet, Upper, and tribs	Nutrients
Ulster	Ashokan Reservoir	Silt/Sediment
Ulster	Esopus Creek, Upper, and minor tribs	Silt/Sediment
Warren	Hague Brook and tribs	Silt/Sediment

303(d) Segments Impaired by Construction Related Pollutant(s)

Warren	Huddle/Finkle Brooks and tribs	Silt/Sediment
Warren	Indian Brook and tribs	Silt/Sediment
Warren	Lake George	Silt/Sediment
Warren	Tribs to L.George, Village of L George	Silt/Sediment
Washington	Cossayuna Lake	Nutrients
Washington	Lake Champlain, South Bay	Nutrients
Washington	Tribs to L.George, East Shore	Silt/Sediment
Washington	Wood Cr/Champlain Canal and minor tribs	Nutrients
Wayne	Port Bay	Nutrients
Westchester	Amawalk Reservoir	Nutrients
Westchester	Blind Brook, Upper, and tribs	Silt/Sediment
Westchester	Cross River Reservoir	Nutrients
Westchester	Lake Katonah	Nutrients
Westchester	Lake Lincolndale	Nutrients
Westchester	Lake Meahagh	Nutrients
Westchester	Lake Mohegan	Nutrients
Westchester	Lake Shenorock	Nutrients
Westchester	Long Island Sound, Westchester (East)	Nutrients
Westchester	Mamaroneck River, Lower	Silt/Sediment
Westchester	Mamaroneck River, Upper, and minor tribs	Silt/Sediment
Westchester	Muscoot/Upper New Croton Reservoir	Nutrients
Westchester	New Croton Reservoir	Nutrients
Westchester	Peach Lake	Nutrients
Westchester	Reservoir No.1 (Lake Isle)	Nutrients
Westchester	Saw Mill River, Lower, and tribs	Nutrients
Westchester	Saw Mill River, Middle, and tribs	Nutrients
Westchester	Sheldrake River and tribs	Silt/Sediment
Westchester	Sheldrake River and tribs	Nutrients
Westchester	Silver Lake	Nutrients
Westchester	Teatown Lake	Nutrients
Westchester	Titicus Reservoir	Nutrients
Westchester	Truesdale Lake	Nutrients
Westchester	Wallace Pond	Nutrients
Wyoming	Java Lake	Nutrients
Wyoming	Silver Lake	Nutrients

APPENDIX F – List of NYS DEC Regional Offices

Region	Covering the following counties:	DIVISION OF ENVIRONMENTAL PERMITS (DEP) Permit Administrators	DIVISION OF WATER (DOW) Water (SPDES) Program
1	Nassau and Suffolk	50 Circle Road Stony Brook, NY 11790 Tel. (631) 444-0365	50 Circle Road Stony Brook, NY 11790-3409 Tel. (631) 444-0405
2	Bronx, Kings, New York, Queens and Richmond	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4997	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4933
3	Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester	21 South Putt Corners Road New Paltz, NY 12561-1696 Tel. (845) 256-3059	100 Hillside Avenue, Suite 1W White Plains, NY 10603 Tel. (914) 428 - 2505
4	Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie	1150 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2069	1130 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2045
5	Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington	1115 State Route 86, Po Box 296 Ray Brook, NY 12977-0296 Tel. (518) 897-1234	232 Golf Course Road Warrensburg, NY 12885-1172 Tel. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070

APPENDIX A-2

Notice of Intent Form (eNOI)

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

version 1.5

(Submission #: HQA-WSC4-Y77FC, version 1)

Details

Originally Started By	Caitlin Choberka
Alternate Identifier	NY Old Oneida Solar Farm, LLC—Region 6
Submission ID	HQA-WSC4-Y77FC
Status	Draft

Form Input

Eligibility

Disturbance Threshold

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

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

1.b. Is this a remediation project being done under a Department approved work plan (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.) with a SWPPP which meets the substantive requirements of GP-0-25-001?
No

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

Other SPDES Permits

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

Threatened and Endangered Species

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

State Historic Preservation Act (SHPA)

4. Is the construction activity designated by the Commissioner of the Office of Parks, Recreation and Historic Preservation (OPRHP), pursuant to 9 NYCRR §§428.12 or 428.13 as exempt from the SHPA review (see Attachment 2 of the Letter of Resolution between NYSDEC and OPRHP, dated January 9, 2015)?
No

4.a. Will the construction activity:

a) occur within an archeologically sensitive area indicated on the sensitivity map, or

b) have the potential to affect a property that is listed or determined to be eligible for listing on the Na or State Registers of Historic Places, or

c) include a new permanent building on the construction site within the following distances from a building, structure, or object that is more than 50 years old and OPRHP, a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determinec historically/archeologically significant building, structure, or object:

- 1-5 acres of disturbance—20 feet
- 5-20 acres of disturbance—50 feet
- 20+ acres of disturbance—100 feet?

No

4.b. Is there documentation at the construction site demonstrating:

a) that the construction activity is not within an archeologically sensitive area indicated on the sensiti map, and that the construction activity is not immediately adjacent to a property listed or determined t eligible for listing on the National or State Registers of Historic Places, and

b) that there is no new permanent building to be built on the construction site within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the construction site within those parameters that OPRHP, a Historic Preserva Commission of a Certified Local Government, or a qualified preservation professional has determinec the building, structure, or object more than 50 years old is not historically/archeologically significant:

- 1-5 acres of disturbance – 20 feet
- 5-20 acres of disturbance – 50 feet
- 20+ acres of disturbance – 100 feet?

Yes

State Environmental Quality Review (SEQR)

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

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

Uniform Procedures Act (UPA) Permits

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

Steep Slope

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

Owner/Operator Information

8. Owner/Operator Name
NY Old Oneida Solar Farm, LLC

9. Owner/Operator Contact Person Information

First and Last Name	Phone	E-mail
Mac Moore	916-712-7303	mac.moore@emeren.com

10. Owner/Operator Mailing Address

149 Water St
Suite 302
Norwalk, CT 06854
USA

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

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

12.b. Is the owner/operator registered with the Department of State to do business in New York State?
Yes

12.b.i. Department of State ID #
NONE PROVIDED

The Department of State ID can be found using the following link:
Department of State | Division of Corporations

Site Information

13. Project/Site Name
NY Old Oneida Solar Farm, LLC

14. Site Address

5792 Old Oneida Rd
Rome, NY 13440
Oneida

DEC Region
6

15. Site Latitude & Longitude
43.1786696,-75.5042792

Project Details

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

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

18. Consistent with Part III.B.1.c.i. of GP-0-25-001, provide a concise overview of the project. Describe existing and proposed conditions, and include any other relevant information.
This project involves the construction of a solar array and associated fencing, stormwater practices, and roadways on an existing farm field.

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

19. Total Site Area (acres)
154.6

20. Total Area to be Disturbed (acres)
20.2

21. Existing Impervious Area to be Disturbed (acres)
0.2

22. Future Impervious Area Within Disturbed Area (acres)
1.0

Nature of the project:
Redevelopment with increase in impervious area

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

> The owner/operator must meet the requirements in Part I.E.6. before disturbing greater than five acres at any one time.

---

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

A (%)
0

B (%)
100

C (%)
0

D (%)
0

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

Start Date
07/01/2025

End Date
10/31/2025

26. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.
On-site wetland and stream

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

28. Has the surface waterbody in question 26 been identified as a 303(d) segment in Appendix D of GP-0-25-001?
No

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

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

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

31.a. What is the name of the municipality/entity that owns the separate storm sewer system? If the separate sewer system is owned by an MS4 Operator, enter the MS4 Operator name.
City of Rome

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

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

Required SWPPP Components

General SWPPP Requirements

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

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

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

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

37.a. Which version of the NYS Stormwater Management Design Manual was used to develop the SWPPP?
2015

SWPPP Preparer

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

40. Name of the person who prepared the SWPPP
C&S Companies, Inc.

41. SWPPP Preparer Organization Name
C&S Companies, Inc.

42. SWPPP Preparer Contact Information

First and Last Name	Phone	E-mail
Eric Kenna	3154552000	ekenna@cscos.com

43. SWPPP Preparer Address

ekenna@cscos.com
Syracuse, NY 13212

Download SWPPP Preparer Certification Form

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

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

44. Please upload the SWPPP Preparer Certification

NONE PROVIDED
Comment
NONE PROVIDED

44.a. Has the SWPPP Preparer Certification Form been signed by the SWPPP preparer in accordance with Part VII.J of GP-0-25-001?
NONE PROVIDED

Erosion & Sediment Control Criteria

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

Post-Construction Criteria

Site Planning and Soil Restoration

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

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

Water Quality Criteria

49. Water Quality Sizing Criteria

Total WQv required (acre-feet)	Total RRv provided (acre-feet)	Minimum RRv (acre-feet)	Total WQv provided (acre-feet)	Sum of RRv and WQv provided
0.23	0.23			NaN

Water Quantity Criteria

50. Per Section 9.2.1.C.VI and VII of the 2024 Design Manual, is there 0% change to hydrology that increases the discharge rate and volume from the project site?
No

51. Does one of the waiver conditions apply to the channel protection for this construction activity?
Yes

51.a. The need to provide channel protection has been waived because:
Reduction of the entire CPv is achieved by application of runoff reduction techniques or infiltration systems.

52. Does one of the waiver conditions apply to the Qp and Qf for this construction activity?
No

Overbank Flood Control Criteria (Qp)

52.b.i. Pre-Development (CFS)
7.59

52.b.ii. Post-Development (CFS)
5.67

Total Extreme Flood Control Criteria (Qf)

52.b.iii. Pre-Development (CFS)
38.24

52.b.iv. Post-Development (CFS)
28.68

Operation and Maintenance

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

53.a. Identify the entity responsible for the long-term Operation and Maintenance.
NY Old Oneida Solar Farm, LLC

Post-Construction SMP Identification

54. Post-Construction RR Techniques and Standard SMPs

RR Techniques and SMPs	Contributing Impervious Area (acres)	Total Contributing Area (acres)
Sheet Flow to Riparian Buffers or Filter Strips (RR-2)	0.370	28.030
Dry Swale (O-1)	0.600	

55. Alternative SMPs

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

Other Permits

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

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

MS4 SWPPP Acceptance

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

Owner/Operator Certification

Owner/Operator Certification Form Download

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

61. Upload Owner/Operator Certification Form

NONE PROVIDED

Comment

NONE PROVIDED

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

NONE PROVIDED

Additional Project Information

62. Enter any additional pertinent project information in the text box below.

NONE PROVIDED

APPENDIX A-3

NYSDEC Acknowledgement Letter – TO BE INSERTED

APPENDIX A-4

Notice of Termination (NOT)

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

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

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

I. Owner or Operator Information

1. Owner/Operator Name: Bradley Davis

2. Street Address: 100 First Stamford Place, Suite 302

3. City/State/Zip: Stamford, CT 06902

4. Contact Person: Bradley Davis | 4a.Telephone: 647-624-4566

4b. Contact Person E-Mail: bradley.davis@emeren.com

II. Project Site Information

5. Project/Site Name: NY Old Oneida Solar Farm, LLC

6. Street Address: 5792 Old Oneida Road

7. City/Zip: Rome, NY 13440

8. County: Oneida

III. Reason for Termination

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

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

9c. □ Other (Explain on Page 2)

IV. Final Site Information:

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

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

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

_____

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

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

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

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

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

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

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

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

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

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

V. Additional Information/Explanation:

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

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

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

Printed Name:	
Title/Position:	
Signature:	Date:

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

VII. Qualified Inspector Certification - Final Stabilization:

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

Printed Name:	
Title/Position:	
Signature:	Date:

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

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

Printed Name:	
Title/Position:	
Signature:	Date:

IX. Owner or Operator Certification

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

Printed Name: -	
Title/Position: -	
Signature:	Date:

(NYS DEC Notice of Termination - January 2015)

APPENDIX A-5

SEQR Resolution- TO BE INSERTED

APPENDIX A-6

SHPO Correspondance- TO BE INSERTED

APPENDIX A-7

Wetlands Summary

C&S Engineers, Inc.
499 Col. Eileen Collins Blvd
Syracuse, New York 13212

Wetland & Waterway Delineation Report

NY Rome Old Oneida Road 1 Solar Farm Site

City of Rome

Oneida County, New York

Prepared for:
Emeren Inc.
100 First Stamford Place, Suite 302
Stamford, CT 06902

May 3, 2023

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Appendices

Appendix A: USACE Wetland Data Sheets
Appendix B: Web Soil Survey
Appendix C: Photographs

1.0 Introduction

Emeren Inc. proposes development on an approximately 40.64-acre area located directly southeast of Old Oneida Road and west of State Route 26 in the City of Rome, Oneida County, New York. C&S Engineers, Inc. (C&S) performed a wetland and waterway delineation for the 40.64-acre site (hereinafter referred to as "Project Area of Interest" or "AOI") on April 18, 2023. The delineation is prepared consistent with the New York State Department of Environmental Conservation (NYSDEC) and United States Army Corps of Engineers (USACE) guidelines. This report outlines review of published resource materials, existing site conditions, and the results of field investigations.

1.1 Project Description

Emeren Inc. is proposing to construct a ground-mounted solar farm and associated electrical appurtenances within a 40.64-acre site.

1.2 Project Location

The AOI is located directly southeast of Old Oneida Road and west of State Route 26 in the City of Rome, Oneida County (See Figure 1). The site occurs within the Oneida Lake watershed (USGS Cataloging Unit: 04140202).

2.0 Methods

2.1 Desktop Evaluation

Prior to field survey, C&S reviewed various maps and other sources of information to determine onsite areas that contain aquatic resources. These include:

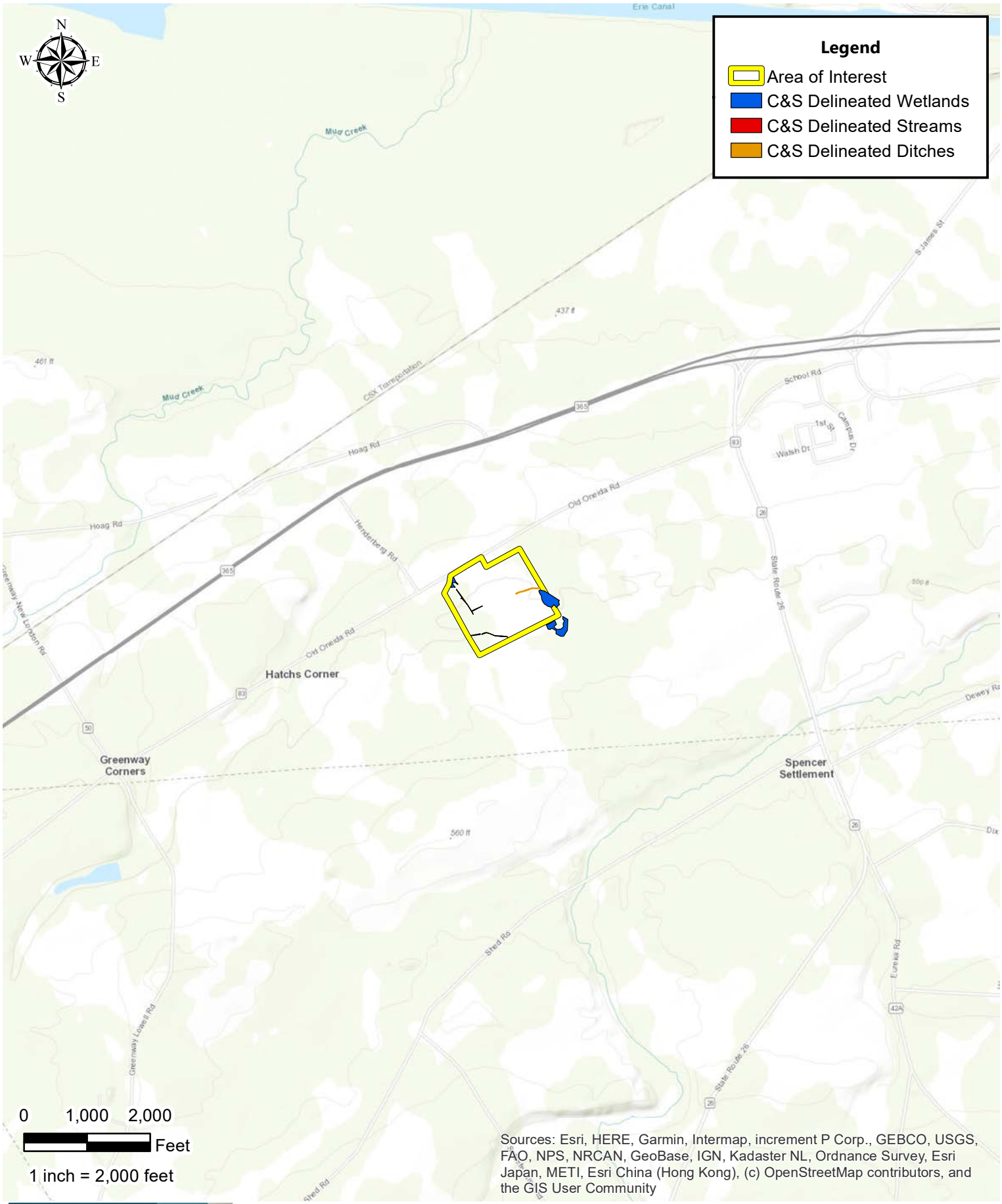
- United States Geological Survey (USGS) topographic maps
- National Wetlands Inventory (NWI) Maps prepared by the U.S. Fish and Wildlife Service (USFWS)
- Freshwater Wetland Maps prepared by the NYSDEC
- Stream Classification Maps prepared by the NYSDEC
- Soil Survey Geographic Database (SSURGO) Soils Map prepared using U.S. Department of Agriculture Natural Resources Conservation Service Soil Survey Geographic Database
- Federal Emergency Management Agency (FEMA) Floodplain Maps

The above references are used initially to identify areas with potential to contain wetlands and streams.

3.0 Field Surveys

3.1 Wetlands

C&S completed wetland delineations within the AOI on April 18, 2022. During field surveys, dominant flora species, hydrologic features, and soil conditions are recorded. Wetlands boundaries are delineated using criteria for vegetation, soils, and hydrology as specified in the *1987 Corps of Engineers Wetland Delineation Manual* (USACE 1987) (hereinafter referred to as the USACE Manual) and the *2012 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0* (Regional Supplement) (USACE 2012). The wetland delineation was also performed consistent with the *1995 NYSDEC Freshwater Wetlands Delineation Manual* (NYSDEC 1995).



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Sources: Created by C&S Engineers, Inc.
Modified: 4/24/2023 @ 8:43:01 AM

Figure 1 | Project Location Map

Renesola Power Hodings
NY Rome Old Oneida Road 1 Solar Farm
City of Rome, Oneida County, New York

Locations of wetland delineation flags are mapped in the field using a Trimble Global Positioning System (GPS). Wetland flags/points are placed and coordinates are recorded via GPS along the wetland boundaries based on observations of hydrophytic vegetation, hydric soils, and hydrology conditions. These observations are made throughout the hydrologic condition continuum to verify the wetland boundary is sufficiently identified. Each wetland is assigned a letter designation, and each wetland flag is labeled with the letter assigned to the wetland and numbered consecutively. All GPS code phase data captured in the field are post-processed (differential correction) using Trimble's Pathfinder Office software. Wetland polygons are created in Geographic Information System (GIS) shapefiles and incorporated on Project base maps for the preparation of report figures. Wetland areas are calculated using Environmental Systems Research Institute ARCGIS ARCView.

Formal wetland determination data forms are completed in the field to document justification for the wetland boundary as delineated (Appendix A). These forms are prepared consistent with the Regional Supplement, and include information pertaining to hydrology, vegetation, and soils for each wetland within the Project AOI.

Vegetation is characterized consistent with the Regional Supplement, and recorded in plots as required by the USACE. Scientific nomenclature for plant species and the indicator status for each plant species occurring within the wetland sampling plot is determined using National Wetland Plant List: 2016 Update of Wetland Ratings (Lichvar et al. 2016). Soil characteristics and hydrology data are observed and collected at test pits within the vegetative plots. The pits are excavated by hand to a depth of 20 inches below grade consistent with the USACE Manual. The presence of hydric soil indicators is determined by describing pertinent characteristics of the soil sample. Soil colors are determined using the Munsell® soil color charts (2000 Edition, Gretag Macbeth, Division of Kollmorgen Instruments Corporation, New Windsor, New York). Hydric soil characteristics such as organic soil layers, reducing conditions, gleying, low-chroma mottles, and concretions are noted. Primary and secondary indicators of hydrology are also noted at each sample plot.

A wetland determination is made at each sample plot after characterizing vegetation, hydrology, and soil. If the vegetation, hydrology, and hydric soil criteria are met, the area is deemed a wetland. If one or more of the criteria are not met, the area is determined to be non-wetland. Completed wetland determination sheets for each representative soil pit are included in Appendix A.

Wetlands identified are further classified consistent with the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979). Wetlands identified are further classified consistent with the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979). The jurisdictional status of delineated features is identified consistent with the *2008 Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell V. United States* memorandum prepared by the United States Environmental Protection Agency and USACE, and the associated guidance document entitled the *U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook* dated May 30, 2007.

3.2 Wetland Manual Differences

The NYSDEC manual and the USACE Manual/Regional Supplement are similar with regard to identifying wetland boundaries; however there are a few significant differences. The first difference is that the NYSDEC Manual states that if an area meets certain requirements regarding prevalence of wetland vegetation, the area can be considered a wetland without detailed investigation of hydrology and soils. If the wetland vegetation requirements are not met, but more than 50 percent of the dominant species prefer wetland habitats; then an investigation and verification of hydrology and/or hydric soils is required to locate a wetland boundary. The second difference is that the Regional Supplement has established additional methods for determining the dominance of hydrophytic vegetation, additional indicators of wetland hydrology, and additional hydric soils criteria that exceed those identified in the USACE and NYSDEC Manuals. These additional indicators could result in differences of wetland boundaries. In the instance the two wetland boundaries are not consistent as a result of the differences in manuals; the discrepancy between the two will be described within the results section of this report. This summary will include a discussion of the reason for the different boundaries.

3.3 Streams

Stream delineations were completed within and immediately adjacent the AOI. The federally regulated Ordinary High Water (OHW) mark of streams within the Project AOI are delineated using the definitional criteria as presented in Title 33, Code of Federal Regulations, Part 328, and the USACE Regulatory Guidance Letter 05-05 – Guidance on Ordinary High Water Mark Identification. Each stream is categorized in regard to its flow regime as perennial, intermittent, or ephemeral, as defined by the USACE. The OHW mark for each stream is mapped using the Trimble GPS.

Streams in the State of New York are protected by Article 15 Use and Protection of Waters. Streams are given classifications that designate the level of protection afforded to each waterbody. Each waterbody identified within the AOI is classified according to Article 15. The waterbody classification categories are AA, A, B, C or D depending on their designated level of protection. Waters with classifications A, B, and C may also have a standard of (T), indicating that it may support a trout population, or (TS), indicating that it may support trout spawning (TS). Streams with a designation of C(T) or higher are considered "protected" waters of New York State.

Stream boundaries are mapped using Trimble GPS units with sub-meter accuracy. Stream lengths are calculated in linear feet using Environmental Systems Research Institute ARCGIS ARCView. The jurisdictional status of delineated features is identified consistent with the *2008 Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell V. United States* memorandum prepared by the United States Environmental Protection Agency and USACE, and the associated guidance document entitled the *U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook* dated May 30, 2007.

3.4 Ditches – Federal Jurisdiction

The jurisdictional status of ditches identified is consistent with the *2008 Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell V. United States* memorandum prepared by the United States Environmental Protection Agency and USACE, and the

associated guidance document entitled the *U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook* dated May 30, 2007.

4.0 Results

4.1 Desktop Evaluation

Resource mapping used during the desktop review are provided in Figures 1 through 5. Figure 1 depicts the AOI on USGS topographic mapping. Figure 2 provides NYSDEC mapped resources within the AOI. Figure 3 provides NWI mapping, and Figure 4 provides soil survey information. Figure 5 depicts FEMA mapped floodplains within the vicinity of the AOI. A summary of information gathered during the desktop analysis is provided herein.

4.1.1 Topography and Drainage

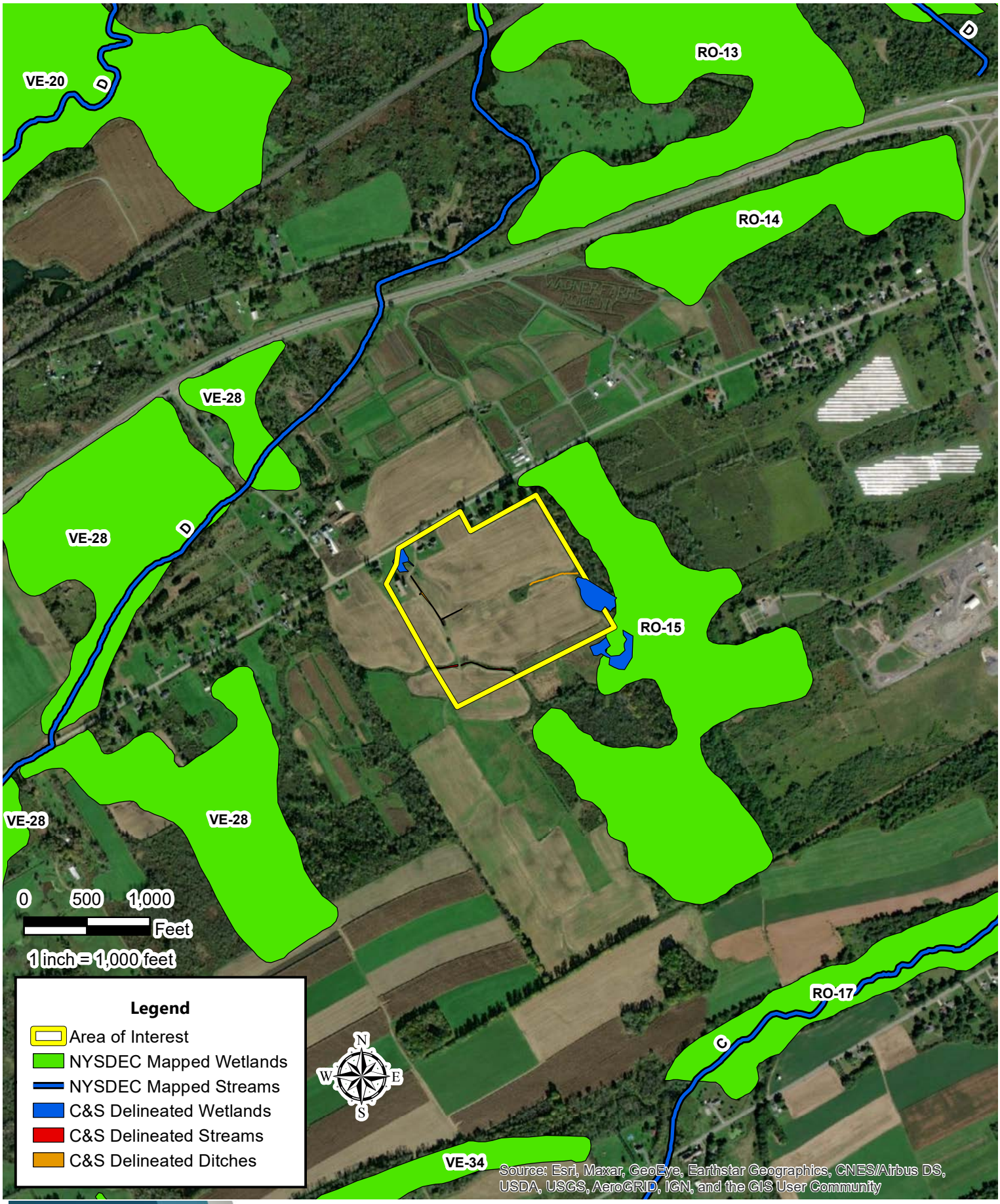
The Project site appears on the Verona and Rome U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle maps (See Figure 1). The AOI is located directly southeast of Old Oneida Road and west of State Route 26 in the City of Rome, Oneida County within the USGS topographic map. Elevation ranges from approximately 540 feet above mean sea level (amsl) in the northern portion of the AOI to 550 feet amsl in the southern portion of the AOI (North American Vertical Datum of 1988 [NAVD 88]). The site slope gently to the northwest.

4.1.2 New York State Mapped Resources

Article 24 of the Environmental Conservation Law requires the NYSDEC to map freshwater wetlands subject to jurisdiction of the law. Article 24 Freshwater Wetland Maps show the approximate location of the wetland boundary and the unique alpha numeric wetland identification number assigned to each resource. Due to the scale of the mapping and aerial photography used to produce the wetland boundaries, they are suitable for general planning purposes only. Based on the Freshwater Wetland Maps and the field review, wetland RO-15 is a Class 2 wetland that intersects the southeastern corner of the AOI. There are no NYSDEC streams within or adjacent to the AOI (See Figure 2).

4.1.3 National Wetlands Inventory Map

Based on the NWI map, there are no mapped NWI wetlands within the AOI. Three NWI wetlands are mapped southeast of the project site, outside of project boundaries – PFO1F is a semi permanently flooded palustrine forested, broad-leaved deciduous wetland; PFO4/1B is a palustrine forested, needle-leaved evergreen/broad-leaved deciduous, saturated wetland; and PFO1B is a saturated palustrine forested, broad-leaved deciduous wetland. One NWI wetland, PSS1F, is located northeast of the AOI – PSS1F is a semipermanently flooded palustrine scrub-shrub wetland (See Figure 3).



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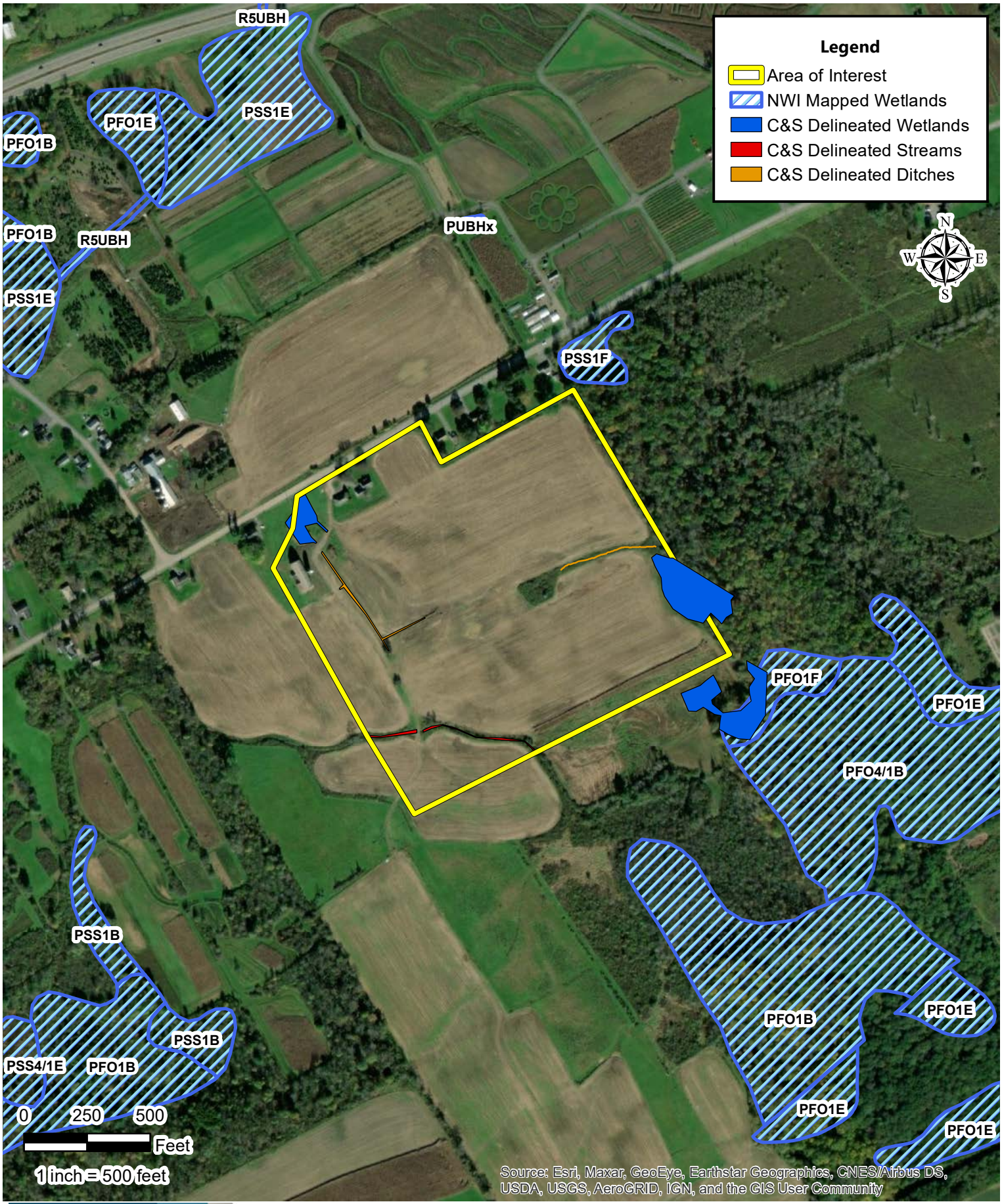
Sources: Created by C&S Engineers, Inc.
Modified: 4/24/2023 @ 8:52:32 AM

C&S COMPANIES®

NYSDEC Freshwater Wetlands & Streams Classification Map

Figure 2

Renesola Power Hodings
NY Rome Old Oneida Road 1 Solar Farm
City of Rome, Oneida County, New York



Sources: Created by C&S Engineers, Inc.
Modified: 4/24/2023 @ 8:51:32 AM

Figure 3 | National Wetlands Inventory (NWI) Map

Renesola Power Hodings
NY Rome Old Oneida Road 1 Solar Farm
City of Rome, Oneida County, New York

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4.1.4 Soil Survey

Two unique soil series are mapped within the AOI as depicted in Figure 4, both of which contain hydric components. Table 1 provides the hydric rating, and acreage of the soils mapped on site. The hydric rating by map unit provided by the USDA NRCS Web Soil Survey is provided as Appendix B.

Table 1. Web Soil Summary in the AOI

Soil map unit	Hydric rating	Acres of soil within AOI	Percent of soil within AOI
136A – Kendaia silt loam, 0 to 3 percent slopes	5	28.6	70.4%
790B – Conesus silt loam, 3 to 8 percent slopes	1	12.0	29.6%

4.1.5 FEMA Floodplain Map

The FEMA floodplain map (See Figure 5) depicts that the AOI is not within a regulatory floodway (zone A).

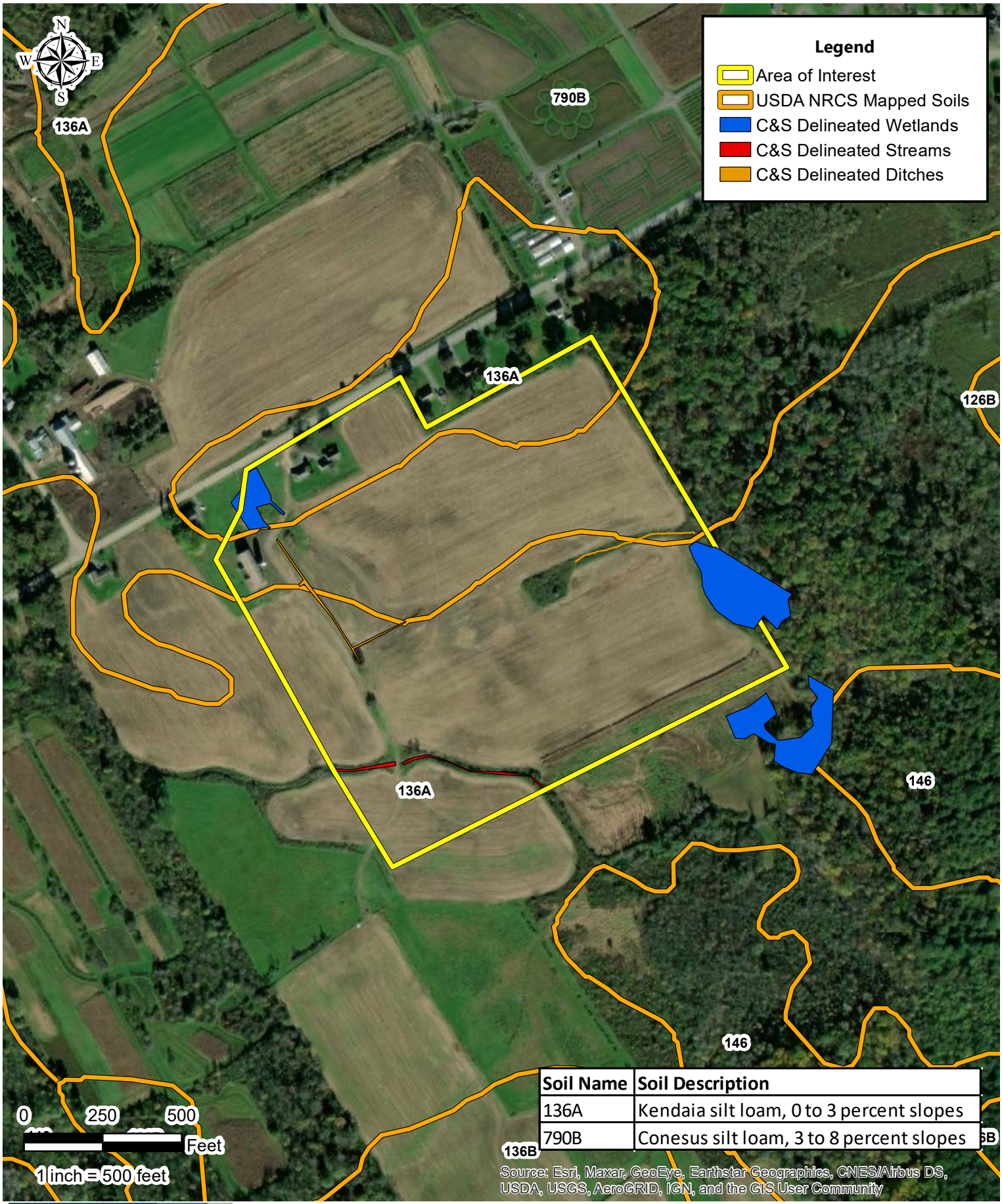
4.2 Field Surveys

4.2.1 Wetlands

C&S delineated two wetlands within the AOI, referred to as Wetlands A and Z and one wetland adjacent to the AOI, referred to as wetland Y. The boundaries of the delineated wetlands are included in Figure 6. Wetland A, Y, and Z are categorized as palustrine emergent (PEM) wetlands consistent with the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979) (hereinafter referred to as Cowardin). The boundaries of on-site wetlands within the AOI are delineated consistent with the USACE manual. Table 2 provides a summary of the wetland identified during the field investigation. Photographs of the wetland identified are provided in Appendix C.

Table 2. Wetland Delineation Summary in the AOI

Wetland Id	Cowardin Community Type Within AOI	Potential Agency Jurisdiction	Latitude/ Longitude Coordinates	Acreage
A	PEM	USACE	43°10'42.08"N, 75°30'18.70"W	0.34 total; 0.29 within AOI
Y	PEM	NYSDEC/USACE	43°10'33.95"N, 75°29'55.29"W	0.96 total; 0.00 within AOI
Z	PEM	NYSDEC/USACE	43°10'38.99"N, 75°29'58.04"W	1.11 total; 0.61 within AOI
TOTAL				2.41 total; 0.90 within AOI



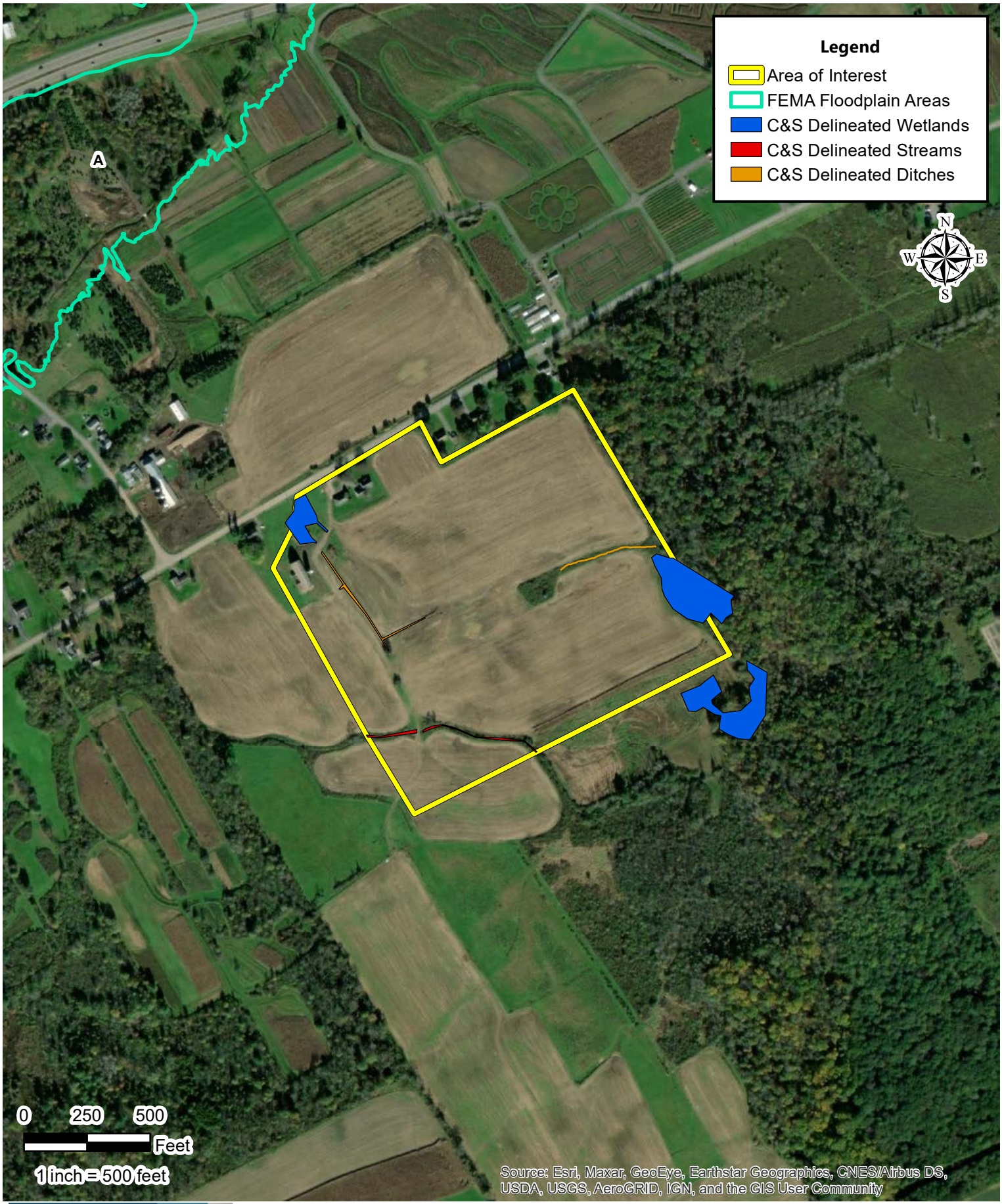
Soil Name	Soil Description
136A	Kendaia silt loam, 0 to 3 percent slopes
790B	Conesus silt loam, 3 to 8 percent slopes

Sources: Created by C&S Companies, Inc.
Modified: 4/24/2023 @ 9:46:30 AM

Document Path: F:\Projects\V32 - Renesola Power Holdings, LLC\V320070\02 - Old Oneida Site Permitting\Planning Study\GIS\Projects\Wetland_Delineation\Figure_4_SOILS.mxd

Figure 4 | USDA NRCS Soils Map

Renesola Power Hodings
NY Rome Old Oneida Road 1 Solar Farm
City of Rome, Oneida County, New York

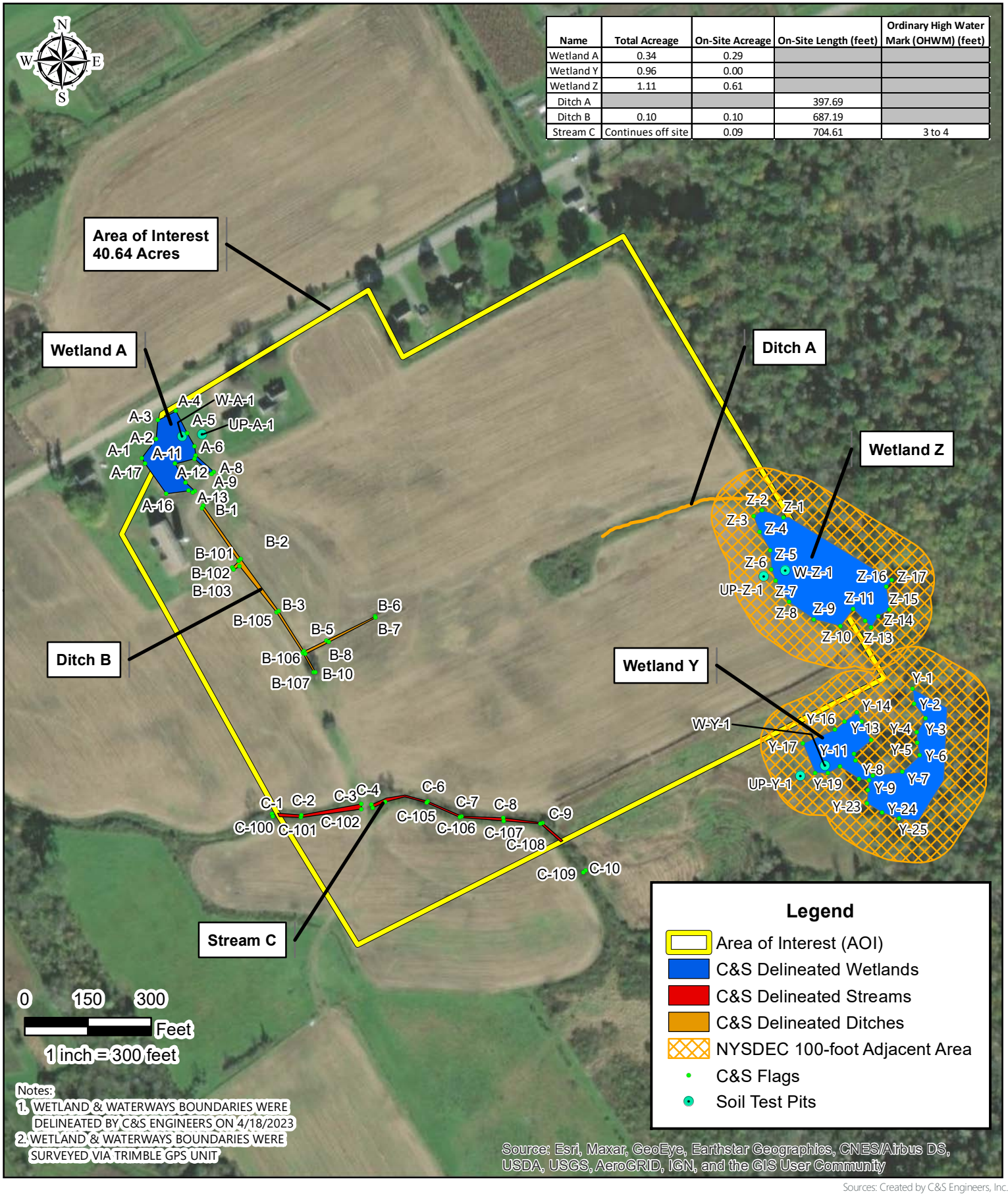


Document Path: F:\Projects\V32 - Renesola Power Holdings, LLC\V320070\02 - Old Oneida Site Permitting\Planning Study\GIS\Projects\Wetland_Delineation\Figure_5_FEMA.mxd

Sources: Created by C&S Engineers, Inc.
Modified: 4/24/2023 @ 9:49:55 AM

Figure 5 | FEMA Floodzone Areas Map

Renesola Power Hodings
NY Rome Old Oneida Road 1 Solar Farm
City of Rome, Oneida County, New York



Name	Total Acreage	On-Site Acreage	On-Site Length (feet)	Ordinary High Water Mark (OHWM) (feet)
Wetland A	0.34	0.29		
Wetland Y	0.96	0.00		
Wetland Z	1.11	0.61		
Ditch A			397.69	
Ditch B	0.10	0.10	687.19	
Stream C	Continues off site	0.09	704.61	3 to 4

Notes:
1. WETLAND & WATERWAYS BOUNDARIES WERE DELINEATED BY C&S ENGINEERS ON 4/18/2023
2. WETLAND & WATERWAYS BOUNDARIES WERE SURVEYED VIA TRIMBLE GPS UNIT

Sources: Created by C&S Engineers, Inc.

Modified: 4/24/2023 @ 8:37:59 AM

Document Path: F:\Project\V32 - Renesola Power Holdings, LLC\V320070\02 - Old Oneida Site Permitting\Planning Study\GIS\Projects\Wetland_Delineation\Figure_6_C&S_Wetland.mxd

C&S COMPANIES®

Figure 6 | C&S Wetlands & Surface Water Delineation Map

Renesola Power Holdings
NY Rome Old Oneida Road 1 Solar Farm
City of Rome, Oneida County, New York

The PEM Cowardin classes are defined below:

PEM - This aquatic resource is a palustrine emergent wetland. Vegetation is comprised of erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. These wetlands are usually dominated by perennial plants.

Below are descriptions of the wetlands that are directly adjacent to the AOI:

Wetland A (PEM): The tree, shrub and woody vine stratum are absent from this wetland. Wetland A is dominated reed canary grass (*Phalaris arundinacea*) and Indian-hemp (*Apocynum cannabinum*), and also contains a goldenrod species (*Solidago* sp.) in the herbaceous stratum. The primary hydrologic indicators observed are surface water (A1), a high-water table (A2), and saturation (A3). The secondary hydrologic indicators observed are drainage patterns (B10), geomorphic position (D2), and a positive FAC-neutral test (D5). The soil hydric indicator F6 for redox dark surface was observed and met.

Wetland Y (PEM): The tree, shrub and woody vine stratum are absent from this wetland. The herbaceous stratum is dominated by reed canary grass (*Phalaris arundinacea*) and cattail (*Typha angustifolia*). The primary hydrologic indicators observed are a standing water (A1) and oxidized rhizospheres on living roots (C3). The secondary hydrologic indicators observed were saturation visible on aerial imagery (C9) and a positive FAC-neutral test (D5). The soil hydric indicator F3 for depleted matrix was observed and met.

Wetland Z (PEM): The forested and woody vine stratum are absent from this wetland. The shrub layer covered less than 5% of the wetland and was dominated by pussy willow (*Salix discolor*) and honeysuckle (*Lonicera morrowii*). The herbaceous stratum is dominated by soft rush (*Juncus effusus*) and reed canary grass. The primary hydrologic indicators observed are standing water (A1) and oxidized rhizospheres on living roots (C3). The secondary hydrologic indicators observed were saturation visible on aerial imagery (C9) and a positive FAC-neutral test (D5). The soil hydric indicator F6 for redox dark surface was observed and met.

4.2.2 Streams and Open Waters

The field survey resulted in one intermittent stream (Stream C) identified within the AOI, summarized in Table 3. Photographs of the stream identified are provided in Appendix C. The boundary of the stream is included in Figure 5.

Table 3. Stream Delineation Summary in the AOI

Stream ID	Stream Classification	Agency Jurisdiction	Length in AOI (linear ft)	Ordinary High Water Mark (OHWM) (feet)
C	Intermittent	USACE	405	3 to 4

No open waters were delineated during the field survey.

4.2.3 Ditches

The field survey resulted in two ditches located throughout the AOI (Ditches A and B). Table 3 provides a summary of the ditches identified during the field investigation. Photographs of the ditches identified are provided in Appendix C. The boundaries of the delineated ditches are included in Figure 6.

Table 4. Ditch Delineation Summary in the AOI

Ditch ID	Agency Jurisdiction	Length in AOI (linear ft)
A	NYSDEC	110.71
A	No Jurisdiction	286.98
B	No Jurisdiction	687.19
		Total: 1,084.88

Ditch A is dug in an upland area and only drains upland surface water into Wetland Z. Areas of Ditch A that are located in the NYSDEC 100ft. adjacent area would be regulated by NYSDEC. Areas located outside of the adjacent area are not regulated by NYSDEC or USACE because these areas only drain upland surface water and were dug in upland areas.

The field investigation indicated that Ditch B drains directly into Wetland A via culvert. Based on the field investigation, Ditch B is dug in and drains only upland waters and therefore should be considered a non-jurisdictional feature.

5.0 Conclusion

C&S was retained by Emeren Inc. to complete a wetland and waterway survey for the proposed project. Wetland areas were assessed as waters of the U.S. subject to USACE and NYSDEC jurisdiction. These features are also classified consistent with the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979).

Three wetlands (Wetlands A, Y, and Z) within the Oneida Lake watershed (USGS Cataloging Unit: 04140202) were delineated by C&S within the AOI, all of which are considered PEM features consistent with *Cowardin*. Wetland A totals 0.29 acre on-site; Wetland A drains off-site via sub-surface culvert drainage northwest of the AOI and may be considered regulated under Section 404 of the Clean Water Act. A significant nexus determination may be required to determine wetland jurisdiction under Section 404 of the Clean Water Act. Wetland Y totals 0.96 acre and is located southeast of the AOI, outside of project boundaries. Wetland Z totals 0.61 acre on-site. Wetlands Y and Z are subject to regulation under Article 24 of the Freshwater Wetlands Act, as well as Section 404 of the Clean Water Act. Additionally, any work done within the 100-foot adjacent areas of NYSDEC regulated wetlands will also require an Article

24 permit. A Water Quality Certification will be required by the NYSDEC for any Section 404 permit issued by the USACE. The wetlands described herein satisfy the criteria to be a wetland pursuant to the 1995 NYSDEC Freshwater Wetland Delineation Manual and the Army Corps of Engineers' 1987 Manual (and Regional Supplement) with subsequent clarification memoranda and pursuant to confirmation by the USACE.

One stream (Stream C) was identified within the AOI; Stream C is considered an intermittent stream and, based on the field review and aerial photography, may connect wetlands outside of the AOI. Therefore, Stream C may be subject to jurisdiction by the USACE.

Two ditches were identified within the AOI boundary, totaling 1,084.88 linear feet. Portions of Ditch A would be considered jurisdictional by the NYSDEC as they fall within the NYSDEC 100-foot regulated adjacent area, while other portions of Ditch fall outside of this regulated area and will therefore not be considered jurisdictional. Ditch B is dug in and drains only upland waters and therefore should be considered a non-jurisdictional feature.

No open waters were identified during the field survey.

The final boundary and jurisdictional status of on-site features is subject to approval by both the USACE and NYSDEC.

6.0 Literature Cited

Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U. S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. (available at: Northern Prairie Wildlife Research Center, Jamestown, North Dakota website http://www.npwrc.usgs.gov/resource/1998/classwet/classwet.htm).

NYSDEC. 1995. Freshwater wetlands delineation manual. New York State Department of Environmental Conservation.

USACE. 1987. Corps of Engineers Wetlands Delineation Manual. Final Report. Wetlands Research Program Technical Report Y-87-1 (on-line edition), Waterways Experiment Station, Environmental Laboratory, Vicksburg, Mississippi. 143 pp.

USACE. 2012. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, ERDC/EL TR-12-1 (Version 2.0). U.S. Army Engineer Research and Development Center, Vicksburg, Mississippi.

APPENDIX A
USACE WETLAND DATA FORMS

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NY Rome Old Oneida Road 1 Solar Farm City/County: Rome/Oneida County Sampling Date: 4/18/2023

Applicant/Owner: NY Rome Old Oneida Road 1, LLC State: NY Sampling Point: W-A-1

Investigator(s): S. Booth Section, Township, Range: 272.000-0002-036

Landform (hillside, terrace, etc.): Flat Local relief (concave, convex, none): Concave Slope %: 1

Subregion (LRR or MLRA): LRR L, MLRA 101 Lat: 43°10'42.39"N Long: 75°30'18.35"W Datum: NAD83

Soil Map Unit Name: 136A - Kendaia silt loam, 0 to 3 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**
Hydric Soil Present?	Yes X	No ____	**within a Wetland?** **Yes** X **No** ____
Wetland Hydrology Present?	Yes X	No ____	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ____	Depth (inches): 1
Water Table Present?	Yes X	No ____	Depth (inches): 1
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: W-A-1

Tree Stratum (Plot size: 30 feet)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 feet)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Herb Stratum (Plot size: 5 feet)			
1. *Phalaris arundinacea*	15	Yes	FACW
2. *Apocynum cannabinum*	25	Yes	FAC
3. *Solidago sp.*	5	No	
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	45 =Total Cover		
Woody Vine Stratum (Plot size: 30 feet)			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	15	x 2 =	30
FAC species	25	x 3 =	75
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	40 (A)		105 (B)

Prevalence Index = B/A = 2.63

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W-A-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 4/2	100					Loamy/Clayey	
2-18	10YR 3/2	95	10YR 3/6	5	C	M	Loamy/Clayey	Prominent redox concentrations
18-20	10YR 3/2	95	10YR 5/6	5	C	M	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ? Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ? Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NY Rome Old Oneida Road 1 Solar Farm City/County: Rome/Oneida County Sampling Date: 4/18/2023

Applicant/Owner: NY Rome Old Oneida Road 1, LLC State: NY Sampling Point: UP-A-1

Investigator(s): S. Booth Section, Township, Range: 272.000-0002-036

Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope %: 3

Subregion (LRR or MLRA): LRR L, MLRA 101 Lat: 43°10'42.44"N Long: 75°30'17.72"W Datum: NAD83

Soil Map Unit Name: 136A - Kendaia silt loam, 0 to 3 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: UP-A-1

Tree Stratum (Plot size: 30 feet)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 feet)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Herb Stratum (Plot size: 5 feet)			
1. *Poa sp.*	35	Yes	
2. *Galium mollugo*	15	Yes	FACU
3. *Urtica dioica*	5	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	55 =Total Cover		
Woody Vine Stratum (Plot size: 30 feet)			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	5	x 3 =	15
FACU species	15	x 4 =	60
UPL species	0	x 5 =	0
Column Totals:	20 (A)		75 (B)

Prevalence Index = B/A = 3.75

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: UP-A-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/2	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Northcentral and Northeast Region
See ERDC/EL TR-12-1; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: NY Rome Old Oneida Road 1 Solar Farm City/County: Rome/Oneida County Sampling Date: 4/18/23

Applicant/Owner: NY Rome Old Oneida Road 1, LLC State: NY Sampling Point: W-Y-1

Investigator(s): J. Strong Section, Township, Range: 272.000-0002-036

Landform (hillside, terrace, etc.): none Local relief (concave, convex, none): concave Slope %: 0

Subregion (LRR or MLRA): LRR L, MLRA 101 Lat: 43°10'34.505"N Long: 75°29'57.754"W Datum: NAD 1983

Soil Map Unit Name: Kendaia silt loam, 0 to 3 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	If yes, optional Wetland Site ID: Wetland Y
Wetland Hydrology Present?	Yes X	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ____	Depth (inches): 1
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: W-Y-1

Tree Stratum (Plot size: 30x30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15x15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Herb Stratum (Plot size: 5x5)			
1. *Phalaris arundinacea*	65	Yes	FACW
2. *Typha angustifolia*	35	Yes	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 =Total Cover		
Woody Vine Stratum (Plot size: 5x5)			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	35	x 1 =	35
FACW species	65	x 2 =	130
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		165 (B)

Prevalence Index = B/A = 1.65

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W-Y-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/1	93	5YR 4/4	7	C	PL/M	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Mesic Spodic (A17) **(MLRA 144A, 145, 149B)**
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)
- ___ Red Parent Material (F21) **(MLRA 145)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Red Parent Material (F21) **(outside MLRA 145)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Northcentral and Northeast Region
See ERDC/EL TR-12-1; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: NY Rome Old Oneida Road 1 Solar Farm City/County: Rome/Oneida County Sampling Date: 4/18/23

Applicant/Owner: NY Rome Old Oneida Road 1, LLC State: NY Sampling Point: UP-Y-1

Investigator(s): J. Strong Section, Township, Range: 272.000-0002-036

Landform (hillside, terrace, etc.): none Local relief (concave, convex, none): convex Slope %: 0

Subregion (LRR or MLRA): LRR L, MLRA 101 Lat: 43°10'34.27"N Long: 75°29'58.763"W Datum: NAD 1983

Soil Map Unit Name: Kendaia silt loam, 0 to 3 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)
The data point is within an active agricutural area that has recenlty been plowed to prepare the soil for corn to be planted.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: UP-Y-1

Tree Stratum (Plot size: 30x30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15x15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Herb Stratum (Plot size: 5x5)			
1. *Phalaris arundinacea*	5	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	5 =Total Cover		
Woody Vine Stratum (Plot size: 5x5)			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	5 (A)		20 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: UP-Y-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/3	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Mesic Spodic (A17) **(MLRA 144A, 145, 149B)**
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)
- ___ Red Parent Material (F21) **(MLRA 145)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Red Parent Material (F21) **(outside MLRA 145)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Northcentral and Northeast Region
See ERDC/EL TR-12-1; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: NY Rome Old Oneida Road 1 Solar Farm City/County: Rome/Oneida County Sampling Date: 4/18/23

Applicant/Owner: NY Rome Old Oneida Road 1, LLC State: NY Sampling Point: W-Z-1

Investigator(s): J. Strong Section, Township, Range: 272.000-0002-036

Landform (hillside, terrace, etc.): none Local relief (concave, convex, none): concave Slope %: 0

Subregion (LRR or MLRA): LRR L, MLRA 101 Lat: 43°10'38.971"N Long: 75°29'59.126"W Datum: NAD 1983

Soil Map Unit Name: 136A- Kendaia silt loam, 0 to 3 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	If yes, optional Wetland Site ID: Wetland Z
Wetland Hydrology Present?	Yes X	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ____	Depth (inches): 1
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: W-Z-1

Tree Stratum (Plot size: 30x30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15x15)			
1. *Salix discolor*	5	Yes	FACW
2. *Lonicera morrowii*	1	No	FACU
3.			
4.			
5.			
6.			
7.			
	6 =Total Cover		
Herb Stratum (Plot size: 5x5)			
1. *Phalaris arundinacea*	40	Yes	FACW
2. *Juncus effusus*	60	Yes	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 =Total Cover		
Woody Vine Stratum (Plot size: 5x5)			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	60	x 1 =	60
FACW species	45	x 2 =	90
FAC species	0	x 3 =	0
FACU species	1	x 4 =	4
UPL species	0	x 5 =	0
Column Totals:	106 (A)		154 (B)

Prevalence Index = B/A = 1.45

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W-Z-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	7.5YR 3/1	95	5YR 3/4	5	C	PL/M	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Mesic Spodic (A17) **(MLRA 144A, 145, 149B)**
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)
- ___ Red Parent Material (F21) **(MLRA 145)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Red Parent Material (F21) **(outside MLRA 145)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Northcentral and Northeast Region
See ERDC/EL TR-12-1; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: NY Rome Old Oneida Road 1 Solar Farm City/County: Rome/Oneida County Sampling Date: 4/18/23

Applicant/Owner: NY Rome Old Oneida Road 1, LLC State: NY Sampling Point: UP-Z-1

Investigator(s): J. Strong Section, Township, Range: 272.000-0002-036

Landform (hillside, terrace, etc.): none Local relief (concave, convex, none): convex Slope %: 0

Subregion (LRR or MLRA): LRR L, MLRA 101 Lat: 43°10'38.978"N Long: 75°29'59.852"W Datum: NAD 1983

Soil Map Unit Name: 136A- Kendaia silt loam, 0 to 3 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)
The data point is within an active agricutural area that has recenlty been plowed to prepare the soil for corn to be planted.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: UP-Z-1

Tree Stratum (Plot size: 30x30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15x15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Herb Stratum (Plot size: 5x5)			
1. *Phalaris arundinacea*	5	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	5 =Total Cover		
Woody Vine Stratum (Plot size: 5x5)			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	5 (A)		20 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: UP-Z-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-18	10YR 3/3	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Mesic Spodic (A17) **(MLRA 144A, 145, 149B)**
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)
- ___ Red Parent Material (F21) **(MLRA 145)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Red Parent Material (F21) **(outside MLRA 145)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

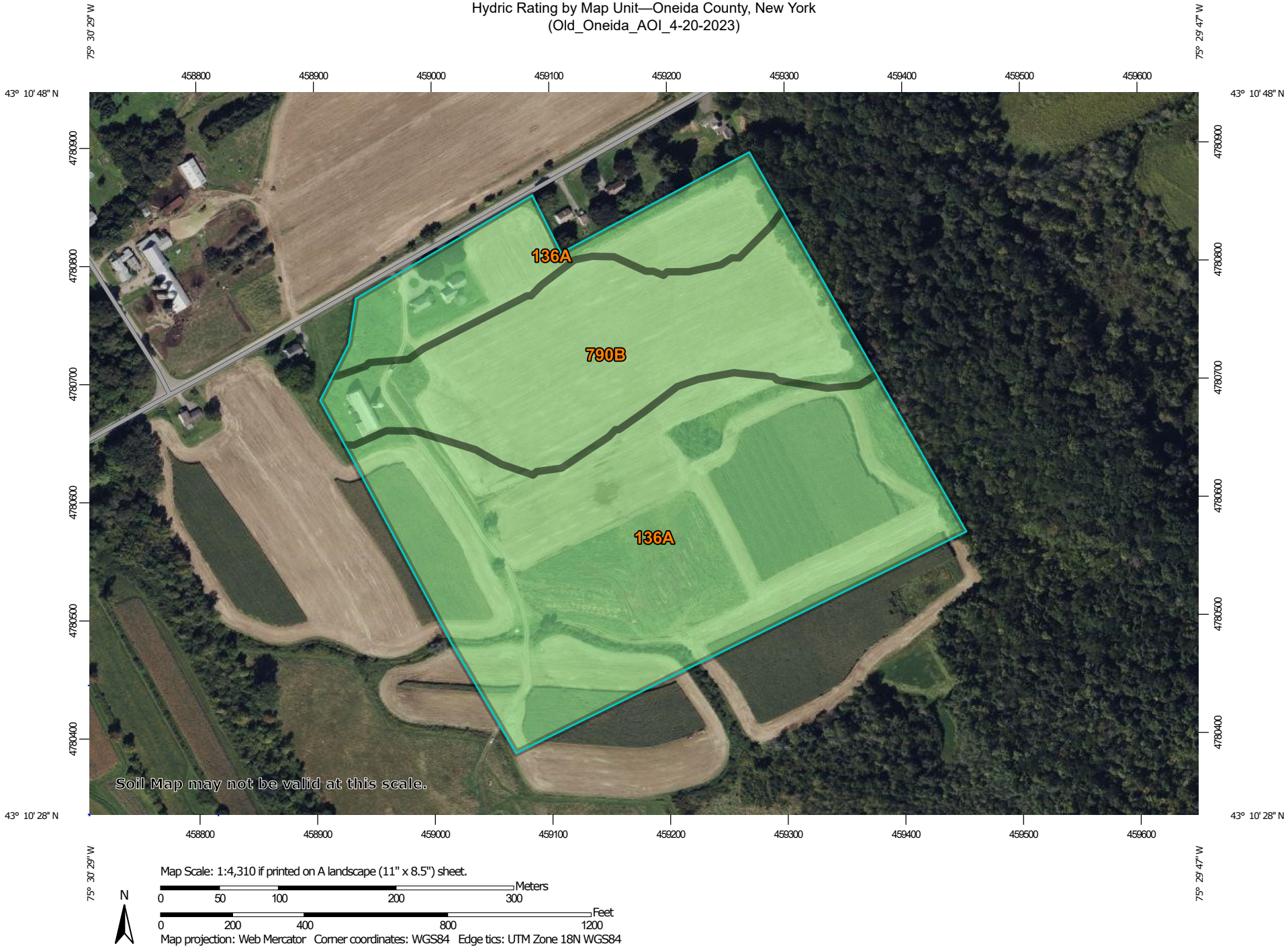
Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

APPENDIX B
WEB SOIL SURVEY

Hydric Rating by Map Unit—Oneida County, New York
(Old_Oneida_AOI_4-20-2023)



Map Scale: 1:4,310 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 200 400 800 1200

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 Rating Polygons
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Lines
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Points
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

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: Oneida County, New York
Survey Area Data: Version 25, Sep 10, 2022

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

Date(s) aerial images were photographed: Sep 15, 2022—Oct 28, 2022

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.

Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
136A	Kendaia silt loam, 0 to 3 percent slopes	5	28.6	70.4%
790B	Conesus silt loam, 3 to 8 percent slopes	1	12.0	29.6%
Totals for Area of Interest			**40.6**	**100.0%**

Description

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Rating Options

Aggregation Method: Percent Present

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

APPENDIX C
PHOTOGRAPHS

Photo Documentation

Project: NY Rome Old Oneida Rd 1 Solar Farm
NY Rome Old Oneida Rd 1 Solar Farm, LLC

Photo 1 – Photo at W-A-1 Data Point, taken facing northwest, view of Old Oneida Road in the background.

Photo 2 – Photo of soil at W-A-1 Data Point.

Photo Documentation

Project: NY Rome Old Oneida Rd 1 Solar Farm
NY Rome Old Oneida Rd 1 Solar Farm, LLC

Photo 3 – Photo at UP-A-1 Data Point, taken facing south.

Photo 4 – Photo of soil at UP-A-1 Data Point.

Photo 5 – Photo of Ditch B, taken facing southeast.

Photo 6 – Photo of Ditch B, taken facing northeast.

Photo Documentation

Project: NY Rome Old Oneida Rd 1 Solar Farm
NY Rome Old Oneida Rd 1 Solar Farm, LLC

Photo 7 – Photo of Stream C, taken facing southwest.

Photo 8 – Representative photo of the northwestern corner of the site.

Photo Documentation

Project: NY Rome Old Oneida Rd 1 Solar Farm
NY Rome Old Oneida Rd 1 Solar Farm, LLC

Photo 9 – Representative photo of the northern portion of the site.

Photo 10 – Representative photo of the central portion of the site.

Photo Documentation

Project: NY Rome Old Oneida Rd 1 Solar Farm
NY Rome Old Oneida Rd 1 Solar Farm, LLC

Photo 11 – Photo at W-Z-1 Data Point

Photo 12 – Photo of soil at W-Z-1 Data Point.

Photo Documentation

Project: NY Rome Old Oneida Rd 1 Solar Farm
NY Rome Old Oneida Rd 1 Solar Farm, LLC

Photo 13 – Photo at UP-Z-1 Data Point

Photo 14 – Photo of at W-Y-1 Data Point.

Photo 15 – Photo of soil at W-Y-1 Data Point.

Photo 16 – Photo of at UP-Y-1 Data Point.

APPENDIX A-8

5-acre Waiver Letter

APPENDIX B

Site Characteristics

Appendix B-1: Location Plan

Appendix B-2: Aerial Image

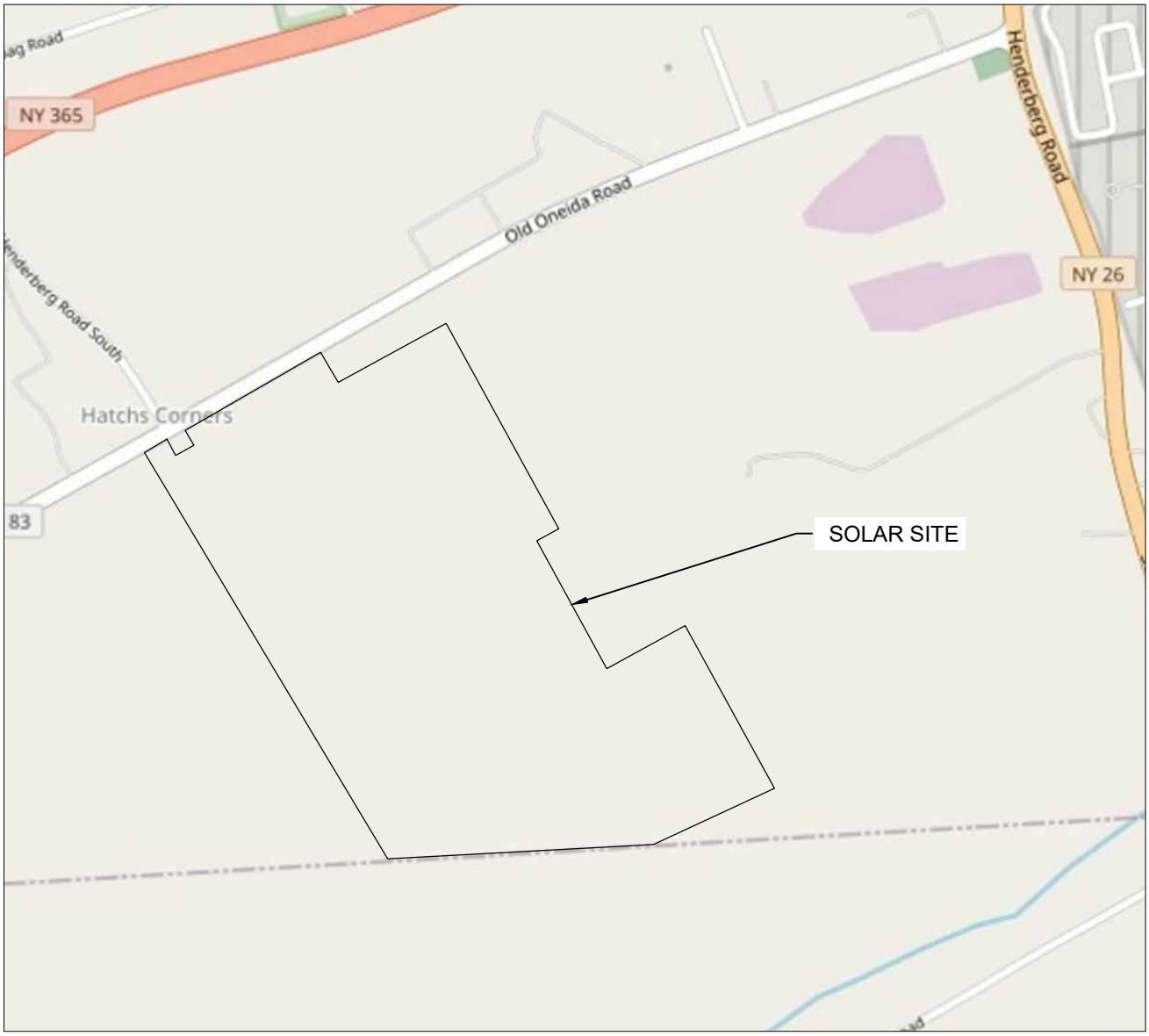
Appendix B-3: USGS Topographic Map

Appendix B-4: USDA NRCS Soils Report

APPENDIX B-1

Location Plan

NORTH



LOCATION PLAN

NY OLD ONEIDA SOLAR FARM, LLC
5792 OLD ONEIDA ROAD
ROME, NY 13440

C&S COMPANIES

APPENDIX B-2

Aerial Image

NORTH

AERIAL IMAGE

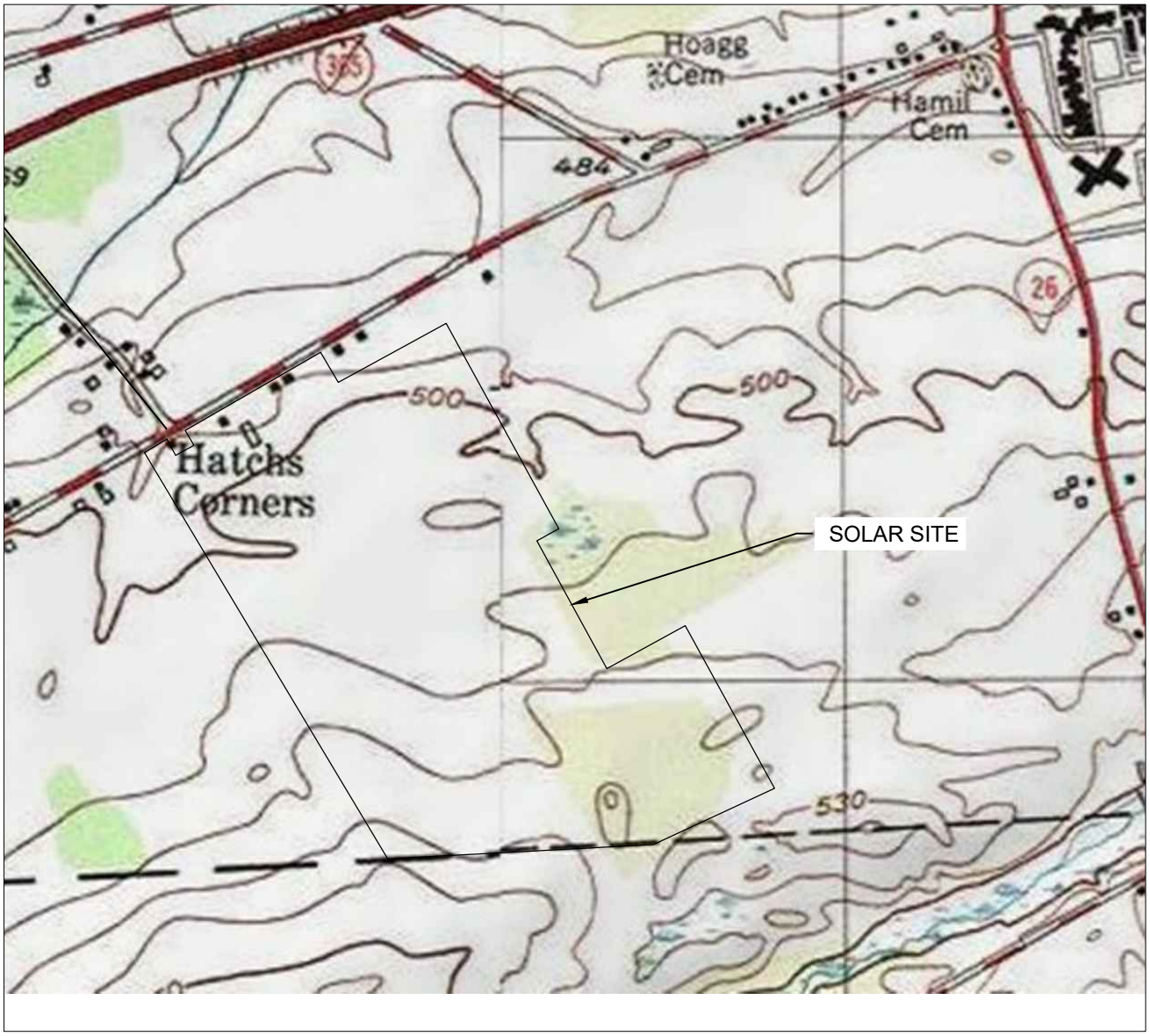
NY OLD ONEIDA SOLAR FARM, LLC
5792 OLD ONEIDA ROAD
ROME, NY 13440

C&S COMPANIES

APPENDIX B-3

USGS Topographic Map

NORTH



USGS IMAGE

NY OLD ONEIDA SOLAR FARM, LLC
5792 OLD ONEIDA ROAD
ROME, NY 13440

C&S COMPANIES

APPENDIX B-4

USDA NRCS Soils Report

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Oneida County, New York

Old Oneida

October 24, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Preface.....2
Soil Information for All Uses.....5
Soil Properties and Qualities.....5
Soil Qualities and Features.....5
Hydrologic Soil Group.....5
References.....10

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Custom Soil Resource Report
Map—Hydrologic Soil Group

Map Scale: 1:6,810 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 300 600 1200 1800

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 Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

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: Oneida County, New York
Survey Area Data: Version 26, Sep 5, 2023

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

Date(s) aerial images were photographed: Sep 15, 2022—Oct 28, 2022

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.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
136A	Kendaia silt loam, 0 to 3 percent slopes	B/D	76.7	71.9%
136B	Kendaia silt loam, 3 to 8 percent slopes	B/D	4.7	4.4%
146	Lyons soils, 0 to 3 percent slopes	C/D	9.0	8.5%
790B	Conesus silt loam, 3 to 8 percent slopes	B/D	16.2	15.2%
Totals for Area of Interest			**106.6**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

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APPENDIX C

Appendix C-1: Grading Plan

Appendix C-2: Erosions and Sediment Control Plan and Details

Appendix C-3: Standard and Specifications for Erosion and Sediment Control

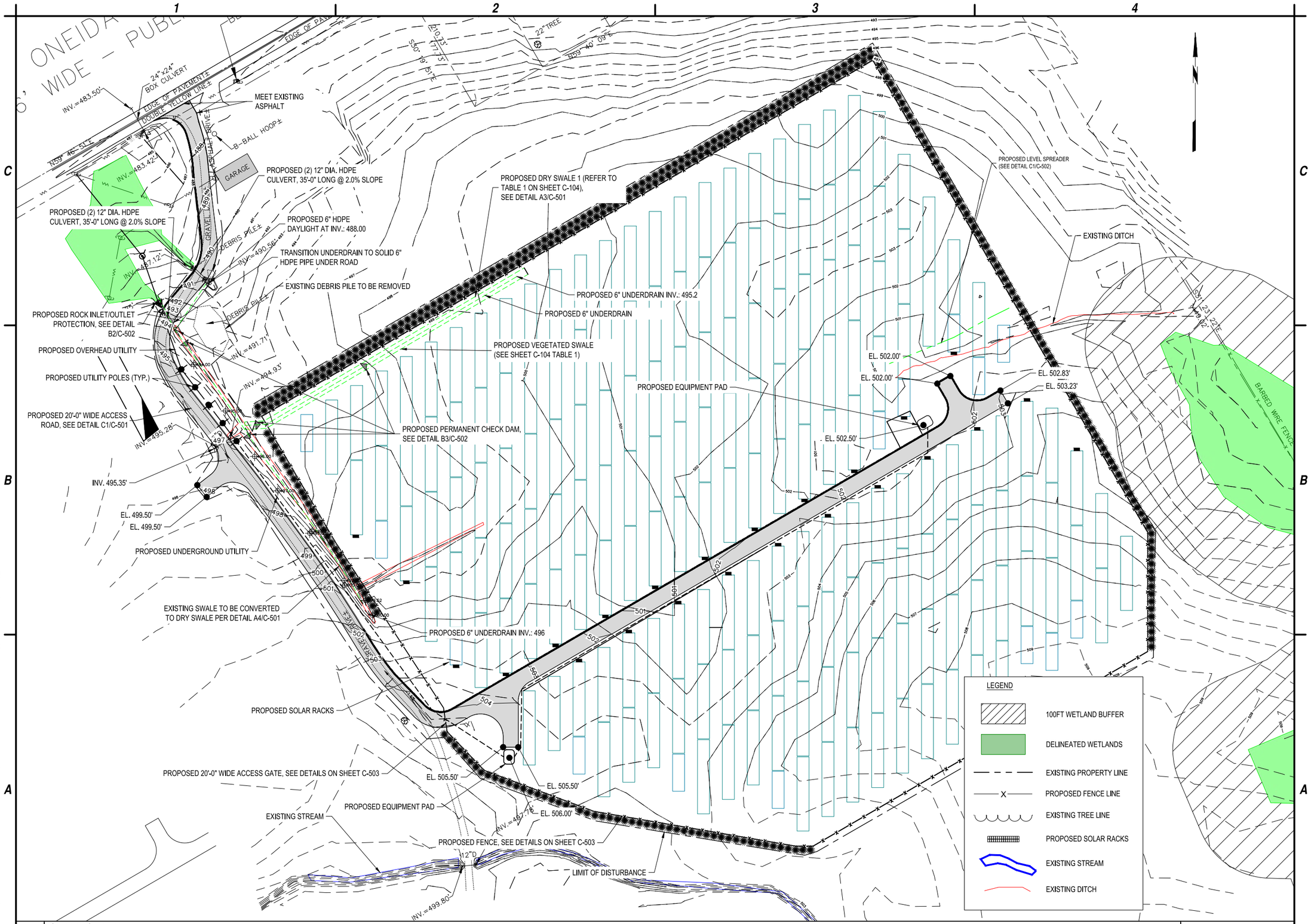
Appendix C-4: Existing and Proposed Conditions Drainage Plans

Appendix C-5: HydroCAD Stormwater Output (Drainage Analysis)

Appendix C-6: WQv, RRv, Filter Strip, Dry Swale and Culvert Calculations

APPENDIX C-1

Grading Plan



A1 **GRADING PLAN**
SCALE: 1" = 60'

0 60' 120'

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ROME, NY 13440
ONEIDA COUNTY

MARK	DATE	DESCRIPTION
		REVISIONS

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DATE:	DECEMBER 2024
DRAWN BY:	B. BUCKINGHAM
DESIGNED BY:	
CHECKED BY:	

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GRADING PLAN

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APPENDIX C-2

Erosion and Sediment Control
Plan and Details

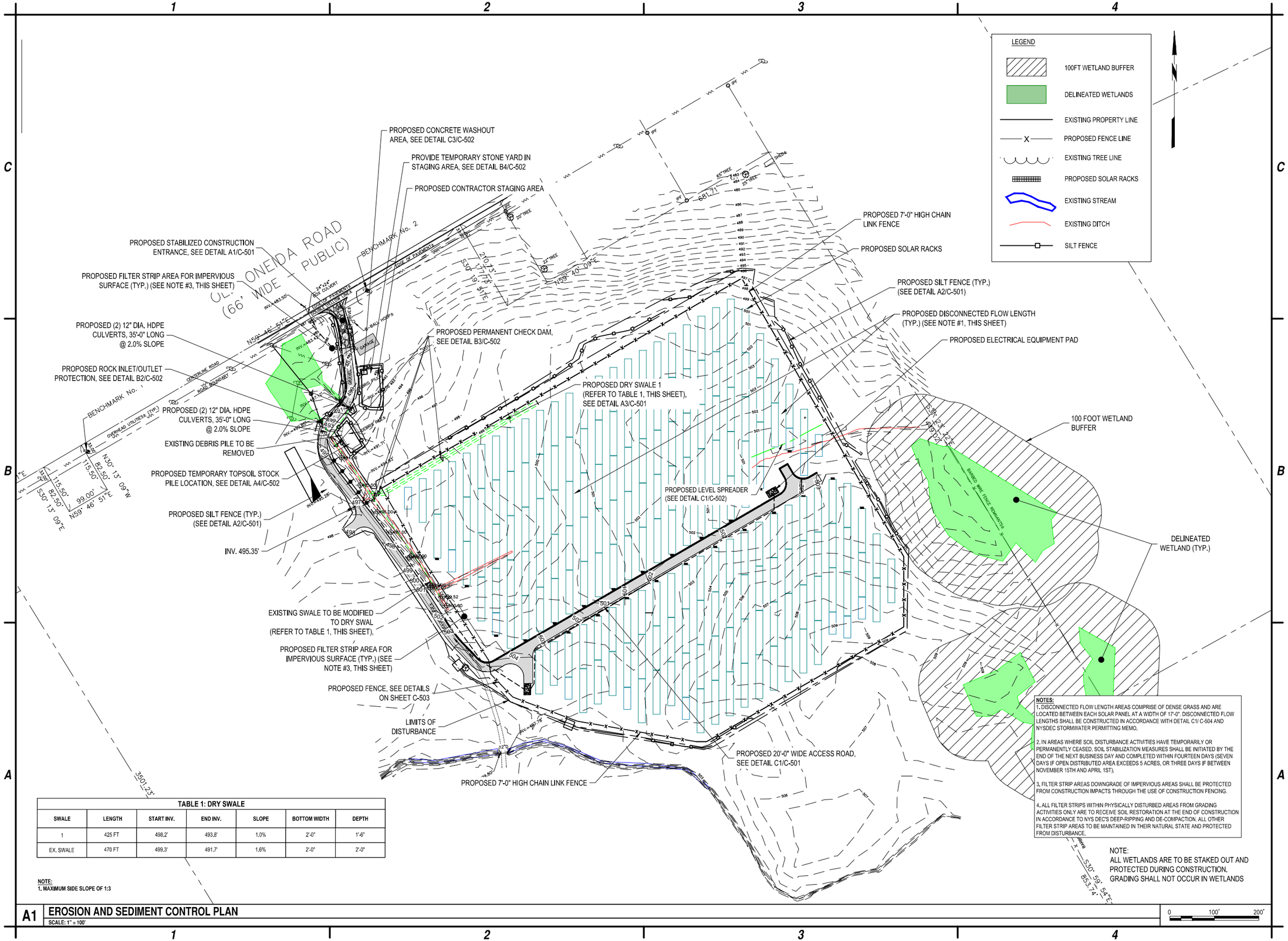

TABLE 1: DRY SWALE						
SWALE	LENGTH	START INV.	END INV.	SLOPE	BOTTOM WIDTH	DEPTH
1	425 FT	498.2'	493.8'	1.0%	2'-0"	1'-6"
EX. SWALE	470 FT	499.3'	491.7'	1.6%	2'-0"	2'-0"

NOTE:
1. MAXIMUM SIDE SLOPE OF 1:3

A1 EROSION AND SEDIMENT CONTROL PLAN
SCALE: 1" = 100'

0 100' 200'

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ROME, NY 13440
ONEIDA COUNTY

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EROSION AND SEDIMENT CONTROL PLAN

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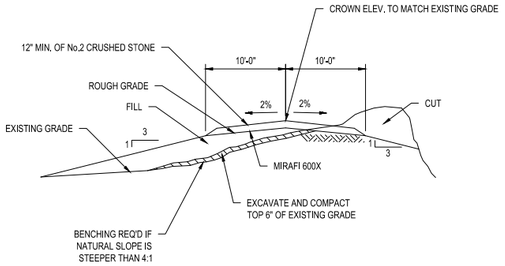
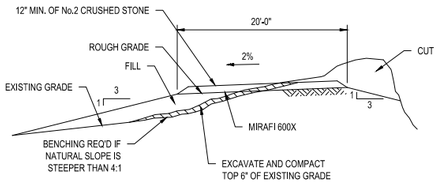




NOTE:
REMOVE ANY SOFT SOILS EXCAVATED DURING INSTALLATION OF ACCESS ROAD.

C1 ACCESS DRIVE DETAIL

SCALE: NOT TO SCALE

1. SCHEDULE A PRE-CONSTRUCTION MEETING THAT SHALL BE ATTENDED BY THE QUALIFIED INSPECTOR, AND INVOLVED SUBCONTRACTORS TO DISCUSS RESPONSIBILITIES AS THEY RELATE TO THE IMPLEMENTATION OF THE SWPPP MEASURES TO AVOID AND MINIMIZE IMPACTS TO PROTECTED SPECIES DURING REMEDIATION, DEMOLITION AND CONSTRUCTION.
2. INSTALL THE STABILIZED CONSTRUCTION ENTRANCE FOR THE PROJECT AS SHOWN ON THE PLANS.
3. DELINEATE THE LIMITS OF DISTURBANCE FOR THE PROJECT, TO INCLUDE THE STAKEOUT AND INSTALLATION OF WETLAND PROTECTIONS OF WETLANDS ON SITE OR THAT COULD BE IMPACTED BY CONSTRUCTION. CONTRACTOR TO ENSURE DELINEATION OF WETLAND BOUNDARIES AND INSTALLATION OF PROTECTIONS REMAINS THROUGHOUT DURATION OF CONSTRUCTION EFFORTS TO PROTECT WETLANDS FROM DISRUPTION AS A RESULT OF CONSTRUCTION ACTIVITIES.
4. ESTABLISH LOCATION FOR STAGING AREA AND SOIL STOCKPILE AS SHOWN ON THE PLANS. IF THESE AREAS ARE NOT CONDUCIVE DUE TO ANY UNFORESEEN CONDITIONS, THE CONTRACTOR SHALL IDENTIFY A NEW LOCATION FOR REVIEW AND APPROVAL BY THE ENGINEER.
5. INSTALL ALL SILT / CONSTRUCTION FENCE FOR THE PROJECT AS SHOWN ON THE PLANS INCLUDING THE INSTALLATION OF SILT FENCE SURROUNDING THE PERIMETER OF THE SOIL STOCKPILE, STAGING AREA, AND AT THE DOWN GRADIENT SIDE OF ALL SOLAR PANEL ARRAYS LOCATIONS.
6. SELECTIVELY CLEAR ONLY THE AREAS REQUIRED FOR THE FOLLOWING: INSTALLATION OF THE STABILIZED FACILITY ENTRANCE, PLACEMENT OF THE CONSTRUCTION OFFICE TRAILER AND PARKING AREAS, PLACEMENT OF TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES, CONSTRUCTION STAGING AREA, THE SOIL STOCKPILE, AND THE MINIMAL AREAS IDENTIFIED TO BE GRADED.
7. INSTALL ALL SWALES /BASINS AND BERMS AS SHOWN ON THE PLANS. TOPSOIL, SEED, AND MULCH THE SWALES. ROLLED EROSION CONTROL FABRICS, TURF REINFORCEMENT MATS, MULCH ANCHORING TO BE INSTALLED AS NEEDED AND IN AREAS OF CONCENTRATED FLOW.
8. CONTRACTOR TO INSTALL LEVEL SPREADERS AS SHOWN ON THE GRADING AND EROSION AND SEDIMENT CONTROL PLAN, COVERING THE LEVEL SPREADER WITH PLYWOOD OR MUD MATS IN LOCATIONS WHERE THEY MUST BE CROSSED DURING CONSTRUCTION IS REQUIRED.
9. CONTRACTOR TO INSTALL THE ACCESS ROADWAYS AS SHOWN ON THE PLANS.
10. PROVIDE TEMPORARY SEEDING AND STABILIZATION MEASURES OF ANY DISTURBED AREAS IN ACTIVE AREAS ON THE NEXT BUSINESS DAY AND COMPLETED IN FOURTEEN DAYS.
11. INSTALL POSTS, BRACKETS, MOUNTING STRUCTURES, AND MODULES. CONTRACTOR SHALL LIMIT SOLAR ARRAY SUPPORTS AND MODULE INSTALLATION TO AREAS AND SECTIONS WHERE TEMPORARY STABILIZATION CAN BE MANAGED AND CONTROLLED AT ALL TIMES. A 5-ACRE WAIVER REQUEST WILL BE SUBMITTED TO THE TOWN OF AFTON AS AN MS4 COMMUNITY TO ALLOW THE SITE CONTRACTOR TO TRAVERSE THE SITE WITH THE SOLAR SUPPORT INSTALLATION EQUIPMENT ONLY. CONVENTIONAL EARTH MOVING AND MASS GRADING ACTIVITIES ARE NOT PROPOSED. PLEASE REFER TO THE 5-ACRE WAIVER LETTER IN APPENDIX A-7. SEEDING AND STABILIZATION MEASURES OUTLINED IN STEP 10 SHALL BE IMPLEMENTED BEFORE MOVING ONTO THE NEXT SECTION OF SOLAR PANEL INSTALLATIONS.
12. COMPLETE OVERALL ON-SITE STABILIZATION.
13. CONTRACTOR TO RAKE OUT ANY AREAS OF LEVEL SPREADERS THAT ARE PACKED WITH MUD AND REMOVE AND REPLACE STONE AS NECESSARY.
14. UPON ESTABLISHMENT OF SUBSTANTIAL VEGETATIVE COVER (85% MIN.) REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROLS. SEED AND MULCH THE REMAINING DISTURBED AREAS (RESULTING FROM TEMPORARY EROSION CONTROL MEASURE REMOVAL).
15. REMOVE SILT FENCING ONLY AFTER DISTURBED SURFACES ARE STABILIZED.
16. UPON FINAL STABILIZATION, AND CERTIFICATION BY THE NYSDEC AND THE QUALIFIED PROFESSIONAL RETAINED TO PERFORM THE REQUIRED SITE INSPECTIONS, THE OWNER SHALL FILE THE NOTICE OF TERMINATION (NOT) WITH THE NYSDEC.

C3 CONSTRUCTION SEQUENCE

SCALE: NOT TO SCALE

STABILIZED CONSTRUCTION ENTRANCE NOTES:

1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.

2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).

3. THICKNESS - NOT LESS THAN SIX (6) INCHES.

4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS, TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.

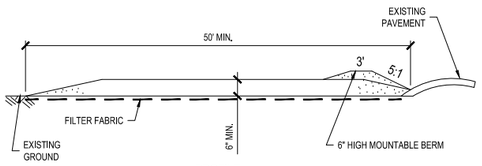
5. FILTER FABRIC - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.

6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.

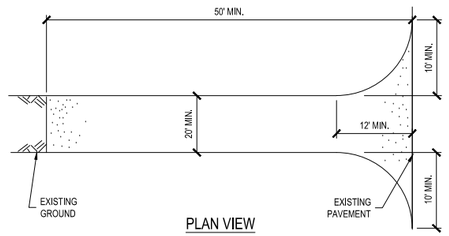
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF- WAY MUST BE REMOVED IMMEDIATELY.

8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.



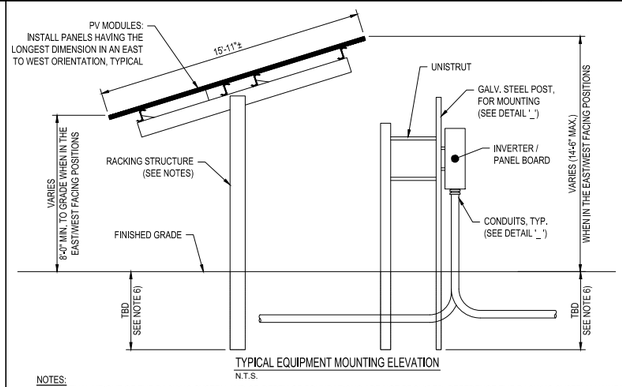
PROFILE



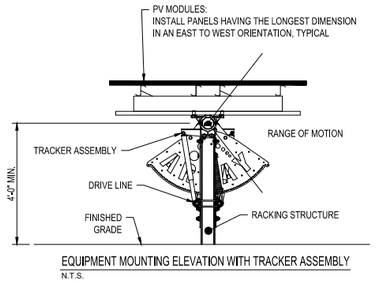
PLAN VIEW

A1 STABILIZED CONSTRUCTION ENTRANCE DETAIL

SCALE: NOT TO SCALE



TYPICAL EQUIPMENT MOUNTING ELEVATION
N.T.S.

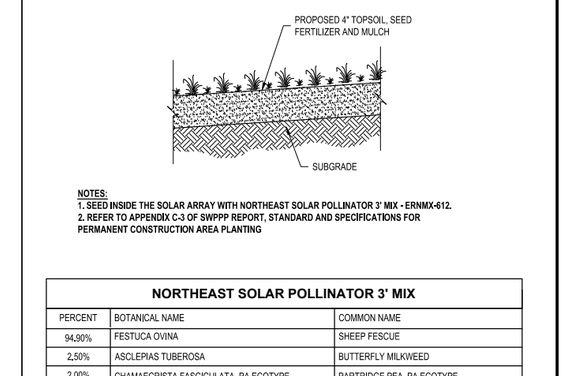


EQUIPMENT MOUNTING ELEVATION WITH TRACKER ASSEMBLY
N.T.S.

NOTES:
1) ACTUAL HEIGHT OF THE RACKING SYSTEM AND OR DEPTH OF FOUNDATIONS ARE NOT PROVIDED. REFERENCE THE RACKING SYSTEM MANUFACTURER'S PRODUCT DATA AND INSTRUCTIONS FOR INFORMATION. RACKING STRUCTURE IS SHOWN AS REPRESENTATIVE ONLY.
2) EQUIPMENT SHALL BE PROVIDED / MOUNTED SUCH THAT IT DOES NOT CAUSE ANY SHADING OF THE PHOTOVOLTAIC (PV) MODULES.
3) CONDUITS SHALL BE ROUTED SUCH THAT CONFLICT WITH ARRAY FOUNDATIONS IS AVOIDED.
4) ENCLOSURE SHALL BE MOUNTED SUCH THAT ALL CODE REQUIRED CLEARANCES ARE MET AND COMPLIED TO. (REFERENCE NEC ARTICLE 110.32)
5) REFER TO RACKING MANUFACTURER'S MANUAL FOR ADDITIONAL INFORMATION.
6) EMBEDMENT DEPTH VARIES, PER GEOTECHNICAL AND STRUCTURAL CALCULATION DETERMINATION.

B2 EQUIPMENT MOUNTING SECTION - ELEVATION

SCALE: NOT TO SCALE



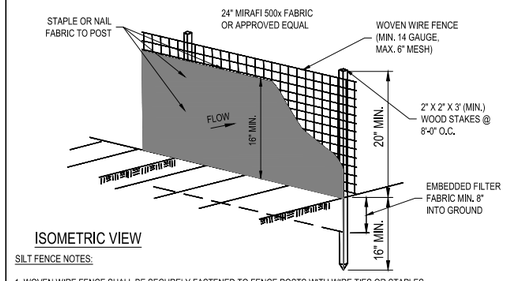
NOTES:
1. SEED INSIDE THE SOLAR ARRAY WITH NORTHEAST SOLAR POLLINATOR 3' MIX - ERNMX-612.
2. REFER TO APPENDIX C-3 OF SWPPP REPORT, STANDARD AND SPECIFICATIONS FOR PERMANENT CONSTRUCTION AREA PLANTING

NORTHEAST SOLAR POLLINATOR 3' MIX

PERCENT	BOTANICAL NAME	COMMON NAME
94.90%	FESTUCA OVINA	SHEEP FESCUE
2.50%	ASCLEPIAS TUBEROSA	BUTTERFLY MILKWEED
2.00%	CHAMAECRISTA FASCICULATA, PA ECOTYPE	PARTRIDGE PEA, PA ECOTYPE
0.30%	OENOTHERA FRUTICOSA VAR. FRUTICOSA	SUNDROPS
0.30%	TRADESCANTIA VIRGINIANA, SOUTHERN PA/ NORTHERN VA	VIRGINIA SPIDERWORT, SOUTHEASTERN PA/ NORTHERN VA BLEND

B4 GRASS RESTORATION DETAIL

SCALE: NOT TO SCALE



ISOMETRIC VIEW

SILT FENCE NOTES:

1. WOVEN WIRE FENCE SHALL BE SECURELY FASTENED TO FENCE POSTS WITH WIRE TIES OR STAPLES.

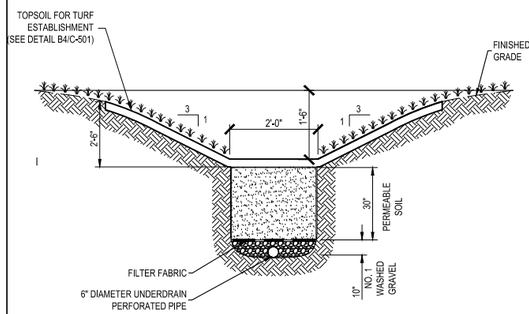
2. SILT FENCE FABRIC SHALL BE SECURELY FASTENED TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID-SECTION, WHEN TWO SECTIONS OF SILT FENCE FABRIC ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY 6" AND FOLDED.

3. MAINTENANCE SHALL BE PROVIDED BY THE CONTRACTOR AS DIRECTED BY ENGINEER AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

4. CONTRACTOR SHALL REMOVE THE SILT FENCE AT THE APPROPRIATE TIME, DRESS THE DISTURBED AREAS, AND DISPOSE OF THE SILT FENCE.

A2 SILT FENCE DETAIL

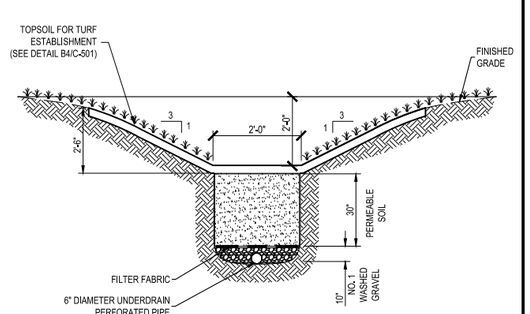
SCALE: NOT TO SCALE



NOTE:
1. DRY SWALE PLANTING SOIL TO BE 80- 85% SAND (MEDIUM- COARSE GRADED, CONFORMING TO ASTM C-33), 8-12% SILT LOAM, AND 3-4% ORGANIC MATERIAL MAX.
2. PERMANENT CHECK DAMS SHALL BE INSTALLED IN ACCORDANCE WITH DETAIL B4/C-504.

A3 DRY SWALE 1

SCALE: NOT TO SCALE



NOTE:
1. DRY SWALE PLANTING SOIL TO BE 80- 85% SAND (MEDIUM- COARSE GRADED, CONFORMING TO ASTM C-33), 8-12% SILT LOAM, AND 3-4% ORGANIC MATERIAL MAX.
2. PERMANENT CHECK DAMS SHALL BE INSTALLED IN ACCORDANCE WITH DETAIL B4/C-504.

A4 EXISTING SWALE TO BE CONVERTED TO DRY SWALE

SCALE: NOT TO SCALE

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CHECKED BY:	E.N. KENNA P.E.

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EROSION AND SEDIMENT CONTROL DETAILS

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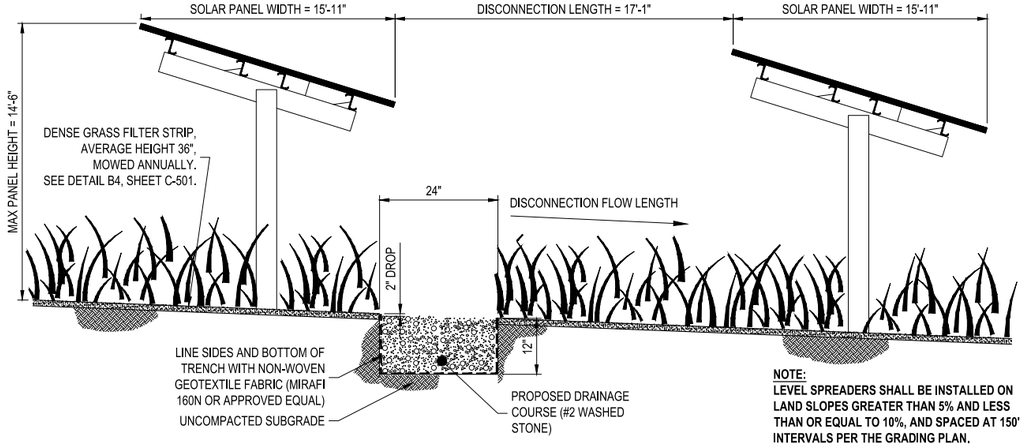
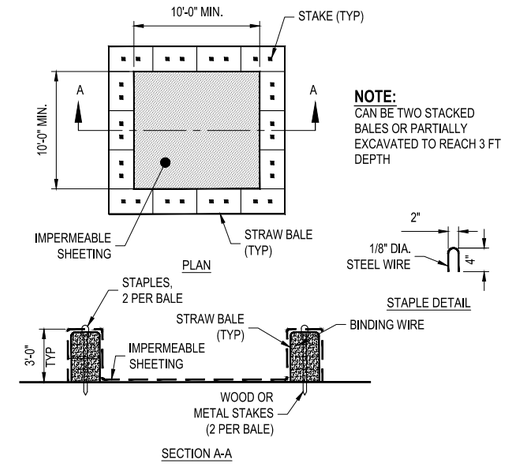


NOTE:
LEVEL SPREADERS SHALL BE INSTALLED ON LAND SLOPES GREATER THAN 5% AND LESS THAN OR EQUAL TO 10%, AND SPACED AT 150' INTERVALS PER THE GRADING PLAN.

C1 LEVEL SPREADER TYPICAL DETAIL
SCALE: NOT TO SCALE

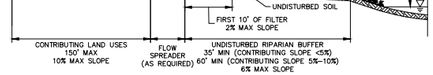


NOTE:
CAN BE TWO STACKED BALES OR PARTIALLY EXCAVATED TO REACH 3 FT DEPTH

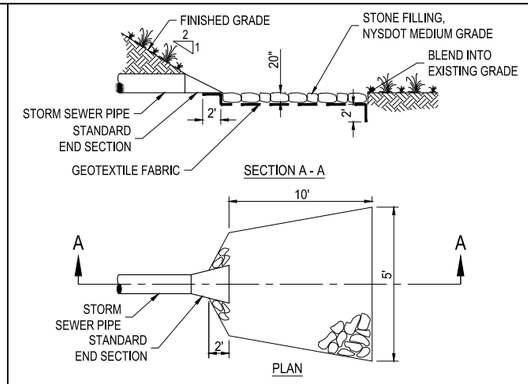
C3 TEMPORARY CONCRETE WASH-OUT AREA (STRAW BALE) DETAIL
SCALE: NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

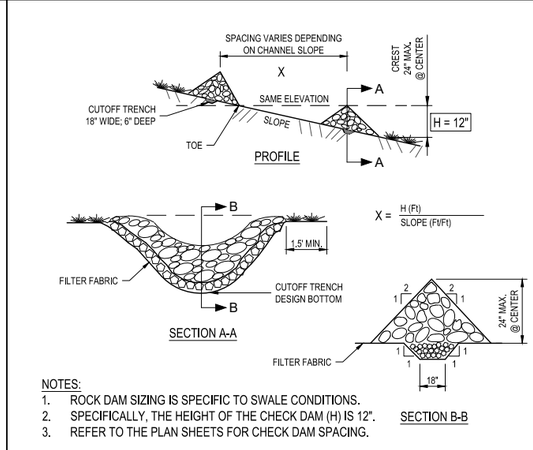
1. LOCATE WASHOUT STRUCTURE A MINIMUM OF 50 FEET AWAY FROM OPEN CHANNELS, STORM DRAIN INLETS, SENSITIVE AREAS, WETLANDS, BUFFERS AND WATER COURSES AND AWAY FROM CONSTRUCTION TRAFFIC.
2. SIZE WASHOUT STRUCTURE FOR VOLUME NECESSARY TO CONTAIN WASH WATER AND SOLIDS AND MAINTAIN AT LEAST 4 INCHES OF FREEBOARD. TYPICAL DIMENSIONS ARE 10 FEET X 10 FEET X 3 FEET DEEP.
3. PREPARE SOIL BASE FREE OF ROCKS OR OTHER DEBRIS THAT MAY CAUSE TEARS OR HOLES IN THE LINER. FOR LINER, USE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING, FREE OF HOLES AND TEARS OR OTHER DEFECTS THAT COMPROMISE IMPERMEABILITY OF THE MATERIAL.
4. PROVIDE A SIGN FOR THE WASHOUT IN CLOSE PROXIMITY TO THE FACILITY.
5. KEEP CONCRETE WASHOUT STRUCTURE WATER TIGHT. REPLACE IMPERMEABLE LINER IF DAMAGED (E.G., RIPPED OR PUNCTURED), EMPTY OR REPLACE WASHOUT STRUCTURE THAT IS 75 PERCENT FULL, AND DISPOSE OF ACCUMULATED MATERIAL PROPERLY. DO NOT REUSE PLASTIC LINER. WET-VACUUM STORED LIQUIDS THAT HAVE NOT EVAPORATED AND DISPOSE OF IN AN APPROVED MANNER.
6. PRIOR TO FORECASTED RAINSTORMS, REMOVE LIQUIDS OR COVER STRUCTURE TO PREVENT OVERFLOWS. REMOVE HARDENED SOLIDS, WHOLE OR BROKEN UP, FOR DISPOSAL OR RECYCLING. MAINTAIN RUNOFF DIVERSION AROUND EXCAVATED WASHOUT STRUCTURE UNTIL STRUCTURE IS REMOVED.



B1 GRASS FILTER STRIP DETAIL
SCALE: NOT TO SCALE

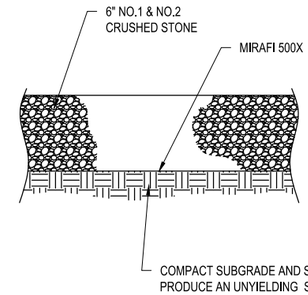


B2 ROCK INLET/OUTLET PROTECTION DETAIL
SCALE: NOT TO SCALE

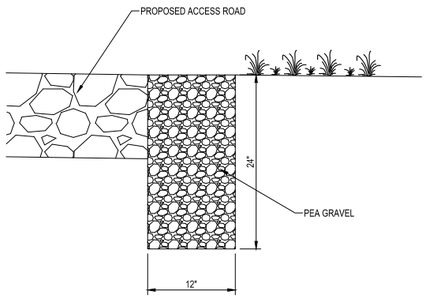


NOTES:
1. ROCK DAM SIZING IS SPECIFIC TO SWALE CONDITIONS.
2. SPECIFICALLY, THE HEIGHT OF THE CHECK DAM (H) IS 12".
3. REFER TO THE PLAN SHEETS FOR CHECK DAM SPACING.

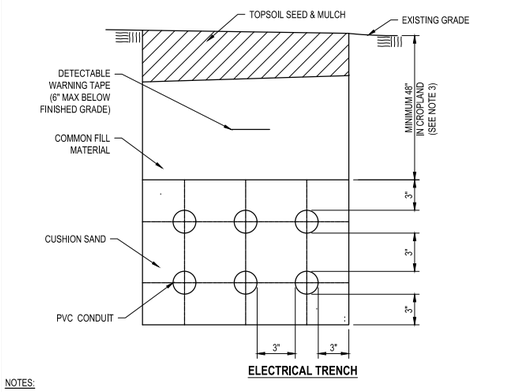
B3 CHECK DAM DETAIL
NOT TO SCALE



B4 TYPICAL STONE YARD DETAIL (FOR STAGING AREA)
SCALE: NOT TO SCALE

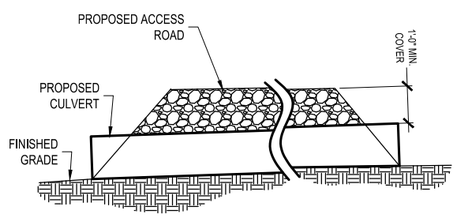


A1 PEA GRAVEL DIAPHRAGM
SCALE: NOT TO SCALE

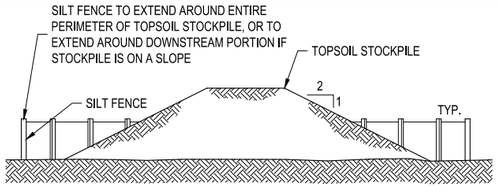


NOTES:
1. TO BE USED IN TURFED ARES AND UNDER SIDEWALKS UNLESS OTHERWISE SHOWN.
2. NUMBER OF CONDUITS AS PER PLANS.
3. ELECTRICAL CONDUIT BURIED ADJACENT TO ACCESS ROAD MUST HAVE A MINIMUM OF 24" BURIAL DEPTH. BURIED ELECTRIC CONDUCTORS MUST HAVE A MINIMUM BURIAL DEPTH OF 48-INCHES OF COVER IN AREAS OF CROPLAND, HAYLAND, AND IMPROVED PASTURE. IN CASE WHERE BEDROCK IS LESS THAN 48", CONDUIT TO BE INSTALLED ON TOP OF BEDROCK.

A2 ELECTRICAL TRENCH DETAIL
SCALE: NOT TO SCALE



A3 TYPICAL CULVERT DETAIL
SCALE: NOT TO SCALE



TEMPORARY TOPSOIL STOCKPILE NOTES:
1. REFER TO SILT FENCE DETAIL FOR MATERIALS AND INSTALLATION METHODS.
2. IF THE STOCKPILE IS TO REMAIN FOR MORE THAN 14 DAYS, IT SHALL BE STABILIZED WITH BURLAP MATTING OR SEEDED WITHIN 7 DAYS OF COMPLETION TO MINIMIZE EROSION.
3. INSPECTION OF SILT FENCE SHALL BE AT LEAST ONCE PER WEEK AND AFTER RAIN EVENTS IN EXCESS OF 1/2". REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
4. SEDIMENT TRAPPED BY THE SILT FENCE SHALL BE REMOVED AND PROPERLY DISPOSED OF WHENEVER SIGNIFICANT ACCUMULATION OCCURS.
5. SILT FENCE SHALL BE MAINTAINED IN PLACE UNTIL TOPSOIL STOCKPILE HAS BEEN ELIMINATED AND SHALL BE REMOVED ONLY WHEN DIRECTED BY THE ENGINEER.
6. TOPSOIL STOCKPILE LOCATION SHALL BE DETERMINED BY THE CONTRACTOR AND APPROVED BY THE OWNER OR AN AUTHORIZED REPRESENTATIVE

A4 TYPICAL TOPSOIL STOCKPILE DETAIL
SCALE: NOT TO SCALE

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STATE OF NEW YORK ERIC KENNA LICENSED PROFESSIONAL ENGINEER 058339

emeren Empowering Renewables

NY ROME OLD ONEIDA ROAD SOLAR, LLC
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ONEIDA COUNTY

MARK	DATE	DESCRIPTION
		REVISIONS

PROJECT NO:	V32.007.002
DATE:	DECEMBER 2024
DRAWN BY:	M. BUCKINGHAM
DESIGNED BY:	E.N.KENNA P.E.
CHECKED BY:	

NO ALTERATION PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK EDUCATION LAW

EROSION AND SEDIMENT CONTROL DETAILS

C-502

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APPENDIX C-3

Standard and Specifications for Erosion and Sediment Control

STANDARD AND SPECIFICATIONS FOR CONCRETE TRUCK WASHOUT

Definition & Scope

A temporary excavated or above ground lined constructed pit where concrete truck mixers and equipment can be washed after their loads have been discharged, to prevent highly alkaline runoff from entering storm drainage systems or leaching into soil.

Conditions Where Practice Applies

Washout facilities shall be provided for every project where concrete will be poured or otherwise formed on the site. This facility will receive highly alkaline wash water from the cleaning of chutes, mixers, hoppers, vibrators, placing equipment, trowels, and screeds. Under no circumstances will wash water from these operations be allowed to infiltrate into the soil or enter surface waters.

Design Criteria

Capacity: The washout facility should be sized to contain solids, wash water, and rainfall and sized to allow for the evaporation of the wash water and rainfall. Wash water shall be estimated at 7 gallons per chute and 50 gallons per hopper of the concrete pump truck and/or discharging drum. The minimum size shall be 8 feet by 8 feet at the bottom and 2 feet deep. If excavated, the side slopes shall be 2 horizontal to 1 vertical.

Location: Locate the facility a minimum of 100 feet from drainage swales, storm drain inlets, wetlands, streams and other surface waters. Prevent surface water from entering the structure except for the access road. Provide appropriate access with a gravel access road sloped down to the structure. Signs shall be placed to direct drivers to the facility after their load is discharged.

Liner: All washout facilities will be lined to prevent leaching of liquids into the ground. The liner shall be plastic sheeting with a minimum thickness of 10 mils with no holes or tears, and anchored beyond the top of the pit with an earthen berm, sand bags, stone, or other structural appurtenance except at the access point.

If pre-fabricated washouts are used they must ensure the capture and containment of the concrete wash and be sized based on the expected frequency of concrete pours. They shall be sited as noted in the location criteria.

Maintenance

- All concrete washout facilities shall be inspected daily. Damaged or leaking facilities shall be deactivated and repaired or replaced immediately. Excess rainwater that has accumulated over hardened concrete should be pumped to a stabilized area, such as a grass filter strip.
- Accumulated hardened material shall be removed when 75% of the storage capacity of the structure is filled. Any excess wash water shall be pumped into a containment vessel and properly disposed of off site.
- Dispose of the hardened material off-site in a construction/demolition landfill. On-site disposal may be allowed if this has been approved and accepted as part of the projects SWPPP. In that case, the material should be recycled as specified, or buried and covered with a minimum of 2 feet of clean compacted earthfill that is permanently stabilized to prevent erosion.
- The plastic liner shall be replaced with each cleaning of the washout facility.
- Inspect the project site frequently to ensure that no concrete discharges are taking place in non-designated areas.

STANDARD AND SPECIFICATIONS FOR DUST CONTROL

Definition & Scope

The control of dust resulting from land-disturbing activities, to prevent surface and air movement of dust from disturbed soil surfaces that may cause off-site damage, health hazards, and traffic safety problems.

Conditions Where Practice Applies

On construction roads, access points, and other disturbed areas subject to surface dust movement and dust blowing where off-site damage may occur if dust is not controlled.

Design Criteria

Construction operations should be scheduled to minimize the amount of area disturbed at one time. Buffer areas of vegetation should be left where practical. Temporary or permanent stabilization measures shall be installed. No specific design criteria is given; see construction specifications below for common methods of dust control.

Water quality must be considered when materials are selected for dust control. Where there is a potential for the material to wash off to a stream, ingredient information must be provided to the NYSDEC.

No polymer application shall take place without written approval from the NYSDEC.

Construction Specifications

A. **Non-driving Areas** – These areas use products and materials applied or placed on soil surfaces to prevent airborne migration of soil particles.

Vegetative Cover – For disturbed areas not subject to traffic, vegetation provides the most practical method of dust control (see Section 3).

Mulch (including gravel mulch) – Mulch offers a fast effective means of controlling dust. This can also include rolled erosion control blankets.

Spray adhesives – These are products generally composed of polymers in a liquid or solid form that are mixed with water to form an emulsion that is sprayed on the soil surface with typical hydroseeding equipment. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations for the specific soils on the site. In no case should the application of these adhesives be made on wet soils or if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators and others working with the material.

B. **Driving Areas** – These areas utilize water, polymer emulsions, and barriers to prevent dust movement from the traffic surface into the air.

Sprinkling – The site may be sprayed with water until the surface is wet. This is especially effective on haul roads and access route to provide short term limited dust control.

Polymer Additives – These polymers are mixed with water and applied to the driving surface by a water truck with a gravity feed drip bar, spray bar or automated distributor truck. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations. Incorporation of the emulsion into the soil will be done to the appropriate depth based on expected traffic. Compaction after incorporation will be by vibratory roller to a minimum of 95%. The prepared surface shall be moist and no application of the polymer will be made if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators working with the material.

Barriers – Woven geo-textiles can be placed on the driving surface to effectively reduce dust throw and particle migration on haul roads. Stone can also be used for construction roads for effective dust control.

Windbreak – A silt fence or similar barrier can control air currents at intervals equal to ten times the barrier height. Preserve existing wind barrier vegetation as much as practical.

Maintenance

Maintain dust control measures through dry weather periods until all disturbed areas are stabilized.

STANDARD AND SPECIFICATIONS FOR MULCHING

Definition and Scope

Applying coarse plant residue or chips, or other suitable materials, to cover the soil surface to provide initial erosion control while a seeding or shrub planting is establishing. Mulch will conserve moisture and modify the surface soil temperature and reduce fluctuation of both. Mulch will prevent soil surface crusting and aid in weed control. Mulch can also be used alone for temporary stabilization in non-growing months. Use of stone as a mulch could be more permanent and should not be limited to non-growing months.

Conditions Where Practice Applies

On soils subject to erosion and on new seedings and shrub plantings. Mulch is useful on soils with low infiltration rates by retarding runoff.

Criteria

Site preparation prior to mulching requires the installation of necessary erosion control or water management practices and drainage systems.

Slope, grade and smooth the site to fit needs of selected mulch products.

Remove all undesirable stones and other debris to meet the needs of the anticipated land use and maintenance required.

Apply mulch after soil amendments and planting is accomplished or simultaneously if hydroseeding is used.

Select appropriate mulch material and application rate or material needs. Hay mulch shall not be used in wetlands or in areas of permanent seeding. Clean straw mulch is preferred alternative in wetland application. Determine local availability.

Select appropriate mulch anchoring material.

NOTE: The best combination for grass/legume establishment is straw (cereal grain) mulch applied at 2 ton/acre (90 lbs./1000sq.ft.) and anchored with wood fiber mulch (hydromulch) at 500 – 750 lbs./acre (11 – 17 lbs./1000 sq. ft.). The wood fiber mulch must be applied through a hydroseeder immediately after mulching.

Table 4.2
Guide to Mulch Materials, Rates, and Uses

Mulch Material	Quality Standards	per 1000 Sq. Ft.	per Acre	Depth of Application	Remarks
Wood chips or shavings	Air-dried. Free of objectionable coarse material	500-900 lbs.	10-20 tons	2-7”	Used primarily around shrub and tree plantings and recreation trails to inhibit weed competition. Resistant to wind blowing. Decomposes slowly.
Wood fiber cellulose (partly digested wood fibers)	Made from natural wood usually with green dye and dispersing agent	50 lbs.	2,000 lbs.	—	Apply with hydromulcher. No tie down required. Less erosion control provided than 2 tons of hay or straw.
Gravel, Crushed Stone or Slag	Washed; Size 2B or 3A—1 1/2”	9 cu. yds.	405 cu. yds.	3”	Excellent mulch for short slopes and around plants and ornamentals. Use 2B where subject to traffic. (Approximately 2,000 lbs./cu. yd.). Frequently used over filter fabric for better weed control.
Hay or Straw	Air-dried; free of undesirable seeds & coarse materials	90-100 lbs. 2-3 bales	2 tons (100-120 bales)	cover about 90% surface	Use small grain straw where mulch is maintained for more than three months. Subject to wind blowing unless anchored. Most commonly used mulching material. Provides the best micro-environment for germinating seeds.
Jute twisted yarn	Undyed, unbleached plain weave. Warp 78 ends/yd., Weft 41 ends/yd. 60-90 lbs./roll	48” x 50 yds. or 48” x 75 yds.	—	—	Use without additional mulch. Tie down as per manufacturers specifications. Good for center line of concentrated water flow.
Excelsior wood fiber mats	Interlocking web of excelsior fibers with photodegradable plastic netting	4’ x 112.5’ or 8’ x 112.5’.	—	—	Use without additional mulch. Excellent for seeding establishment. Anchor as per manufacturers specifications. Approximately 72 lbs./roll for excelsior with plastic on both sides. Use two sided plastic for centerline of waterways.
Straw or coconut fiber, or combination	Photodegradable plastic net on one or two sides	Most are 6.5 ft. x 3.5 ft.	81 rolls	—	Designed to tolerate higher velocity water flow, centerlines of waterways, 60 sq. yds. per roll.

Table 4.3
Mulch Anchoring Guide

Anchoring Method or Material	Kind of Mulch to be Anchored	How to Apply
1. Peg and Twine	Hay or straw	After mulching, divide areas into blocks approximately 1 sq. yd. in size. Drive 4-6 pegs per block to within 2" to 3" of soil surface. Secure mulch to surface by stretching twine between pegs in criss-cross pattern on each block. Secure twine around each peg with 2 or more tight turns. Drive pegs flush with soil. Driving stakes into ground tightens the twine.
2. Mulch netting	Hay or straw	Staple the light-weight paper, jute, wood fiber, or plastic nettings to soil surface according to manufacturer's recommendations. Should be biodegradable. Most products are not suitable for foot traffic.
3. Wood cellulose fiber	Hay or straw	Apply with hydroseeder immediately after mulching. Use 500 lbs. wood fiber per acre. Some products contain an adhesive material ("tackifier"), possibly advantageous.
4. Mulch anchoring tool	Hay or straw	Apply mulch and pull a mulch anchoring tool (blunt, straight discs) over mulch as near to the contour as possible. Mulch material should be "tucked" into soil surface about 3".
5. Tackifier	Hay or straw	Mix and apply polymeric and gum tackifiers according to manufacturer's instructions. Avoid application during rain. A 24-hour curing period and a soil temperature higher than 45^0 Fahrenheit are required.

STANDARD AND SPECIFICATIONS FOR PROTECTING VEGETATION DURING CONSTRUCTION

Definition & Scope

The protection of trees, shrubs, ground cover and other vegetation from damage by construction equipment. In order to preserve existing vegetation determined to be important for soil erosion control, water quality protection, shade, screening, buffers, wildlife habitat, wetland protection, and other values.

Conditions Where Practices Applies

On planned construction sites where valued vegetation exists and needs to be preserved.

Design Criteria

1. Planning Considerations

   A. Inventory:

      1) Property boundaries, topography, vegetation and soils information should be gathered. Identify potentially high erosion areas, areas with tree windthrow potential, etc. A vegetative cover type map should be made on a copy of a topographic map which shows other natural and manmade features. Vegetation that is desirable to preserve because of its value for screening, shade, critical erosion control, endangered species, aesthetics, etc., should be identified and marked on the map.

      2) Based upon this data, general statements should be prepared about the present condition, potential problem areas, and unique features of the property.

   B. Planning:

      1) After engineering plans (plot maps) are prepared, another field review should take place and recommendations made for the vegetation to be saved. Minor adjustments in location of roads, dwellings, and utilities may be needed. Construction on steep slopes, erodible soils, wetlands, and streams should be avoided. Clearing limits should be delineated (See "Determine Limits of Clearing and Grading" on page 2.2).

      2) Areas to be seeded and planted should be identified. Remaining vegetation should blend with their surroundings and/or provide special function such as a filter strip, buffer zone, or screen.

      3) Trees and shrubs of special seasonal interest, such as flowering dogwood, red maple, striped maple, serviceberry, or shadbush, and valuable potential shade trees should be identified and marked for special protective treatment as appropriate.

      4) Trees to be cut should be marked on the plans. If timber can be removed for salable products, a forester should be consulted for marketing advice.

      5) Trees that may become a hazard to people, personal property, or utilities should be removed. These include trees that are weak-wooded, disease-prone, subject to windthrow, or those that have severely damaged root systems.

      6) The vigor of remaining trees may be improved by a selective thinning. A forester should be consulted for implementing this practice.

2. Measures to Protect Vegetation

   A. Limit soil placement over existing tree and shrub roots to a maximum of 3 inches. Soils with loamy texture and good structure should be used.

   B. Use retaining walls and terraces to protect roots of trees and shrubs when grades are lowered. Lowered grades should start no closer than the dripline of the tree. For narrow-canopied trees and shrubs, the stem diameter in inches is converted to feet and doubled, such that a 10 inch tree should be protected to 20 feet.

   C. Trenching across tree root systems should be the same minimum distance from the trunk, as in "B". Tunnels under root systems for underground utilities should start 18 inches or deeper below the normal ground surface. Tree roots which must be severed should be cut clean. Backfill material that will be in contact with the roots should be topsoil or a prepared planting soil mixture.

   D. Construct sturdy fences, or barriers, of wood, steel, or other protective material around valuable

vegetation for protection from construction equipment. Place barriers far enough away from trees, but not less than the specifications in "B", so that tall equipment such as backhoes and dump trucks do not contact tree branches.

E. Construction limits should be identified and clearly marked to exclude equipment.

F. Avoid spills of oil/gas and other contaminants.

G. Obstructive and broken branches should be pruned properly. The branch collar on all branches whether living or dead should not be damaged. The 3 or 4 cut method should be used on all branches larger than two inches at the cut. First cut about one-third the way through the underside of the limb (about 6-12 inches from the tree trunk). Then (approximately an inch further out) make a second cut through the limb from the upper side. When the branch is removed, there is no splintering of the main tree trunk. Remove the stub. If the branch is larger than 5-6 inches in diameter, use the four cut system. Cuts 1 and 2 remain the same and cut 3 should be from the underside of the limb, on the outside of the branch collar. Cut 4 should be from the top and in alignment with the 3rd cut. Cut 3 should be 1/4 to 1/3 the way through the limb. This will prevent the bark from peeling down the trunk. Do not paint the cut surface.

H. Penalties for damage to valuable trees, shrubs, and herbaceous plants should be clearly spelled out in the contract.

PROTECTING TREES IN HEAVY USE AREAS

The compaction of soil over the roots of trees and shrubs by the trampling of recreationists, vehicular traffic, etc., reduces oxygen, water, and nutrient uptake by feeder roots. This weakens and may eventually kill the plants. Table 2.6 rates the “Susceptibility of Tree Species to Compaction.”

Where heavy compaction is anticipated, apply and maintain a 3 to 4 inch layer of undecayed wood chips or 2 inches of No. 2 washed, crushed gravel. In addition, use of a wooden or plastic mat may be used to lessen compaction, if applicable.

Table 2.6
Susceptibility of Tree Species to Compaction[1]

Resistant:

Box elder……	*Acer negundo*	Willows……	*Salix spp.*
Green ash……..	*Fraxinus pennsylvanica*	Honey locust……	*Gleditsia triacanthos*
Red elm……..	*Ulmus rubra*	Eastern cottonwood…….	*Populus deltoides*
Hawthornes……	*Crataegus spp.*	Swamp white oak…….	*Quercus bicolor*
Bur oak……..	*Quercus macrocarpa*	Hophornbeam……	*Ostrya virginiana*
Northern white cedar….	*Thuja occidentalis*		

Intermediate:

Red maple…….	*Acer rubrum*	Sweetgum…….	*Liquidambar styraciflua*
Silver maple……..	*Acer saccharinum*	Norway maple…….	*Acer platanoides*
Hackberry…….	*Celtis occidentalis*	Shagbark hickory…….	*Carya ovata*
Black gum……	*Nyssa sylvatica*	London plane……..	*Platanus x hybrida*
Red oak……	*Quercus rubra*	Pin oak…….	*Quercus palustris*
Basswood…….	*Tilia americana*		

Susceptible:

Sugar maple…….	*Acer saccharum*	Austrian Pine……	*Pinus nigra*
White pine……	*Pinus strobus*	White ash…….	*Fraxinus americana*
Blue spruce……..	*Picea pungens*	Paper birch……..	*Betula papyrifera*
White oak……	*Quercus alba*	Moutain ash…….	*Sorbus aucuparia*
Red pine……..	*Pinus resinosa*	Japanese maple……	*Acer palmatum*

[1] If a tree species does not appear on the list, insufficient information is available to rate it for this purpose.

STANDARD AND SPECIFICATIONS FOR ROCK OUTLET PROTECTION

Definition & Scope

A **permanent** section of rock protection placed at the outlet end of the culverts, conduits, or channels to reduce the depth, velocity, and energy of water, such that the flow will not erode the receiving downstream reach.

Conditions Where Practice Applies

This practice applies where discharge velocities and energies at the outlets of culverts, conduits, or channels are sufficient to erode the next downstream reach. This applies to:

1. Culvert outlets of all types.
2. Pipe conduits from all sediment basins, dry storm water ponds, and permanent type ponds.
3. New channels constructed as outlets for culverts and conduits.

Design Criteria

The design of rock outlet protection depends entirely on the location. Pipe outlet at the top of cuts or on slopes steeper than 10 percent, cannot be protected by rock aprons or riprap sections due to re-concentration of flows and high velocities encountered after the flow leaves the apron.

Many counties and state agencies have regulations and design procedures already established for dimensions, type and size of materials, and locations where outlet protection is required. Where these requirements exist, they shall be followed.

Tailwater Depth

The depth of tailwater immediately below the pipe outlet must be determined for the design capacity of the pipe. If the tailwater depth is less than half the diameter of the outlet pipe, and the receiving stream is wide enough to accept divergence of the flow, it shall be classified as a Minimum Tailwater Condition; see Figure 3.16 on page 3.42 as an example. If the tailwater depth is greater than half the pipe diameter and the receiving stream will continue to confine the flow, it shall be classified as a Maximum Tailwater Condition; see Figure 3.17 on page 3.43 as an example. Pipes which outlet onto flat areas with no defined channel may be assumed to have a Minimum Tailwater Condition; see Figure 3.16 on page 3.42 as an example.

Apron Size

The apron length and width shall be determined from the curves according to the tailwater conditions:

Minimum Tailwater – Use Figure 3.16 on page 3.42
Maximum Tailwater – Use Figure 3.17 on page 3.43

If the pipe discharges directly into a well defined channel, the apron shall extend across the channel bottom and up the channel banks to an elevation one foot above the maximum tailwater depth or to the top of the bank, whichever is less.

The upstream end of the apron, adjacent to the pipe, shall have a width two (2) times the diameter of the outlet pipe, or conform to pipe end section if used.

Bottom Grade

The outlet protection apron shall be constructed with no slope along its length. There shall be no overfall at the end of the apron. The elevation of the downstream end of the apron shall be equal to the elevation of the receiving channel or adjacent ground.

Alignment

The outlet protection apron shall be located so that there are no bends in the horizontal alignment.

Materials

The outlet protection may be done using rock riprap, grouted riprap, or gabions. Outlets constructed on the bank of a stream or wetland shall not use grouted rip-rap, gabions or concrete.

Riprap shall be composed of a well-graded mixture of rock size so that 50 percent of the pieces, by weight, shall be larger than the d_{50} size determined by using the charts. A

well-graded mixture, as used herein, is defined as a mixture composed primarily of larger rock sizes, but with a sufficient mixture of other sizes to fill the smaller voids between the rocks. The diameter of the largest rock size in such a mixture shall be 1.5 times the d_{50} size.

Thickness

The minimum thickness of the riprap layer shall be 1.5 times the maximum rock diameter for d_{50} of 15 inches or less; and 1.2 times the maximum rock size for d_{50} greater than 15 inches. The following chart lists some examples:

D_{50} (inches)	d_{max} (inches)	Minimum Blanket Thickness (inches)
4	6	9
6	9	14
9	14	20
12	18	27
15	22	32
18	27	32
21	32	38
24	36	43

Rock Quality

Rock for riprap shall consist of field rock or rough unhewn quarry rock. The rock shall be hard and angular and of a quality that will not disintegrate on exposure to water or weathering. The specific gravity of the individual rocks shall be at least 2.5.

Filter

A filter is a layer of material placed between the riprap and the underlying soil surface to prevent soil movement into and through the riprap. Riprap shall have a filter placed under it in all cases.

A filter can be of two general forms: a gravel layer or a plastic filter cloth. The plastic filter cloth can be woven or non-woven monofilament yarns, and shall meet these base requirements: thickness 20-60 mils, grab strength 90-120 lbs; and shall conform to ASTM D-1777 and ASTM D-1682.

Gravel filter blanket, when used, shall be designed by comparing particle sizes of the overlying material and the base material. Design criteria are available in Standard and Specification for Anchored Slope and Channel Stabilization on page 4.7.

Gabions

Gabions shall be made of hexagonal triple twist mesh with heavily galvanized steel wire. The maximum linear dimension of the mesh opening shall not exceed 4 ½ inches and the area of the mesh opening shall not exceed 10 square inches.

Gabions shall be fabricated in such a manner that the sides, ends, and lid can be assembled at the construction site into a rectangular basket of the specified sizes. Gabions shall be of single unit construction and shall be installed according to manufacturer's recommendations.

The area on which the gabion is to be installed shall be graded as shown on the drawings. Foundation conditions shall be the same as for placing rock riprap, and filter cloth shall be placed under all gabions. Where necessary, key, or tie, the structure into the bank to prevent undermining of the main gabion structure.

Maintenance

Once a riprap outlet has been installed, the maintenance needs are very low. It should be inspected after high flows for evidence of scour beneath the riprap or for dislodged rocks. Repairs should be made immediately.

Design Procedure

1. Investigate the downstream channel to assure that nonerosive velocities can be maintained.

2. Determine the tailwater condition at the outlet to establish which curve to use.

3. Use the appropriate chart with the design discharge to determine the riprap size and apron length required. It is noted that references to pipe diameters in the charts are based on full flow. For other than full pipe flow, the parameters of depth of flow and velocity must be used to adjust the design discharges.

4. Calculate apron width at the downstream end if a flare section is to be employed.

Design Examples are demonstrated in Appendix B.

Construction Specifications

1. The subgrade for the filter, riprap, or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.

2. The rock or gravel shall conform to the specified grad-

ing limits when installed respectively in the riprap or filter.

3. Filter cloth shall be protected from punching, cutting, or tearing. Any damage other than an occasional small hole shall be repaired by placing another piece of cloth over the damaged part or by completely replacing the cloth. All overlaps, whether for repairs or for joining two pieces of cloth shall be a minimum of one foot.

4. Rock for the riprap or gabion outlets may be placed by equipment. Both shall each be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. The rock for riprap or gabion outlets shall be delivered and placed in a manner that will ensure that it is reasonably homogenous with the smaller rocks and spalls filling the voids between the larger rocks. Riprap shall be placed in a manner to prevent damage to the filter blanket or filter cloth. Hand placement will be required to the extent necessary to prevent damage to the permanent works.

STANDARD AND SPECIFICATIONS FOR SILT FENCE

Definition & Scope

A **temporary** barrier of geotextile fabric installed on the contours across a slope used to intercept sediment laden runoff from small drainage areas of disturbed soil by temporarily ponding the sediment laden runoff allowing settling to occur. The maximum period of use is limited by the ultraviolet stability of the fabric (approximately one year).

Conditions Where Practice Applies

A silt fence may be used subject to the following conditions:

1. Maximum allowable slope length and fence length will not exceed the limits shown in the Design Criteria for the specific type of silt fence used ; and
2. Maximum ponding depth of 1.5 feet behind the fence; and
3. Erosion would occur in the form of sheet erosion; and
4. There is no concentration of water flowing to the barrier; and
5. Soil conditions allow for proper keying of fabric, or other anchorage, to prevent blowouts.

Design Criteria

1. Design computations are not required for installations of 1 month or less. Longer installation periods should be designed for expected runoff.
2. All silt fences shall be placed as close to the disturbed area as possible, but at least 10 feet from the toe of a slope steeper than 3H:1V, to allow for maintenance and roll down. The area beyond the fence must be undisturbed or stabilized.
3. The type of silt fence specified for each location on the plan shall not exceed the maximum slope length and maximum fence length requirements shown in the following table:

		Slope Length/Fence Length (ft.)		
Slope	Steepness	Standard	Reinforced	Super
<2%	< 50:1	300/1500	N/A	N/A
2-10%	50:1 to 10:1	125/1000	250/2000	300/2500
10-20%	10:1 to 5:1	100/750	150/1000	200/1000
20-33%	5:1 to 3:1	60/500	80/750	100/1000
33-50%	3:1 to 2:1	40/250	70/350	100/500
>50%	> 2:1	20/125	30/175	50/250

Standard Silt Fence (SF) is fabric rolls stapled to wooden stakes driven 16 inches in the ground.
Reinforced Silt Fence (RSF) is fabric placed against welded wire fabric with anchored steel posts driven 16 inches in the ground.
Super Silt Fence (SSF) is fabric placed against chain link fence as support backing with posts driven 3 feet in the ground.

4. Silt fence shall be removed as soon as the disturbed area has achieved final stabilization.

The silt fence shall be installed in accordance with the appropriate details. Where ends of filter cloth come together, they shall be overlapped, folded and stapled to prevent sediment bypass. Butt joints are not acceptable. A detail of the silt fence shall be shown on the plan. See Figure 5.30 on page 5.56 for Reinforced Silt Fence as an example of details to be provided.

Criteria for Silt Fence Materials

1. Silt Fence Fabric: The fabric shall meet the following specifications unless otherwise approved by the appropriate erosion and sediment control plan approval authority. Such approval shall not constitute statewide acceptance.

Fabric Properties	Minimum Acceptable Value	Test Method
Grab Tensile Strength (lbs)	110	ASTM D 4632
Elongation at Failure (%)	20	ASTM D 4632
Mullen Burst Strength (PSI)	300	ASTM D 3786
Puncture Strength (lbs)	60	ASTM D 4833
Minimum Trapezoidal Tear Strength (lbs)	50	ASTM D 4533
Flow Through Rate (gal/min/sf)	25	ASTM D 4491
Equivalent Opening Size	40-80	US Std Sieve ASTM D 4751
Minimum UV Residual (%)	70	ASTM D 4355

2. Fence Posts (for fabricated units): The length shall be a minimum of 36 inches long. Wood posts will be of sound quality hardwood with a minimum cross sectional area of 3.5 square inches. Steel posts will be standard T and U section weighing not less than 1.00 pound per linear foot. Posts for super silt fence shall be standard chain link fence posts.

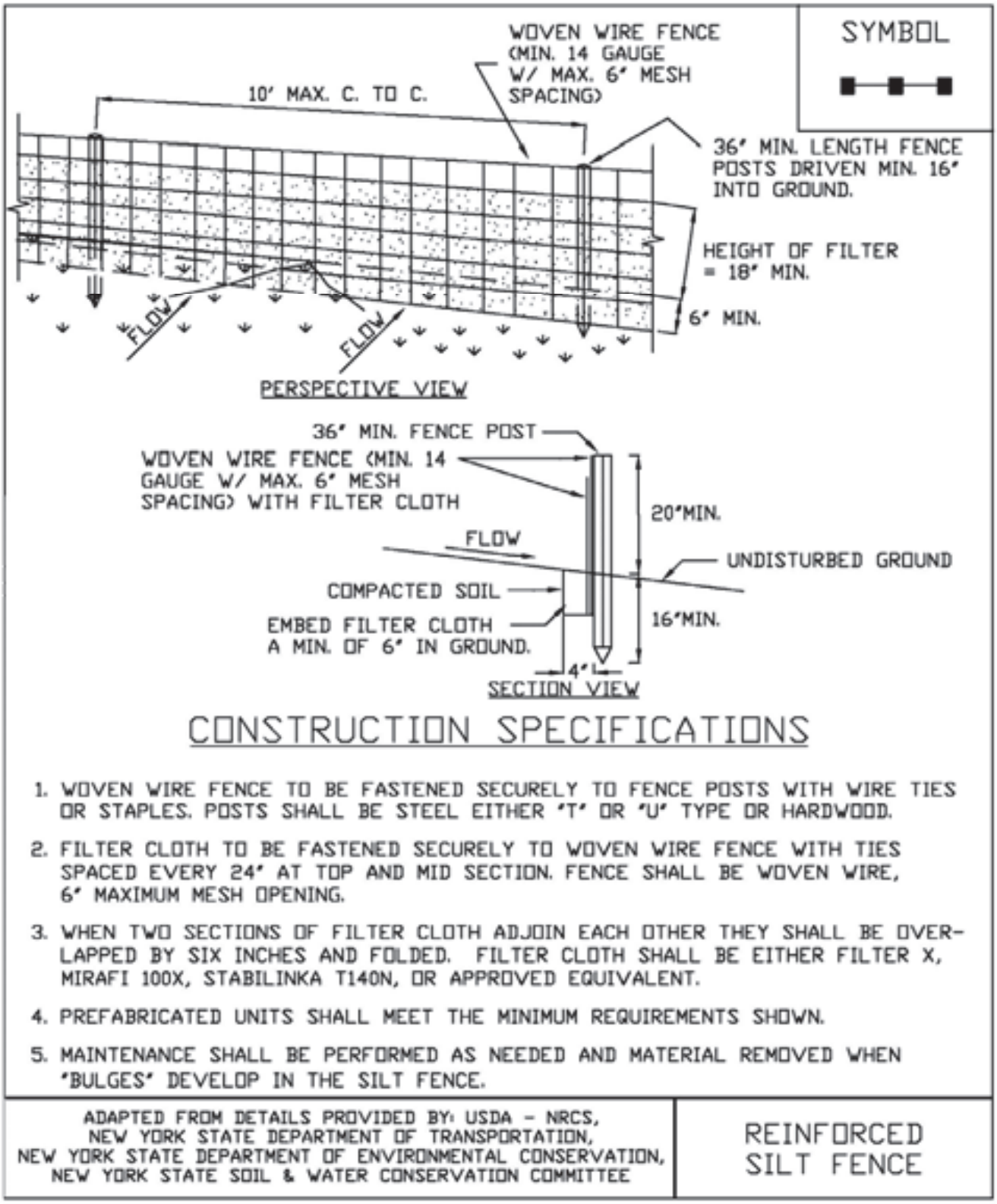
3. Wire Fence for reinforced silt fence: Wire fencing shall be a minimum 14 gage with a maximum 6 in. mesh opening, or as approved.

4. Prefabricated silt fence is acceptable as long as all material specifications are met.

Super Silt Fence

Reinforced Silt Fence

Figure 5.30
Reinforced Silt Fence



STANDARD AND SPECIFICATIONS FOR SITE POLLUTION PREVENTION

Definition & Scope

A collection of management practices intended to control non-sediment pollutants associated with construction activities to prevent the generation of pollutants due to improper handling, storage, and spills and prevent the movement of toxic substances from the site into surface waters.

Conditions Where Practice Applies

On all construction sites where the earth disturbance exceeds 5,000 square feet, and involves the use of fertilizers, pesticides, petroleum based chemicals, fuels and lubricants, as well as sealers, paints, cleared woody vegetation, garbage, and sanitary wastes.

Design Criteria

The variety of pollutants on a particular site and the severity of their impacts depend on factors such as the nature of the construction activity, the physical characteristics of the construction site, and the proximity of water bodies and conveyances to the pollutant source.

1. All state and federal regulations shall be followed for the storage, handling, application, usage, and disposal of pesticides, fertilizers, and petroleum products.

2. Vehicle and construction equipment staging and maintenance areas will be located away from all drainage ways with their parking areas graded so the runoff from these areas is collected, contained and treated prior to discharge from the site.

3. Provide sanitary facilities for on-site personnel.

4. Store, cover, and isolate construction materials including topsoil, and chemicals, to prevent runoff of pollutants and contamination of groundwater and surface waters.

5. Develop and implement a spill prevention and control plan. The plan should include NYSDEC's spill reporting and initial notification requirements.

6. Provide adequate disposal for solid waste including woody debris, stumps, and other construction waste and include these methods and directions in the construction details on the site construction drawings. Fill, woody debris, stumps and construction waste shall not be placed in regulated wetlands, streams or other surface waters.

7. Distribute or post informational material regarding proper handling, spill response, spill kit location, and emergency actions to be taken, to all construction personnel.

8. Refueling equipment shall be located at least 100 feet from all wetlands, streams and other surface waters.

STANDARD AND SPECIFICATIONS FOR SOIL RESTORATION

Definition & Scope

The decompaction of areas of a development site or construction project where soils have been disturbed to recover the original properties and porosity of the soil; thus providing a sustainable growth medium for vegetation, reduction of runoff and filtering of pollutants from stormwater runoff.

Conditions Where Practice Applies

Soil restoration is to be applied to areas whose heavy construction traffic is done and final stabilization is to begin. This is generally applied in the cleanup, site restoration, and landscaping phase of construction followed by the permanent establishment of an appropriate ground cover to maintain the soil structure. Soil restoration measures should be applied over and adjacent to any runoff reduction practices to achieve design performance.

Design Criteria

1. Soil restoration areas will be designated on the plan views of areas to be disturbed.
2. Soil restoration will be completed in accordance with Table 4.6 on page 4.53.

Specification for Full Soil Restoration

During periods of relatively low to moderate subsoil moisture, the disturbed subsoils are returned to rough grade and the following Soil Restoration steps applied:

1. Apply 3 inches of compost over subsoil. The compost shall be well decomposed (matured at least 3 months), weed-free, organic matter. It shall be aerobically composted, possess no objectionable odors, and contain less than 1%, by dry weight, of man-made foreign matter. The physical parameters of the compost shall meet the standards listed in Table 5.2 - Compost Standards Table, except for "Particle Size" 100% will pass the 1/2" sieve. **Note: All biosolids compost produced in New York State (or approved for importation) must meet NYS DEC's 6 NYCRR Part 360 (Solid Waste Management Facilities) requirements. The Part 360 requirements are equal to or more stringent than 40 CFR Part 503 which ensure safe standards for pathogen reduction and heavy metals content.**

2. Till compost into subsoil to a depth of at least 12 inches using a cat-mounted ripper, tractor mounted disc, or tiller, to mix and circulate air and compost into the subsoil.
3. Rock-pick until uplifted stone/rock materials of four inches and larger size are cleaned off the site.
4. Apply topsoil to a depth of 6 inches.
5. Vegetate as required by the seeding plan. Use appropriate ground cover with deep roots to maintain the soil structure.
6. Topsoil may be manufactured as a mixture or a mineral component and organic material such as compost.

At the end of the project an inspector should be able to push a 3/8" metal bar 12 inches into the soil just with body weight. This should not be performed within the drip line of any existing trees or over utility installations that are within 24 inches of the surface.

Maintenance

Keep the site free of vehicular and foot traffic or other weight loads. Consider pedestrian footpaths.

Table 4.6
Soil Restoration Requirements

Type of Soil Disturbance	Soil Restoration Requirement		Comments/Examples
No soil disturbance	Restoration not permitted		Preservation of Natural Features
Minimal soil disturbance	Restoration not required		Clearing and grubbing
Areas where topsoil is stripped only - no change in grade	HSG A&B	HSG C&D	Protect area from any ongoing construction activities.
	Apply 6 inches of topsoil	Aerate* and apply 6 inches of topsoil	
Areas of cut or fill	HSG A&B	HSG C&D	
	Aerate* and apply 6 inches of topsoil	Apply full Soil Restoration**	
Heavy traffic areas on site (especially in a zone 5-25 feet around buildings but not within a 5 foot perimeter around foundation walls)	Apply full Soil Restoration (decompaction and compost enhancement)		
Areas where Runoff Reduction and/or Infiltration practices are applied	Restoration not required, but may be applied to enhance the reduction specified for appropriate practices.		Keep construction equipment from crossing these areas. To protect newly installed practice from any ongoing construction activities construct a single phase operation fence area
Redevelopment projects	Soil Restoration is required on redevelopment projects in areas where existing impervious area will be converted to pervious area.		

* Aeration includes the use of machines such as tractor-drawn implements with coulters making a narrow slit in the soil, a roller with many spikes making indentations in the soil, or prongs which function like a mini-subsoiler.
** Per "Deep Ripping and De-compaction, DEC 2008".

STANDARD AND SPECIFICATIONS FOR STABILIZED CONSTRUCTION ACCESS

Definition & Scope

A stabilized pad of aggregate underlain with geotextile located at any point where traffic will be entering or leaving a construction site to or from a public right-of-way, street, alley, sidewalk, or parking area. The purpose of stabilized construction access is to reduce or eliminate the tracking of sediment onto public rights-of-way or streets.

Conditions Where Practice Applies

A stabilized construction access shall be used at all points of construction ingress and egress.

Design Criteria

See Figure 2.1 on page 2.31 for details.

Aggregate Size: Use a matrix of 1-4 inch stone, or reclaimed or recycled concrete equivalent.

Thickness: Not less than six (6) inches.

Width: 12-foot minimum but not less than the full width of points where ingress or egress occurs. 24-foot minimum if there is only one access to the site.

Length: As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum would apply).

Geotextile: To be placed over the entire area to be covered with aggregate. Filter cloth will not be required on a single-family residence lot. Piping of surface water under entrance shall be provided as required. If piping is impossible, a mountable berm with 5:1 slopes will be permitted.

Criteria for Geotextile: The geotextile shall be woven or nonwoven fabric consisting only of continuous chain polymeric filaments or yarns of polyester. The fabric shall be inert to commonly encountered chemicals, hydro-carbons, mildew, rot resistant, and conform to the fabric properties as shown:

Fabric Properties[3]	Light Duty[1] Roads Grade Subgrade	Heavy Duty[2] Haul Roads Rough Graded	Test Method
Grab Tensile Strength (lbs)	200	220	ASTM D1682
Elongation at Failure (%)	50	60	ASTM D1682
Mullen Burst Strength (lbs)	190	430	ASTM D3786
Puncture Strength (lbs)	40	125	ASTM D751 Modified
Equivalent	40-80	40-80	US Std Sieve
Opening Size			CW-02215
Aggregate Depth	6	10	-

[1]Light Duty Road: Area sites that have been graded to subgrade and where most travel would be single axle vehicles and an occasional multi-axle truck. Acceptable materials are Trevira Spunbond 1115, Mirafi 100X, Typar 3401, or equivalent.

[2]Heavy Duty Road: Area sites with only rough grading, and where most travel would be multi-axle vehicles. Acceptable materials are Trevira Spunbond 1135, Mirafi 600X, or equivalent.

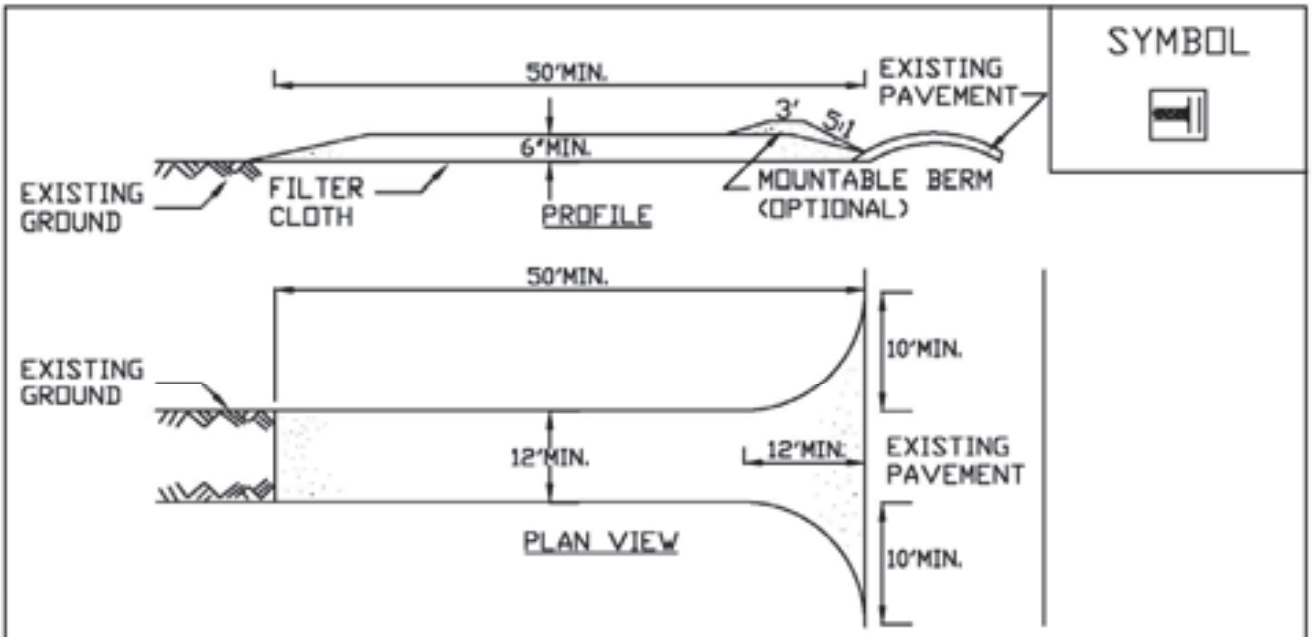
[3]Fabrics not meeting these specifications may be used only when design procedure and supporting documentation are supplied to determine aggregate depth and fabric strength.

Maintenance

The access shall be maintained in a condition which will prevent tracking of sediment onto public rights-of-way or streets. This may require periodic top dressing with additional aggregate. All sediment spilled, dropped, or washed onto public rights-of-way must be removed immediately.

When necessary, wheels must be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device. All sediment shall be prevented from entering storm drains, ditches, or watercourses.

Figure 2.1
Stabilized Construction Access



CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 1-4 INCH STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ACCESS SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS,
NEW YORK STATE DEPARTMENT OF TRANSPORTATION,
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,
NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

STABILIZED CONSTRUCTION ACCESS

STANDARD AND SPECIFICATIONS FOR TEMPORARY CONSTRUCTION AREA SEEDING

Definition & Scope

Providing temporary erosion control protection to disturbed areas and/or localized critical areas for an interim period by covering all bare ground that exists as a result of construction activities or a natural event. Critical areas may include but are not limited to steep excavated cut or fill slopes and any disturbed, denuded natural slopes subject to erosion.

Conditions Where Practice Applies

Temporary seedings may be necessary on construction sites to protect an area, or section, where final grading is complete, when preparing for winter work shutdown, or to provide cover when permanent seedings are likely to fail due to mid-summer heat and drought. The intent is to provide temporary protective cover during temporary shutdown of construction and/or while waiting for optimal planting time.

Criteria

Water management practices must be installed as appropriate for site conditions. The area must be rough graded and slopes physically stable. Large debris and rocks are usually removed. Seedbed must be seeded within 24 hours of disturbance or scarification of the soil surface will be necessary prior to seeding.

Fertilizer or lime are not typically used for temporary seedings.

IF: Spring or summer or early fall, then seed the area with ryegrass (annual or perennial) at 30 lbs. per acre (Approximately 0.7 lb./1000 sq. ft. or use 1 lb./1000 sq. ft.).

IF: Late fall or early winter, then seed Certified 'Aroostook' winter rye (cereal rye) at 100 lbs. per acre (2.5 lbs./1000 sq. ft.).

Any seeding method may be used that will provide uniform application of seed to the area and result in relatively good soil to seed contact.

Mulch the area with hay or straw at 2 tons/acre (approx. 90 lbs./1000 sq. ft. or 2 bales). Quality of hay or straw mulch allowable will be determined based on long term use and visual concerns. Mulch anchoring will be required where wind or areas of concentrated water are of concern. Wood fiber hydromulch or other sprayable products approved for erosion control (nylon web or mesh) may be used if applied according to manufacturers' specification. Caution is advised when using nylon or other synthetic products. They may be difficult to remove prior to final seeding and can be a hazard to young wildlife species.

STANDARD AND SPECIFICATIONS FOR TOPSOILING

Definition & Scope

Spreading a specified quality and quantity of topsoil materials on graded or constructed subsoil areas to provide acceptable plant cover growing conditions, thereby reducing erosion; to reduce irrigation water needs; and to reduce the need for nitrogen fertilizer application.

Conditions Where Practice Applies

Topsoil is applied to subsoils that are droughty (low available moisture for plants), stony, slowly permeable, salty or extremely acid. It is also used to backfill around shrub and tree transplants. This standard does not apply to wetland soils.

Design Criteria

1. Preserve existing topsoil in place where possible, thereby reducing the need for added topsoil.

2. Conserve by stockpiling topsoil and friable fine textured subsoils that must be stripped from the excavated site and applied after final grading where vegetation will be established. Topsoil stockpiles must be stabilized. Stockpile surfaces can be stabilized by vegetation, geotextile or plastic covers. This can be aided by orientating the stockpile lengthwise into prevailing winds.

3. Refer to USDA Natural Resource Conservation Service soil surveys or soil interpretation record sheets for further soil texture information for selecting appropriate design topsoil depths.

Site Preparation

1. As needed, install erosion and sediment control practices such as diversions, channels, sediment traps, and stabilizing measures, or maintain if already installed.

2. Complete rough grading and final grade, allowing for depth of topsoil to be added.

3. Scarify all compact, slowly permeable, medium and fine textured subsoil areas. Scarify at approximately right angles to the slope direction in soil areas that are steeper than 5 percent. Areas that have been overly compacted shall be decompacted in accordance with the Soil Restoration Standard.

4. Remove refuse, woody plant parts, stones over 3 inches in diameter, and other litter.

Topsoil Materials

1. Topsoil shall have at least 6 percent by weight of fine textured stable organic material, and no greater than 20 percent. Muck soil shall not be considered topsoil.

2. Topsoil shall have not less than 20 percent fine textured material (passing the NO. 200 sieve) and not more than 15 percent clay.

3. Topsoil treated with soil sterilants or herbicides shall be so identified to the purchaser.

4. Topsoil shall be relatively free of stones over 1 1/2 inches in diameter, trash, noxious weeds such as nut sedge and quackgrass, and will have less than 10 percent gravel.

5. Topsoil containing soluble salts greater than 500 parts per million shall not be used.

6. Topsoil may be manufactured as a mixture of a mineral component and organic material such as compost.

Application and Grading

1. Topsoil shall be distributed to a uniform depth over the area. It shall not be placed when it is partly frozen, muddy, or on frozen slopes or over ice, snow, or standing water puddles.

2. Topsoil placed and graded on slopes steeper than 5 percent shall be promptly fertilized, seeded, mulched, and stabilized by “tracking” with suitable equipment.

3. Apply topsoil in the amounts shown in Table 4.7 below:

Table 4.7 - Topsoil Application Depth		
Site Conditions	**Intended Use**	**Minimum Topsoil Depth**
1. Deep sand or loamy sand	Mowed lawn	6 in.
	Tall legumes, unmowed	2 in.
	Tall grass, unmowed	1 in.
2. Deep sandy loam	Mowed lawn	5 in.
	Tall legumes, unmowed	2 in.
	Tall grass, unmowed	none
3. Six inches or more: silt loam, clay loam, loam, or silt	Mowed lawn	4 in.
	Tall legumes, unmowed	1 in.
	Tall grass, unmowed	1 in.

VEGETATIVE MEASURES FOR EROSION AND SEDIMENT CONTROL

Erosion is the gradual wearing away of the land surface as a result of uncontrolled wind and water energy. Sedimentation is the result of transport and delivery of eroded soil particles, deposited at some point. Erosion and sediment control is a complex interaction of soils, engineering water management, agronomic and horticultural practices. Decisions for resolving erosion conditions, both on site and within the upper watershed, are formulated based on surface and subsurface water, soil material, climatic conditions, and anticipated land use. Creating a stable slope is necessary prior to vegetating. Sloughing and slumping are not helpful in establishing a uniform protective cover.

General planning considerations for vegetating a steep slope will include evaluating the soil. Factors such as soil texture and steepness affect the stability of the slope. Texture also influences the permeability and water holding capacity of the soil. Many slopes are stripped of topsoil during the construction phase, leaving an infertile, compacted soil surface, void of valuable organic matter. Topsoil must be reapplied. Overly compacted slopes should be decompacted with appropriate equipment. Soil pH and nutrient level are determined by obtaining a representative soil sample for analysis from an accredited lab. Appropriate plants are selected to meet the final slope and soil conditions for the site.

Liming material sold in New York varies considerably in several ways. The mineral content (calcium and magnesium) of the limestone may be high or low, the fineness or particle sizes vary between suppliers, and the cost varies greatly. Two types of limestone are sold. The most common is limestone high in calcium. Dolomitic limestone contains magnesium (Mg) and calcium (Ca). Limestone sold in NY varies from 0 to 20% Mg while the calcium content of lime varies from 14.7% to 51.5%. Particle size determines how rapidly the calcium and magnesium will react with the acid in the soil. The finer the particle sizes, the quicker the reaction.

When purchasing agricultural limestone, one should state on the order that the amount should be adjusted to 100% effective neutralizing value (ENV). This is the way to compare materials as it adjusts for the reactive Ca and Mg and the particle size. The ENV is stated as the ratio needed to convert a limestone recommendation to 100% ENV. Thus, if the recommendation is 4 tons/acre of 100% ENV lime and the lime being used had an 80% ENV (1/ENV = 1.25), 4 times 1.25 or 5 tons/acre would be required.

The amount of limestone needed can be estimated by using the table below. A soil test is the only way to determine the soil pH. This table is very general, but it is useful for planning.

General lime guidelines (at 100% ENV)

Initial Soil pH	*Sands*	*Sandy Loams*	*Loams and Silt Loams*	*Silty Clay Loams*
		T/A of lime[1]		
4.5	2.5	6.0	9.5	13.0
4.6-4.7	2.5	6.0	9.0	12.5
4.8-4.9	2.5	5.5	8.5	12.0
5.0-5.1	2.0	5.0	7.5	10.5
5.2-5.3	1.5	4.0	6.5	8.5
5.4-5.5	1.0	3.0	4.0	6.0
5.6-5.7	1.0	2.0	3.0	4.5
5.8-5.9	0.7	1.5	2.5	3.5
6.0-6.1	0.6	1.5	2.0	3.0
6.2-6.3	0.4	1.0	1.5	2.0
6.~6.5	0.3	0.7	1.0	1.5
6.6-6.7	0.2	0.5	0.7	1.0

Lime guidelines are in tons per acre and are based on a plow depth of 8.0 inches. Correct rate if plowing to a different depth.

REFERENCE: Cornell Cooperative Extension. 2003 Cornell Guide for Integrated Field Crop Management, Pg. 32.

Fertilizer is sold with an analysis printed on the tag or bag. The first number is the percent of nitrogen (N), the second is phosphorus (P), and the third is potassium (K). Other elements are sometimes included and are listed with these basic three components. For example, a forty pound bag of 5-10-5 contains 2 lbs. N, 4 lbs. P (as P_2O_5), and 2 lbs. of K (as K_20). Select an appropriate analysis to meet the nutrients required for the specific site. Always apply as closely as possible the required amount of fertilizer to meet the requirements of the site. Adding surplus nitrogen may cause pollution of drinking water and saltwater ecosystems. Excessive phosphorus may accelerate the aging process of freshwater ecosystems. Excessive amounts of N and K2O may result in 'burning' the grass and killing it.

Water management on and above potentially eroding sites is extremely important. Large watersheds above a site may require extensive water control measures. Water flow paths must be controlled to allow the safe delivery of the water to an outlet to the side or bottom of the slope. Shallow ditches or diversions across the slope and above the area to be seeded is an effective method of avoiding wash-out of the seed and soil. Diversions may be constructed at a point where surface runoff water is intercepted and carried away from the slope and to a safe outlet. On large slopes,

benching may be necessary for bench drains or future maintenance (see standard for Land Grading). Subsurface drainage is frequently included to prevent long term saturated soil conditions and sloughing.

Conservation plantings need to effectively hold soil and control erosion, and they should enhance and blend with their surroundings. Mature plant size, form, and appearance must be considered along with their functionality to match the anticipated land use. Basic erosion control is accomplished by providing cover to the soil surface utilizing plants and/or mulch. It is the system of seedbed preparation, soil amendments, plant selection, proper timing of planting, and mulching that will optimize the chances of success. Characteristics of grasses such as low growth, horizontal above and below ground stems, leafy growth, and many fine roots for binding soil particles, make them the primary choice for vegetating slopes. Once the grass type is selected, then appropriate forbs, shrubs, or trees may be added to meet site conditions. The use of appropriate mulches will depend on site criteria and should be carefully evaluated. Although some materials are costly, they may prevent the need for more costly reshaping and reseeding.

Selection of proper vegetative materials for site stabilization is critical for environmental success. Species should be selected that are not considered "invasive." A primary list of invasive plants can be found at the website of the Invasive Plant Council of New York State (http://www.ipcnys.org). Any species not on this list but considered suspect should be verified at the appropriate regional or local level for acceptance.

STANDARD AND SPECIFICATIONS FOR WINTER STABILIZATION

Definition & Scope

A temporary site specific, enhanced erosion and sediment control plan to manage runoff and sediment at the site during construction activities in the winter months to protect off-site water resources.

Conditions Where Practice Applies

This standard applies to all construction activities involved with ongoing land disturbance and exposure between November 15th to the following April 1st.

Design Criteria

1. Prepare a snow management plan with adequate storage for snow and control of melt water, requiring cleared snow to be stored in a manner not affecting ongoing construction activities.

2. Enlarge and stabilize access points to provide for snow management and stockpiling. Snow management activities must not destroy or degrade installed erosion and sediment control practices.

3. A minimum 25 foot buffer shall be maintained from all perimeter controls such as silt fence. Mark silt fence with tall stakes that are visible above the snow pack.

4. Edges of disturbed areas that drain to a waterbody within 100 feet will have 2 rows of silt fence, 5 feet apart, installed on the contour.

5. Drainage structures must be kept open and free of snow and ice dams. All debris, ice dams, or debris from plowing operations, that restrict the flow of runoff and meltwater, shall be removed.

6. Sediment barriers must be installed at all appropriate perimeter and sensitive locations. Silt fence and other practices requiring earth disturbance must be installed before the ground freezes.

7. Soil stockpiles must be protected by the use of established vegetation, anchored straw mulch, rolled stabilization matting, or other durable covering. A barrier must be installed at least 15 feet from the toe of the stockpile to prevent soil migration and to capture loose soil.

8. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures should be initiated by the end of the next business day and completed within three (3) days. Rolled erosion control blankets must be used on all slopes 3 horizontal to 1 vertical or steeper.

9. If straw mulch alone is used for temporary stabilization, it shall be applied at double the standard rate of 2 tons per acre, making the application rate 4 tons per acre. Other manufactured mulches should be applied at double the manufacturer's recommended rate.

10. To ensure adequate stabilization of disturbed soil in advance of a melt event, areas of disturbed soil should be stabilized at the end of each work day unless:

    a. work will resume within 24 hours in the same area and no precipitation is forecast or;

    b. the work is in disturbed areas that collect and retain runoff, such as open utility trenches, foundation excavations, or water management areas.

11. Use stone paths to stabilize access perimeters of buildings under construction and areas where construction vehicle traffic is anticipated. Stone paths should be a minimum 10 feet in width but wider as necessary to accommodate equipment.

Maintenance

The site shall be inspected frequently to ensure that the erosion and sediment control plan is performing its winter stabilization function. If the site will not have earth disturbing activities ongoing during the "winter season", **all** bare exposed soil must be stabilized by established vegetation, straw or other acceptable mulch, matting, rock, or other approved material such as rolled erosion control products. Seeding of areas with mulch cover is preferred but seeding alone is not acceptable for proper stabilization.

Compliance inspections must be performed and reports filed properly in accordance with the SWPPP for all sites under a winter shutdown.

APPENDIX C-4

Existing and Proposed Conditions Drainage Plan

ANALYSIS POINT

DELINEATED WETLAND (TYP.)

DRAINAGE AREA BOUNDARY

EXISTING DITCH

Tc PATH

DA-1

DRAINAGE AREA BOUNDARY

EXISTING PROPERTY LINE

EXISTING ROADWAY

EXISTING DITCH

DRAINAGE AREA BOUNDARY

DA-1 Tc PATH START POINT

DELINEATED WETLAND (TYP.)

EXISTING STREAM

Tc PATH

DA-2 Tc PATH START POINT

DA-2

100 FOOT WETLAND BUFFER

ANALYSIS POINT

USGS GROUP B SOIL

USGS SOILS GROUP BOUNDARY

USGS GROUP C SOIL

LEGEND

- 100FT WETLAND BUFFER
- DELINEATED WETLANDS
- EXISTING PROPERTY LINE
- EXISTING TREE LINE
- EXISTING STREAM
- EXISTING DITCH

A1 EXISTING CONDITIONS DRAINAGE PLAN
SCALE: 1" = 150'

0 100' 200'

C&S COMPANIES
C&S Engineers, Inc.
499 Col. Eileen Collins Blvd.
Syracuse, New York 13212
Phone: 315-455-2000
Fax: 315-455-9667
www.cscos.com

STATE OF NEW YORK ERIC KENT LICENSED PROFESSIONAL ENGINEER 058339

emeren Empowering Renewables

NY ROME OLD ONEIDA ROAD SOLAR, LLC
5792 OLD ONEIDA ROAD
ROME, NY 13440
ONEIDA COUNTY

MARK	DATE	DESCRIPTION

REVISIONS

PROJECT NO: V32.007.002
DATE: DECEMBER 2024
DRAWN BY: B. BUCKINGHAM
DESIGNED BY:
CHECKED BY:

NO ALTERATION PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK EDUCATION LAW

EXISTING CONDITIONS DRAINAGE PLAN

E-1

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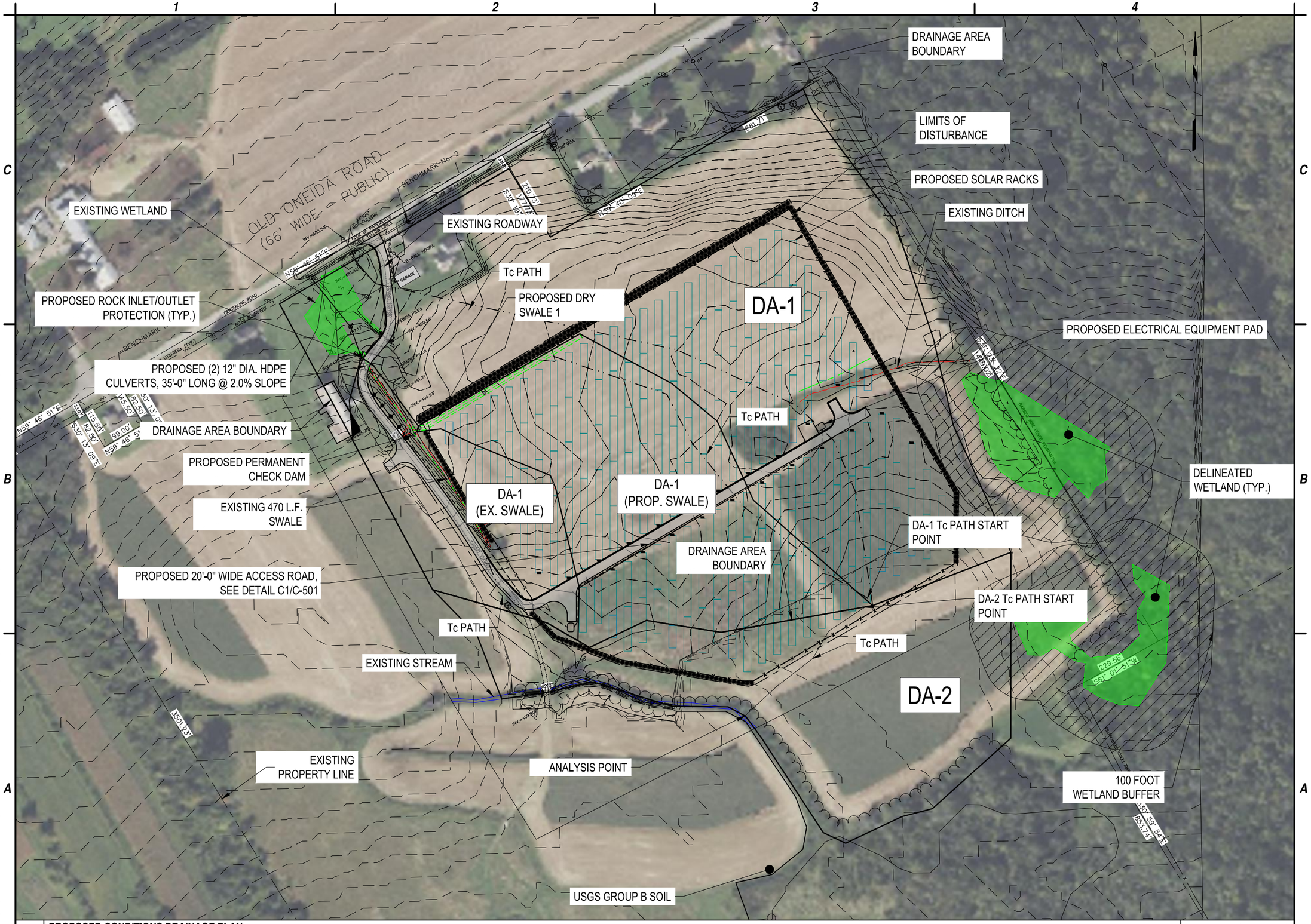
Mar 19, 2025 - 3:32pm
F:\Projects\V32 - Renesola Power Holdings, LLC\V32007002 - Old Oneida Site Permitting\Planning-Study\Technical Information\SWPPP\Appendix C\CADD\Existing Conditions Drainage Plan.dwg



A1 **PROPOSED CONDITIONS DRAINAGE PLAN**
SCALE: 1" = 150'

0 150' 300'

C&S COMPANIES
C&S Engineers, Inc.
499 Col. Eileen Collins Blvd.
Syracuse, New York 13212
Phone: 315-455-2000
Fax: 315-455-9667
www.cscos.com

STATE OF NEW YORK ERIC KENT A LICENSED PROFESSIONAL ENGINEER 058339

emeren Empowering Renewables

NY ROME OLD ONEIDA ROAD SOLAR, LLC
5792 OLD ONEIDA ROAD
ROME, NY 13440
ONEIDA COUNTY

MARK	DATE	DESCRIPTION

REVISIONS

PROJECT NO:	V32.007.002
DATE:	DECEMBER 2024
DRAWN BY:	B. BUCKINGHAM
DESIGNED BY:	
CHECKED BY:	

NO ALTERATION PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK EDUCATION LAW

PROPOSED CONDITIONS DRAINAGE PLAN

P-1

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Mar 19, 2025 – 3:37pm
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APPENDIX C-5

HydroCAD Stormwater Output (Drainage Analysis)

Subcat Reach Pond Link

Routing Diagram for Existing Conditions
Prepared by C&S Engineers, Inc, Printed 3/19/2025
HydroCAD® 10.20-5c s/n 01996 © 2023 HydroCAD Software Solutions LLC

Project Notes

Rainfall events imported from "NRCS-Rain.txt" for 7108 NY St Lawrence
Rainfall events imported from "NRCS-Rain.txt" for 7069 NY Livingston
Rainfall events imported from "NRCS-Rain.txt" for 7081 NY Ontario
Rainfall events imported from "NRCS-Rain.txt" for 7024 NY Chenango
Rainfall events imported from "NRCS-Rain.txt" for 7077 NY Oneida
Copied 9 events from NY-Old Oneida 24-hr S1 storm
Copied 9 events from NY-Old Oneida 24-hr S1 storm
Copied 9 events from NY-Old Oneida 24-hr S1 storm
Copied 9 events from NY-Old Oneida 24-hr S1 storm

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr	NY-Old Oneida 24-hr S1	1-yr	Default	24.00	1	2.15	2
2	2-yr	NY-Old Oneida 24-hr S1	2-yr	Default	24.00	1	2.48	2
3	5-yr	NY-Old Oneida 24-hr S1	5-yr	Default	24.00	1	3.04	2
4	10-yr	NY-Old Oneida 24-hr S1	10-yr	Default	24.00	1	3.54	2
5	25-yr	NY-Old Oneida 24-hr S1	25-yr	Default	24.00	1	4.34	2
6	50-yr	NY-Old Oneida 24-hr S1	50-yr	Default	24.00	1	5.07	2
7	100-yr	NY-Old Oneida 24-hr S1	100-yr	Default	24.00	1	5.92	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.560	48	Brush, Good, HSG B (2)
0.280	82	Dirt roads, HSG B (1)
35.290	58	Meadow, non-grazed, HSG B (1, 2)
0.290	98	Roofs & Asphalt Drive, HSG B (1)
0.059	98	Stream (2)
0.270	58	Woods/grass comb., Good, HSG B (1)
36.749	**58**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
36.690	HSG B	1, 2
0.000	HSG C	
0.000	HSG D	
0.059	Other	2
36.749		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.560	0.000	0.000	0.000	0.560	Brush, Good	2
0.000	0.280	0.000	0.000	0.000	0.280	Dirt roads	1
0.000	35.290	0.000	0.000	0.000	35.290	Meadow, non-grazed	1, 2
0.000	0.290	0.000	0.000	0.000	0.290	Roofs & Asphalt Drive	1
0.000	0.000	0.000	0.000	0.059	0.059	Stream	2
0.000	0.270	0.000	0.000	0.000	0.270	Woods/grass comb., Good	1
0.000	**36.690**	**0.000**	**0.000**	**0.059**	**36.749**	**TOTAL AREA**	

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

Subcatchment1: DA-1 Runoff Area=28.720 ac 1.01% Impervious Runoff Depth=0.07"
Flow Length=1,440' Tc=45.3 min CN=59 Runoff=0.24 cfs 0.179 af

Subcatchment2: DA-2 Runoff Area=8.029 ac 0.73% Impervious Runoff Depth=0.06"
Flow Length=363' Tc=23.3 min CN=58 Runoff=0.05 cfs 0.041 af

Total Runoff Area = 36.749 ac Runoff Volume = 0.221 af Average Runoff Depth = 0.07"
99.05% Pervious = 36.400 ac 0.95% Impervious = 0.349 ac

Summary for Subcatchment 1: DA-1

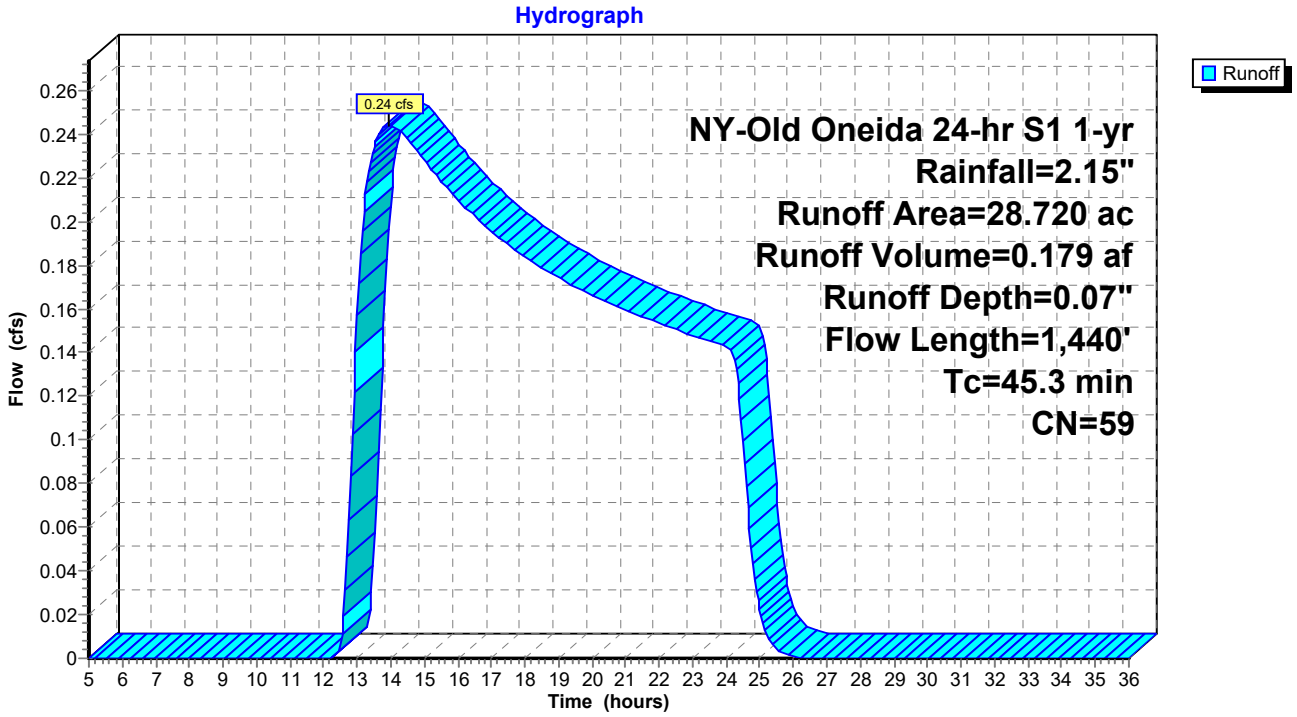
Runoff = 0.24 cfs @ 13.94 hrs, Volume= 0.179 af, Depth= 0.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 1-yr Rainfall=2.15"

	Area (ac)	CN	Description
	27.880	58	Meadow, non-grazed, HSG B
	0.280	82	Dirt roads, HSG B
*	0.290	98	Roofs & Asphalt Drive, HSG B
	0.270	58	Woods/grass comb., Good, HSG B
	28.720	59	Weighted Average
	28.430		98.99% Pervious Area
	0.290		1.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0250	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
3.9	240	0.0210	1.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.1	672	0.0070	0.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.3	428	0.0260	1.13		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
45.3	1,440	Total			

Subcatchment 1: DA-1



Summary for Subcatchment 2: DA-2

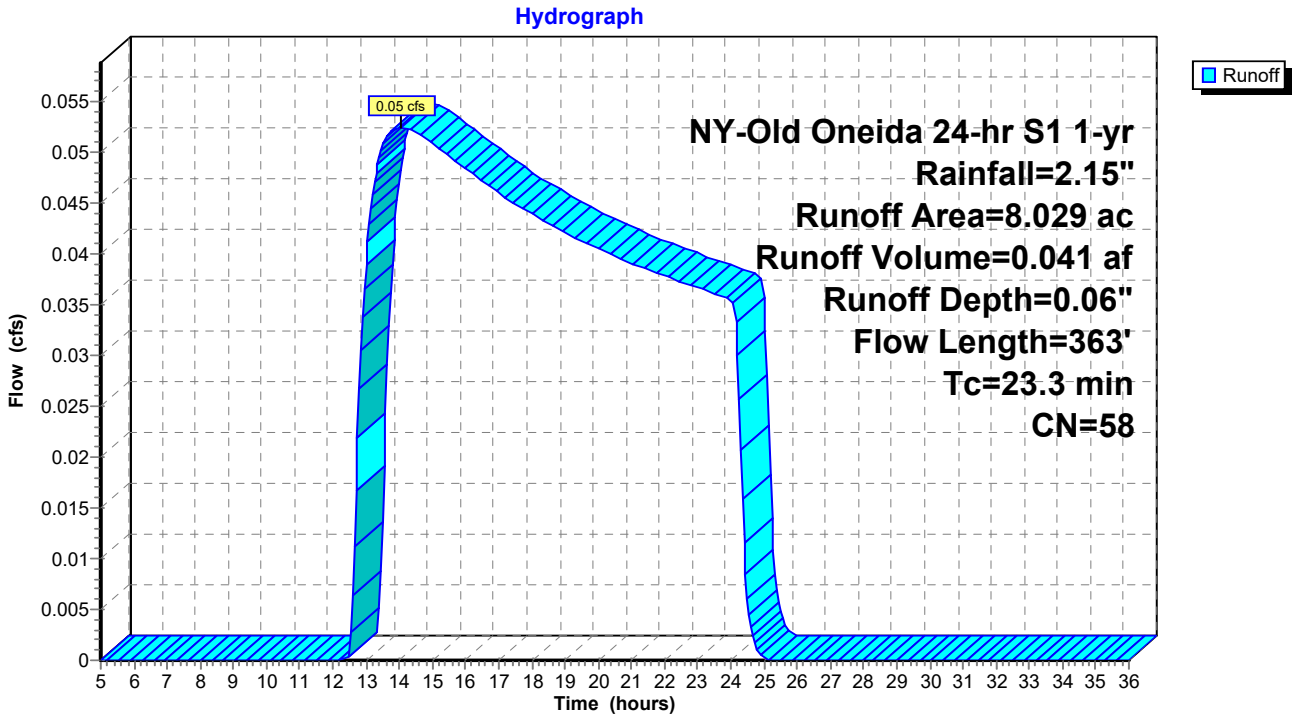
Runoff = 0.05 cfs @ 14.06 hrs, Volume= 0.041 af, Depth= 0.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 1-yr Rainfall=2.15"

	Area (ac)	CN	Description
*	0.059	98	Stream
	0.560	48	Brush, Good, HSG B
	7.410	58	Meadow, non-grazed, HSG B
	8.029	58	Weighted Average
	7.970		99.27% Pervious Area
	0.059		0.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	100	0.0180	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
5.1	263	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
23.3	363	Total			

Subcatchment 2: DA-2



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

Subcatchment1: DA-1 Runoff Area=28.720 ac 1.01% Impervious Runoff Depth=0.15"
Flow Length=1,440' Tc=45.3 min CN=59 Runoff=0.86 cfs 0.354 af

Subcatchment2: DA-2 Runoff Area=8.029 ac 0.73% Impervious Runoff Depth=0.13"
Flow Length=363' Tc=23.3 min CN=58 Runoff=0.23 cfs 0.086 af

Total Runoff Area = 36.749 ac Runoff Volume = 0.440 af Average Runoff Depth = 0.14"
99.05% Pervious = 36.400 ac 0.95% Impervious = 0.349 ac

Summary for Subcatchment 1: DA-1

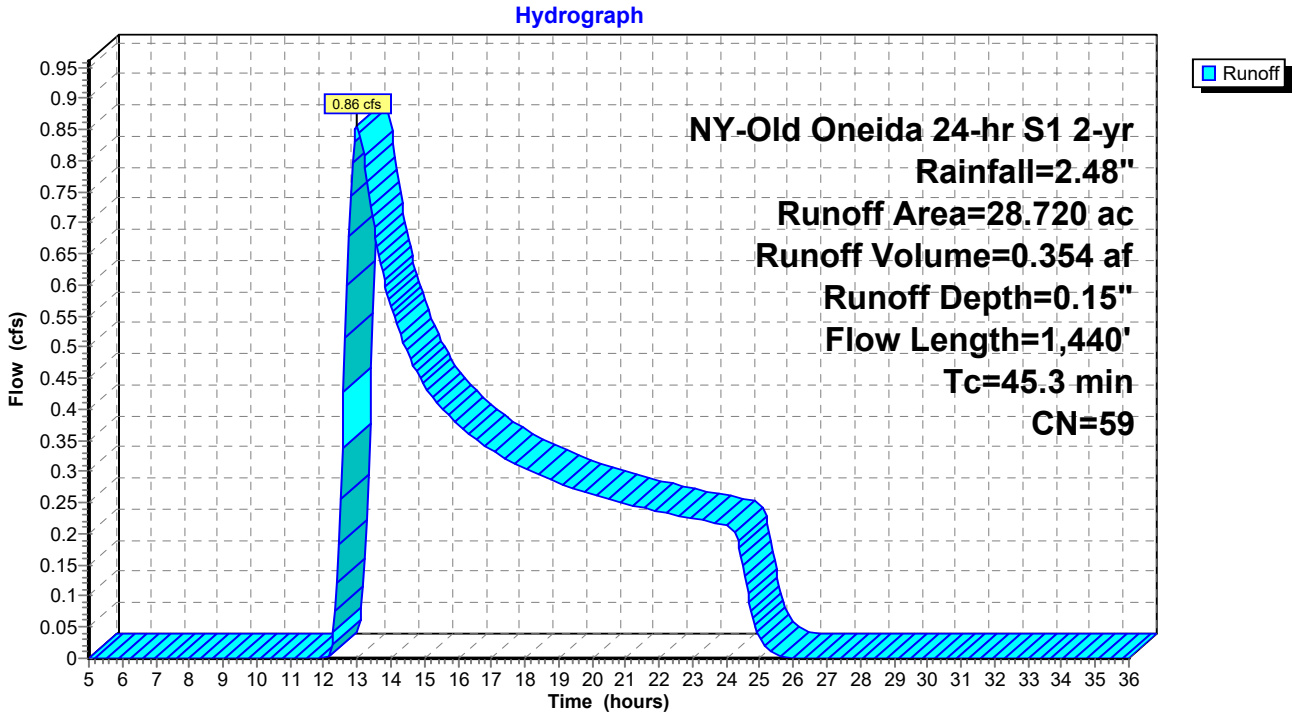
Runoff = 0.86 cfs @ 13.01 hrs, Volume= 0.354 af, Depth= 0.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 2-yr Rainfall=2.48"

	Area (ac)	CN	Description
	27.880	58	Meadow, non-grazed, HSG B
	0.280	82	Dirt roads, HSG B
*	0.290	98	Roofs & Asphalt Drive, HSG B
	0.270	58	Woods/grass comb., Good, HSG B
	28.720	59	Weighted Average
	28.430		98.99% Pervious Area
	0.290		1.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0250	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
3.9	240	0.0210	1.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.1	672	0.0070	0.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.3	428	0.0260	1.13		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
45.3	1,440	Total			

Subcatchment 1: DA-1



Summary for Subcatchment 2: DA-2

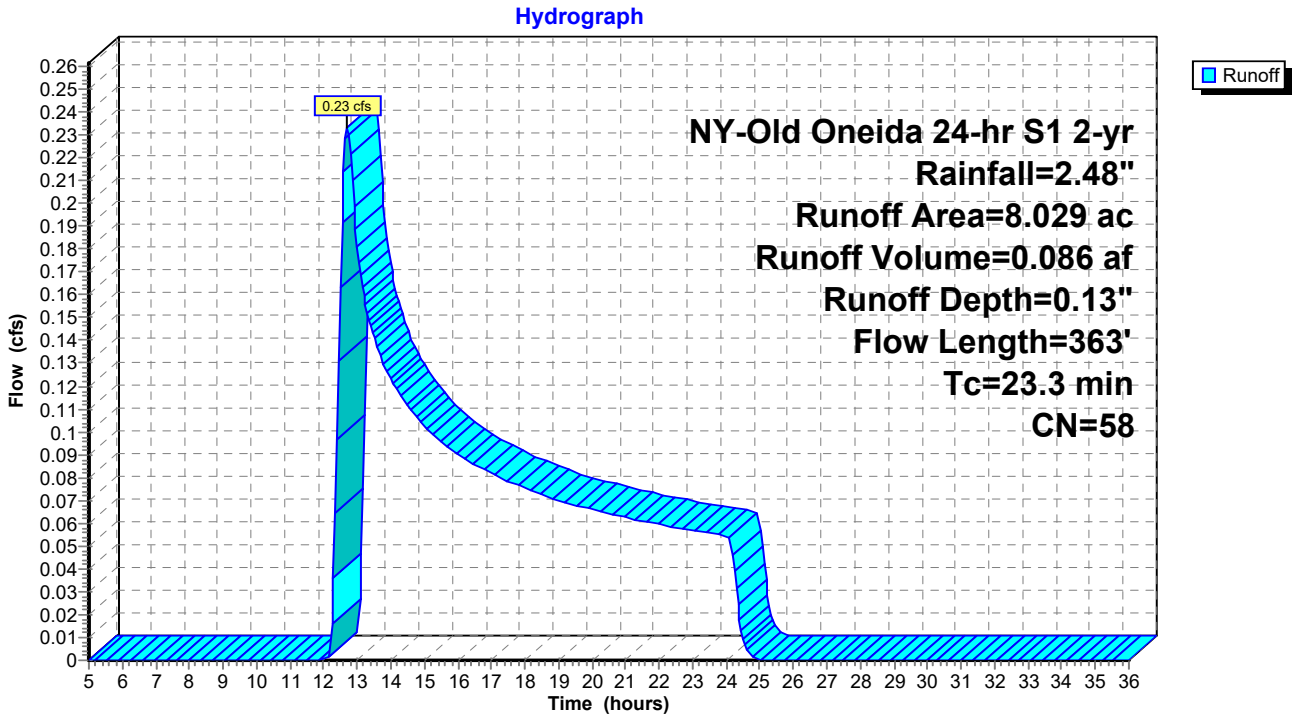
Runoff = 0.23 cfs @ 12.71 hrs, Volume= 0.086 af, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 2-yr Rainfall=2.48"

	Area (ac)	CN	Description
*	0.059	98	Stream
	0.560	48	Brush, Good, HSG B
	7.410	58	Meadow, non-grazed, HSG B
	8.029	58	Weighted Average
	7.970		99.27% Pervious Area
	0.059		0.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	100	0.0180	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
5.1	263	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
23.3	363	Total			

Subcatchment 2: DA-2



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

Subcatchment1: DA-1 Runoff Area=28.720 ac 1.01% Impervious Runoff Depth=0.32"
Flow Length=1,440' Tc=45.3 min CN=59 Runoff=2.94 cfs 0.758 af

Subcatchment2: DA-2 Runoff Area=8.029 ac 0.73% Impervious Runoff Depth=0.29"
Flow Length=363' Tc=23.3 min CN=58 Runoff=0.88 cfs 0.192 af

Total Runoff Area = 36.749 ac Runoff Volume = 0.950 af Average Runoff Depth = 0.31"
99.05% Pervious = 36.400 ac 0.95% Impervious = 0.349 ac

Summary for Subcatchment 1: DA-1

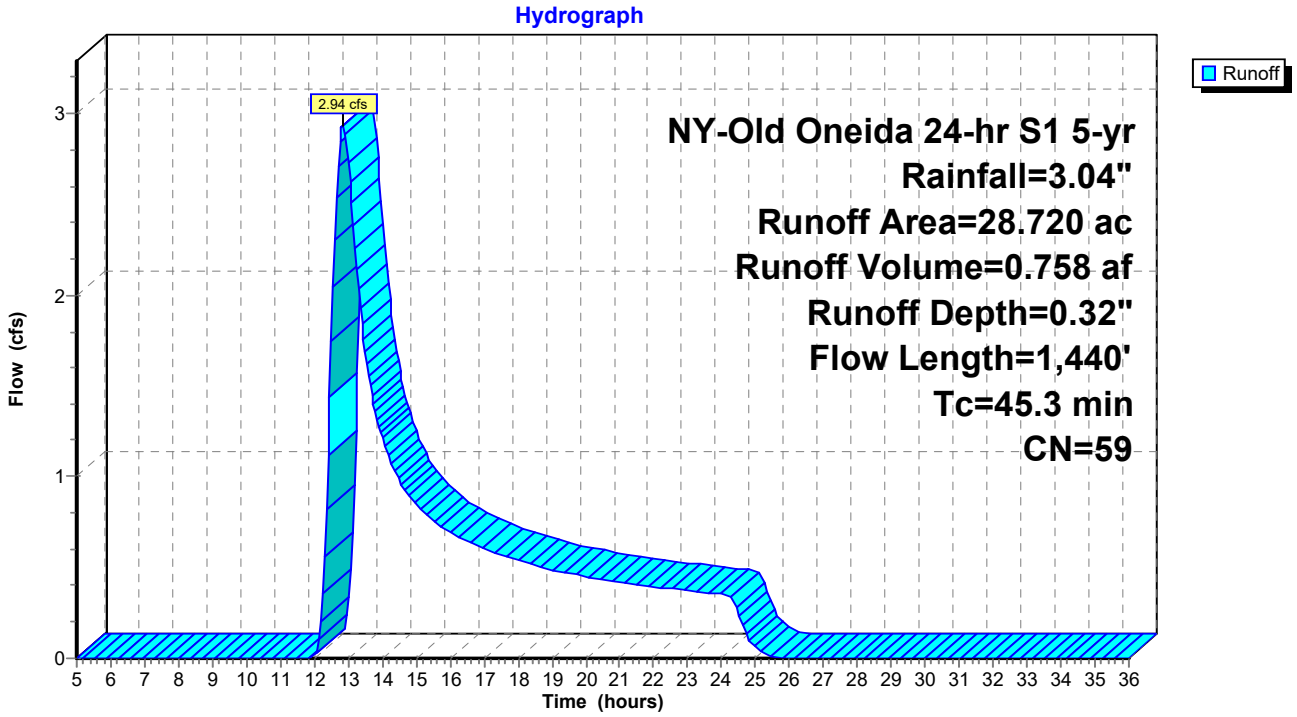
Runoff = 2.94 cfs @ 12.84 hrs, Volume= 0.758 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 5-yr Rainfall=3.04"

	Area (ac)	CN	Description
	27.880	58	Meadow, non-grazed, HSG B
	0.280	82	Dirt roads, HSG B
*	0.290	98	Roofs & Asphalt Drive, HSG B
	0.270	58	Woods/grass comb., Good, HSG B
	28.720	59	Weighted Average
	28.430		98.99% Pervious Area
	0.290		1.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0250	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
3.9	240	0.0210	1.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.1	672	0.0070	0.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.3	428	0.0260	1.13		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
45.3	1,440	Total			

Subcatchment 1: DA-1



Summary for Subcatchment 2: DA-2

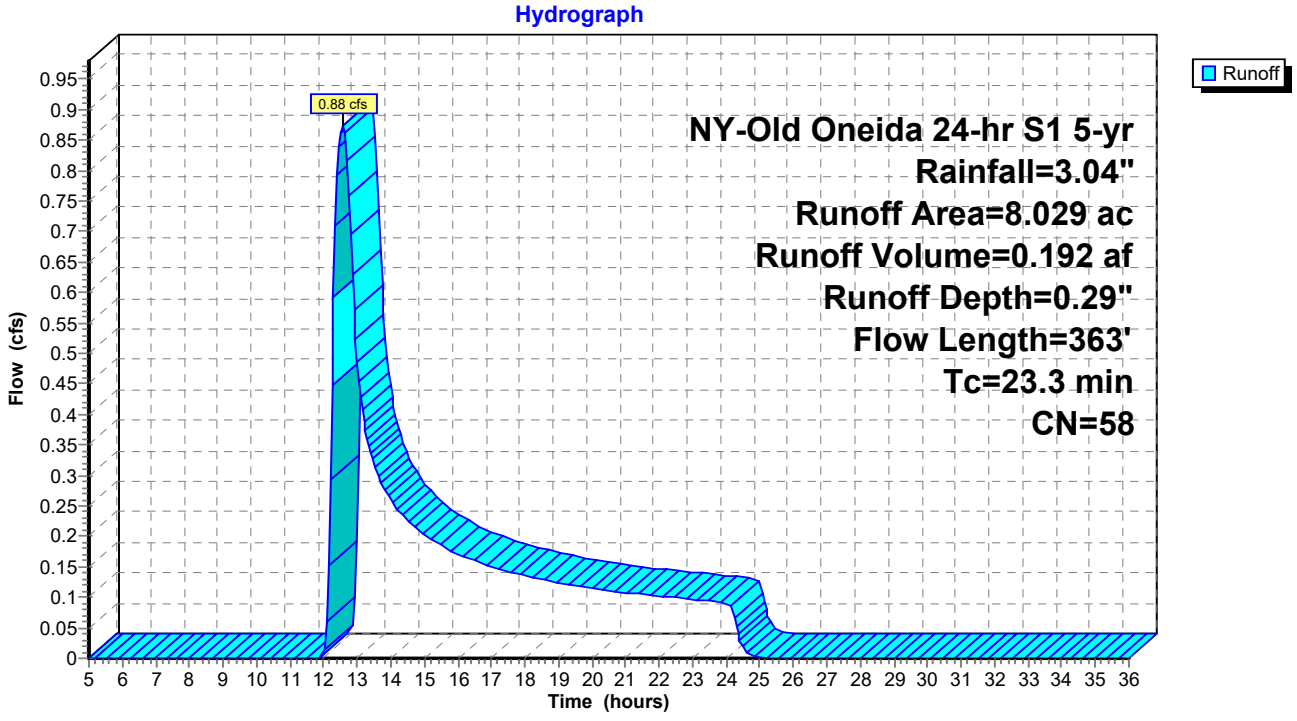
Runoff = 0.88 cfs @ 12.57 hrs, Volume= 0.192 af, Depth= 0.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 5-yr Rainfall=3.04"

	Area (ac)	CN	Description
*	0.059	98	Stream
	0.560	48	Brush, Good, HSG B
	7.410	58	Meadow, non-grazed, HSG B
	8.029	58	Weighted Average
	7.970		99.27% Pervious Area
	0.059		0.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	100	0.0180	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
5.1	263	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
23.3	363	Total			

Subcatchment 2: DA-2



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

Subcatchment1: DA-1 Runoff Area=28.720 ac 1.01% Impervious Runoff Depth=0.51"
Flow Length=1,440' Tc=45.3 min CN=59 Runoff=5.77 cfs 1.216 af

Subcatchment2: DA-2 Runoff Area=8.029 ac 0.73% Impervious Runoff Depth=0.47"
Flow Length=363' Tc=23.3 min CN=58 Runoff=1.82 cfs 0.314 af

Total Runoff Area = 36.749 ac Runoff Volume = 1.530 af Average Runoff Depth = 0.50"
99.05% Pervious = 36.400 ac 0.95% Impervious = 0.349 ac

Summary for Subcatchment 1: DA-1

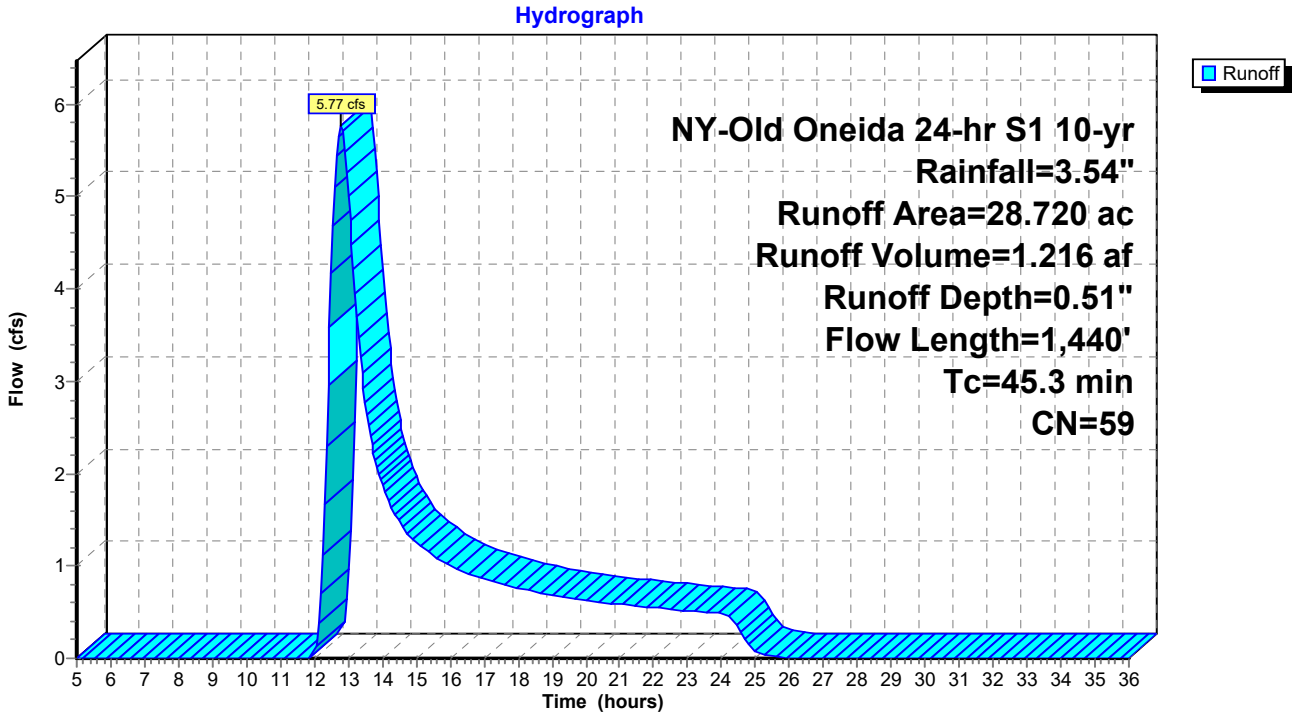
Runoff = 5.77 cfs @ 12.77 hrs, Volume= 1.216 af, Depth= 0.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 10-yr Rainfall=3.54"

	Area (ac)	CN	Description
	27.880	58	Meadow, non-grazed, HSG B
	0.280	82	Dirt roads, HSG B
*	0.290	98	Roofs & Asphalt Drive, HSG B
	0.270	58	Woods/grass comb., Good, HSG B
	28.720	59	Weighted Average
	28.430		98.99% Pervious Area
	0.290		1.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0250	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
3.9	240	0.0210	1.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.1	672	0.0070	0.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.3	428	0.0260	1.13		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
45.3	1,440	Total			

Subcatchment 1: DA-1



Summary for Subcatchment 2: DA-2

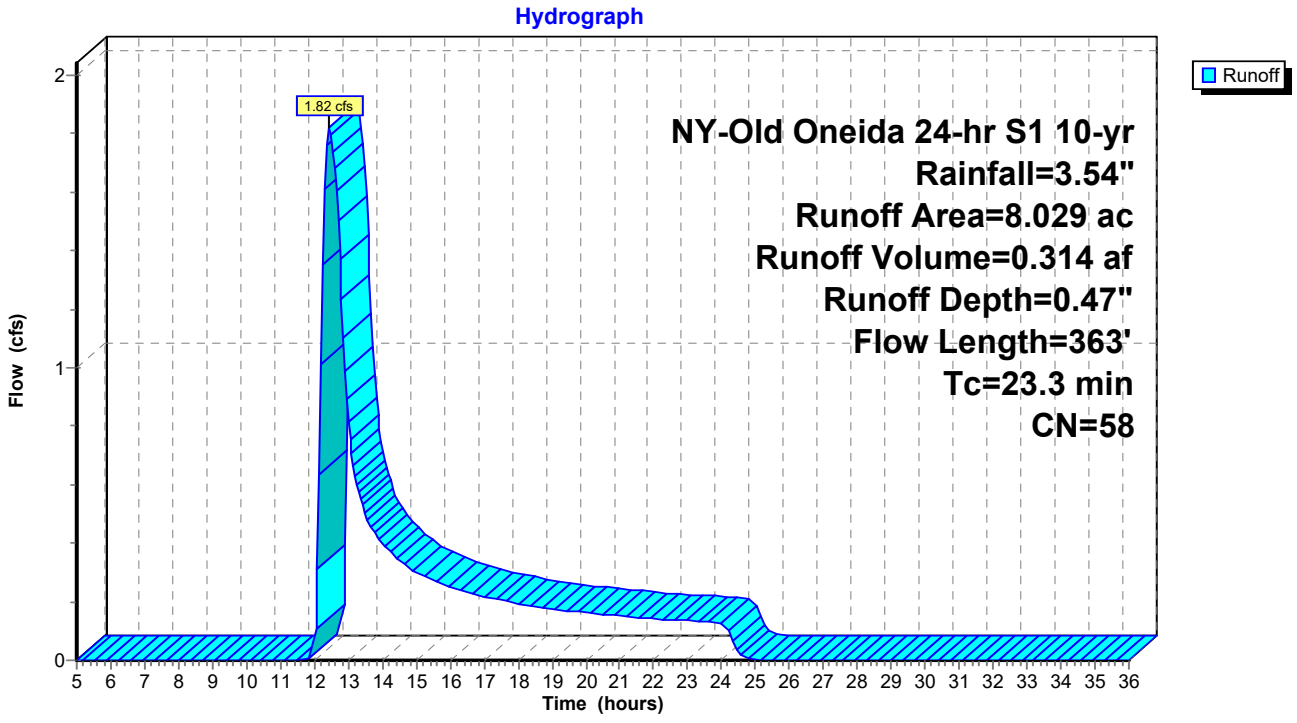
Runoff = 1.82 cfs @ 12.42 hrs, Volume= 0.314 af, Depth= 0.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 10-yr Rainfall=3.54"

	Area (ac)	CN	Description
*	0.059	98	Stream
	0.560	48	Brush, Good, HSG B
	7.410	58	Meadow, non-grazed, HSG B
	8.029	58	Weighted Average
	7.970		99.27% Pervious Area
	0.059		0.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	100	0.0180	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
5.1	263	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
23.3	363	Total			

Subcatchment 2: DA-2



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

Subcatchment1: DA-1 Runoff Area=28.720 ac 1.01% Impervious Runoff Depth=0.88"
Flow Length=1,440' Tc=45.3 min CN=59 Runoff=11.97 cfs 2.104 af

Subcatchment2: DA-2 Runoff Area=8.029 ac 0.73% Impervious Runoff Depth=0.83"
Flow Length=363' Tc=23.3 min CN=58 Runoff=4.07 cfs 0.552 af

Total Runoff Area = 36.749 ac Runoff Volume = 2.656 af Average Runoff Depth = 0.87"
99.05% Pervious = 36.400 ac 0.95% Impervious = 0.349 ac

Summary for Subcatchment 1: DA-1

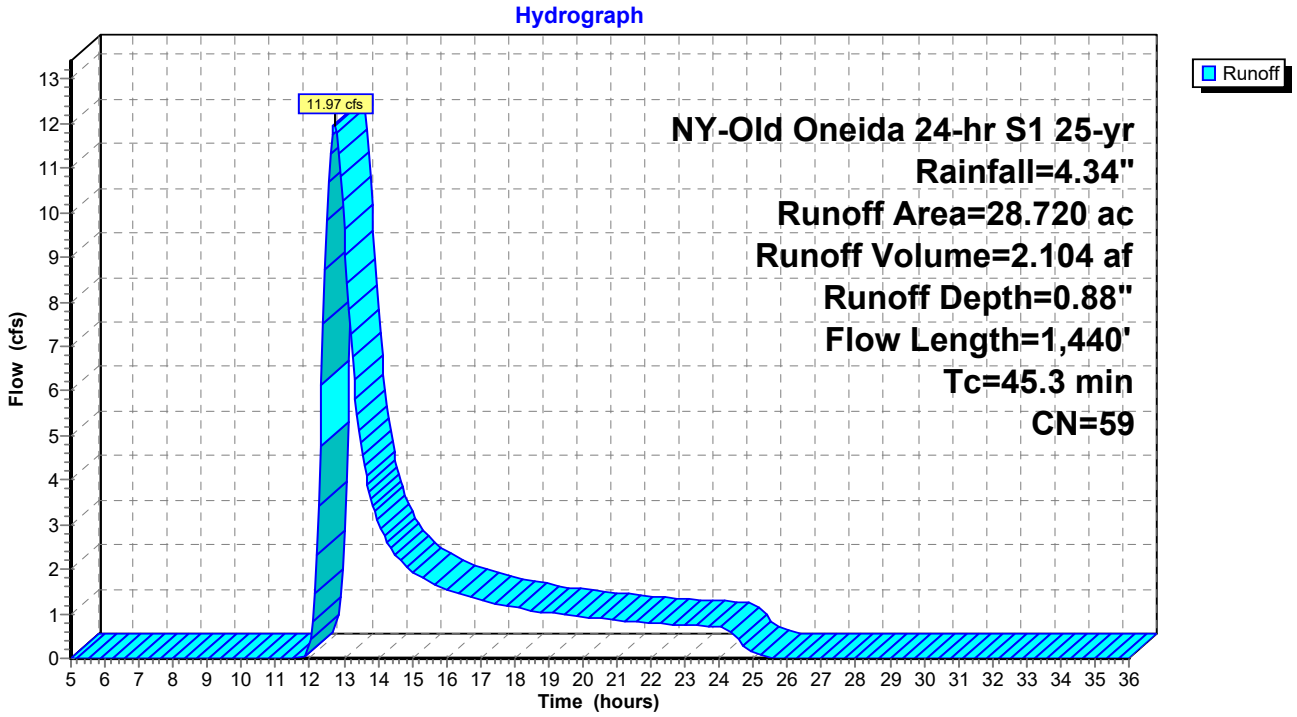
Runoff = 11.97 cfs @ 12.72 hrs, Volume= 2.104 af, Depth= 0.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 25-yr Rainfall=4.34"

	Area (ac)	CN	Description
	27.880	58	Meadow, non-grazed, HSG B
	0.280	82	Dirt roads, HSG B
*	0.290	98	Roofs & Asphalt Drive, HSG B
	0.270	58	Woods/grass comb., Good, HSG B
	28.720	59	Weighted Average
	28.430		98.99% Pervious Area
	0.290		1.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0250	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
3.9	240	0.0210	1.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.1	672	0.0070	0.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.3	428	0.0260	1.13		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
45.3	1,440	Total			

Subcatchment 1: DA-1



Summary for Subcatchment 2: DA-2

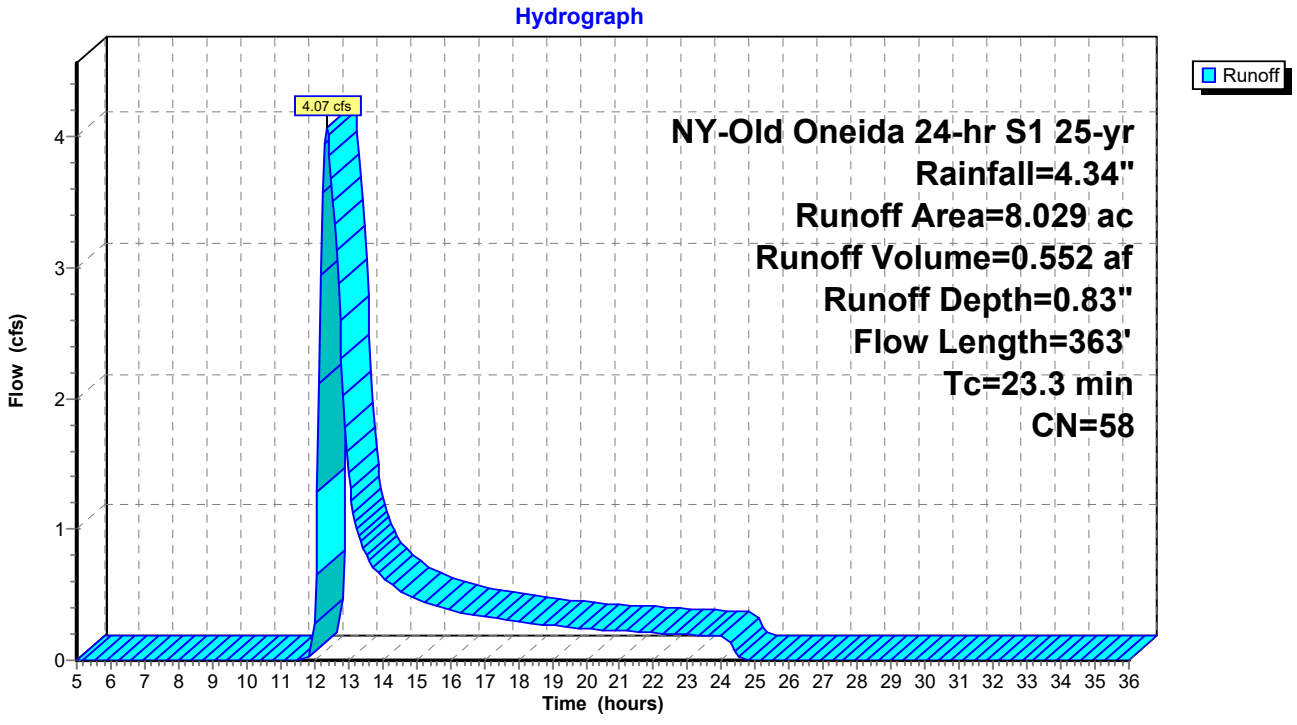
Runoff = 4.07 cfs @ 12.36 hrs, Volume= 0.552 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 25-yr Rainfall=4.34"

	Area (ac)	CN	Description
*	0.059	98	Stream
	0.560	48	Brush, Good, HSG B
	7.410	58	Meadow, non-grazed, HSG B
	8.029	58	Weighted Average
	7.970		99.27% Pervious Area
	0.059		0.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	100	0.0180	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
5.1	263	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
23.3	363	Total			

Subcatchment 2: DA-2



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

Subcatchment1: DA-1 Runoff Area=28.720 ac 1.01% Impervious Runoff Depth=1.27"
Flow Length=1,440' Tc=45.3 min CN=59 Runoff=18.84 cfs 3.050 af

Subcatchment2: DA-2 Runoff Area=8.029 ac 0.73% Impervious Runoff Depth=1.21"
Flow Length=363' Tc=23.3 min CN=58 Runoff=6.61 cfs 0.808 af

Total Runoff Area = 36.749 ac Runoff Volume = 3.857 af Average Runoff Depth = 1.26"
99.05% Pervious = 36.400 ac 0.95% Impervious = 0.349 ac

Summary for Subcatchment 1: DA-1

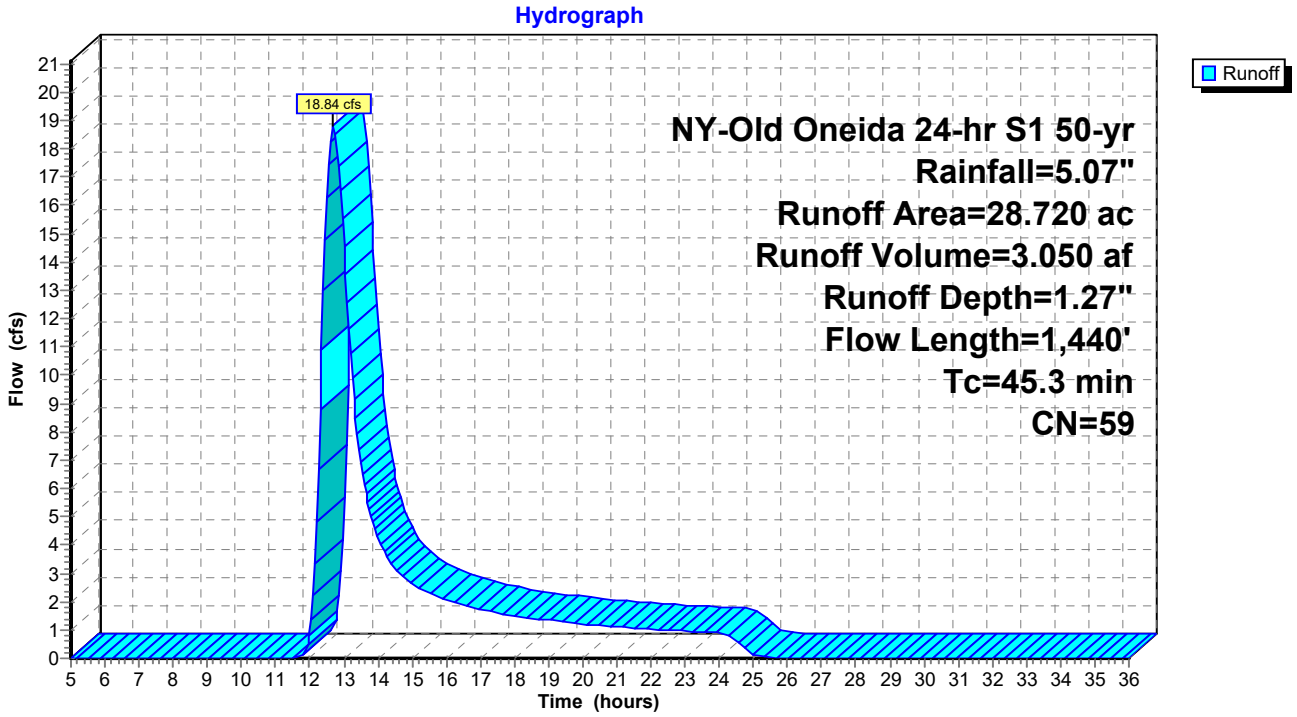
Runoff = 18.84 cfs @ 12.69 hrs, Volume= 3.050 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 50-yr Rainfall=5.07"

	Area (ac)	CN	Description
	27.880	58	Meadow, non-grazed, HSG B
	0.280	82	Dirt roads, HSG B
*	0.290	98	Roofs & Asphalt Drive, HSG B
	0.270	58	Woods/grass comb., Good, HSG B
	28.720	59	Weighted Average
	28.430		98.99% Pervious Area
	0.290		1.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0250	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
3.9	240	0.0210	1.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.1	672	0.0070	0.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.3	428	0.0260	1.13		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
45.3	1,440	Total			

Subcatchment 1: DA-1



Summary for Subcatchment 2: DA-2

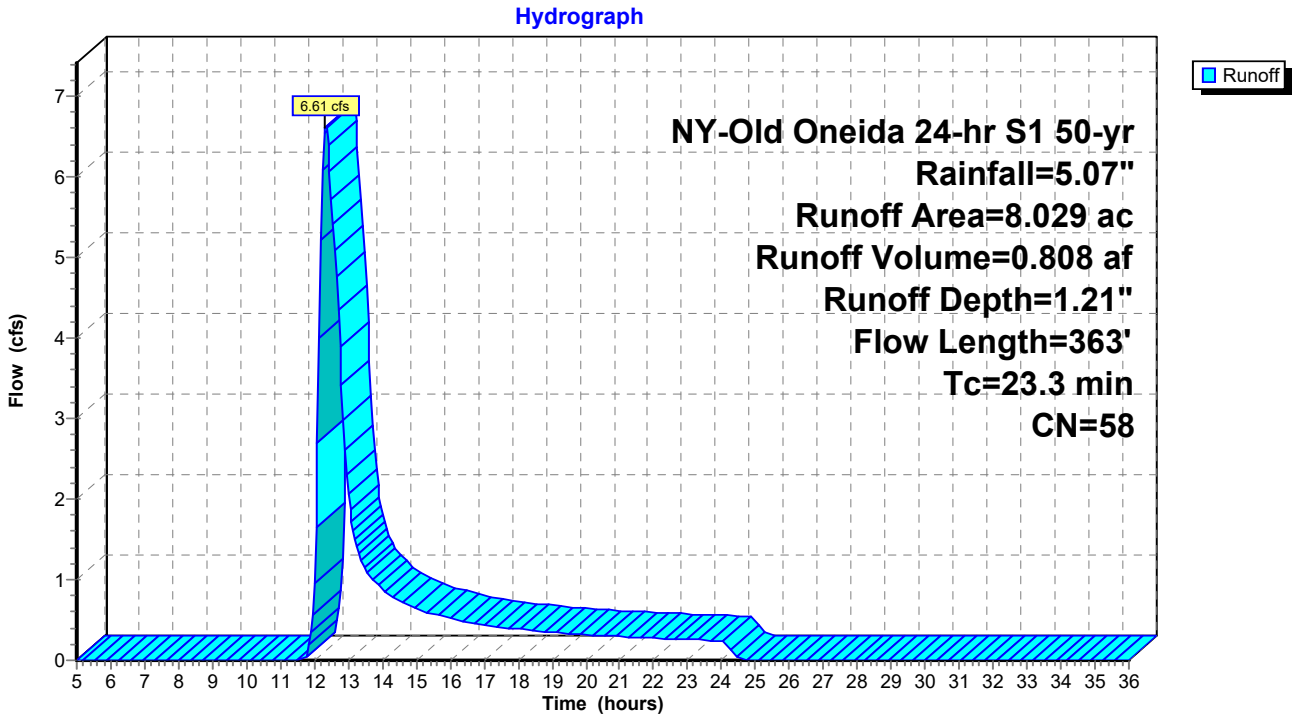
Runoff = 6.61 cfs @ 12.34 hrs, Volume= 0.808 af, Depth= 1.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 50-yr Rainfall=5.07"

	Area (ac)	CN	Description
*	0.059	98	Stream
	0.560	48	Brush, Good, HSG B
	7.410	58	Meadow, non-grazed, HSG B
	8.029	58	Weighted Average
	7.970		99.27% Pervious Area
	0.059		0.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	100	0.0180	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
5.1	263	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
23.3	363	Total			

Subcatchment 2: DA-2



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

Subcatchment1: DA-1 Runoff Area=28.720 ac 1.01% Impervious Runoff Depth=1.79"
Flow Length=1,440' Tc=45.3 min CN=59 Runoff=28.13 cfs 4.279 af

Subcatchment2: DA-2 Runoff Area=8.029 ac 0.73% Impervious Runoff Depth=1.71"
Flow Length=363' Tc=23.3 min CN=58 Runoff=10.11 cfs 1.142 af

Total Runoff Area = 36.749 ac Runoff Volume = 5.421 af Average Runoff Depth = 1.77"
99.05% Pervious = 36.400 ac 0.95% Impervious = 0.349 ac

Summary for Subcatchment 1: DA-1

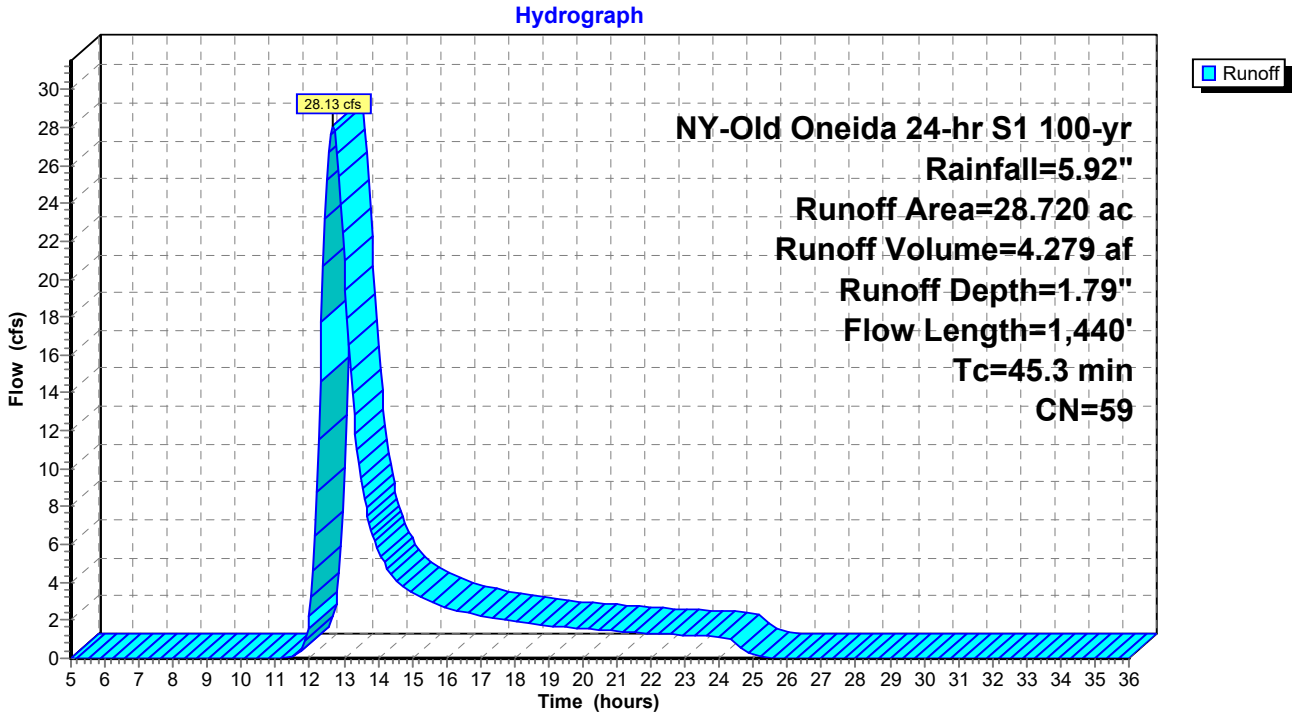
Runoff = 28.13 cfs @ 12.67 hrs, Volume= 4.279 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 100-yr Rainfall=5.92"

	Area (ac)	CN	Description
	27.880	58	Meadow, non-grazed, HSG B
	0.280	82	Dirt roads, HSG B
*	0.290	98	Roofs & Asphalt Drive, HSG B
	0.270	58	Woods/grass comb., Good, HSG B
	28.720	59	Weighted Average
	28.430		98.99% Pervious Area
	0.290		1.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0250	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
3.9	240	0.0210	1.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.1	672	0.0070	0.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.3	428	0.0260	1.13		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
45.3	1,440	Total			

Subcatchment 1: DA-1



Summary for Subcatchment 2: DA-2

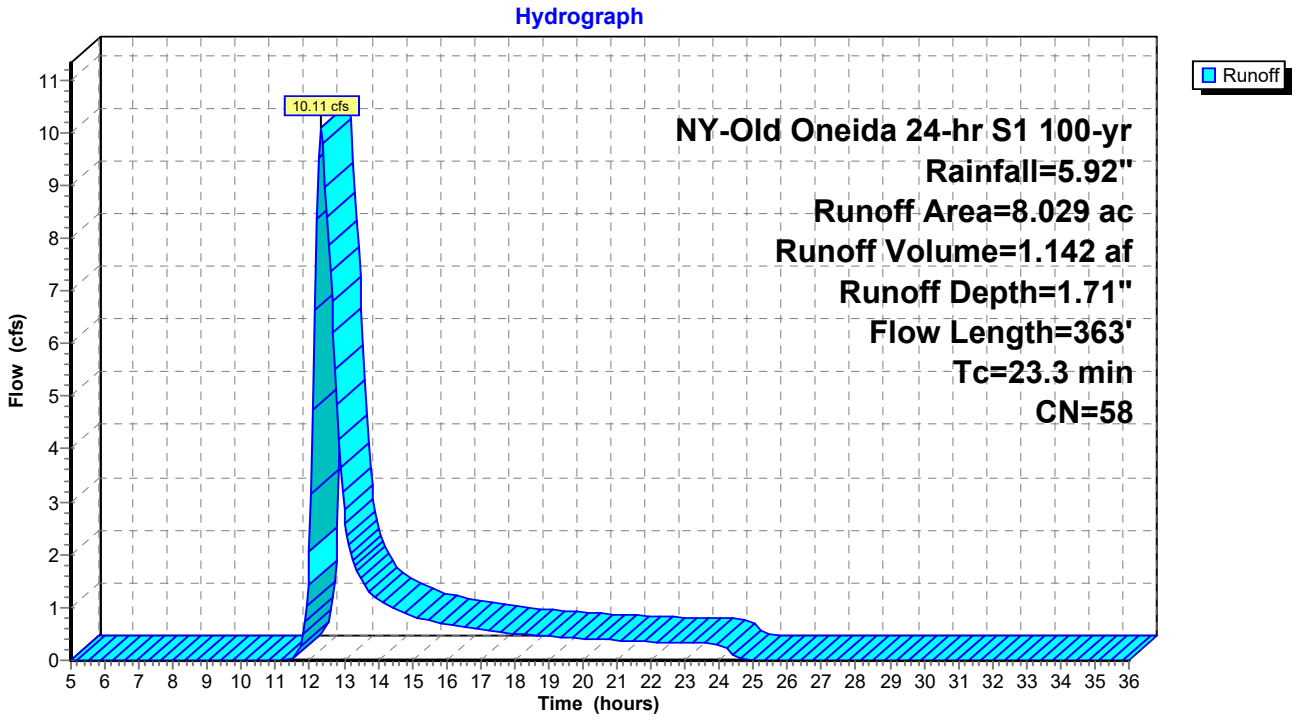
Runoff = 10.11 cfs @ 12.32 hrs, Volume= 1.142 af, Depth= 1.71"

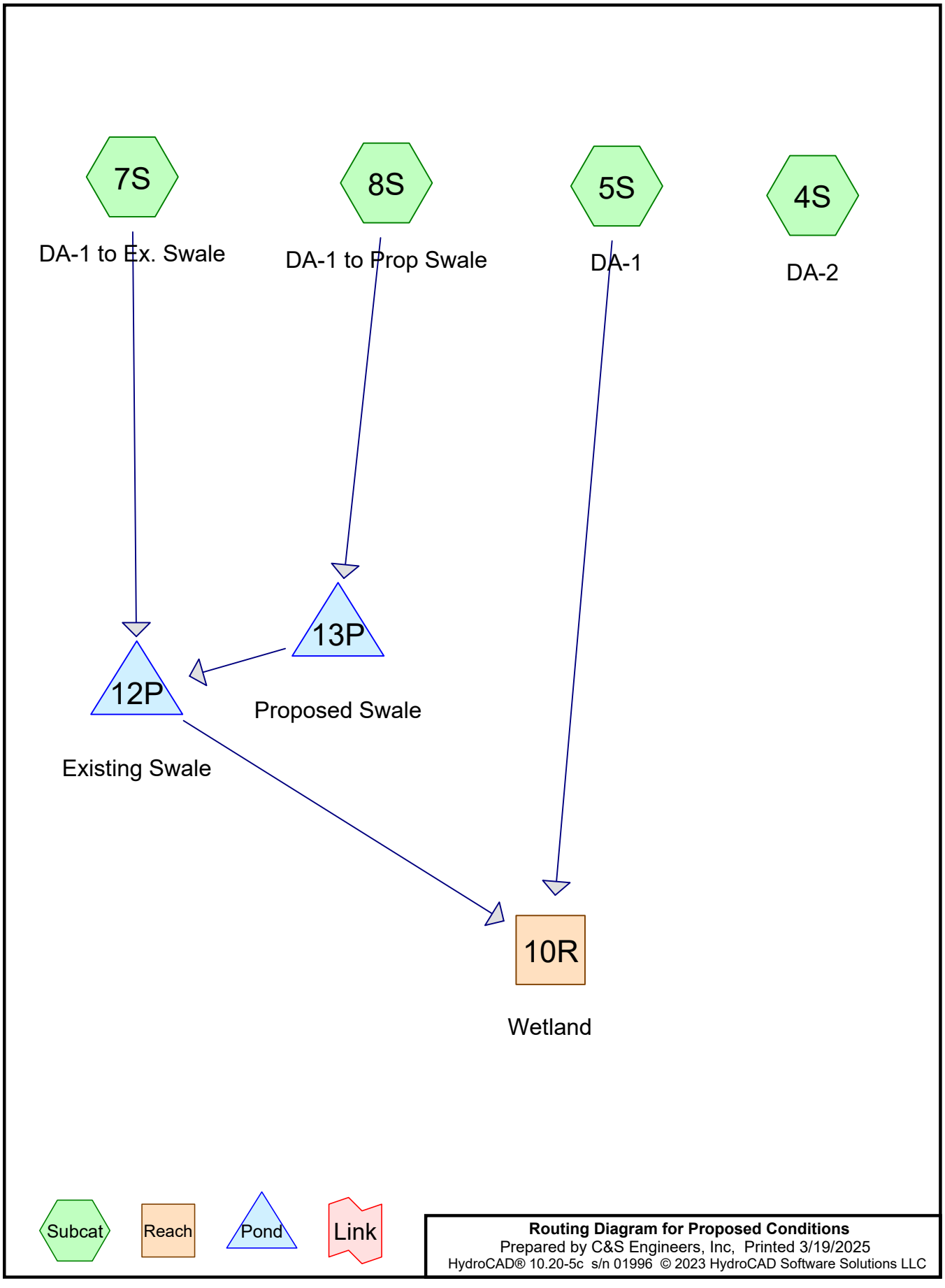
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 100-yr Rainfall=5.92"

	Area (ac)	CN	Description
*	0.059	98	Stream
	0.560	48	Brush, Good, HSG B
	7.410	58	Meadow, non-grazed, HSG B
	8.029	58	Weighted Average
	7.970		99.27% Pervious Area
	0.059		0.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	100	0.0180	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
5.1	263	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
23.3	363	Total			

Subcatchment 2: DA-2





Routing Diagram for Proposed Conditions
Prepared by C&S Engineers, Inc, Printed 3/19/2025
HydroCAD® 10.20-5c s/n 01996 © 2023 HydroCAD Software Solutions LLC

Project Notes

Rainfall events imported from "NRCS-Rain.txt" for 7108 NY St Lawrence
Rainfall events imported from "NRCS-Rain.txt" for 7069 NY Livingston
Rainfall events imported from "NRCS-Rain.txt" for 7081 NY Ontario
Rainfall events imported from "NRCS-Rain.txt" for 7024 NY Chenango
Rainfall events imported from "NRCS-Rain.txt" for 7077 NY Oneida
Defined 9 rainfall events from NY-Old Oneida IDF
Copied 9 events from NY-Old Oneida 24-hr S1 storm

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr	NY-Old Oneida 24-hr S1	1-yr	Default	24.00	1	2.15	2
2	2-yr	NY-Old Oneida 24-hr S1	2-yr	Default	24.00	1	2.48	2
3	5-yr	NY-Old Oneida 24-hr S1	5-yr	Default	24.00	1	3.04	2
4	10-yr	NY-Old Oneida 24-hr S1	10-yr	Default	24.00	1	3.54	2
5	25-yr	NY-Old Oneida 24-hr S1	25-yr	Default	24.00	1	4.34	2
6	50-yr	NY-Old Oneida 24-hr S1	50-yr	Default	24.00	1	5.07	2
7	100-yr	NY-Old Oneida 24-hr S1	100-yr	Default	24.00	1	5.92	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.360	98	Access Road (7S)
0.370	98	Access Road, HSG B (5S)
0.560	48	Brush, Good, HSG B (4S)
35.600	58	Meadow, non-grazed, HSG B (4S, 5S, 7S, 8S)
0.240	98	Paved parking, HSG B (8S)
0.290	98	Roofs & Asphalt Drive, HSG B (5S)
0.059	98	Stream (4S)
37.479	**59**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
37.060	HSG B	4S, 5S, 7S, 8S
0.000	HSG C	
0.000	HSG D	
0.419	Other	4S, 7S
37.479		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.370	0.000	0.000	0.360	0.730	Access Road	5S, 7S
0.000	0.560	0.000	0.000	0.000	0.560	Brush, Good	4S
0.000	35.600	0.000	0.000	0.000	35.600	Meadow, non-grazed	4S, 5S, 7S, 8S
0.000	0.240	0.000	0.000	0.000	0.240	Paved parking	8S
0.000	0.290	0.000	0.000	0.000	0.290	Roofs & Asphalt Drive	5S
0.000	0.000	0.000	0.000	0.059	0.059	Stream	4S
0.000	**37.060**	**0.000**	**0.000**	**0.419**	**37.479**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	12P	490.00	489.70	40.0	0.0075	0.012	0.0	6.0	0.0	
2	13P	496.69	491.59	425.0	0.0120	0.013	0.0	6.0	0.0	

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

Subcatchment4S: DA-2 Runoff Area=8.029 ac 0.73% Impervious Runoff Depth=0.06"
Flow Length=363' Tc=23.3 min CN=58 Runoff=0.05 cfs 0.041 af

Subcatchment5S: DA-1 Runoff Area=20.670 ac 3.19% Impervious Runoff Depth=0.07"
Flow Length=1,395' Tc=53.5 min CN=59 Runoff=0.17 cfs 0.129 af

Subcatchment7S: DA-1 to Ex. Swale Runoff Area=4.040 ac 8.91% Impervious Runoff Depth=0.12"
Flow Length=180' Tc=2.2 min CN=62 Runoff=0.13 cfs 0.041 af

Subcatchment8S: DA-1 to Prop Swale Runoff Area=4.740 ac 5.06% Impervious Runoff Depth=0.09"
Flow Length=1,012' Tc=39.0 min CN=60 Runoff=0.06 cfs 0.035 af

Reach 10R: Wetland Inflow=0.19 cfs 0.163 af
Outflow=0.19 cfs 0.163 af

Pond 12P: Existing Swale Peak Elev=493.90' Storage=1,012 cf Inflow=0.13 cfs 0.041 af
Primary=0.02 cfs 0.034 af Secondary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.034 af

Pond 13P: Proposed Swale Peak Elev=494.04' Storage=421 cf Inflow=0.06 cfs 0.035 af
Primary=0.00 cfs 0.000 af Secondary=0.04 cfs 0.026 af Outflow=0.04 cfs 0.026 af

Total Runoff Area = 37.479 ac Runoff Volume = 0.247 af Average Runoff Depth = 0.08"
96.48% Pervious = 36.160 ac 3.52% Impervious = 1.319 ac

Summary for Subcatchment 4S: DA-2

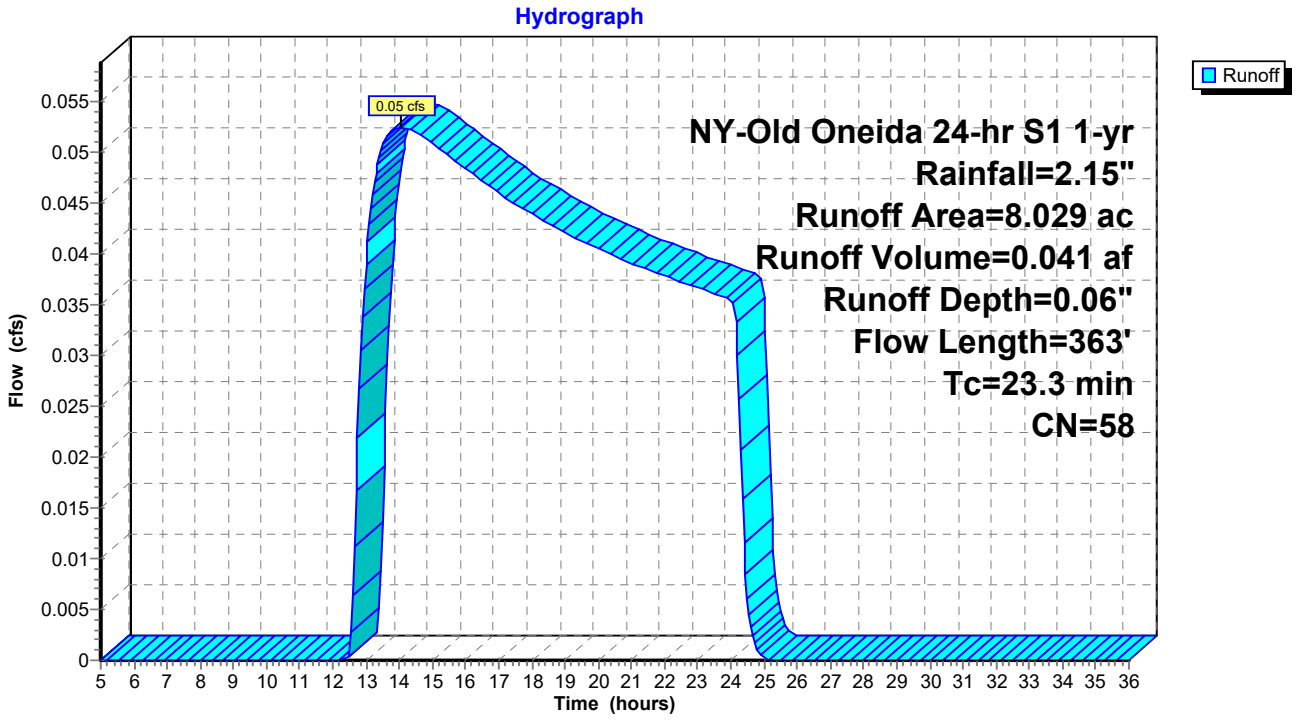
Runoff = 0.05 cfs @ 14.06 hrs, Volume= 0.041 af, Depth= 0.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 1-yr Rainfall=2.15"

	Area (ac)	CN	Description
*	0.059	98	Stream
	0.560	48	Brush, Good, HSG B
	7.410	58	Meadow, non-grazed, HSG B
	8.029	58	Weighted Average
	7.970		99.27% Pervious Area
	0.059		0.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	100	0.0180	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
5.1	263	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
23.3	363	Total			

Subcatchment 4S: DA-2



Summary for Subcatchment 5S: DA-1

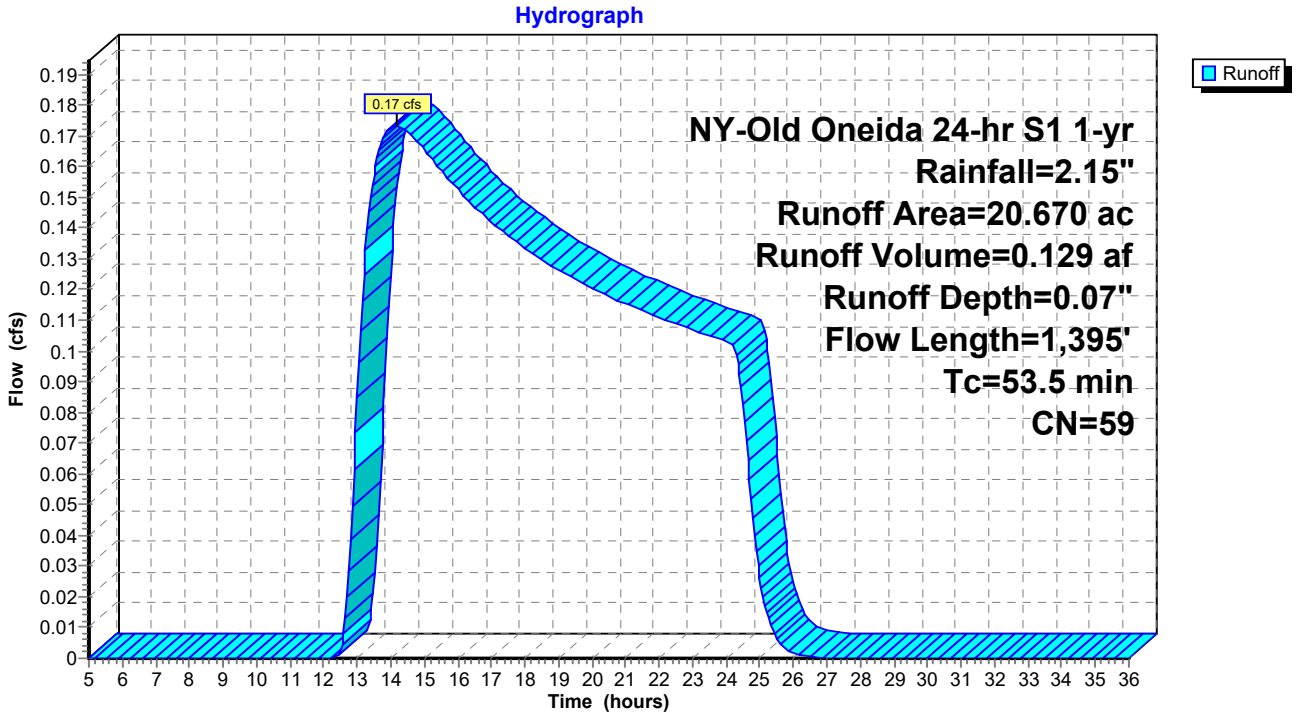
Runoff = 0.17 cfs @ 14.20 hrs, Volume= 0.129 af, Depth= 0.07"
Routed to Reach 10R : Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 1-yr Rainfall=2.15"

	Area (ac)	CN	Description
	20.010	58	Meadow, non-grazed, HSG B
*	0.370	98	Access Road, HSG B
*	0.290	98	Roofs & Asphalt Drive, HSG B
	20.670	59	Weighted Average
	20.010		96.81% Pervious Area
	0.660		3.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.7	100	0.0130	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
3.3	220	0.0250	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
25.3	750	0.0050	0.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	325	0.0340	1.29		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
53.5	1,395	Total			

Subcatchment 5S: DA-1



Summary for Subcatchment 7S: DA-1 to Ex. Swale

[49] Hint: Tc<2dt may require smaller dt

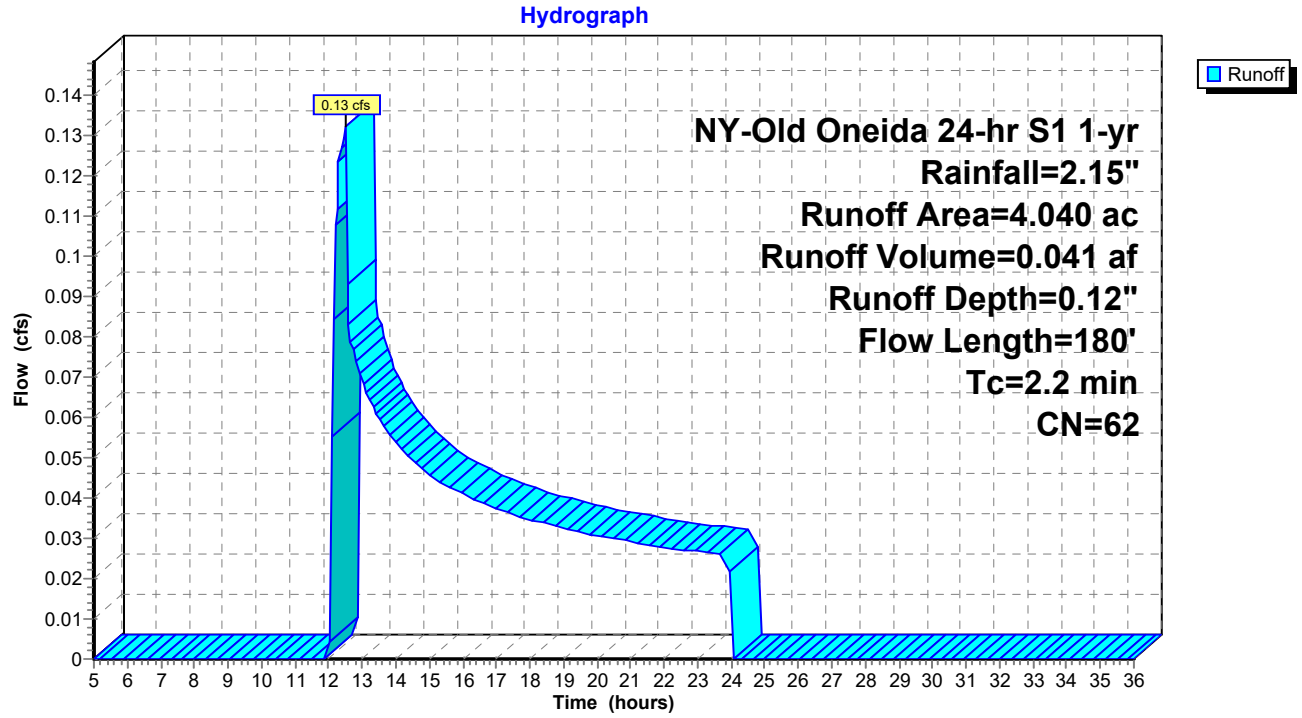
Runoff = 0.13 cfs @ 12.50 hrs, Volume= 0.041 af, Depth= 0.12"
Routed to Pond 12P : Existing Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 1-yr Rainfall=2.15"

	Area (ac)	CN	Description
	3.680	58	Meadow, non-grazed, HSG B
*	0.360	98	Access Road
	4.040	62	Weighted Average
	3.680		91.09% Pervious Area
	0.360		8.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0150	1.00		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.14"
0.3	50	0.0230	3.08		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	30	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.2	180	Total			

Subcatchment 7S: DA-1 to Ex. Swale



Summary for Subcatchment 8S: DA-1 to Prop Swale

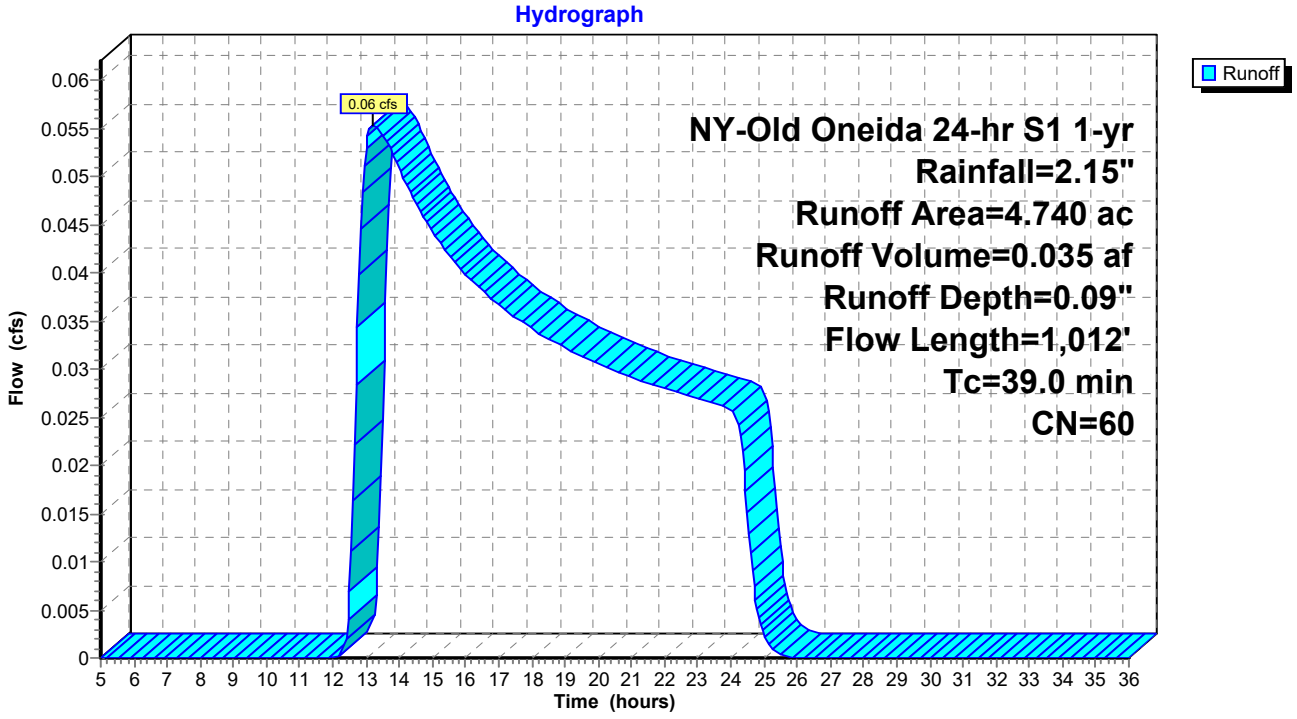
Runoff = 0.06 cfs @ 13.21 hrs, Volume= 0.035 af, Depth= 0.09"
Routed to Pond 13P : Proposed Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 1-yr Rainfall=2.15"

Area (ac)	CN	Description
0.240	98	Paved parking, HSG B
4.500	58	Meadow, non-grazed, HSG B
4.740	60	Weighted Average
4.500		94.94% Pervious Area
0.240		5.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0250	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
3.9	240	0.0210	1.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.1	672	0.0070	0.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
39.0	1,012	Total			

Subcatchment 8S: DA-1 to Prop Swale



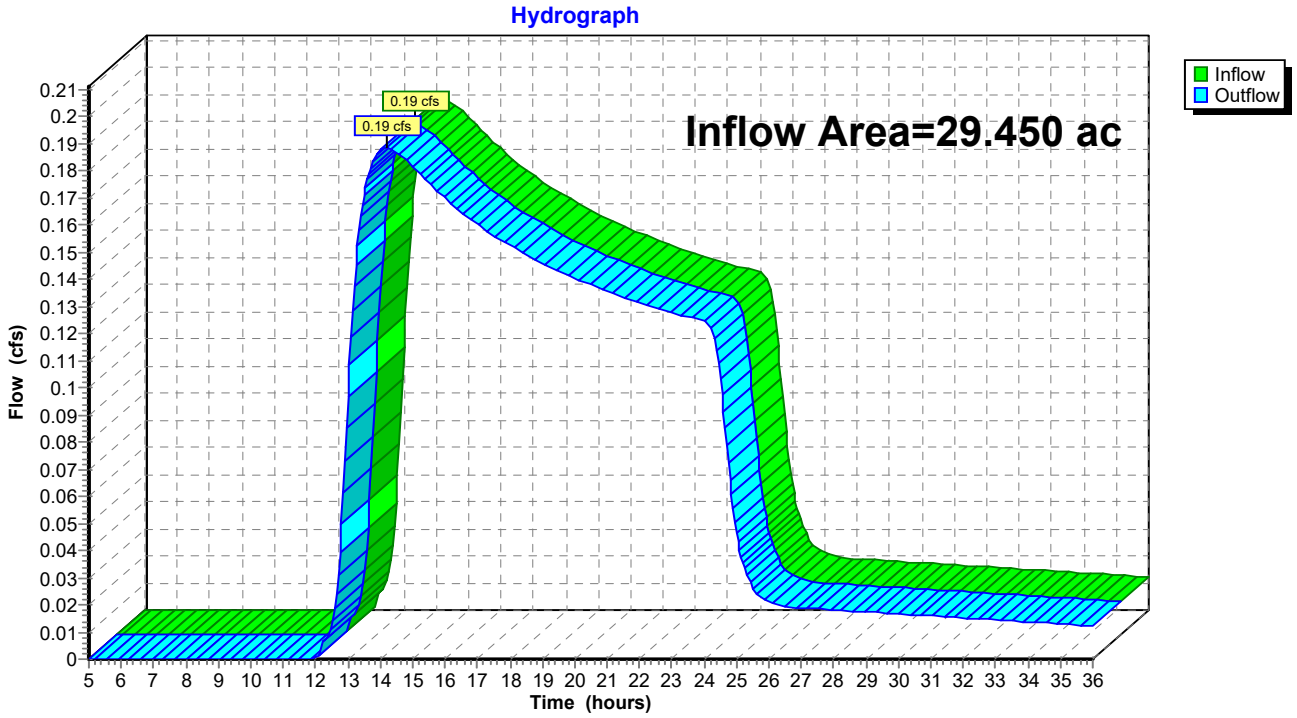
Summary for Reach 10R: Wetland

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 29.450 ac, 4.28% Impervious, Inflow Depth > 0.07" for 1-yr event
Inflow = 0.19 cfs @ 14.20 hrs, Volume= 0.163 af
Outflow = 0.19 cfs @ 14.20 hrs, Volume= 0.163 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs

Reach 10R: Wetland



Summary for Pond 12P: Existing Swale

[79] Warning: Submerged Pond 13P Primary device # 1 OUTLET by 2.31'

Inflow Area = 8.780 ac, 6.83% Impervious, Inflow Depth = 0.06" for 1-yr event
Inflow = 0.13 cfs @ 12.50 hrs, Volume= 0.041 af
Outflow = 0.02 cfs @ 24.00 hrs, Volume= 0.034 af, Atten= 84%, Lag= 689.8 min
Primary = 0.02 cfs @ 24.00 hrs, Volume= 0.034 af
Routed to Reach 10R : Wetland
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 493.90' @ 24.00 hrs Surf.Area= 1,814 sf Storage= 1,012 cf

Plug-Flow detention time= 495.9 min calculated for 0.034 af (83% of inflow)
Center-of-Mass det. time= 427.0 min (1,434.1 - 1,007.1)

Volume	Invert	Avail.Storage	Storage Description
#1	493.00'	21,690 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

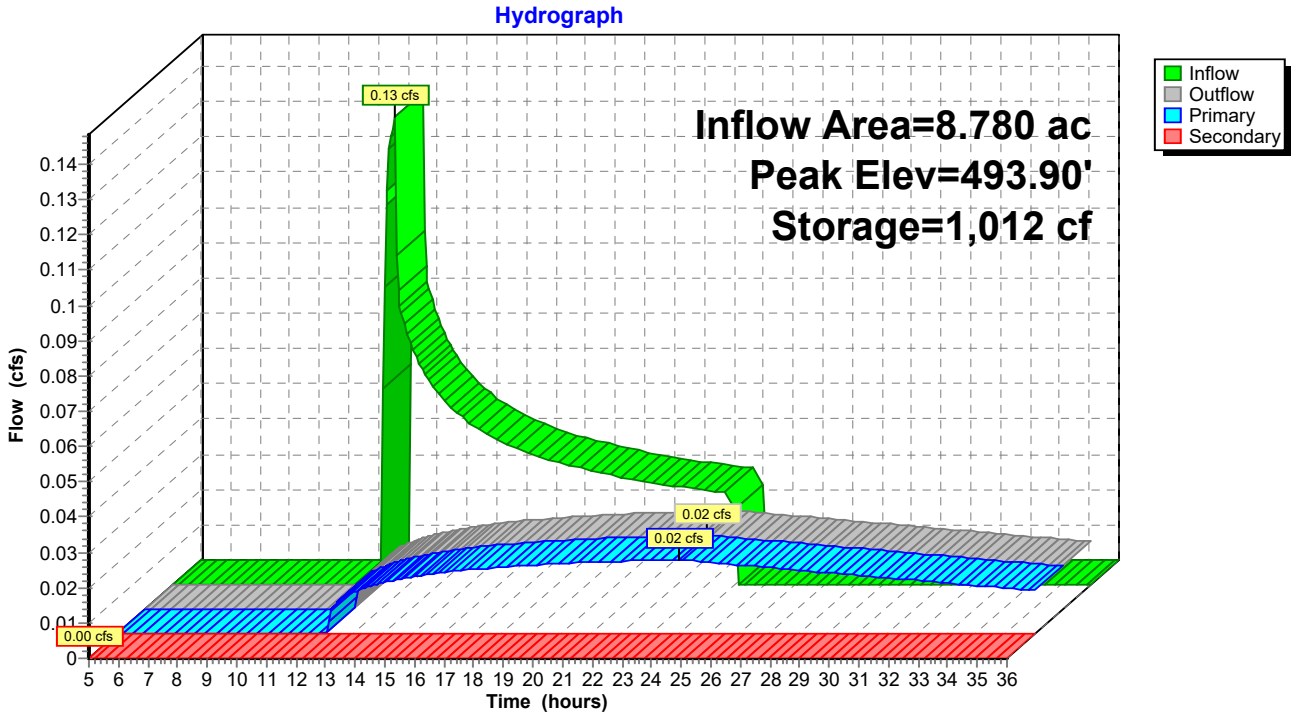
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
493.00	440	0	0
494.00	1,970	1,205	1,205
495.00	4,020	2,995	4,200
496.00	5,900	4,960	9,160
497.00	4,500	5,200	14,360
498.00	2,900	3,700	18,060
499.00	1,430	2,165	20,225
500.00	1,500	1,465	21,690

Device	Routing	Invert	Outlet Devices
#1	Primary	490.00'	**6.0" Round Culvert** L= 40.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 490.00' / 489.70' S= 0.0075 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.20 sf
#2	Device 1	493.00'	**0.500 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	495.00'	**2.0' long x 5.0' 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.02 cfs @ 24.00 hrs HW=493.90' (Free Discharge)
└**1=Culvert** (Passes 0.02 cfs of 1.45 cfs potential flow)
└**2=Exfiltration** (Exfiltration Controls 0.02 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=493.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 12P: Existing Swale



Summary for Pond 13P: Proposed Swale

Inflow Area = 4.740 ac, 5.06% Impervious, Inflow Depth = 0.09" for 1-yr event
Inflow = 0.06 cfs @ 13.21 hrs, Volume= 0.035 af
Outflow = 0.04 cfs @ 15.41 hrs, Volume= 0.026 af, Atten= 24%, Lag= 131.9 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond 12P : Existing Swale
Secondary = 0.04 cfs @ 15.41 hrs, Volume= 0.026 af

Routing by Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 494.04' @ 15.41 hrs Surf.Area= 721 sf Storage= 421 cf

Plug-Flow detention time= 196.0 min calculated for 0.026 af (74% of inflow)
Center-of-Mass det. time= 97.3 min (1,167.2 - 1,069.8)

Volume	Invert	Avail.Storage	Storage Description
#1	493.00'	8,428 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

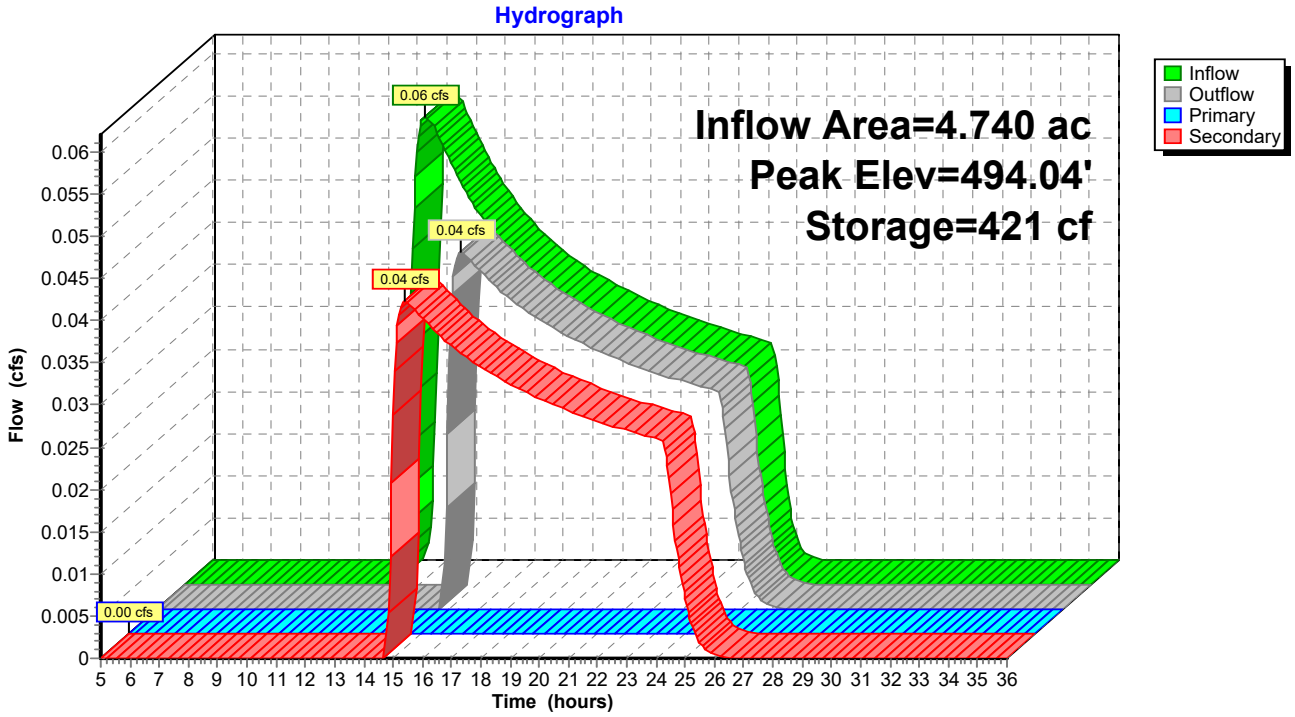
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
493.00	104	0	0
494.00	686	395	395
495.00	1,635	1,161	1,556
496.00	2,550	2,093	3,648
497.00	1,235	1,893	5,541
498.00	1,940	1,588	7,128
499.00	660	1,300	8,428

Device	Routing	Invert	Outlet Devices
#1	Primary	496.69'	**6.0" Round Culvert** L= 425.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 496.69' / 491.59' S= 0.0120 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	493.00'	**0.500 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	494.00'	**2.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=493.00' (Free Discharge)
↑**1=Culvert** (Controls 0.00 cfs)
↑**2=Exfiltration** (Controls 0.00 cfs)

Secondary OutFlow Max=0.04 cfs @ 15.41 hrs HW=494.04' (Free Discharge)
↑**3=Broad-Crested Rectangular Weir** (Weir Controls 0.04 cfs @ 0.48 fps)

Pond 13P: Proposed Swale



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

Subcatchment4S: DA-2 Runoff Area=8.029 ac 0.73% Impervious Runoff Depth=0.13"
Flow Length=363' Tc=23.3 min CN=58 Runoff=0.23 cfs 0.086 af

Subcatchment5S: DA-1 Runoff Area=20.670 ac 3.19% Impervious Runoff Depth=0.15"
Flow Length=1,395' Tc=53.5 min CN=59 Runoff=0.58 cfs 0.255 af

Subcatchment7S: DA-1 to Ex. Swale Runoff Area=4.040 ac 8.91% Impervious Runoff Depth=0.21"
Flow Length=180' Tc=2.2 min CN=62 Runoff=0.39 cfs 0.072 af

Subcatchment8S: DA-1 to Prop Swale Runoff Area=4.740 ac 5.06% Impervious Runoff Depth=0.17"
Flow Length=1,012' Tc=39.0 min CN=60 Runoff=0.19 cfs 0.066 af

Reach 10R: Wetland Inflow=0.60 cfs 0.306 af
Outflow=0.60 cfs 0.306 af

Pond 12P: Existing Swale Peak Elev=494.33' Storage=1,979 cf Inflow=0.39 cfs 0.072 af
Primary=0.03 cfs 0.051 af Secondary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.051 af

Pond 13P: Proposed Swale Peak Elev=494.09' Storage=461 cf Inflow=0.19 cfs 0.066 af
Primary=0.00 cfs 0.000 af Secondary=0.14 cfs 0.057 af Outflow=0.14 cfs 0.057 af

Total Runoff Area = 37.479 ac Runoff Volume = 0.479 af Average Runoff Depth = 0.15"
96.48% Pervious = 36.160 ac 3.52% Impervious = 1.319 ac

Summary for Subcatchment 4S: DA-2

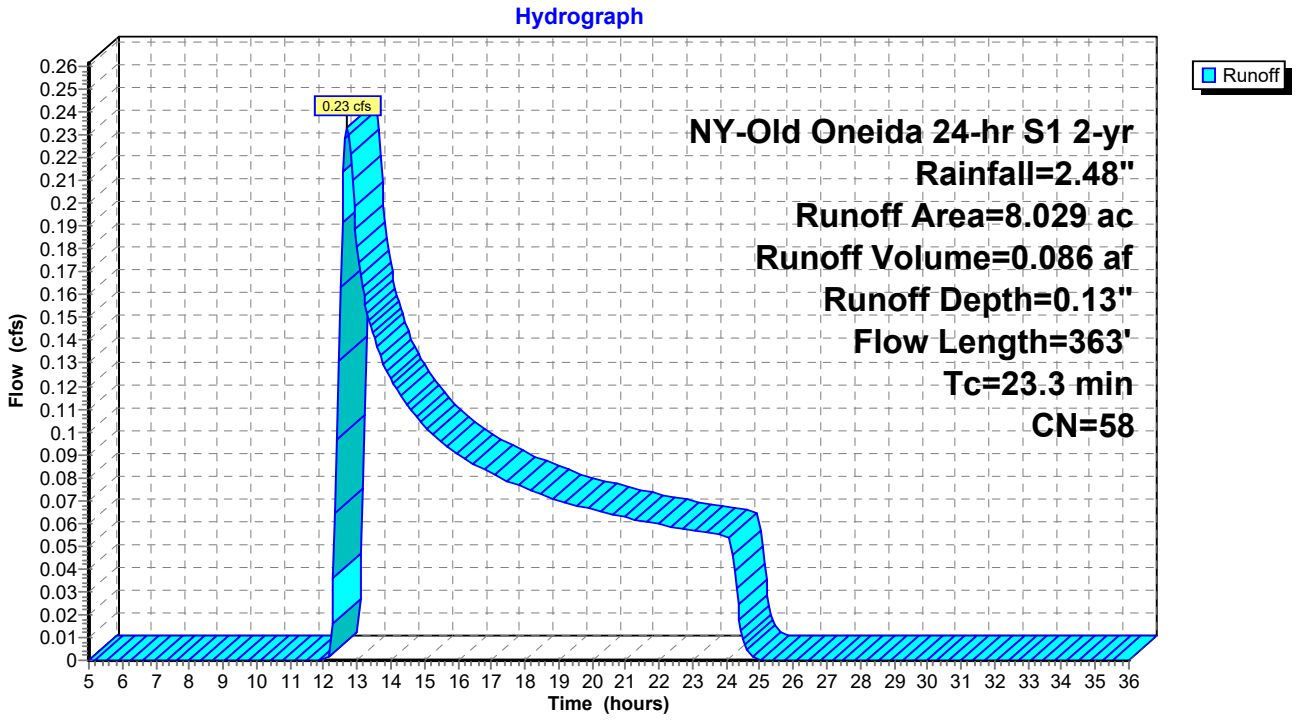
Runoff = 0.23 cfs @ 12.71 hrs, Volume= 0.086 af, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 2-yr Rainfall=2.48"

	Area (ac)	CN	Description
*	0.059	98	Stream
	0.560	48	Brush, Good, HSG B
	7.410	58	Meadow, non-grazed, HSG B
	8.029	58	Weighted Average
	7.970		99.27% Pervious Area
	0.059		0.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	100	0.0180	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
5.1	263	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
23.3	363	Total			

Subcatchment 4S: DA-2



Summary for Subcatchment 5S: DA-1

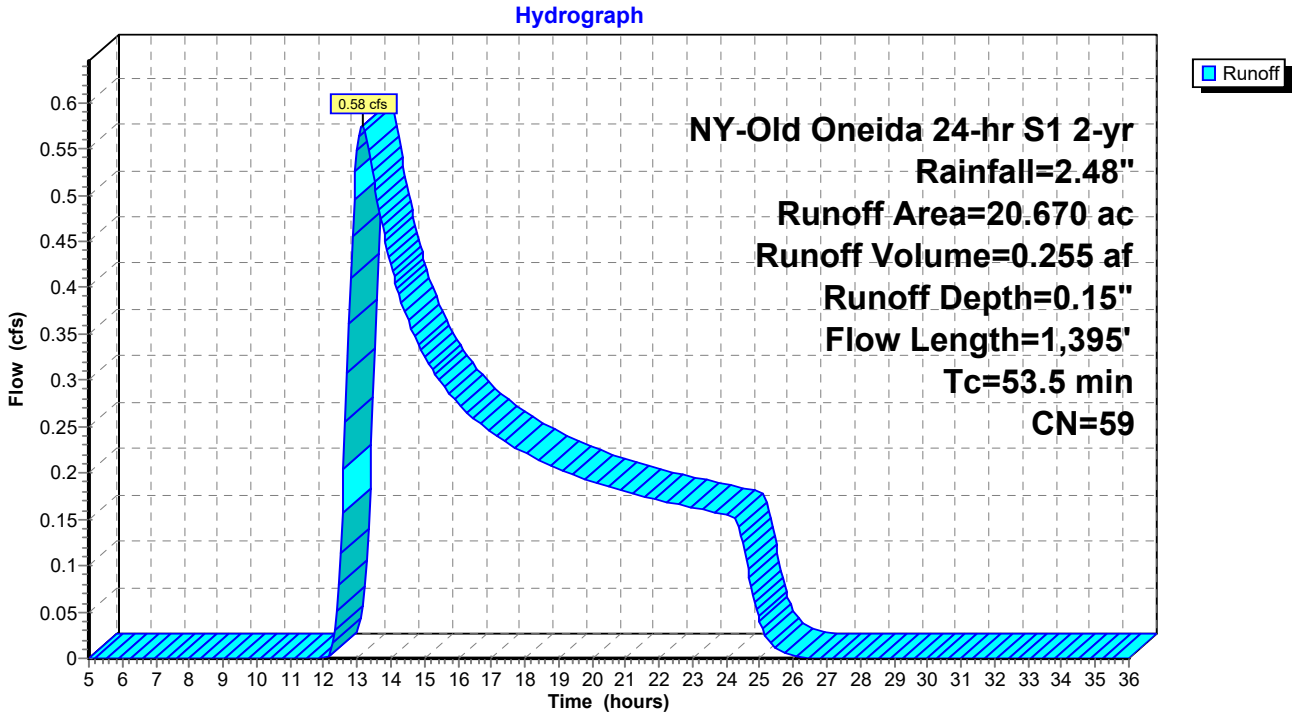
Runoff = 0.58 cfs @ 13.15 hrs, Volume= 0.255 af, Depth= 0.15"
Routed to Reach 10R : Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 2-yr Rainfall=2.48"

	Area (ac)	CN	Description
	20.010	58	Meadow, non-grazed, HSG B
*	0.370	98	Access Road, HSG B
*	0.290	98	Roofs & Asphalt Drive, HSG B
	20.670	59	Weighted Average
	20.010		96.81% Pervious Area
	0.660		3.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.7	100	0.0130	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
3.3	220	0.0250	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
25.3	750	0.0050	0.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	325	0.0340	1.29		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
53.5	1,395	Total			

Subcatchment 5S: DA-1



Summary for Subcatchment 7S: DA-1 to Ex. Swale

[49] Hint: Tc<2dt may require smaller dt

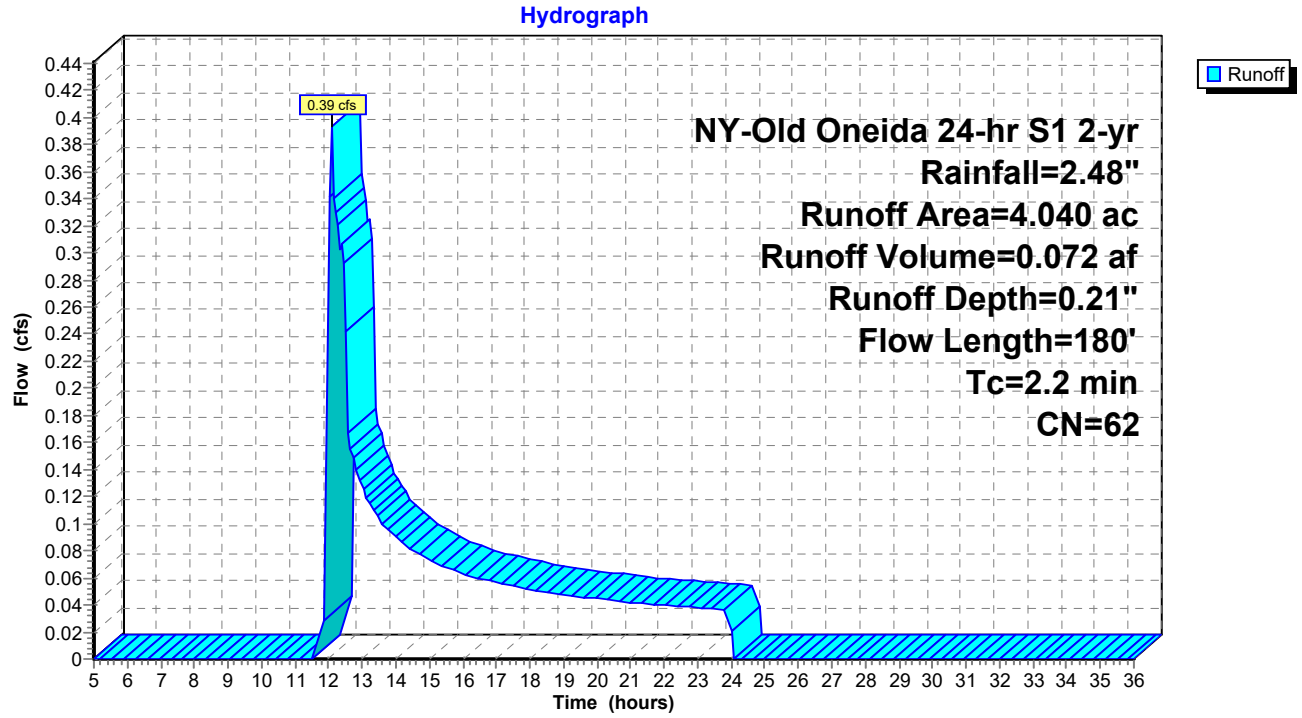
Runoff = 0.39 cfs @ 12.10 hrs, Volume= 0.072 af, Depth= 0.21"
Routed to Pond 12P : Existing Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 2-yr Rainfall=2.48"

	Area (ac)	CN	Description
	3.680	58	Meadow, non-grazed, HSG B
*	0.360	98	Access Road
	4.040	62	Weighted Average
	3.680		91.09% Pervious Area
	0.360		8.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0150	1.00		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.14"
0.3	50	0.0230	3.08		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	30	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.2	180	Total			

Subcatchment 7S: DA-1 to Ex. Swale



Summary for Subcatchment 8S: DA-1 to Prop Swale

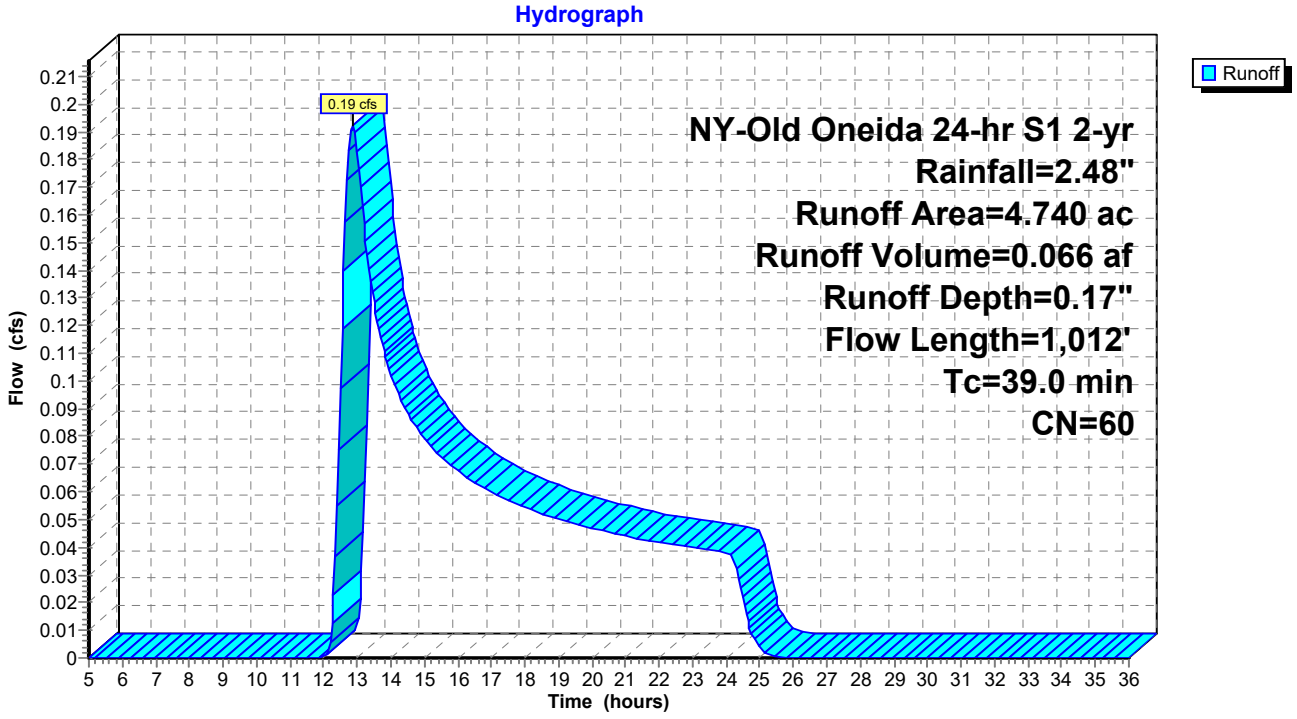
Runoff = 0.19 cfs @ 12.86 hrs, Volume= 0.066 af, Depth= 0.17"
Routed to Pond 13P : Proposed Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 2-yr Rainfall=2.48"

Area (ac)	CN	Description
0.240	98	Paved parking, HSG B
4.500	58	Meadow, non-grazed, HSG B
4.740	60	Weighted Average
4.500		94.94% Pervious Area
0.240		5.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0250	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
3.9	240	0.0210	1.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.1	672	0.0070	0.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
39.0	1,012	Total			

Subcatchment 8S: DA-1 to Prop Swale



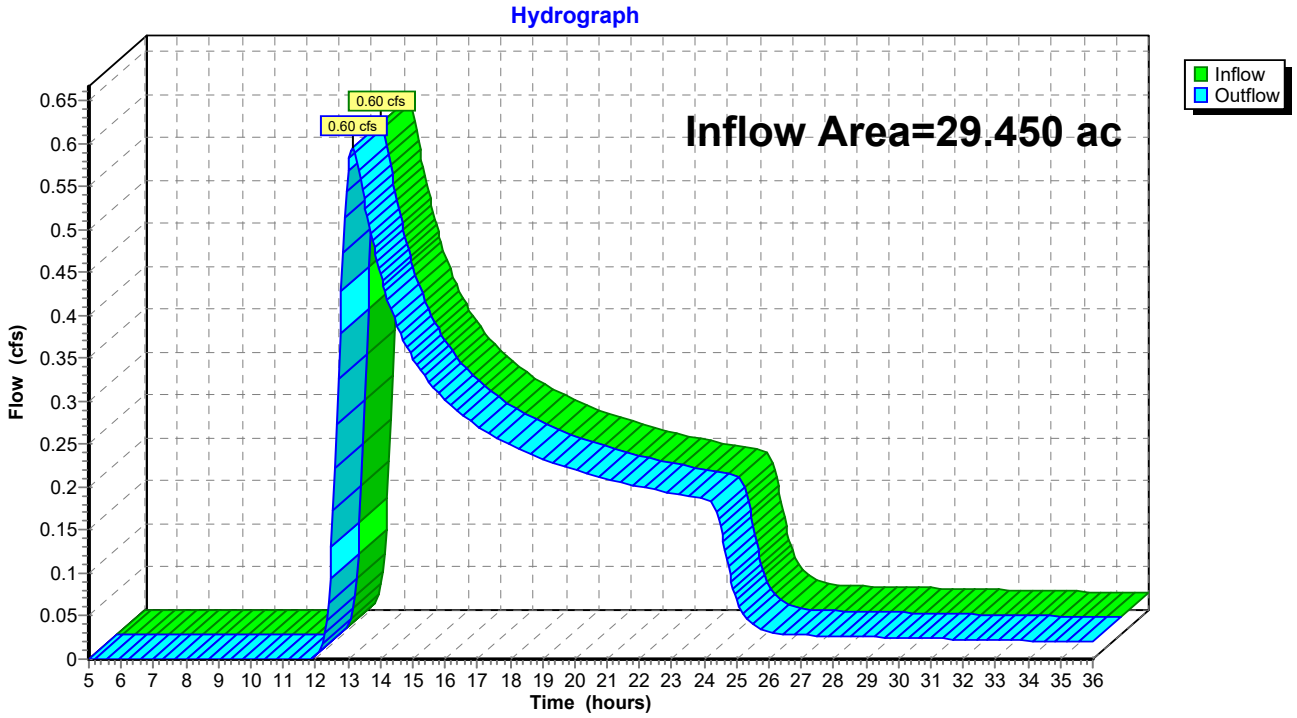
Summary for Reach 10R: Wetland

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 29.450 ac, 4.28% Impervious, Inflow Depth > 0.12" for 2-yr event
Inflow = 0.60 cfs @ 13.15 hrs, Volume= 0.306 af
Outflow = 0.60 cfs @ 13.15 hrs, Volume= 0.306 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs

Reach 10R: Wetland



Summary for Pond 12P: Existing Swale

[79] Warning: Submerged Pond 13P Primary device # 1 OUTLET by 2.74'

Inflow Area = 8.780 ac, 6.83% Impervious, Inflow Depth = 0.10" for 2-yr event
Inflow = 0.39 cfs @ 12.10 hrs, Volume= 0.072 af
Outflow = 0.03 cfs @ 23.99 hrs, Volume= 0.051 af, Atten= 92%, Lag= 713.5 min
Primary = 0.03 cfs @ 23.99 hrs, Volume= 0.051 af
Routed to Reach 10R : Wetland
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 494.33' @ 23.99 hrs Surf.Area= 2,656 sf Storage= 1,979 cf

Plug-Flow detention time= 588.3 min calculated for 0.051 af (71% of inflow)
Center-of-Mass det. time= 471.0 min (1,434.6 - 963.6)

Volume	Invert	Avail.Storage	Storage Description
#1	493.00'	21,690 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

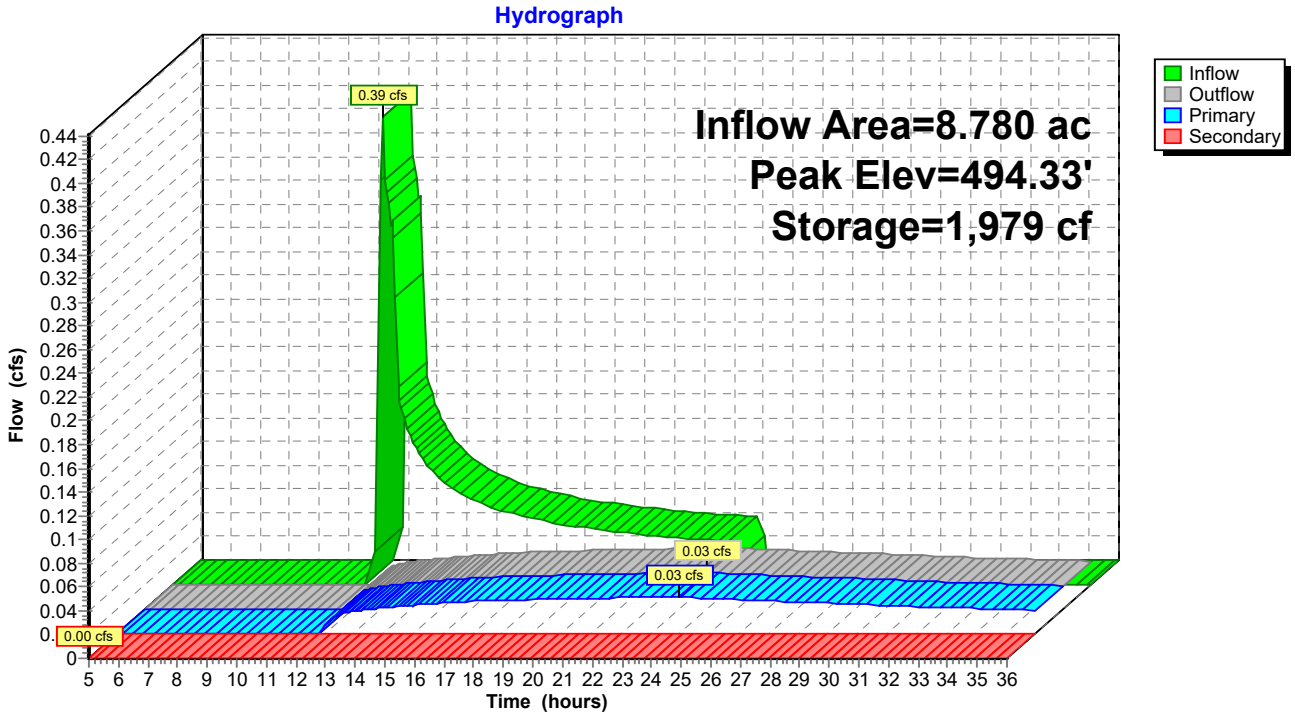
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
493.00	440	0	0
494.00	1,970	1,205	1,205
495.00	4,020	2,995	4,200
496.00	5,900	4,960	9,160
497.00	4,500	5,200	14,360
498.00	2,900	3,700	18,060
499.00	1,430	2,165	20,225
500.00	1,500	1,465	21,690

Device	Routing	Invert	Outlet Devices
#1	Primary	490.00'	**6.0" Round Culvert** L= 40.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 490.00' / 489.70' S= 0.0075 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.20 sf
#2	Device 1	493.00'	**0.500 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	495.00'	**2.0' long x 5.0' 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.03 cfs @ 23.99 hrs HW=494.33' (Free Discharge)
└**1=Culvert** (Passes 0.03 cfs of 1.53 cfs potential flow)
└**2=Exfiltration** (Exfiltration Controls 0.03 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=493.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 12P: Existing Swale



Summary for Pond 13P: Proposed Swale

Inflow Area = 4.740 ac, 5.06% Impervious, Inflow Depth = 0.17" for 2-yr event
Inflow = 0.19 cfs @ 12.86 hrs, Volume= 0.066 af
Outflow = 0.14 cfs @ 13.39 hrs, Volume= 0.057 af, Atten= 29%, Lag= 32.1 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond 12P : Existing Swale
Secondary = 0.14 cfs @ 13.39 hrs, Volume= 0.057 af

Routing by Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 494.09' @ 13.39 hrs Surf.Area= 771 sf Storage= 461 cf

Plug-Flow detention time= 108.3 min calculated for 0.057 af (86% of inflow)
Center-of-Mass det. time= 49.4 min (1,067.0 - 1,017.5)

Volume	Invert	Avail.Storage	Storage Description
#1	493.00'	8,428 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

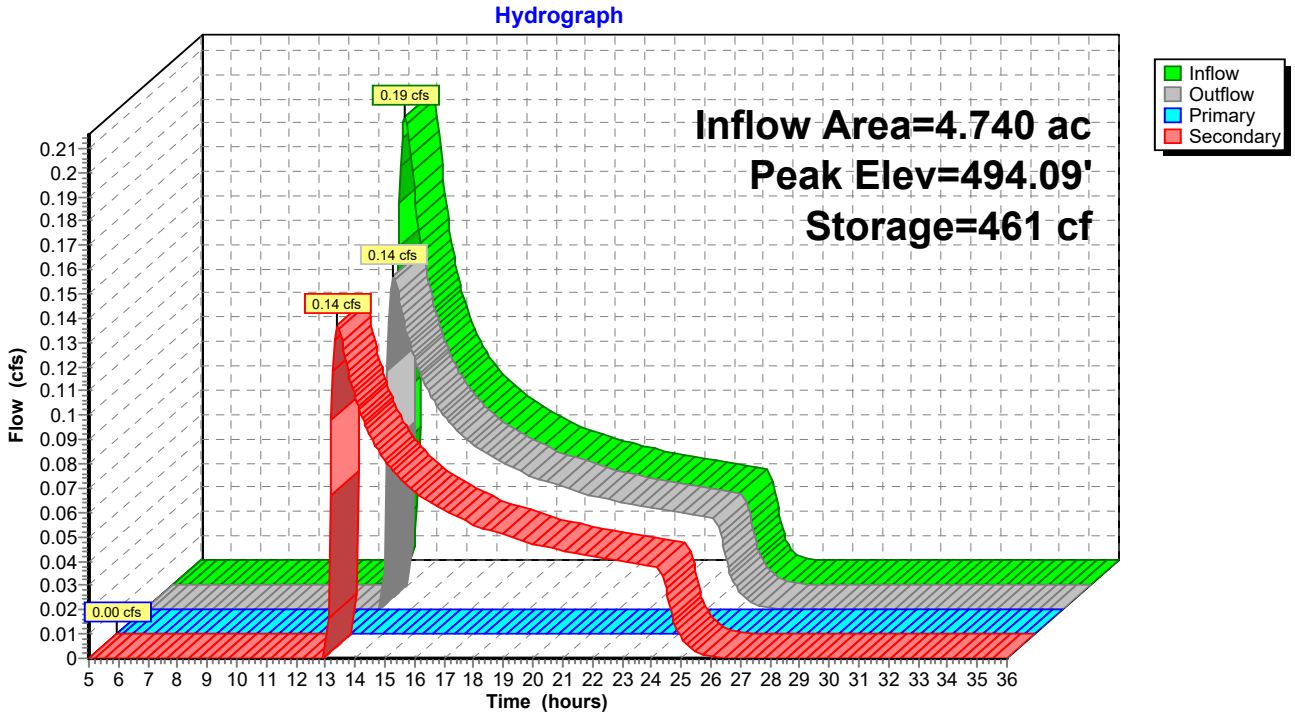
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
493.00	104	0	0
494.00	686	395	395
495.00	1,635	1,161	1,556
496.00	2,550	2,093	3,648
497.00	1,235	1,893	5,541
498.00	1,940	1,588	7,128
499.00	660	1,300	8,428

Device	Routing	Invert	Outlet Devices
#1	Primary	496.69'	**6.0" Round Culvert** L= 425.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 496.69' / 491.59' S= 0.0120 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	493.00'	**0.500 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	494.00'	**2.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=493.00' (Free Discharge)
↑**1=Culvert** (Controls 0.00 cfs)
↑**2=Exfiltration** (Controls 0.00 cfs)

Secondary OutFlow Max=0.13 cfs @ 13.39 hrs HW=494.09' (Free Discharge)
↑**3=Broad-Crested Rectangular Weir** (Weir Controls 0.13 cfs @ 0.75 fps)

Pond 13P: Proposed Swale



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

Subcatchment4S: DA-2 Runoff Area=8.029 ac 0.73% Impervious Runoff Depth=0.29"
Flow Length=363' Tc=23.3 min CN=58 Runoff=0.88 cfs 0.192 af

Subcatchment5S: DA-1 Runoff Area=20.670 ac 3.19% Impervious Runoff Depth=0.32"
Flow Length=1,395' Tc=53.5 min CN=59 Runoff=1.93 cfs 0.545 af

Subcatchment7S: DA-1 to Ex. Swale Runoff Area=4.040 ac 8.91% Impervious Runoff Depth=0.41"
Flow Length=180' Tc=2.2 min CN=62 Runoff=1.58 cfs 0.139 af

Subcatchment8S: DA-1 to Prop Swale Runoff Area=4.740 ac 5.06% Impervious Runoff Depth=0.35"
Flow Length=1,012' Tc=39.0 min CN=60 Runoff=0.60 cfs 0.137 af

Reach 10R: Wetland Inflow=1.96 cfs 0.628 af
Outflow=1.96 cfs 0.628 af

Pond 12P: Existing Swale Peak Elev=495.01' Storage=4,237 cf Inflow=1.58 cfs 0.139 af
Primary=0.05 cfs 0.082 af Secondary=0.01 cfs 0.001 af Outflow=0.05 cfs 0.083 af

Pond 13P: Proposed Swale Peak Elev=494.24' Storage=583 cf Inflow=0.60 cfs 0.137 af
Primary=0.00 cfs 0.000 af Secondary=0.58 cfs 0.128 af Outflow=0.58 cfs 0.128 af

Total Runoff Area = 37.479 ac Runoff Volume = 1.014 af Average Runoff Depth = 0.32"
96.48% Pervious = 36.160 ac 3.52% Impervious = 1.319 ac

Summary for Subcatchment 4S: DA-2

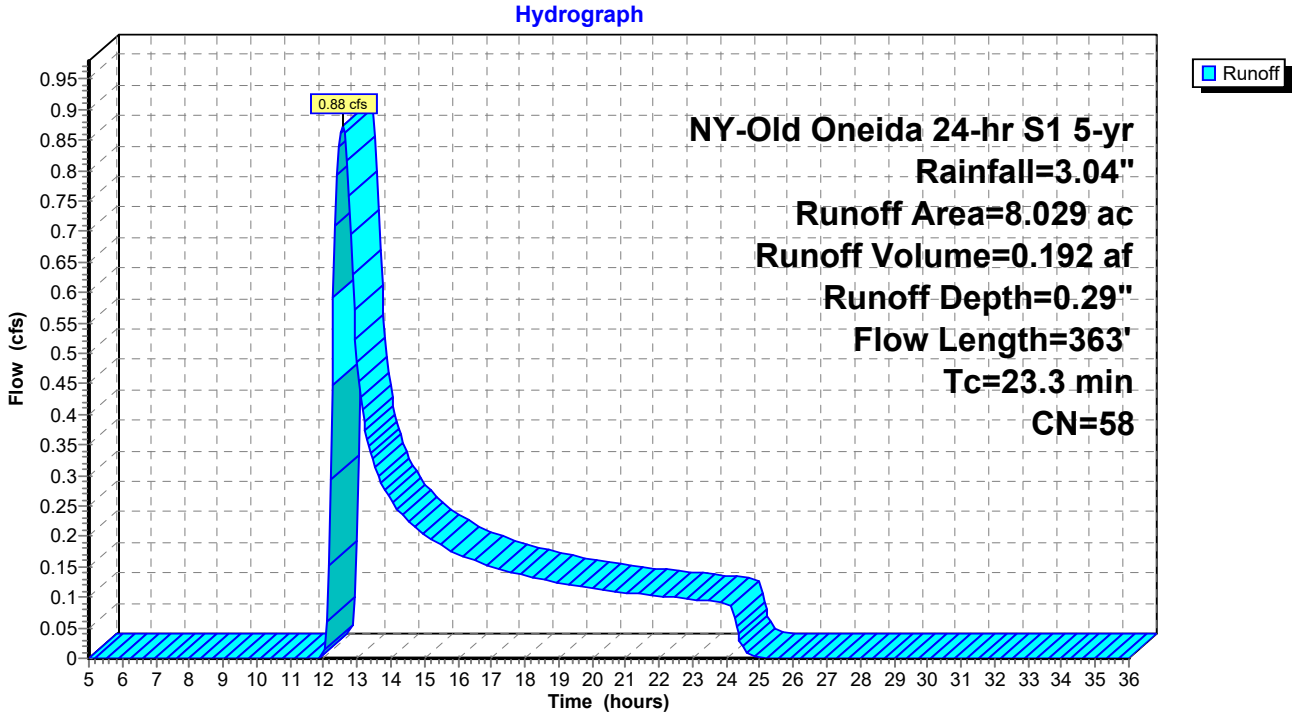
Runoff = 0.88 cfs @ 12.57 hrs, Volume= 0.192 af, Depth= 0.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 5-yr Rainfall=3.04"

	Area (ac)	CN	Description
*	0.059	98	Stream
	0.560	48	Brush, Good, HSG B
	7.410	58	Meadow, non-grazed, HSG B
	8.029	58	Weighted Average
	7.970		99.27% Pervious Area
	0.059		0.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	100	0.0180	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
5.1	263	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
23.3	363	Total			

Subcatchment 4S: DA-2



Summary for Subcatchment 5S: DA-1

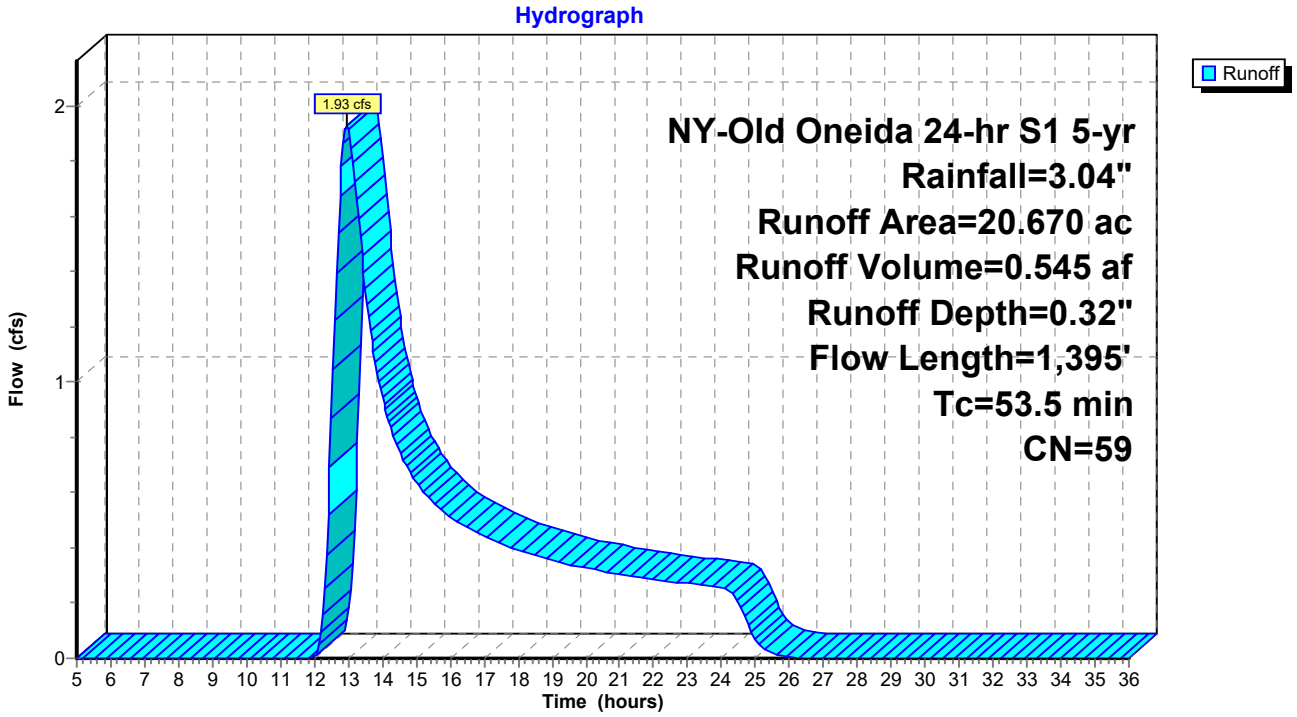
Runoff = 1.93 cfs @ 12.96 hrs, Volume= 0.545 af, Depth= 0.32"
Routed to Reach 10R : Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 5-yr Rainfall=3.04"

	Area (ac)	CN	Description
	20.010	58	Meadow, non-grazed, HSG B
*	0.370	98	Access Road, HSG B
*	0.290	98	Roofs & Asphalt Drive, HSG B
	20.670	59	Weighted Average
	20.010		96.81% Pervious Area
	0.660		3.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.7	100	0.0130	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
3.3	220	0.0250	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
25.3	750	0.0050	0.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	325	0.0340	1.29		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
53.5	1,395	Total			

Subcatchment 5S: DA-1



Summary for Subcatchment 7S: DA-1 to Ex. Swale

[49] Hint: Tc<2dt may require smaller dt

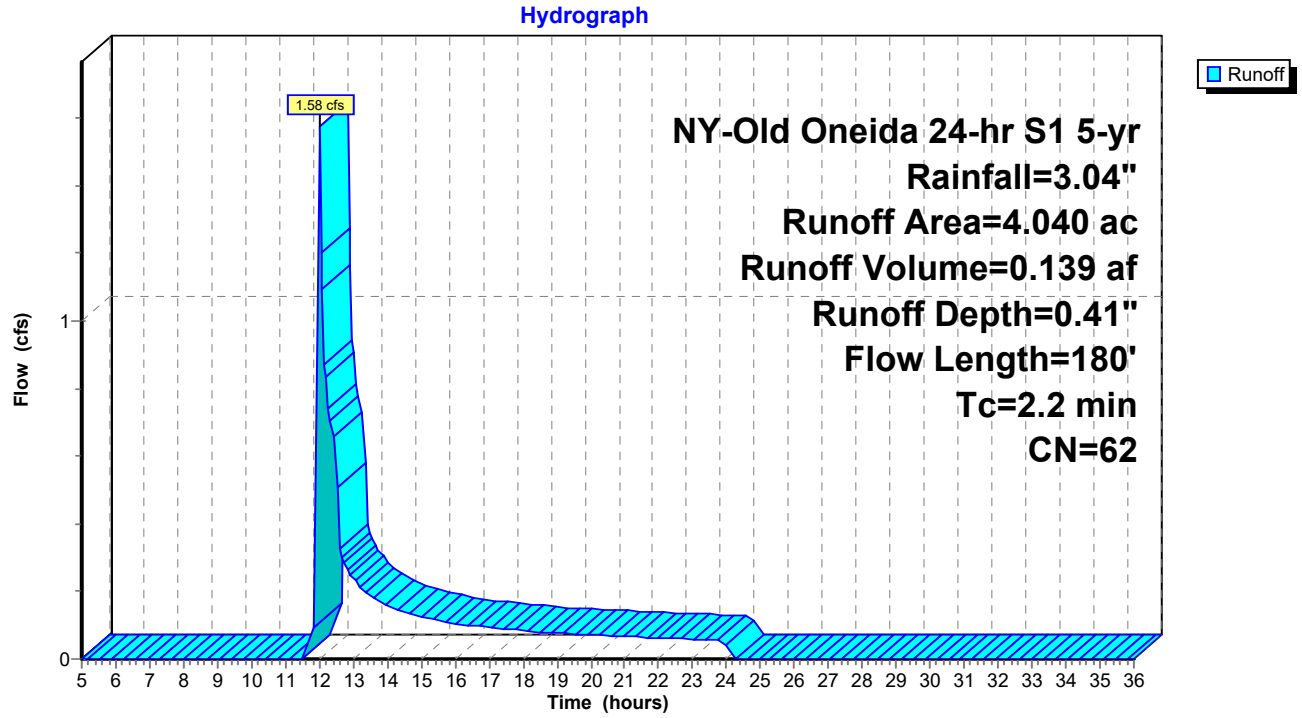
Runoff = 1.58 cfs @ 12.01 hrs, Volume= 0.139 af, Depth= 0.41"
Routed to Pond 12P : Existing Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 5-yr Rainfall=3.04"

	Area (ac)	CN	Description
	3.680	58	Meadow, non-grazed, HSG B
*	0.360	98	Access Road
	4.040	62	Weighted Average
	3.680		91.09% Pervious Area
	0.360		8.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0150	1.00		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.14"
0.3	50	0.0230	3.08		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	30	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.2	180	Total			

Subcatchment 7S: DA-1 to Ex. Swale



Summary for Subcatchment 8S: DA-1 to Prop Swale

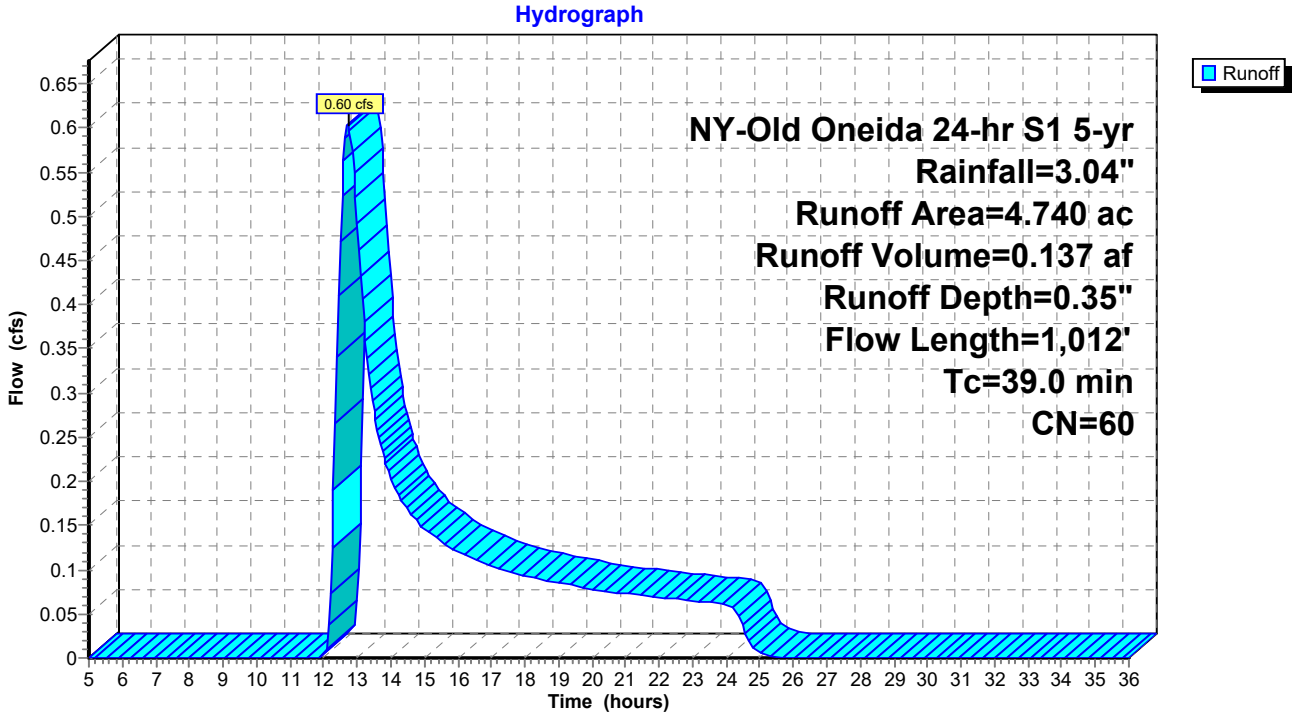
Runoff = 0.60 cfs @ 12.72 hrs, Volume= 0.137 af, Depth= 0.35"
Routed to Pond 13P : Proposed Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 5-yr Rainfall=3.04"

Area (ac)	CN	Description
0.240	98	Paved parking, HSG B
4.500	58	Meadow, non-grazed, HSG B
4.740	60	Weighted Average
4.500		94.94% Pervious Area
0.240		5.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0250	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
3.9	240	0.0210	1.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.1	672	0.0070	0.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
39.0	1,012	Total			

Subcatchment 8S: DA-1 to Prop Swale



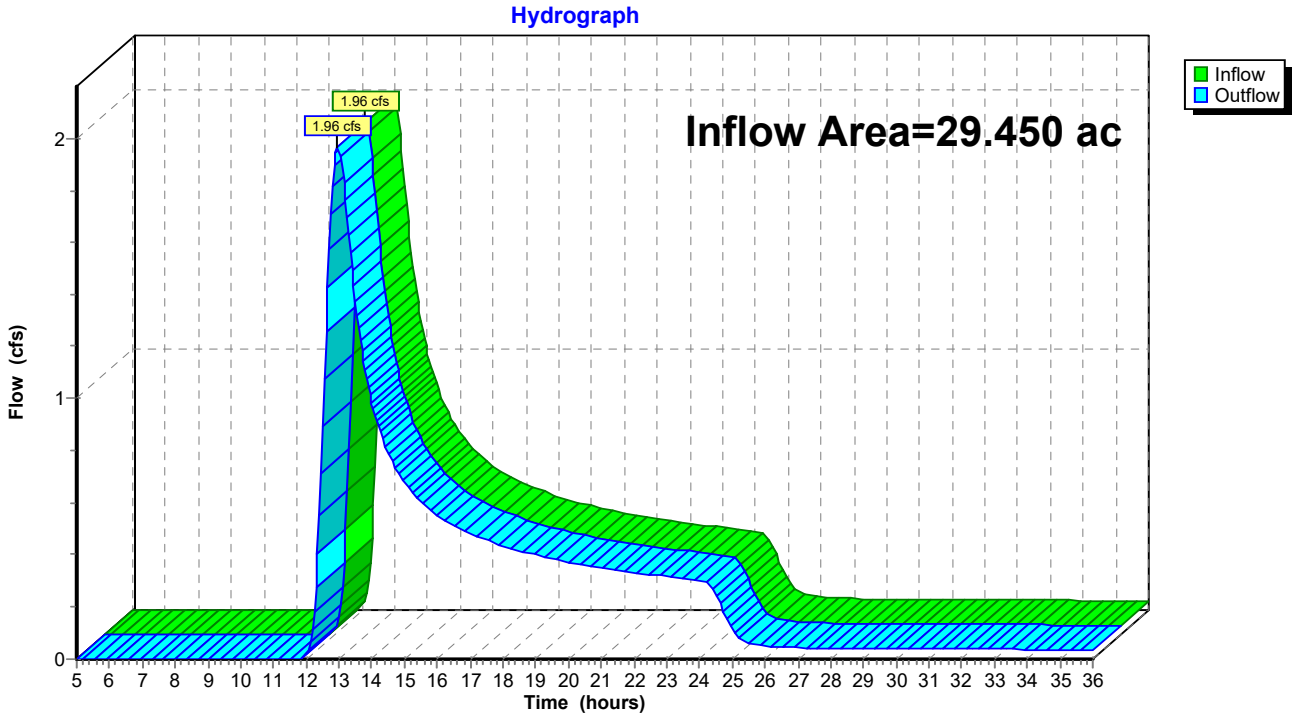
Summary for Reach 10R: Wetland

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 29.450 ac, 4.28% Impervious, Inflow Depth > 0.26" for 5-yr event
Inflow = 1.96 cfs @ 12.96 hrs, Volume= 0.628 af
Outflow = 1.96 cfs @ 12.96 hrs, Volume= 0.628 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs

Reach 10R: Wetland



Summary for Pond 12P: Existing Swale

[79] Warning: Submerged Pond 13P Primary device # 1 OUTLET by 3.42'

Inflow Area = 8.780 ac, 6.83% Impervious, Inflow Depth = 0.19" for 5-yr event
Inflow = 1.58 cfs @ 12.01 hrs, Volume= 0.139 af
Outflow = 0.05 cfs @ 23.98 hrs, Volume= 0.083 af, Atten= 97%, Lag= 717.9 min
Primary = 0.05 cfs @ 23.98 hrs, Volume= 0.082 af
Routed to Reach 10R : Wetland
Secondary = 0.01 cfs @ 23.98 hrs, Volume= 0.001 af

Routing by Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 495.01' @ 23.98 hrs Surf.Area= 4,037 sf Storage= 4,237 cf

Plug-Flow detention time= 665.7 min calculated for 0.083 af (59% of inflow)
Center-of-Mass det. time= 515.0 min (1,439.6 - 924.6)

Volume	Invert	Avail.Storage	Storage Description
#1	493.00'	21,690 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

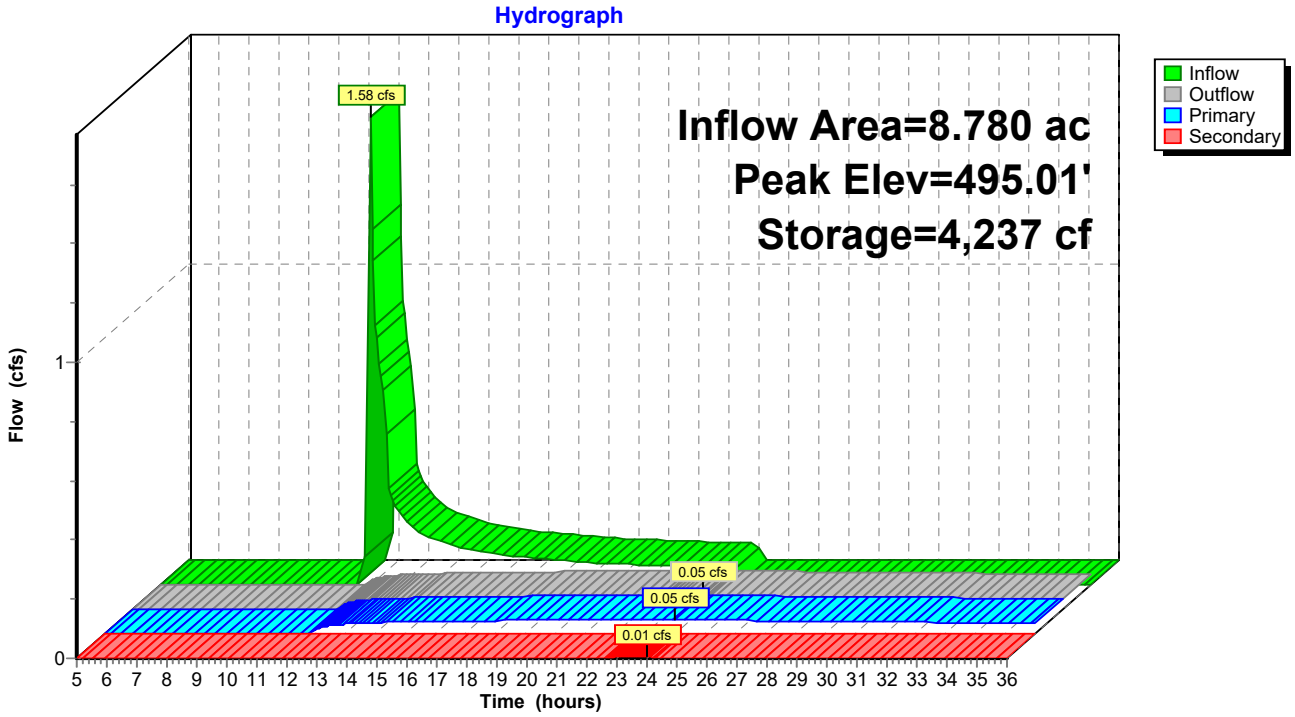
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
493.00	440	0	0
494.00	1,970	1,205	1,205
495.00	4,020	2,995	4,200
496.00	5,900	4,960	9,160
497.00	4,500	5,200	14,360
498.00	2,900	3,700	18,060
499.00	1,430	2,165	20,225
500.00	1,500	1,465	21,690

Device	Routing	Invert	Outlet Devices
#1	Primary	490.00'	**6.0" Round Culvert** L= 40.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 490.00' / 489.70' S= 0.0075 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.20 sf
#2	Device 1	493.00'	**0.500 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	495.00'	**2.0' long x 5.0' 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.05 cfs @ 23.98 hrs HW=495.01' (Free Discharge)
└**1=Culvert** (Passes 0.05 cfs of 1.65 cfs potential flow)
└**2=Exfiltration** (Exfiltration Controls 0.05 cfs)

Secondary OutFlow Max=0.00 cfs @ 23.98 hrs HW=495.01' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Weir Controls 0.00 cfs @ 0.22 fps)

Pond 12P: Existing Swale



Summary for Pond 13P: Proposed Swale

Inflow Area = 4.740 ac, 5.06% Impervious, Inflow Depth = 0.35" for 5-yr event
Inflow = 0.60 cfs @ 12.72 hrs, Volume= 0.137 af
Outflow = 0.58 cfs @ 12.84 hrs, Volume= 0.128 af, Atten= 4%, Lag= 7.2 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond 12P : Existing Swale
Secondary = 0.58 cfs @ 12.84 hrs, Volume= 0.128 af

Routing by Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 494.24' @ 12.84 hrs Surf.Area= 910 sf Storage= 583 cf

Plug-Flow detention time= 56.1 min calculated for 0.128 af (93% of inflow)
Center-of-Mass det. time= 23.8 min (995.4 - 971.6)

Volume	Invert	Avail.Storage	Storage Description
#1	493.00'	8,428 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

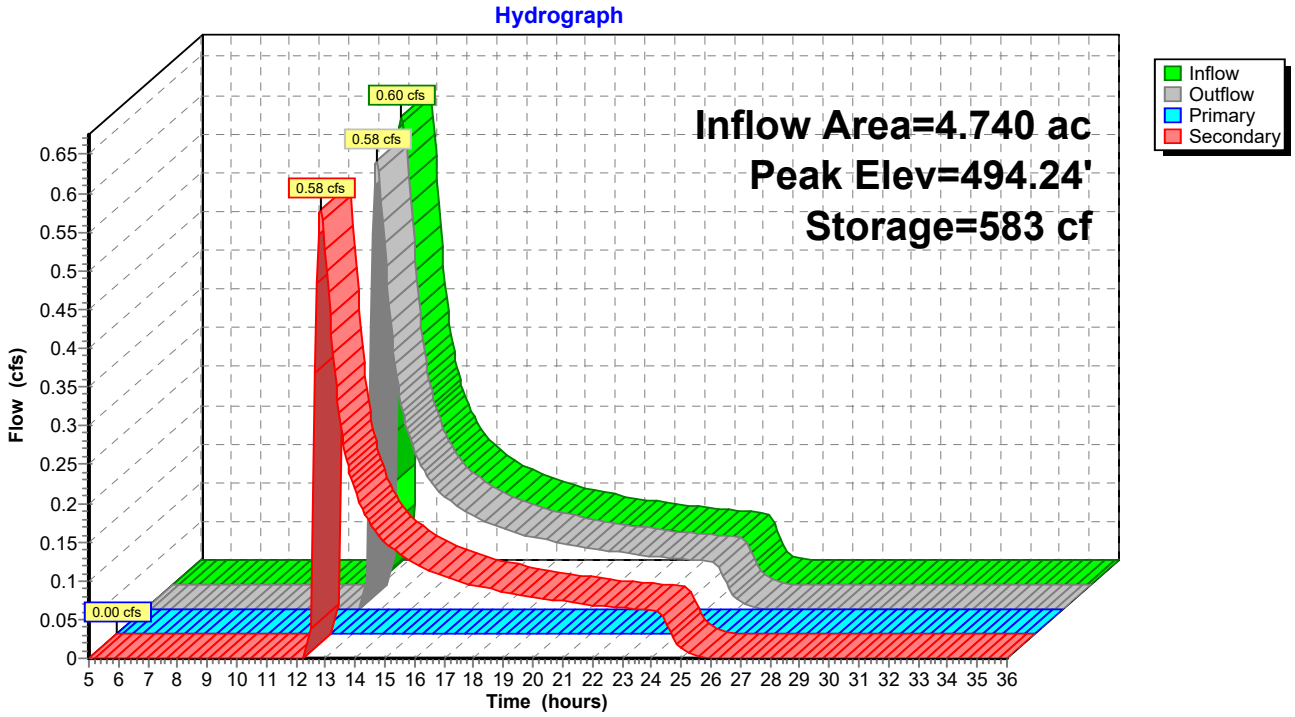
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
493.00	104	0	0
494.00	686	395	395
495.00	1,635	1,161	1,556
496.00	2,550	2,093	3,648
497.00	1,235	1,893	5,541
498.00	1,940	1,588	7,128
499.00	660	1,300	8,428

Device	Routing	Invert	Outlet Devices
#1	Primary	496.69'	**6.0" Round Culvert** L= 425.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 496.69' / 491.59' S= 0.0120 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	493.00'	**0.500 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	494.00'	**2.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=493.00' (Free Discharge)
↑**1=Culvert** (Controls 0.00 cfs)
↑**2=Exfiltration** (Controls 0.00 cfs)

Secondary OutFlow Max=0.57 cfs @ 12.84 hrs HW=494.24' (Free Discharge)
↑**3=Broad-Crested Rectangular Weir** (Weir Controls 0.57 cfs @ 1.22 fps)

Pond 13P: Proposed Swale



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

Subcatchment4S: DA-2 Runoff Area=8.029 ac 0.73% Impervious Runoff Depth=0.47"
Flow Length=363' Tc=23.3 min CN=58 Runoff=1.82 cfs 0.314 af

Subcatchment5S: DA-1 Runoff Area=20.670 ac 3.19% Impervious Runoff Depth=0.51"
Flow Length=1,395' Tc=53.5 min CN=59 Runoff=3.81 cfs 0.875 af

Subcatchment7S: DA-1 to Ex. Swale Runoff Area=4.040 ac 8.91% Impervious Runoff Depth=0.63"
Flow Length=180' Tc=2.2 min CN=62 Runoff=3.08 cfs 0.214 af

Subcatchment8S: DA-1 to Prop Swale Runoff Area=4.740 ac 5.06% Impervious Runoff Depth=0.55"
Flow Length=1,012' Tc=39.0 min CN=60 Runoff=1.15 cfs 0.217 af

Reach 10R: Wetland Inflow=3.85 cfs 0.963 af
Outflow=3.85 cfs 0.963 af

Pond 12P: Existing Swale Peak Elev=495.10' Storage=4,609 cf Inflow=3.08 cfs 0.214 af
Primary=0.05 cfs 0.088 af Secondary=0.15 cfs 0.068 af Outflow=0.20 cfs 0.156 af

Pond 13P: Proposed Swale Peak Elev=494.37' Storage=709 cf Inflow=1.15 cfs 0.217 af
Primary=0.00 cfs 0.000 af Secondary=1.13 cfs 0.208 af Outflow=1.13 cfs 0.208 af

Total Runoff Area = 37.479 ac Runoff Volume = 1.619 af Average Runoff Depth = 0.52"
96.48% Pervious = 36.160 ac 3.52% Impervious = 1.319 ac

Summary for Subcatchment 4S: DA-2

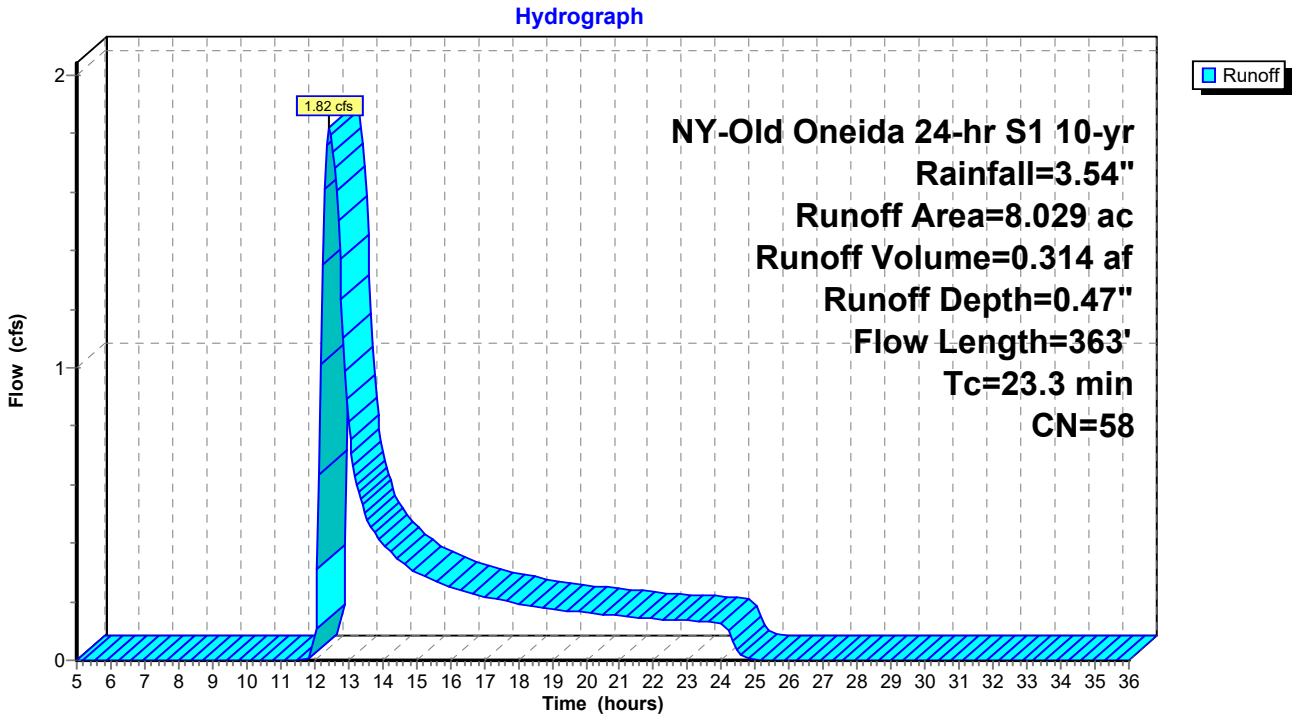
Runoff = 1.82 cfs @ 12.42 hrs, Volume= 0.314 af, Depth= 0.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 10-yr Rainfall=3.54"

	Area (ac)	CN	Description
*	0.059	98	Stream
	0.560	48	Brush, Good, HSG B
	7.410	58	Meadow, non-grazed, HSG B
	8.029	58	Weighted Average
	7.970		99.27% Pervious Area
	0.059		0.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	100	0.0180	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
5.1	263	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
23.3	363	Total			

Subcatchment 4S: DA-2



Summary for Subcatchment 5S: DA-1

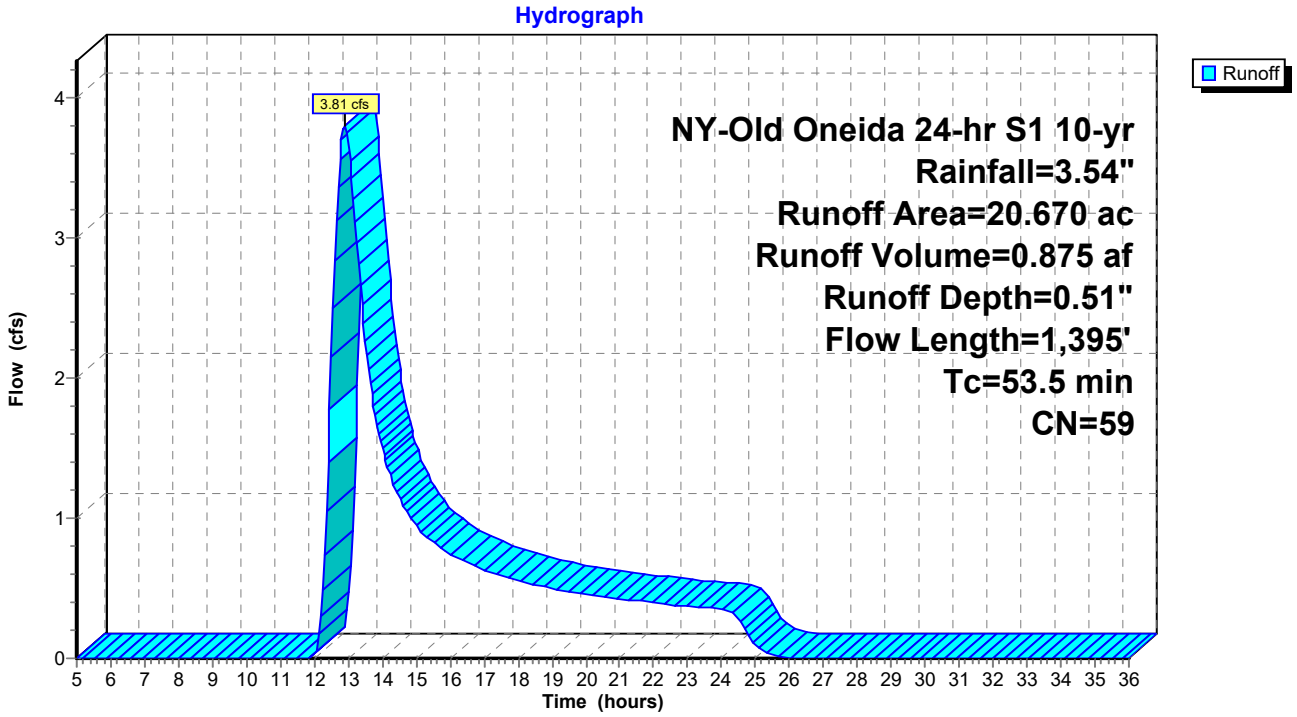
Runoff = 3.81 cfs @ 12.89 hrs, Volume= 0.875 af, Depth= 0.51"
Routed to Reach 10R : Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 10-yr Rainfall=3.54"

	Area (ac)	CN	Description
	20.010	58	Meadow, non-grazed, HSG B
*	0.370	98	Access Road, HSG B
*	0.290	98	Roofs & Asphalt Drive, HSG B
	20.670	59	Weighted Average
	20.010		96.81% Pervious Area
	0.660		3.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.7	100	0.0130	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
3.3	220	0.0250	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
25.3	750	0.0050	0.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	325	0.0340	1.29		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
53.5	1,395	Total			

Subcatchment 5S: DA-1



Summary for Subcatchment 7S: DA-1 to Ex. Swale

[49] Hint: Tc<2dt may require smaller dt

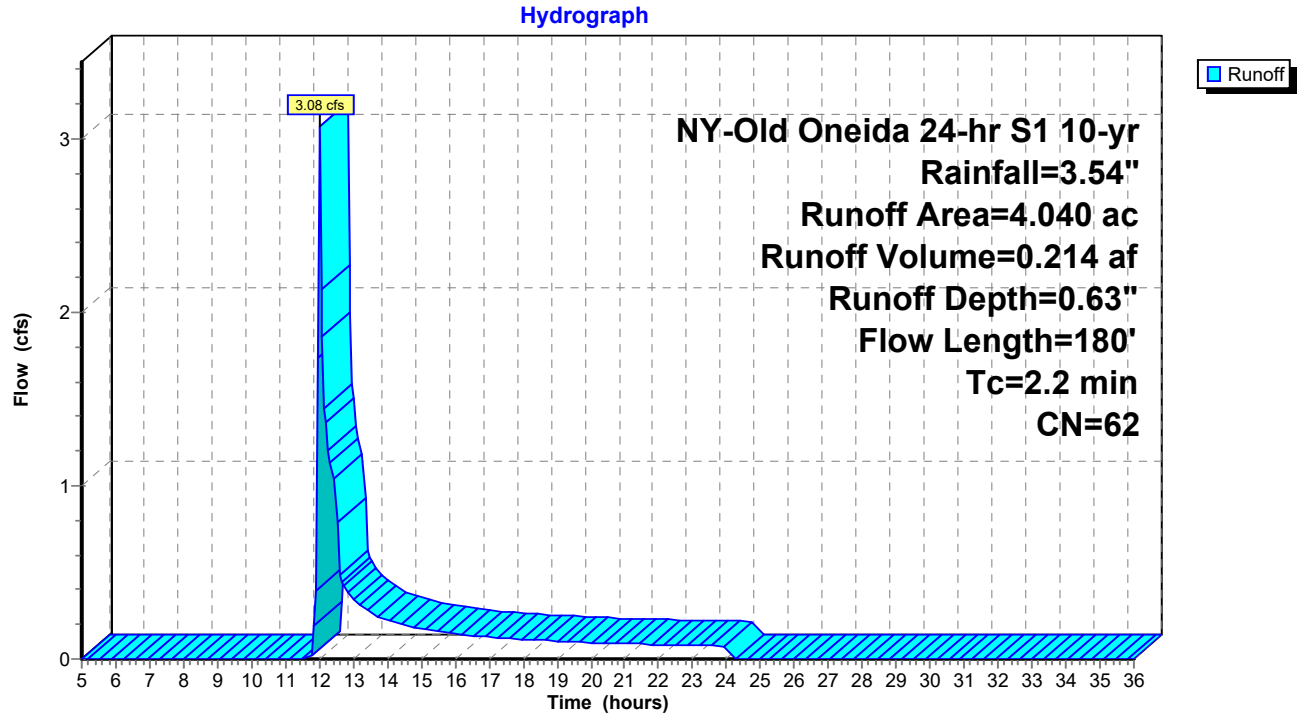
Runoff = 3.08 cfs @ 12.00 hrs, Volume= 0.214 af, Depth= 0.63"
Routed to Pond 12P : Existing Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 10-yr Rainfall=3.54"

	Area (ac)	CN	Description
	3.680	58	Meadow, non-grazed, HSG B
*	0.360	98	Access Road
	4.040	62	Weighted Average
	3.680		91.09% Pervious Area
	0.360		8.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0150	1.00		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.14"
0.3	50	0.0230	3.08		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	30	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.2	180	Total			

Subcatchment 7S: DA-1 to Ex. Swale



Summary for Subcatchment 8S: DA-1 to Prop Swale

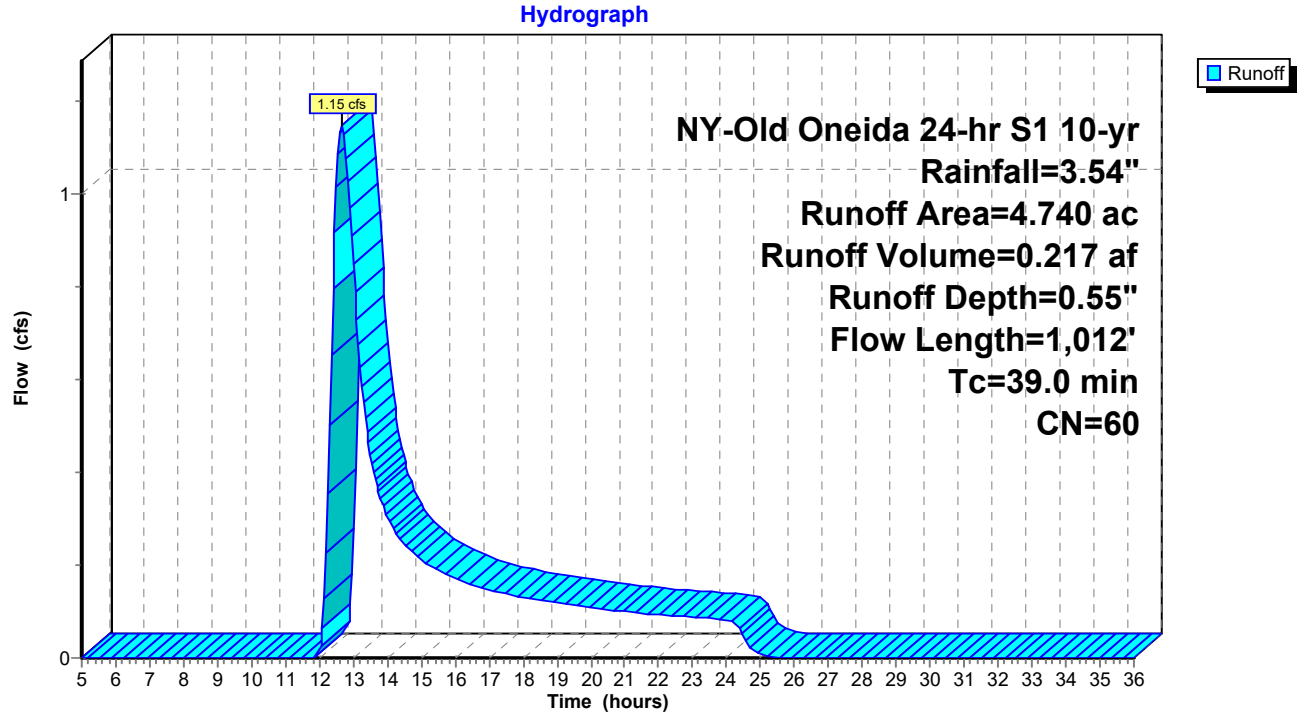
Runoff = 1.15 cfs @ 12.66 hrs, Volume= 0.217 af, Depth= 0.55"
Routed to Pond 13P : Proposed Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 10-yr Rainfall=3.54"

Area (ac)	CN	Description
0.240	98	Paved parking, HSG B
4.500	58	Meadow, non-grazed, HSG B
4.740	60	Weighted Average
4.500		94.94% Pervious Area
0.240		5.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0250	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
3.9	240	0.0210	1.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.1	672	0.0070	0.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
39.0	1,012	Total			

Subcatchment 8S: DA-1 to Prop Swale



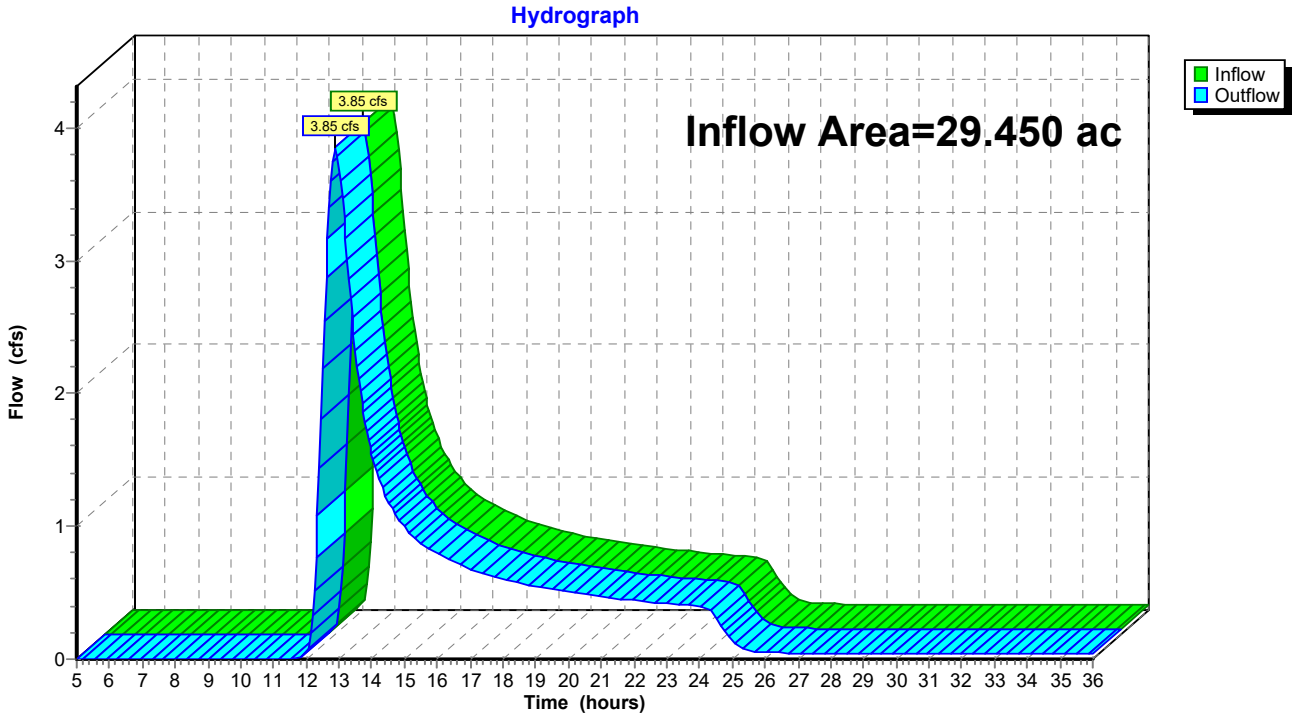
Summary for Reach 10R: Wetland

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 29.450 ac, 4.28% Impervious, Inflow Depth > 0.39" for 10-yr event
Inflow = 3.85 cfs @ 12.89 hrs, Volume= 0.963 af
Outflow = 3.85 cfs @ 12.89 hrs, Volume= 0.963 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs

Reach 10R: Wetland



Summary for Pond 12P: Existing Swale

[79] Warning: Submerged Pond 13P Primary device # 1 OUTLET by 3.51'

Inflow Area = 8.780 ac, 6.83% Impervious, Inflow Depth = 0.29" for 10-yr event
Inflow = 3.08 cfs @ 12.00 hrs, Volume= 0.214 af
Outflow = 0.20 cfs @ 14.51 hrs, Volume= 0.156 af, Atten= 94%, Lag= 150.4 min
Primary = 0.05 cfs @ 14.51 hrs, Volume= 0.088 af
Routed to Reach 10R : Wetland
Secondary = 0.15 cfs @ 14.51 hrs, Volume= 0.068 af

Routing by Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 495.10' @ 14.51 hrs Surf.Area= 4,207 sf Storage= 4,609 cf

Plug-Flow detention time= 459.4 min calculated for 0.155 af (73% of inflow)
Center-of-Mass det. time= 348.3 min (1,251.2 - 902.9)

Volume	Invert	Avail.Storage	Storage Description
#1	493.00'	21,690 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

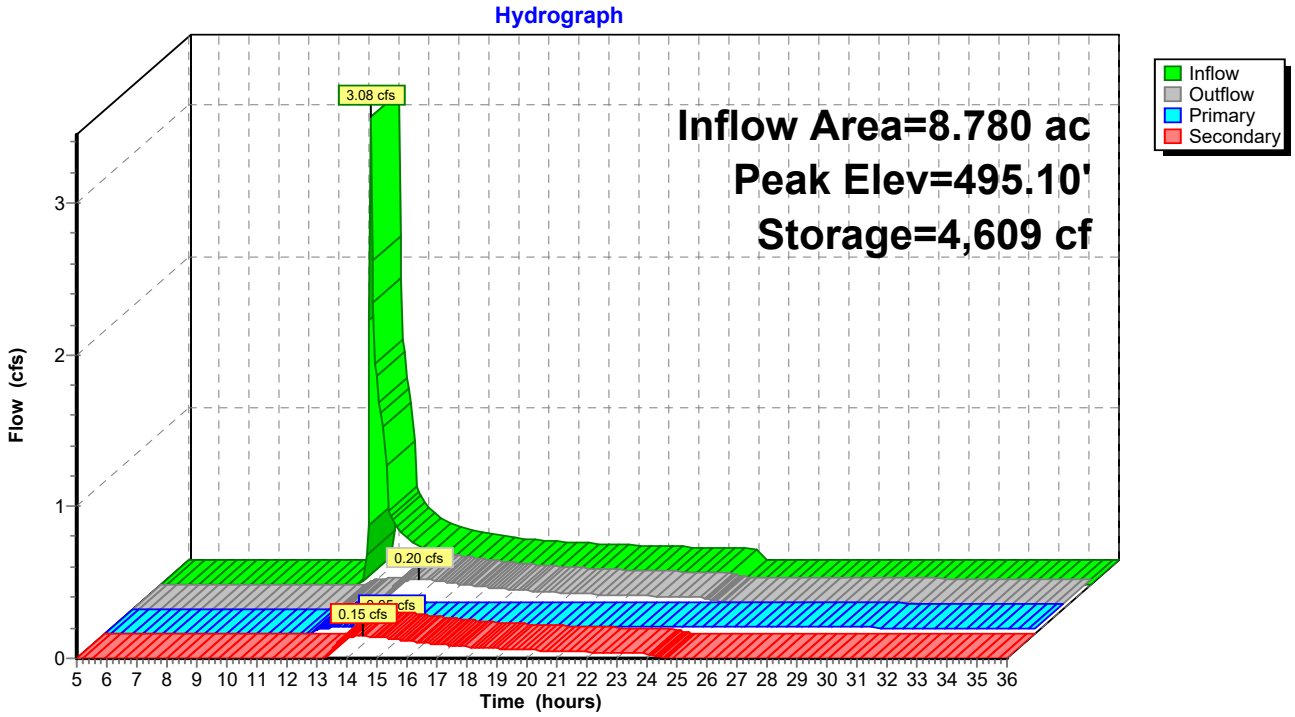
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
493.00	440	0	0
494.00	1,970	1,205	1,205
495.00	4,020	2,995	4,200
496.00	5,900	4,960	9,160
497.00	4,500	5,200	14,360
498.00	2,900	3,700	18,060
499.00	1,430	2,165	20,225
500.00	1,500	1,465	21,690

Device	Routing	Invert	Outlet Devices
#1	Primary	490.00'	**6.0" Round Culvert** L= 40.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 490.00' / 489.70' S= 0.0075 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.20 sf
#2	Device 1	493.00'	**0.500 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	495.00'	**2.0' long x 5.0' 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.05 cfs @ 14.51 hrs HW=495.10' (Free Discharge)
└**1=Culvert** (Passes 0.05 cfs of 1.66 cfs potential flow)
└**2=Exfiltration** (Exfiltration Controls 0.05 cfs)

Secondary OutFlow Max=0.15 cfs @ 14.51 hrs HW=495.10' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Weir Controls 0.15 cfs @ 0.74 fps)

Pond 12P: Existing Swale



Summary for Pond 13P: Proposed Swale

Inflow Area = 4.740 ac, 5.06% Impervious, Inflow Depth = 0.55" for 10-yr event
Inflow = 1.15 cfs @ 12.66 hrs, Volume= 0.217 af
Outflow = 1.13 cfs @ 12.73 hrs, Volume= 0.208 af, Atten= 2%, Lag= 4.3 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond 12P : Existing Swale
Secondary = 1.13 cfs @ 12.73 hrs, Volume= 0.208 af

Routing by Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 494.37' @ 12.73 hrs Surf.Area= 1,033 sf Storage= 709 cf

Plug-Flow detention time= 37.2 min calculated for 0.207 af (96% of inflow)
Center-of-Mass det. time= 15.9 min (962.7 - 946.8)

Volume	Invert	Avail.Storage	Storage Description
#1	493.00'	8,428 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

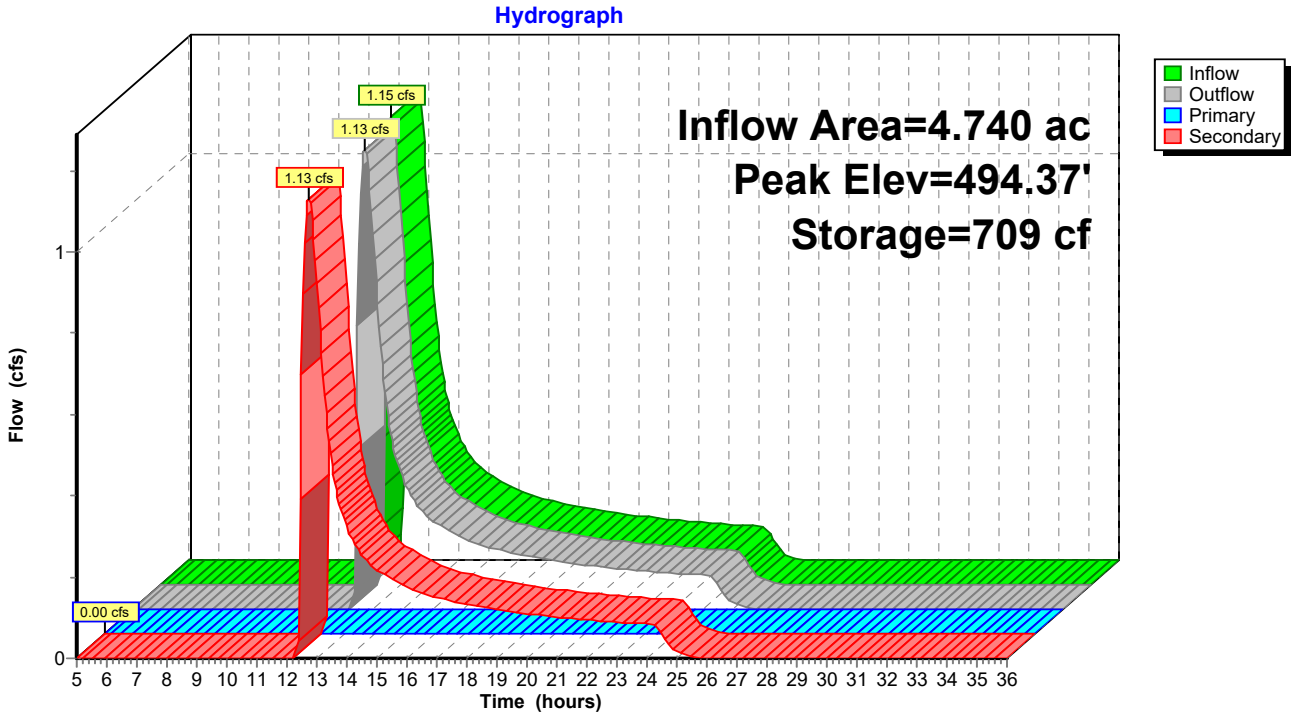
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
493.00	104	0	0
494.00	686	395	395
495.00	1,635	1,161	1,556
496.00	2,550	2,093	3,648
497.00	1,235	1,893	5,541
498.00	1,940	1,588	7,128
499.00	660	1,300	8,428

Device	Routing	Invert	Outlet Devices
#1	Primary	496.69'	**6.0" Round Culvert** L= 425.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 496.69' / 491.59' S= 0.0120 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	493.00'	**0.500 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	494.00'	**2.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=493.00' (Free Discharge)
↑**1=Culvert** (Controls 0.00 cfs)
↑**2=Exfiltration** (Controls 0.00 cfs)

Secondary OutFlow Max=1.12 cfs @ 12.73 hrs HW=494.36' (Free Discharge)
↑**3=Broad-Crested Rectangular Weir** (Weir Controls 1.12 cfs @ 1.54 fps)

Pond 13P: Proposed Swale



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

Subcatchment4S: DA-2 Runoff Area=8.029 ac 0.73% Impervious Runoff Depth=0.83"
Flow Length=363' Tc=23.3 min CN=58 Runoff=4.07 cfs 0.552 af

Subcatchment5S: DA-1 Runoff Area=20.670 ac 3.19% Impervious Runoff Depth=0.88"
Flow Length=1,395' Tc=53.5 min CN=59 Runoff=7.88 cfs 1.514 af

Subcatchment7S: DA-1 to Ex. Swale Runoff Area=4.040 ac 8.91% Impervious Runoff Depth=1.05"
Flow Length=180' Tc=2.2 min CN=62 Runoff=5.85 cfs 0.353 af

Subcatchment8S: DA-1 to Prop Swale Runoff Area=4.740 ac 5.06% Impervious Runoff Depth=0.93"
Flow Length=1,012' Tc=39.0 min CN=60 Runoff=2.31 cfs 0.369 af

Reach 10R: Wetland Inflow=7.93 cfs 1.604 af
Outflow=7.93 cfs 1.604 af

Pond 12P: Existing Swale Peak Elev=495.37' Storage=5,793 cf Inflow=5.85 cfs 0.353 af
Primary=0.05 cfs 0.090 af Secondary=1.09 cfs 0.205 af Outflow=1.15 cfs 0.295 af

Pond 13P: Proposed Swale Peak Elev=494.57' Storage=936 cf Inflow=2.31 cfs 0.369 af
Primary=0.00 cfs 0.000 af Secondary=2.28 cfs 0.360 af Outflow=2.28 cfs 0.360 af

Total Runoff Area = 37.479 ac Runoff Volume = 2.789 af Average Runoff Depth = 0.89"
96.48% Pervious = 36.160 ac 3.52% Impervious = 1.319 ac

Summary for Subcatchment 4S: DA-2

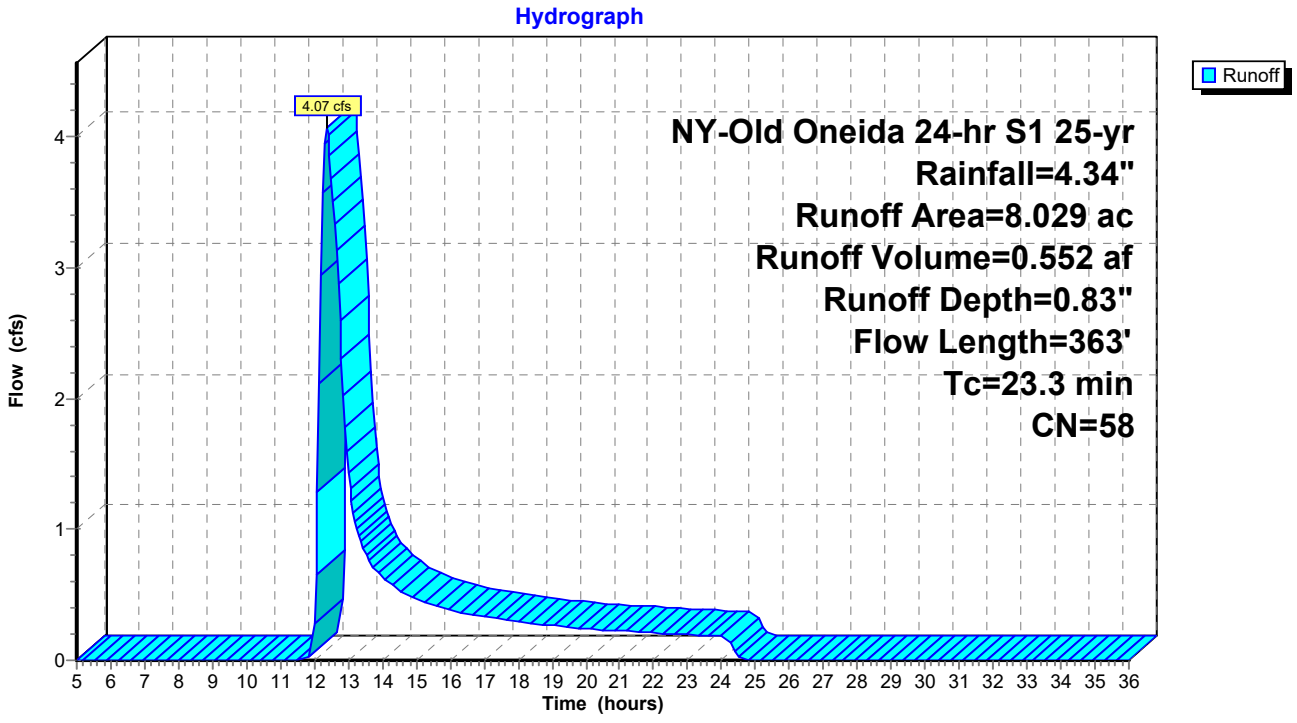
Runoff = 4.07 cfs @ 12.36 hrs, Volume= 0.552 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 25-yr Rainfall=4.34"

	Area (ac)	CN	Description
*	0.059	98	Stream
	0.560	48	Brush, Good, HSG B
	7.410	58	Meadow, non-grazed, HSG B
	8.029	58	Weighted Average
	7.970		99.27% Pervious Area
	0.059		0.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	100	0.0180	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
5.1	263	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
23.3	363	Total			

Subcatchment 4S: DA-2



Summary for Subcatchment 5S: DA-1

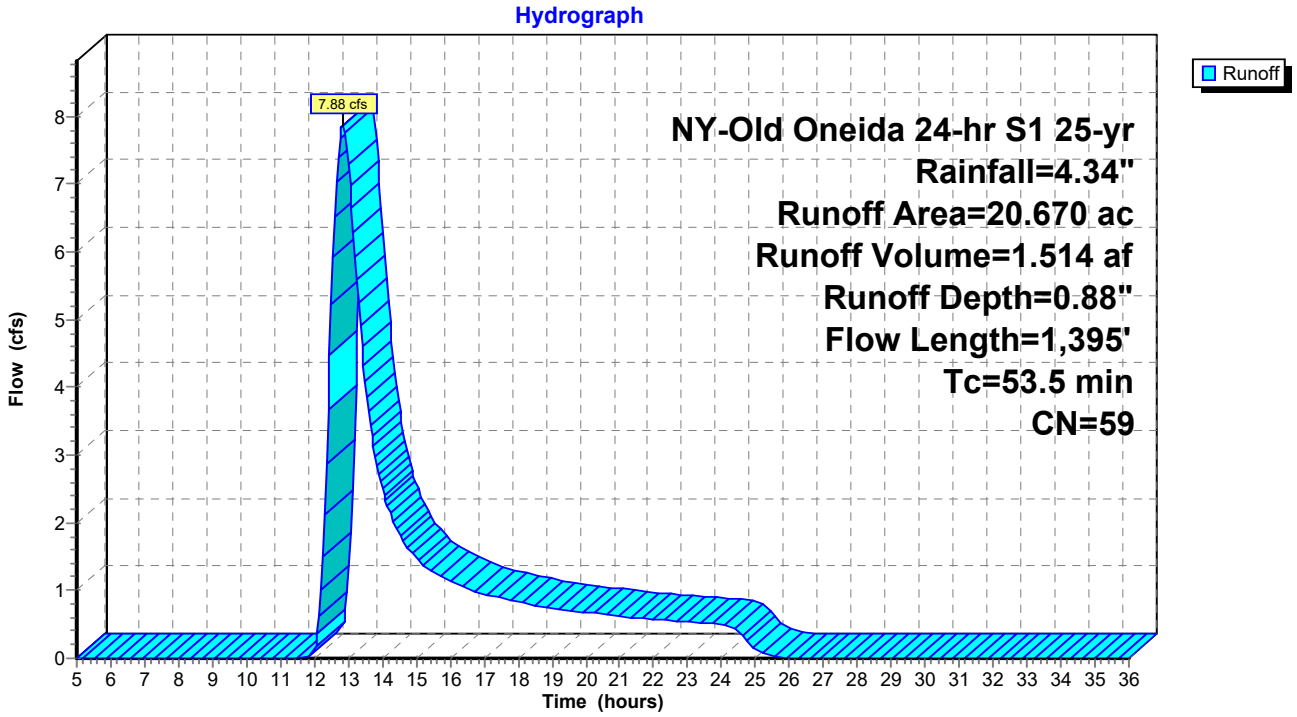
Runoff = 7.88 cfs @ 12.84 hrs, Volume= 1.514 af, Depth= 0.88"
Routed to Reach 10R : Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 25-yr Rainfall=4.34"

	Area (ac)	CN	Description
	20.010	58	Meadow, non-grazed, HSG B
*	0.370	98	Access Road, HSG B
*	0.290	98	Roofs & Asphalt Drive, HSG B
	20.670	59	Weighted Average
	20.010		96.81% Pervious Area
	0.660		3.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.7	100	0.0130	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
3.3	220	0.0250	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
25.3	750	0.0050	0.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	325	0.0340	1.29		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
53.5	1,395	Total			

Subcatchment 5S: DA-1



Summary for Subcatchment 7S: DA-1 to Ex. Swale

[49] Hint: Tc<2dt may require smaller dt

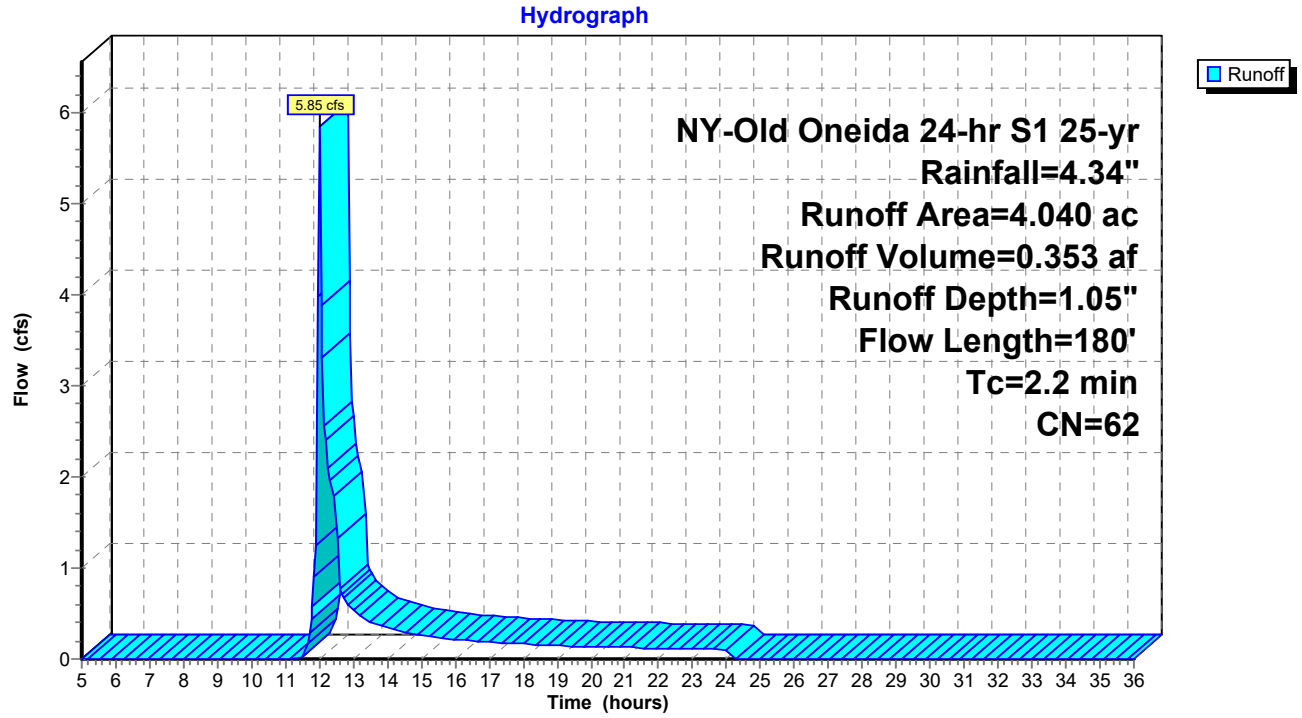
Runoff = 5.85 cfs @ 12.00 hrs, Volume= 0.353 af, Depth= 1.05"
Routed to Pond 12P : Existing Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 25-yr Rainfall=4.34"

	Area (ac)	CN	Description
	3.680	58	Meadow, non-grazed, HSG B
*	0.360	98	Access Road
	4.040	62	Weighted Average
	3.680		91.09% Pervious Area
	0.360		8.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0150	1.00		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.14"
0.3	50	0.0230	3.08		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	30	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.2	180	Total			

Subcatchment 7S: DA-1 to Ex. Swale



Summary for Subcatchment 8S: DA-1 to Prop Swale

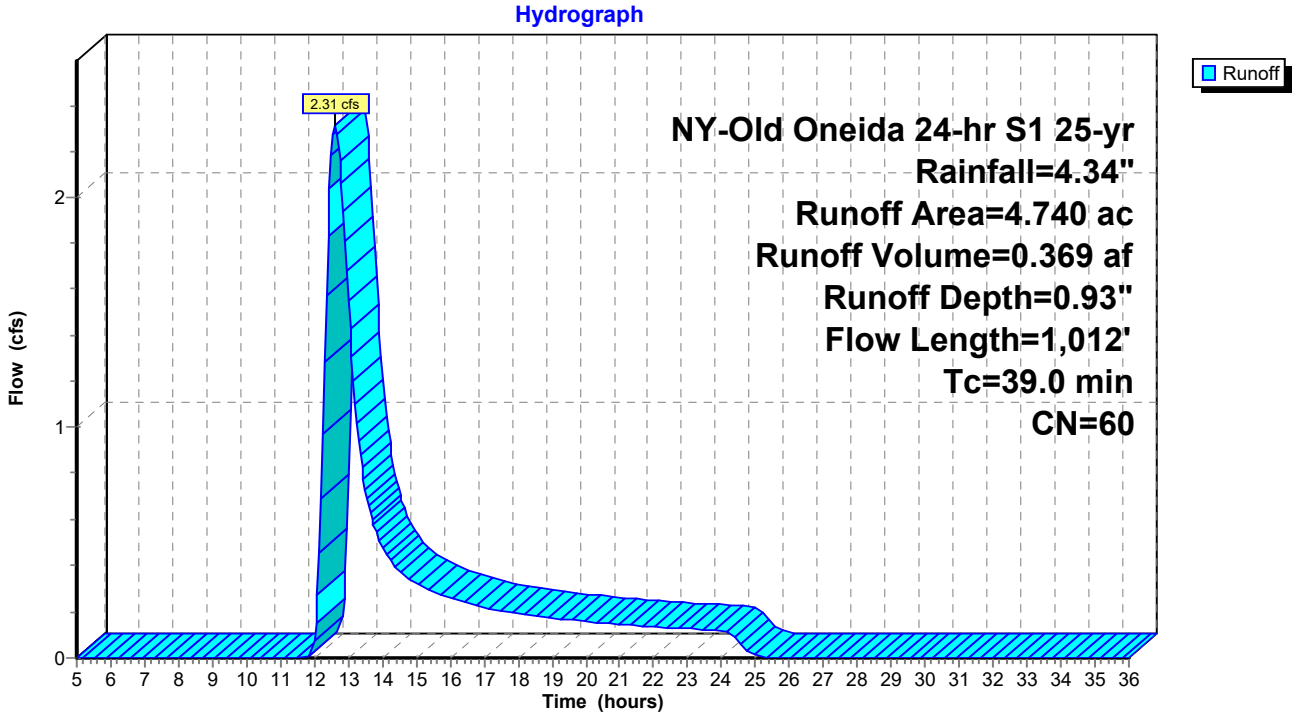
Runoff = 2.31 cfs @ 12.61 hrs, Volume= 0.369 af, Depth= 0.93"
Routed to Pond 13P : Proposed Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 25-yr Rainfall=4.34"

Area (ac)	CN	Description
0.240	98	Paved parking, HSG B
4.500	58	Meadow, non-grazed, HSG B
4.740	60	Weighted Average
4.500		94.94% Pervious Area
0.240		5.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0250	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
3.9	240	0.0210	1.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.1	672	0.0070	0.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
39.0	1,012	Total			

Subcatchment 8S: DA-1 to Prop Swale



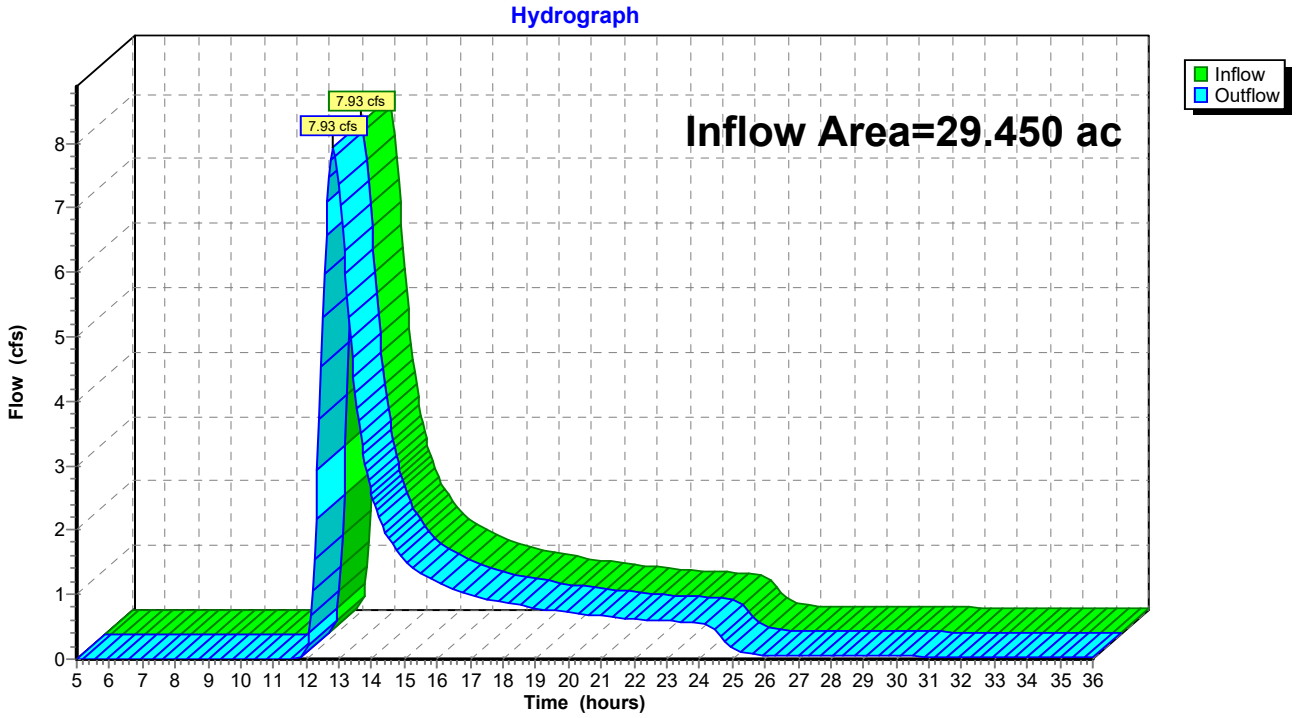
Summary for Reach 10R: Wetland

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 29.450 ac, 4.28% Impervious, Inflow Depth > 0.65" for 25-yr event
Inflow = 7.93 cfs @ 12.84 hrs, Volume= 1.604 af
Outflow = 7.93 cfs @ 12.84 hrs, Volume= 1.604 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs

Reach 10R: Wetland



Summary for Pond 12P: Existing Swale

[79] Warning: Submerged Pond 13P Primary device # 1 OUTLET by 3.78'

Inflow Area = 8.780 ac, 6.83% Impervious, Inflow Depth = 0.48" for 25-yr event
Inflow = 5.85 cfs @ 12.00 hrs, Volume= 0.353 af
Outflow = 1.15 cfs @ 12.55 hrs, Volume= 0.295 af, Atten= 80%, Lag= 32.8 min
Primary = 0.05 cfs @ 12.55 hrs, Volume= 0.090 af
Routed to Reach 10R : Wetland
Secondary = 1.09 cfs @ 12.55 hrs, Volume= 0.205 af

Routing by Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 495.37' @ 12.55 hrs Surf.Area= 4,706 sf Storage= 5,793 cf

Plug-Flow detention time= 274.5 min calculated for 0.295 af (83% of inflow)
Center-of-Mass det. time= 198.1 min (1,077.6 - 879.5)

Volume	Invert	Avail.Storage	Storage Description
#1	493.00'	21,690 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

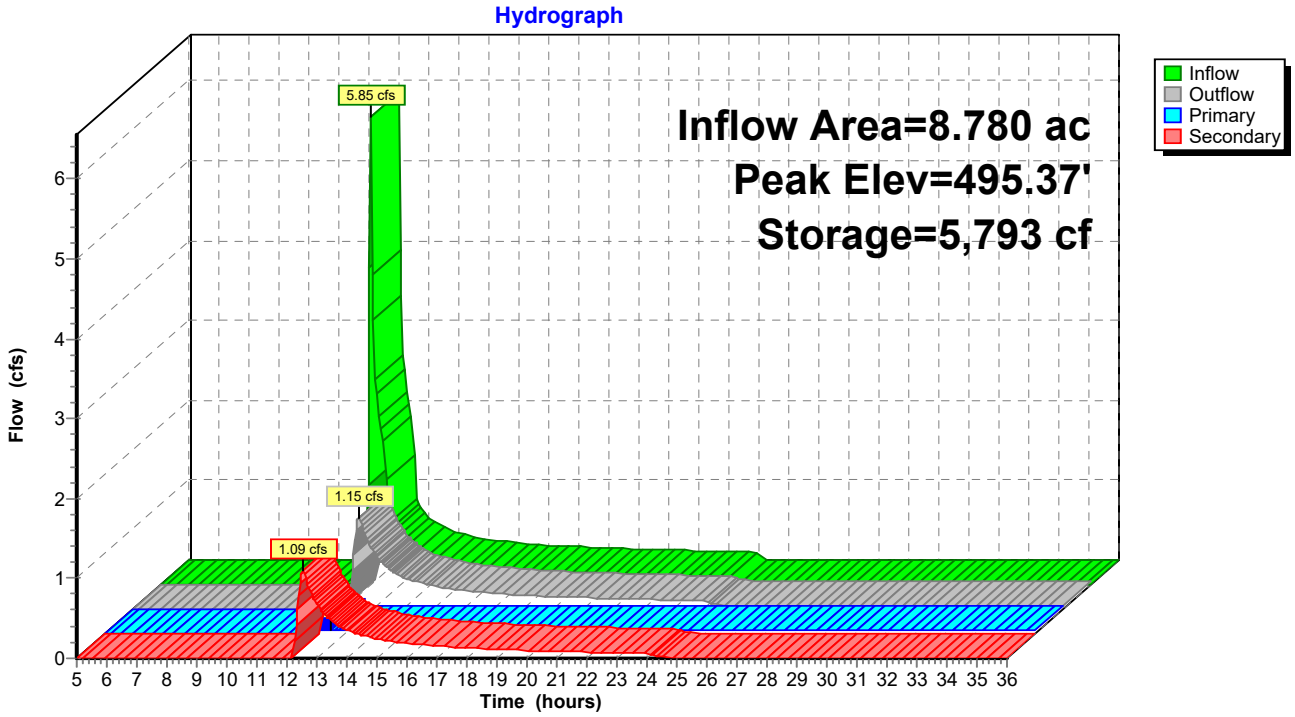
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
493.00	440	0	0
494.00	1,970	1,205	1,205
495.00	4,020	2,995	4,200
496.00	5,900	4,960	9,160
497.00	4,500	5,200	14,360
498.00	2,900	3,700	18,060
499.00	1,430	2,165	20,225
500.00	1,500	1,465	21,690

Device	Routing	Invert	Outlet Devices
#1	Primary	490.00'	**6.0" Round Culvert** L= 40.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 490.00' / 489.70' S= 0.0075 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.20 sf
#2	Device 1	493.00'	**0.500 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	495.00'	**2.0' long x 5.0' 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.05 cfs @ 12.55 hrs HW=495.36' (Free Discharge)
└**1=Culvert** (Passes 0.05 cfs of 1.71 cfs potential flow)
└**2=Exfiltration** (Exfiltration Controls 0.05 cfs)

Secondary OutFlow Max=1.09 cfs @ 12.55 hrs HW=495.36' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Weir Controls 1.09 cfs @ 1.49 fps)

Pond 12P: Existing Swale



Summary for Pond 13P: Proposed Swale

Inflow Area = 4.740 ac, 5.06% Impervious, Inflow Depth = 0.93" for 25-yr event
Inflow = 2.31 cfs @ 12.61 hrs, Volume= 0.369 af
Outflow = 2.28 cfs @ 12.67 hrs, Volume= 0.360 af, Atten= 1%, Lag= 3.4 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond 12P : Existing Swale
Secondary = 2.28 cfs @ 12.67 hrs, Volume= 0.360 af

Routing by Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 494.57' @ 12.67 hrs Surf.Area= 1,224 sf Storage= 936 cf

Plug-Flow detention time= 23.8 min calculated for 0.359 af (97% of inflow)
Center-of-Mass det. time= 10.6 min (931.5 - 920.9)

Volume	Invert	Avail.Storage	Storage Description
#1	493.00'	8,428 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

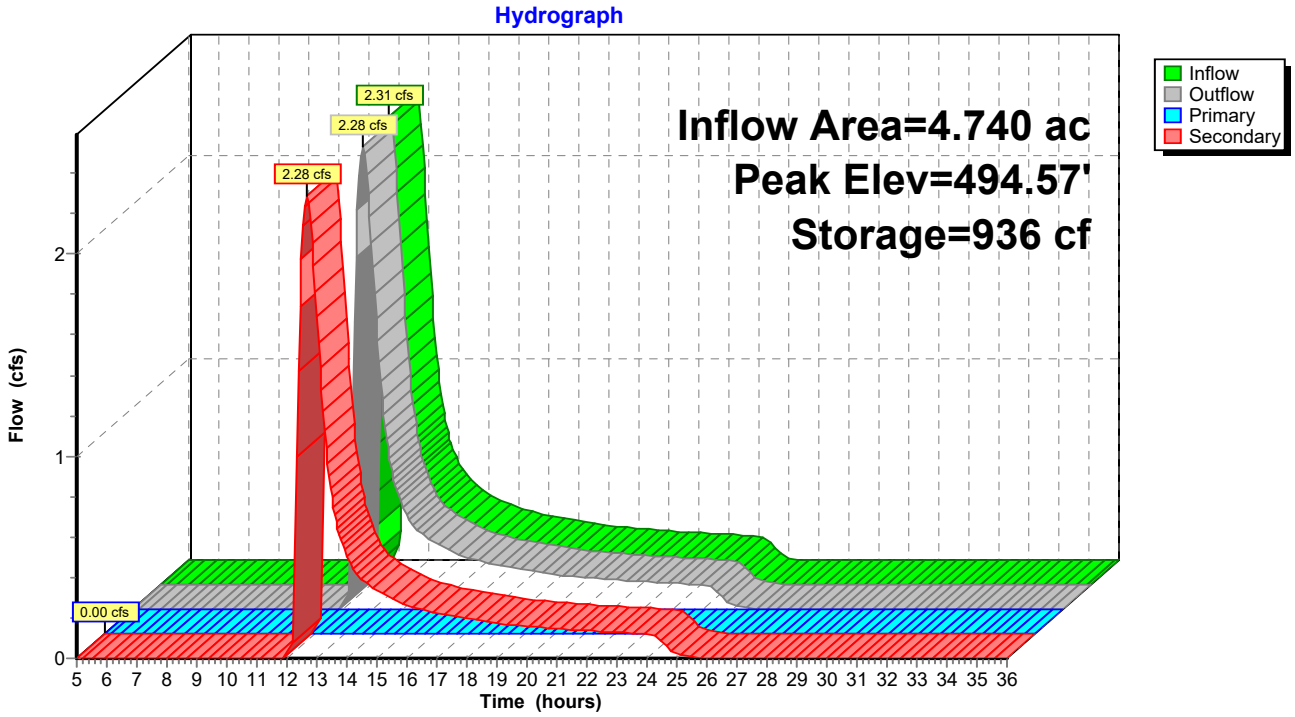
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
493.00	104	0	0
494.00	686	395	395
495.00	1,635	1,161	1,556
496.00	2,550	2,093	3,648
497.00	1,235	1,893	5,541
498.00	1,940	1,588	7,128
499.00	660	1,300	8,428

Device	Routing	Invert	Outlet Devices
#1	Primary	496.69'	**6.0" Round Culvert** L= 425.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 496.69' / 491.59' S= 0.0120 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	493.00'	**0.500 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	494.00'	**2.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=493.00' (Free Discharge)
↑**1=Culvert** (Controls 0.00 cfs)
↑**2=Exfiltration** (Controls 0.00 cfs)

Secondary OutFlow Max=2.28 cfs @ 12.67 hrs HW=494.57' (Free Discharge)
↑**3=Broad-Crested Rectangular Weir** (Weir Controls 2.28 cfs @ 2.01 fps)

Pond 13P: Proposed Swale



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

Subcatchment4S: DA-2 Runoff Area=8.029 ac 0.73% Impervious Runoff Depth=1.21"
Flow Length=363' Tc=23.3 min CN=58 Runoff=6.61 cfs 0.808 af

Subcatchment5S: DA-1 Runoff Area=20.670 ac 3.19% Impervious Runoff Depth=1.27"
Flow Length=1,395' Tc=53.5 min CN=59 Runoff=12.41 cfs 2.195 af

Subcatchment7S: DA-1 to Ex. Swale Runoff Area=4.040 ac 8.91% Impervious Runoff Depth=1.48"
Flow Length=180' Tc=2.2 min CN=62 Runoff=8.67 cfs 0.499 af

Subcatchment8S: DA-1 to Prop Swale Runoff Area=4.740 ac 5.06% Impervious Runoff Depth=1.34"
Flow Length=1,012' Tc=39.0 min CN=60 Runoff=3.58 cfs 0.530 af

Reach 10R: Wetland Inflow=12.47 cfs 2.286 af
Outflow=12.47 cfs 2.286 af

Pond 12P: Existing Swale Peak Elev=495.59' Storage=6,897 cf Inflow=8.67 cfs 0.499 af
Primary=0.06 cfs 0.092 af Secondary=2.44 cfs 0.348 af Outflow=2.49 cfs 0.440 af

Pond 13P: Proposed Swale Peak Elev=494.75' Storage=1,183 cf Inflow=3.58 cfs 0.530 af
Primary=0.00 cfs 0.000 af Secondary=3.53 cfs 0.521 af Outflow=3.53 cfs 0.521 af

Total Runoff Area = 37.479 ac Runoff Volume = 4.032 af Average Runoff Depth = 1.29"
96.48% Pervious = 36.160 ac 3.52% Impervious = 1.319 ac

Summary for Subcatchment 4S: DA-2

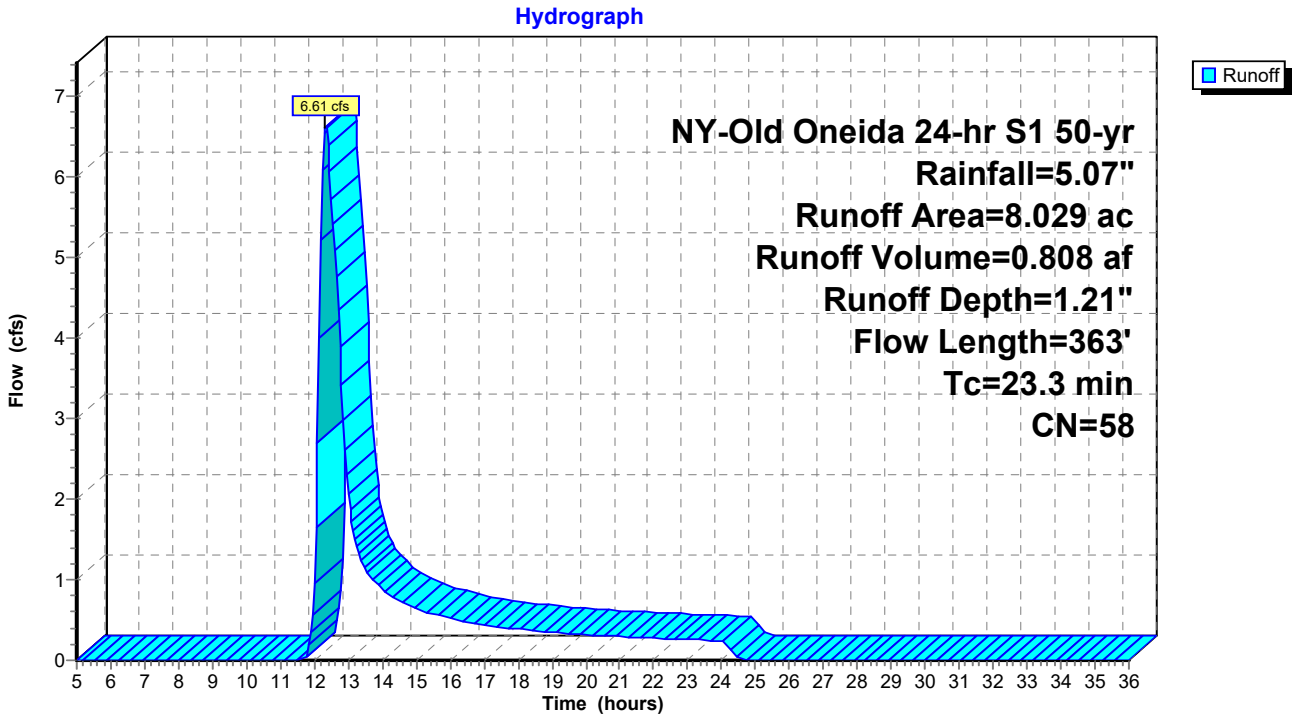
Runoff = 6.61 cfs @ 12.34 hrs, Volume= 0.808 af, Depth= 1.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 50-yr Rainfall=5.07"

	Area (ac)	CN	Description
*	0.059	98	Stream
	0.560	48	Brush, Good, HSG B
	7.410	58	Meadow, non-grazed, HSG B
	8.029	58	Weighted Average
	7.970		99.27% Pervious Area
	0.059		0.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	100	0.0180	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
5.1	263	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
23.3	363	Total			

Subcatchment 4S: DA-2



Summary for Subcatchment 5S: DA-1

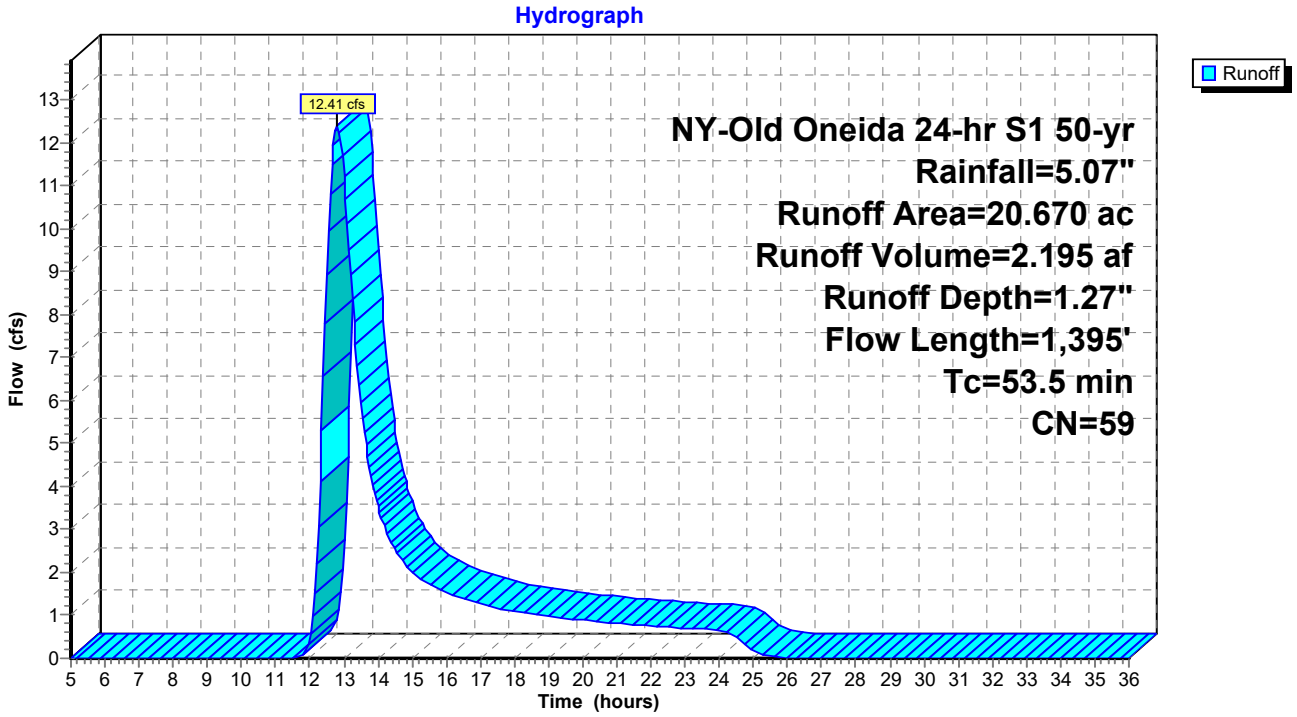
Runoff = 12.41 cfs @ 12.81 hrs, Volume= 2.195 af, Depth= 1.27"
Routed to Reach 10R : Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 50-yr Rainfall=5.07"

	Area (ac)	CN	Description
	20.010	58	Meadow, non-grazed, HSG B
*	0.370	98	Access Road, HSG B
*	0.290	98	Roofs & Asphalt Drive, HSG B
	20.670	59	Weighted Average
	20.010		96.81% Pervious Area
	0.660		3.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.7	100	0.0130	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
3.3	220	0.0250	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
25.3	750	0.0050	0.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	325	0.0340	1.29		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
53.5	1,395	Total			

Subcatchment 5S: DA-1



Summary for Subcatchment 7S: DA-1 to Ex. Swale

[49] Hint: Tc<2dt may require smaller dt

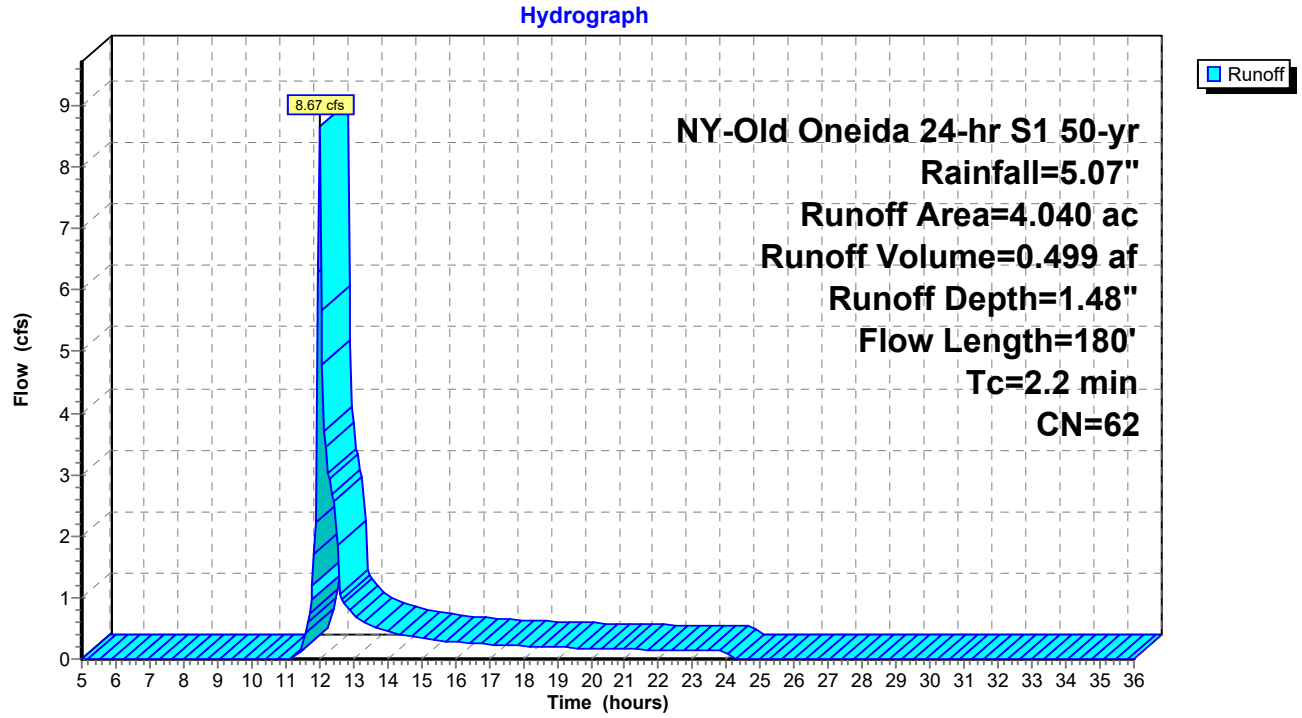
Runoff = 8.67 cfs @ 12.00 hrs, Volume= 0.499 af, Depth= 1.48"
Routed to Pond 12P : Existing Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 50-yr Rainfall=5.07"

	Area (ac)	CN	Description
	3.680	58	Meadow, non-grazed, HSG B
*	0.360	98	Access Road
	4.040	62	Weighted Average
	3.680		91.09% Pervious Area
	0.360		8.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0150	1.00		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.14"
0.3	50	0.0230	3.08		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	30	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.2	180	Total			

Subcatchment 7S: DA-1 to Ex. Swale



Summary for Subcatchment 8S: DA-1 to Prop Swale

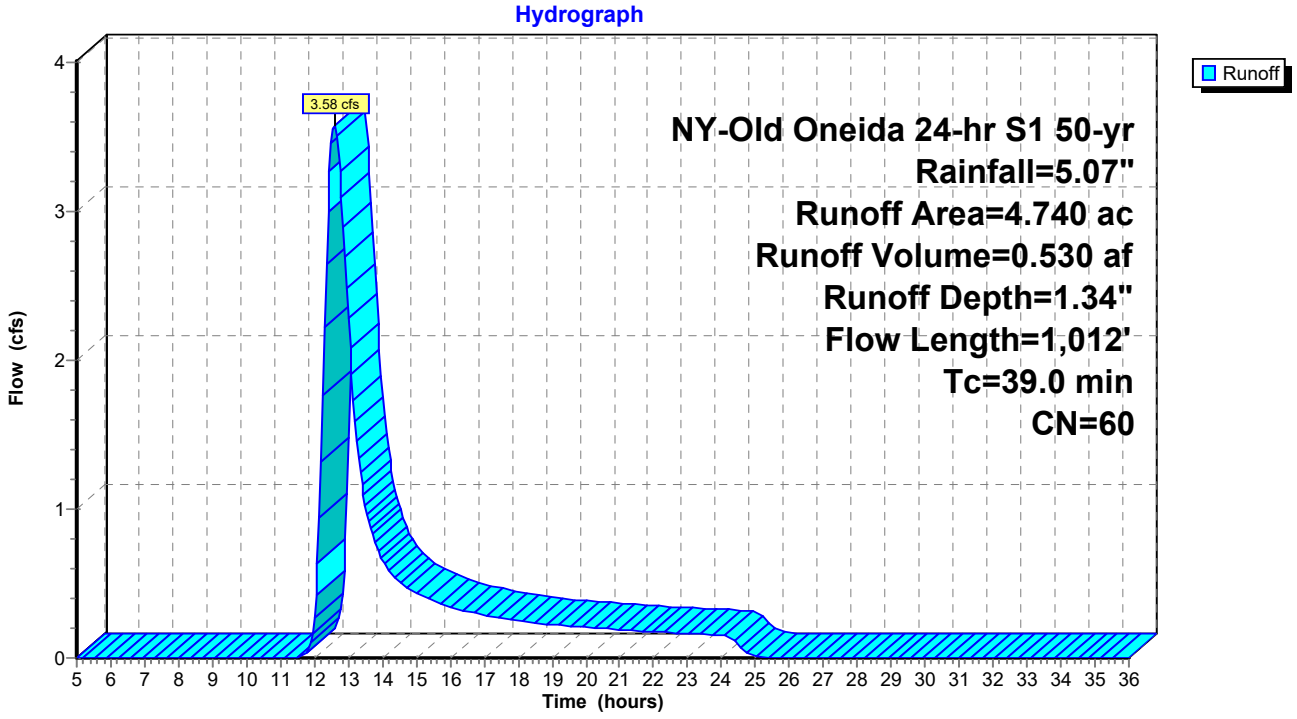
Runoff = 3.58 cfs @ 12.59 hrs, Volume= 0.530 af, Depth= 1.34"
Routed to Pond 13P : Proposed Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 50-yr Rainfall=5.07"

Area (ac)	CN	Description
0.240	98	Paved parking, HSG B
4.500	58	Meadow, non-grazed, HSG B
4.740	60	Weighted Average
4.500		94.94% Pervious Area
0.240		5.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0250	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
3.9	240	0.0210	1.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.1	672	0.0070	0.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
39.0	1,012	Total			

Subcatchment 8S: DA-1 to Prop Swale



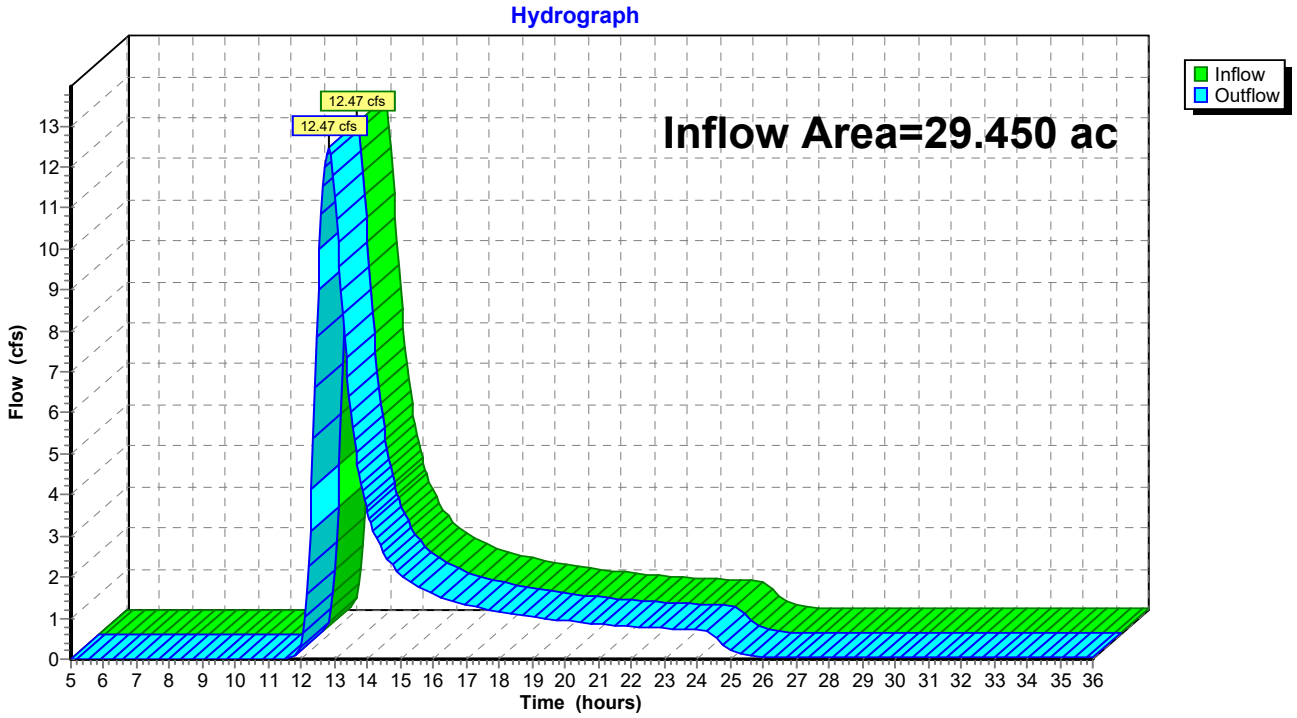
Summary for Reach 10R: Wetland

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 29.450 ac, 4.28% Impervious, Inflow Depth > 0.93" for 50-yr event
Inflow = 12.47 cfs @ 12.81 hrs, Volume= 2.286 af
Outflow = 12.47 cfs @ 12.81 hrs, Volume= 2.286 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs

Reach 10R: Wetland



Summary for Pond 12P: Existing Swale

[79] Warning: Submerged Pond 13P Primary device # 1 OUTLET by 4.00'

Inflow Area = 8.780 ac, 6.83% Impervious, Inflow Depth = 0.68" for 50-yr event
Inflow = 8.67 cfs @ 12.00 hrs, Volume= 0.499 af
Outflow = 2.49 cfs @ 12.45 hrs, Volume= 0.440 af, Atten= 71%, Lag= 27.3 min
Primary = 0.06 cfs @ 12.45 hrs, Volume= 0.092 af
Routed to Reach 10R : Wetland
Secondary = 2.44 cfs @ 12.45 hrs, Volume= 0.348 af

Routing by Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 495.59' @ 12.45 hrs Surf.Area= 5,129 sf Storage= 6,897 cf

Plug-Flow detention time= 195.4 min calculated for 0.439 af (88% of inflow)
Center-of-Mass det. time= 138.7 min (1,004.6 - 865.8)

Volume	Invert	Avail.Storage	Storage Description
#1	493.00'	21,690 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

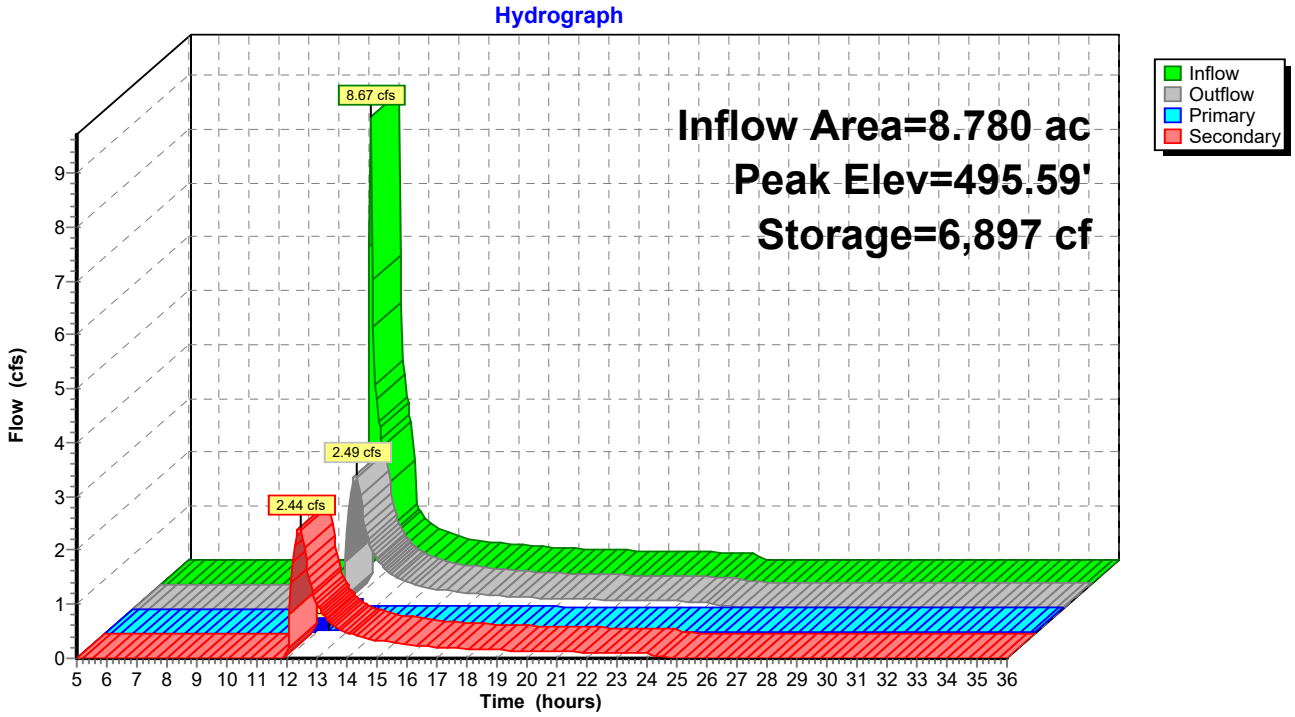
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
493.00	440	0	0
494.00	1,970	1,205	1,205
495.00	4,020	2,995	4,200
496.00	5,900	4,960	9,160
497.00	4,500	5,200	14,360
498.00	2,900	3,700	18,060
499.00	1,430	2,165	20,225
500.00	1,500	1,465	21,690

Device	Routing	Invert	Outlet Devices
#1	Primary	490.00'	**6.0" Round Culvert** L= 40.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 490.00' / 489.70' S= 0.0075 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.20 sf
#2	Device 1	493.00'	**0.500 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	495.00'	**2.0' long x 5.0' 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.06 cfs @ 12.45 hrs HW=495.59' (Free Discharge)
└**1=Culvert** (Passes 0.06 cfs of 1.74 cfs potential flow)
└**2=Exfiltration** (Exfiltration Controls 0.06 cfs)

Secondary OutFlow Max=2.43 cfs @ 12.45 hrs HW=495.59' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Weir Controls 2.43 cfs @ 2.07 fps)

Pond 12P: Existing Swale



Summary for Pond 13P: Proposed Swale

Inflow Area = 4.740 ac, 5.06% Impervious, Inflow Depth = 1.34" for 50-yr event
Inflow = 3.58 cfs @ 12.59 hrs, Volume= 0.530 af
Outflow = 3.53 cfs @ 12.65 hrs, Volume= 0.521 af, Atten= 1%, Lag= 3.5 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond 12P : Existing Swale
Secondary = 3.53 cfs @ 12.65 hrs, Volume= 0.521 af

Routing by Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 494.75' @ 12.65 hrs Surf.Area= 1,402 sf Storage= 1,183 cf

Plug-Flow detention time= 17.9 min calculated for 0.520 af (98% of inflow)
Center-of-Mass det. time= 8.4 min (914.4 - 906.0)

Volume	Invert	Avail.Storage	Storage Description
#1	493.00'	8,428 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

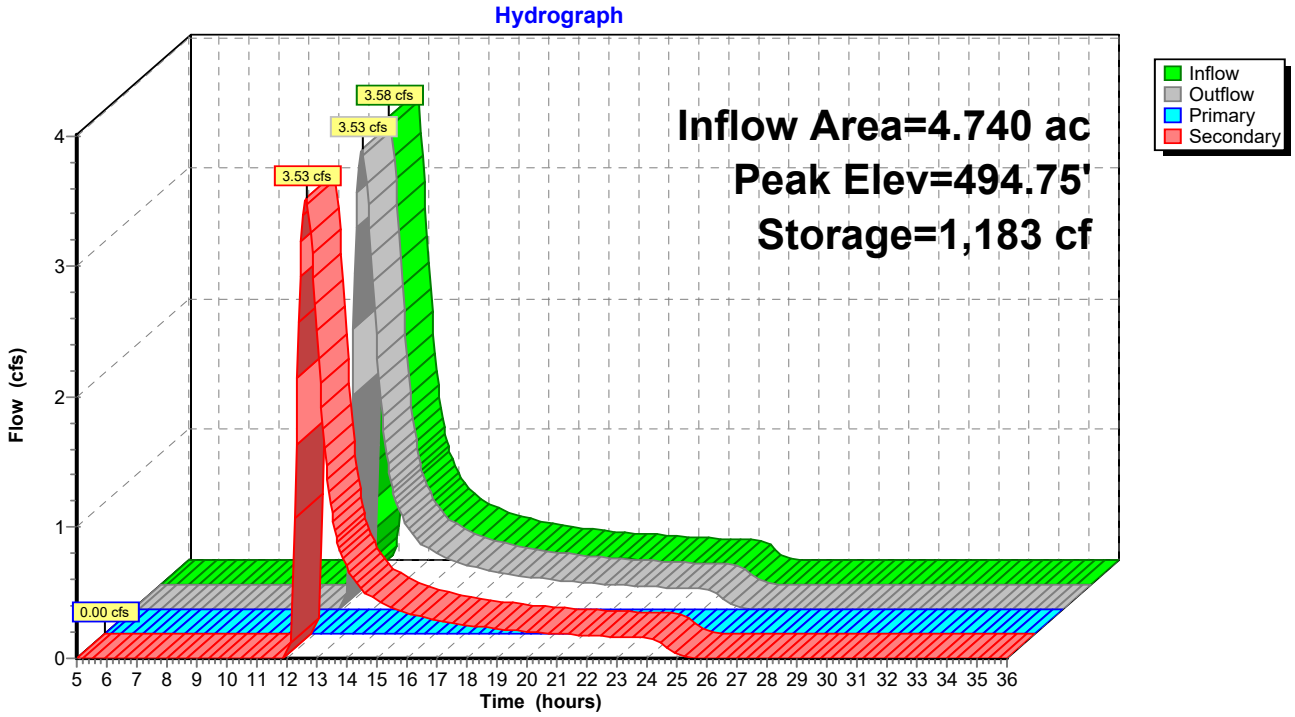
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
493.00	104	0	0
494.00	686	395	395
495.00	1,635	1,161	1,556
496.00	2,550	2,093	3,648
497.00	1,235	1,893	5,541
498.00	1,940	1,588	7,128
499.00	660	1,300	8,428

Device	Routing	Invert	Outlet Devices
#1	Primary	496.69'	**6.0" Round Culvert** L= 425.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 496.69' / 491.59' S= 0.0120 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	493.00'	**0.500 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	494.00'	**2.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=493.00' (Free Discharge)
↑**1=Culvert** (Controls 0.00 cfs)
↑**2=Exfiltration** (Controls 0.00 cfs)

Secondary OutFlow Max=3.53 cfs @ 12.65 hrs HW=494.75' (Free Discharge)
↑**3=Broad-Crested Rectangular Weir** (Weir Controls 3.53 cfs @ 2.34 fps)

Pond 13P: Proposed Swale



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

Subcatchment4S: DA-2 Runoff Area=8.029 ac 0.73% Impervious Runoff Depth=1.71"
Flow Length=363' Tc=23.3 min CN=58 Runoff=10.11 cfs 1.142 af

Subcatchment5S: DA-1 Runoff Area=20.670 ac 3.19% Impervious Runoff Depth=1.79"
Flow Length=1,395' Tc=53.5 min CN=59 Runoff=18.51 cfs 3.079 af

Subcatchment7S: DA-1 to Ex. Swale Runoff Area=4.040 ac 8.91% Impervious Runoff Depth=2.04"
Flow Length=180' Tc=2.2 min CN=62 Runoff=12.51 cfs 0.685 af

Subcatchment8S: DA-1 to Prop Swale Runoff Area=4.740 ac 5.06% Impervious Runoff Depth=1.87"
Flow Length=1,012' Tc=39.0 min CN=60 Runoff=5.28 cfs 0.738 af

Reach 10R: Wetland Inflow=18.57 cfs 3.173 af
Outflow=18.57 cfs 3.173 af

Pond 12P: Existing Swale Peak Elev=495.86' Storage=8,347 cf Inflow=12.51 cfs 0.685 af
Primary=0.07 cfs 0.093 af Secondary=4.27 cfs 0.533 af Outflow=4.33 cfs 0.626 af

Pond 13P: Proposed Swale Peak Elev=494.98' Storage=1,524 cf Inflow=5.28 cfs 0.738 af
Primary=0.00 cfs 0.000 af Secondary=5.21 cfs 0.729 af Outflow=5.21 cfs 0.729 af

Total Runoff Area = 37.479 ac Runoff Volume = 5.646 af Average Runoff Depth = 1.81"
96.48% Pervious = 36.160 ac 3.52% Impervious = 1.319 ac

Summary for Subcatchment 4S: DA-2

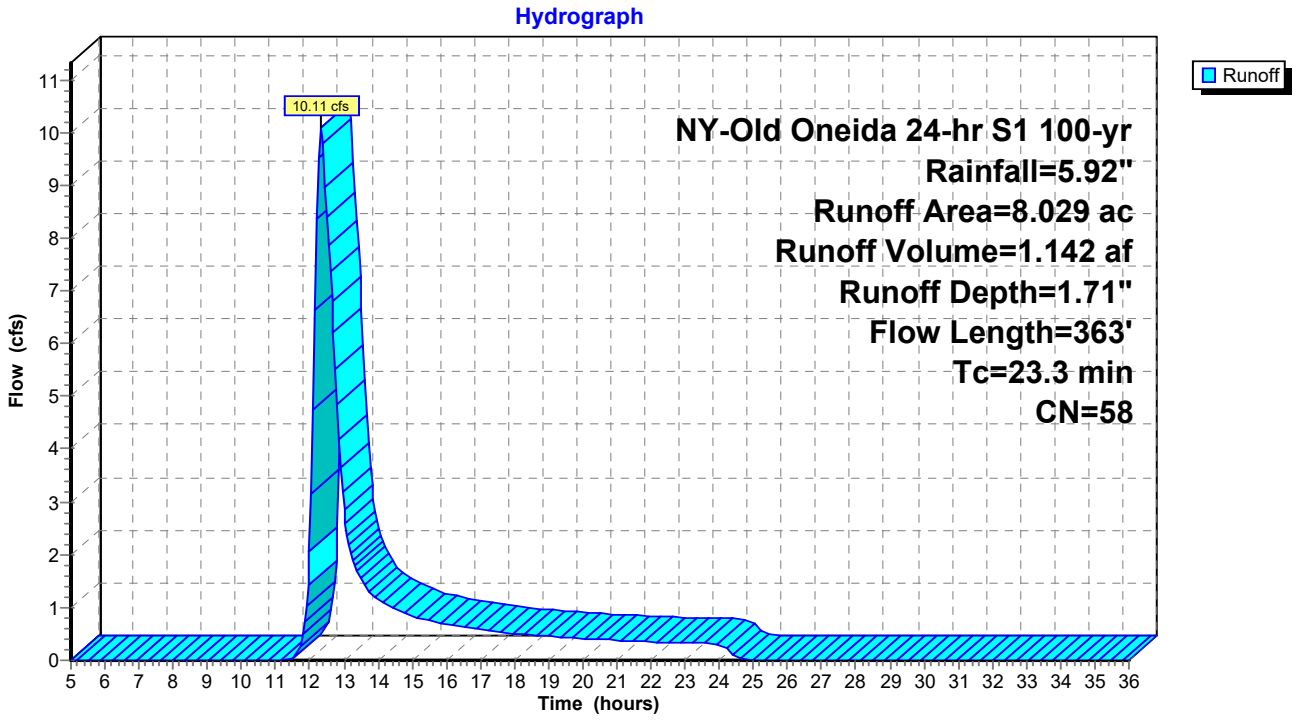
Runoff = 10.11 cfs @ 12.32 hrs, Volume= 1.142 af, Depth= 1.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 100-yr Rainfall=5.92"

	Area (ac)	CN	Description
*	0.059	98	Stream
	0.560	48	Brush, Good, HSG B
	7.410	58	Meadow, non-grazed, HSG B
	8.029	58	Weighted Average
	7.970		99.27% Pervious Area
	0.059		0.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	100	0.0180	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
5.1	263	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
23.3	363	Total			

Subcatchment 4S: DA-2



Summary for Subcatchment 5S: DA-1

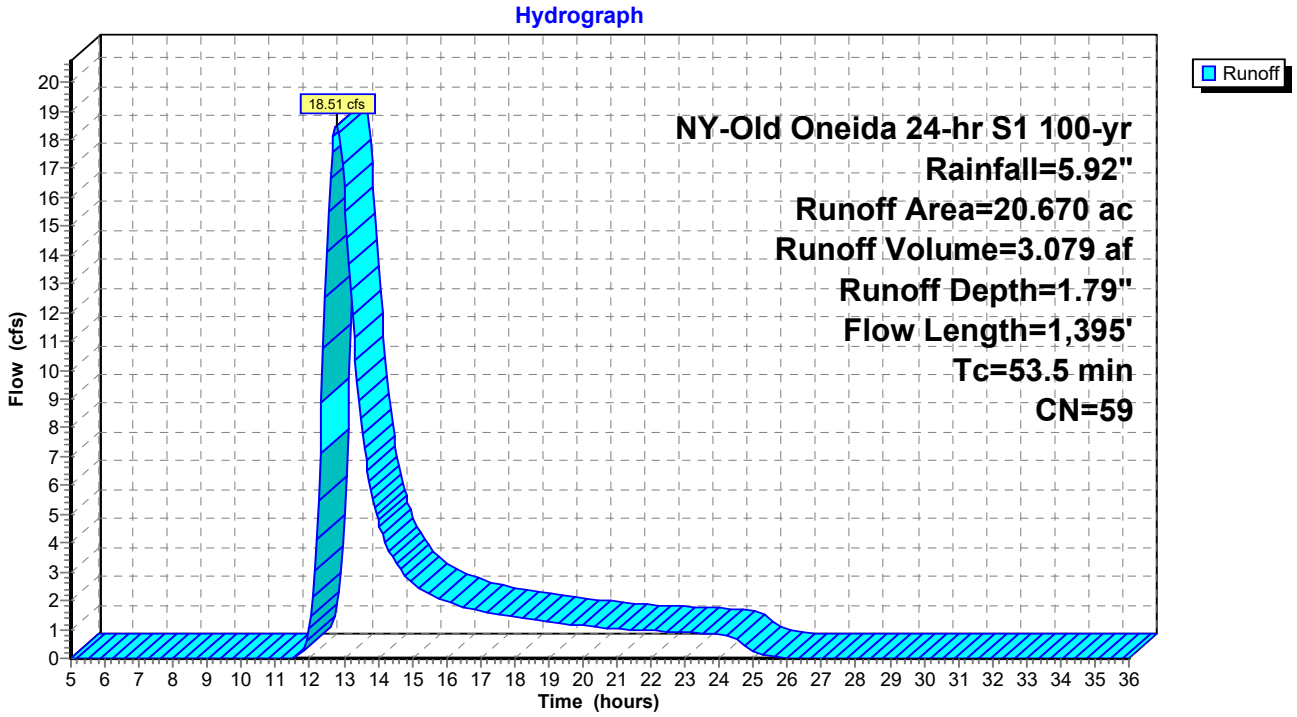
Runoff = 18.51 cfs @ 12.79 hrs, Volume= 3.079 af, Depth= 1.79"
Routed to Reach 10R : Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 100-yr Rainfall=5.92"

	Area (ac)	CN	Description
	20.010	58	Meadow, non-grazed, HSG B
*	0.370	98	Access Road, HSG B
*	0.290	98	Roofs & Asphalt Drive, HSG B
	20.670	59	Weighted Average
	20.010		96.81% Pervious Area
	0.660		3.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.7	100	0.0130	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
3.3	220	0.0250	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
25.3	750	0.0050	0.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	325	0.0340	1.29		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
53.5	1,395	Total			

Subcatchment 5S: DA-1



Summary for Subcatchment 7S: DA-1 to Ex. Swale

[49] Hint: Tc<2dt may require smaller dt

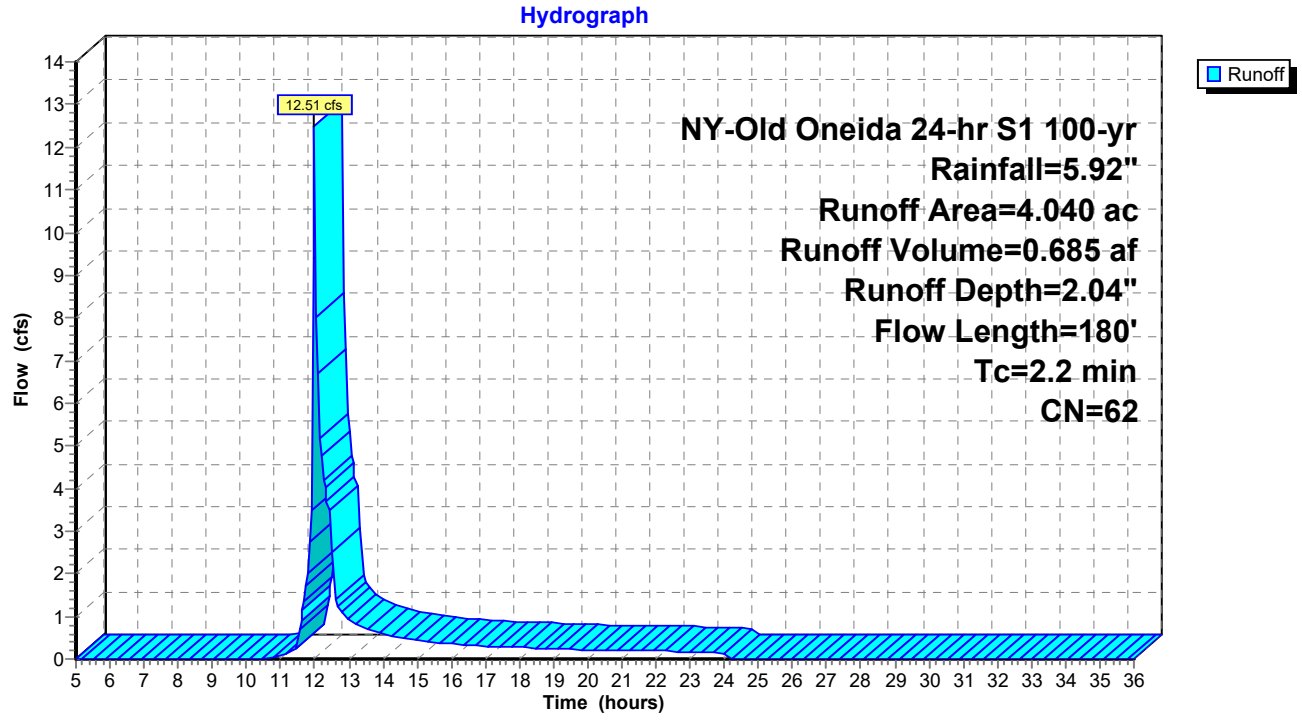
Runoff = 12.51 cfs @ 12.00 hrs, Volume= 0.685 af, Depth= 2.04"
Routed to Pond 12P : Existing Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 100-yr Rainfall=5.92"

	Area (ac)	CN	Description
	3.680	58	Meadow, non-grazed, HSG B
*	0.360	98	Access Road
	4.040	62	Weighted Average
	3.680		91.09% Pervious Area
	0.360		8.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0150	1.00		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.14"
0.3	50	0.0230	3.08		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	30	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.2	180	Total			

Subcatchment 7S: DA-1 to Ex. Swale



Summary for Subcatchment 8S: DA-1 to Prop Swale

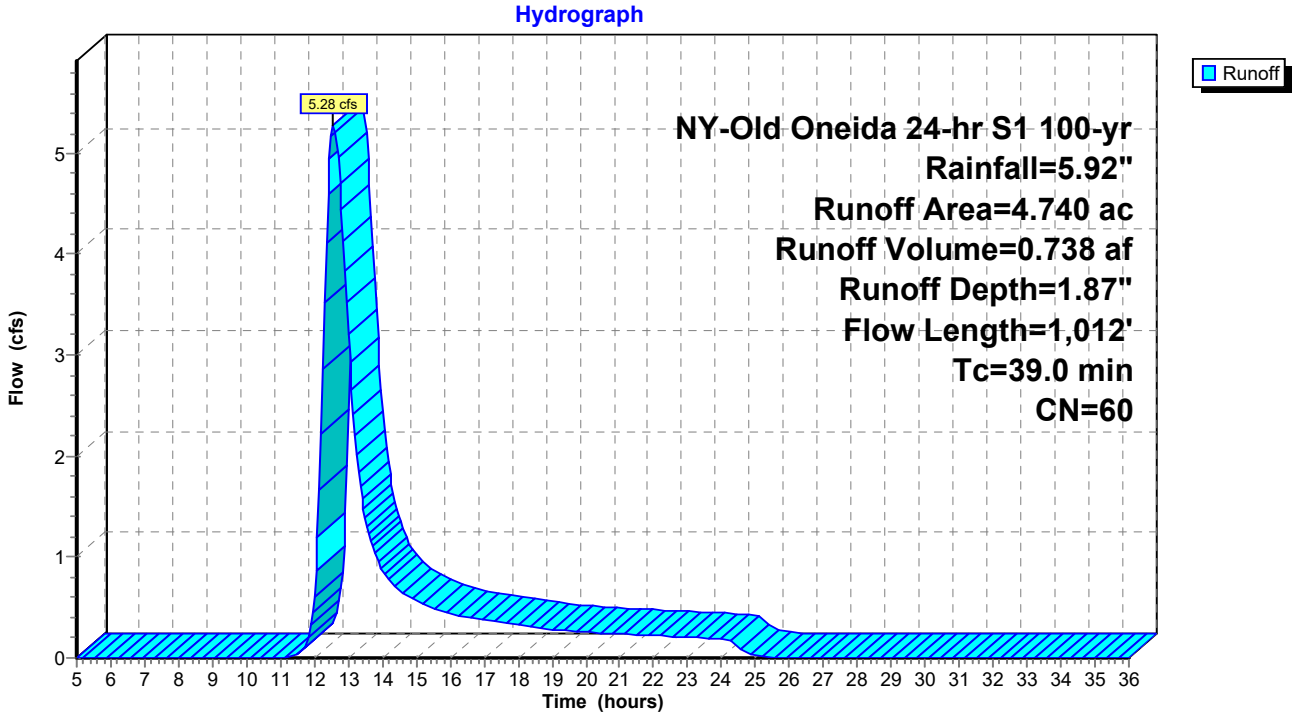
Runoff = 5.28 cfs @ 12.57 hrs, Volume= 0.738 af, Depth= 1.87"
Routed to Pond 13P : Proposed Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
NY-Old Oneida 24-hr S1 100-yr Rainfall=5.92"

Area (ac)	CN	Description
0.240	98	Paved parking, HSG B
4.500	58	Meadow, non-grazed, HSG B
4.740	60	Weighted Average
4.500		94.94% Pervious Area
0.240		5.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0250	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.14"
3.9	240	0.0210	1.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.1	672	0.0070	0.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
39.0	1,012	Total			

Subcatchment 8S: DA-1 to Prop Swale



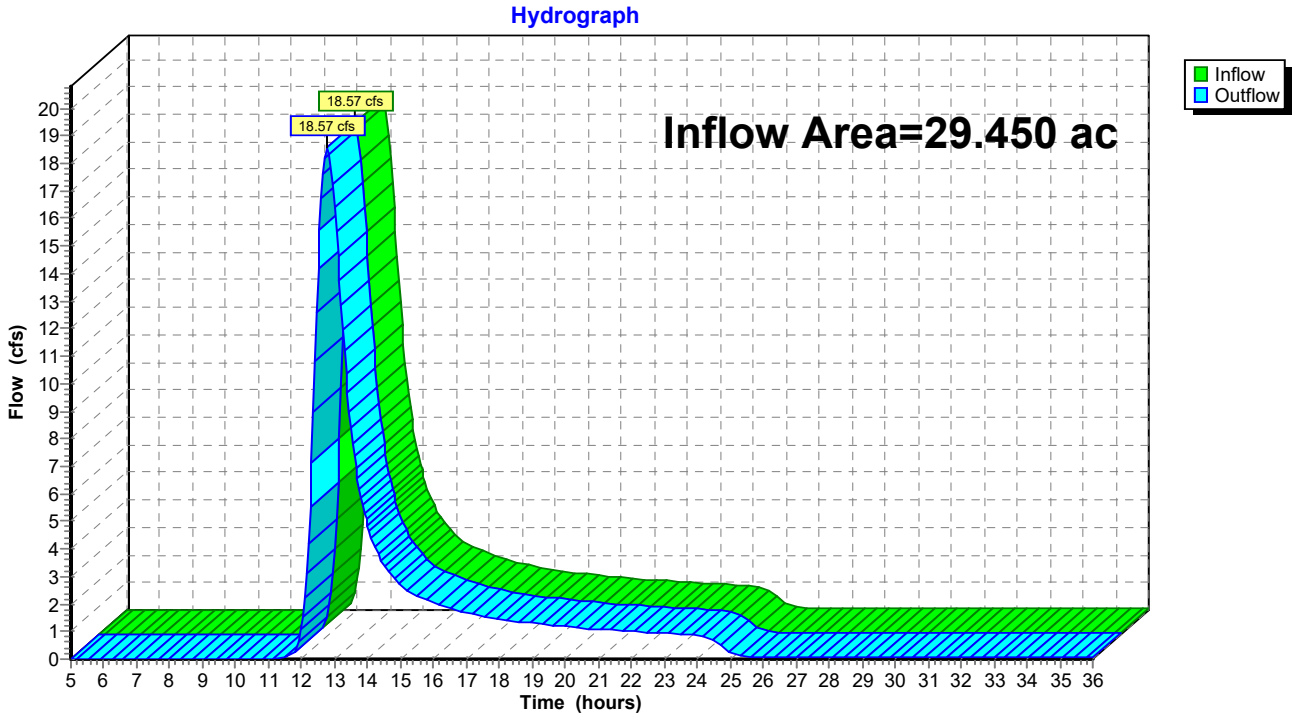
Summary for Reach 10R: Wetland

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 29.450 ac, 4.28% Impervious, Inflow Depth > 1.29" for 100-yr event
Inflow = 18.57 cfs @ 12.79 hrs, Volume= 3.173 af
Outflow = 18.57 cfs @ 12.79 hrs, Volume= 3.173 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs

Reach 10R: Wetland



Summary for Pond 12P: Existing Swale

[79] Warning: Submerged Pond 13P Primary device # 1 OUTLET by 4.27'

Inflow Area = 8.780 ac, 6.83% Impervious, Inflow Depth = 0.94" for 100-yr event
Inflow = 12.51 cfs @ 12.00 hrs, Volume= 0.685 af
Outflow = 4.33 cfs @ 12.25 hrs, Volume= 0.626 af, Atten= 65%, Lag= 15.1 min
Primary = 0.07 cfs @ 12.25 hrs, Volume= 0.093 af
Routed to Reach 10R : Wetland
Secondary = 4.27 cfs @ 12.25 hrs, Volume= 0.533 af

Routing by Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 495.86' @ 12.25 hrs Surf.Area= 5,635 sf Storage= 8,347 cf

Plug-Flow detention time= 145.8 min calculated for 0.625 af (91% of inflow)
Center-of-Mass det. time= 102.4 min (956.2 - 853.8)

Volume	Invert	Avail.Storage	Storage Description
#1	493.00'	21,690 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

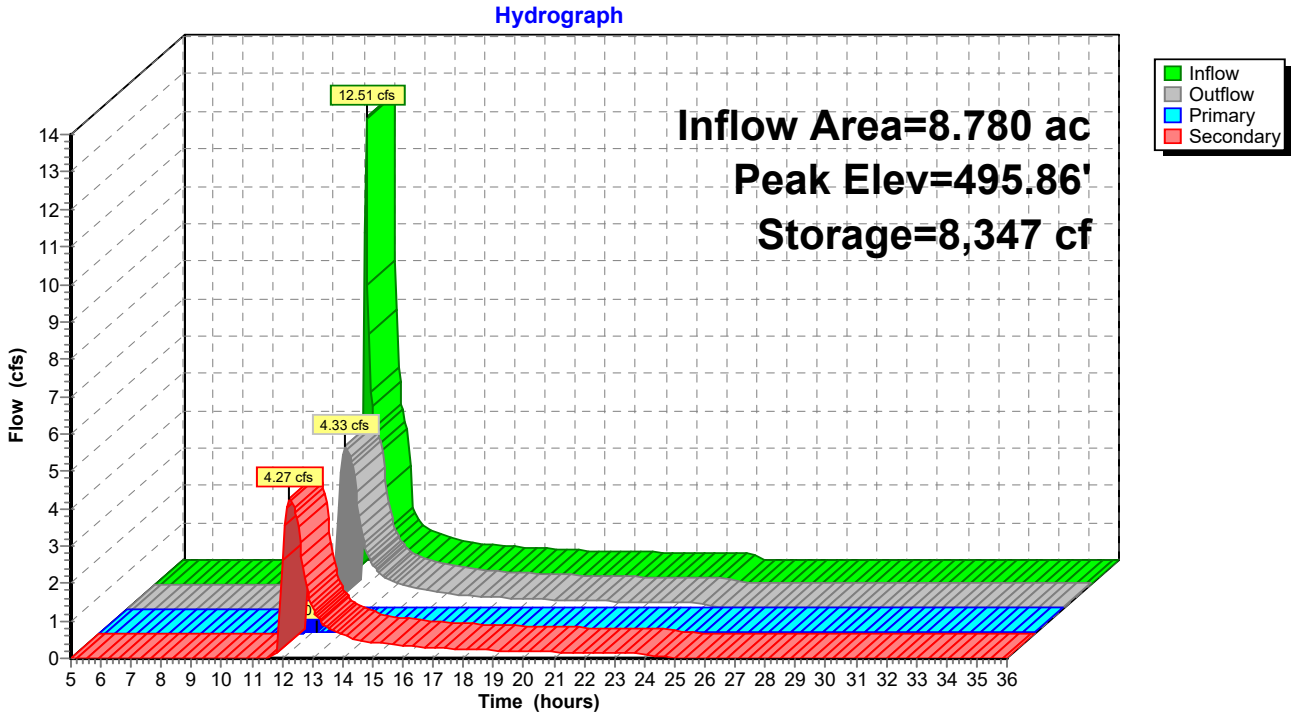
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
493.00	440	0	0
494.00	1,970	1,205	1,205
495.00	4,020	2,995	4,200
496.00	5,900	4,960	9,160
497.00	4,500	5,200	14,360
498.00	2,900	3,700	18,060
499.00	1,430	2,165	20,225
500.00	1,500	1,465	21,690

Device	Routing	Invert	Outlet Devices
#1	Primary	490.00'	**6.0" Round Culvert** L= 40.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 490.00' / 489.70' S= 0.0075 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.20 sf
#2	Device 1	493.00'	**0.500 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	495.00'	**2.0' long x 5.0' 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.07 cfs @ 12.25 hrs HW=495.86' (Free Discharge)
└**1=Culvert** (Passes 0.07 cfs of 1.79 cfs potential flow)
└**2=Exfiltration** (Exfiltration Controls 0.07 cfs)

Secondary OutFlow Max=4.27 cfs @ 12.25 hrs HW=495.86' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Weir Controls 4.27 cfs @ 2.48 fps)

Pond 12P: Existing Swale



Summary for Pond 13P: Proposed Swale

Inflow Area = 4.740 ac, 5.06% Impervious, Inflow Depth = 1.87" for 100-yr event
Inflow = 5.28 cfs @ 12.57 hrs, Volume= 0.738 af
Outflow = 5.21 cfs @ 12.63 hrs, Volume= 0.729 af, Atten= 1%, Lag= 3.5 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond 12P : Existing Swale
Secondary = 5.21 cfs @ 12.63 hrs, Volume= 0.729 af

Routing by Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 494.98' @ 12.63 hrs Surf.Area= 1,617 sf Storage= 1,524 cf

Plug-Flow detention time= 14.0 min calculated for 0.728 af (99% of inflow)
Center-of-Mass det. time= 7.1 min (900.1 - 893.1)

Volume	Invert	Avail.Storage	Storage Description
#1	493.00'	8,428 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

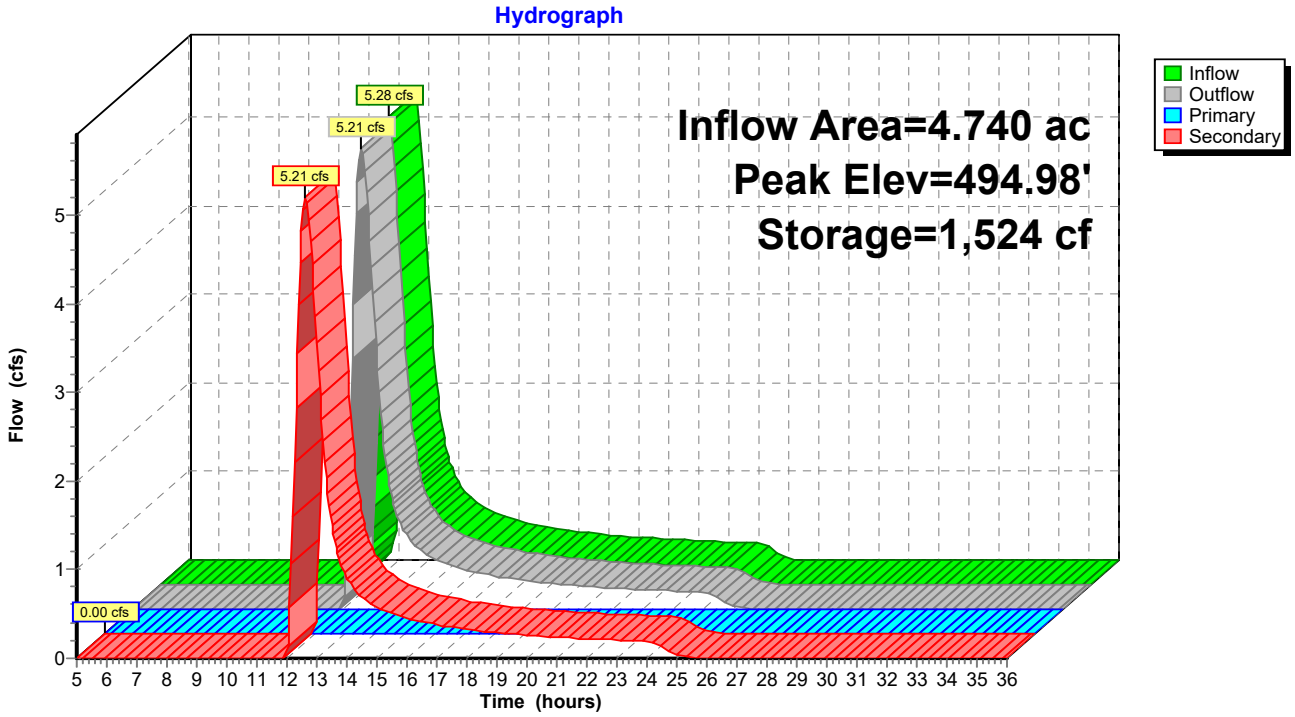
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
493.00	104	0	0
494.00	686	395	395
495.00	1,635	1,161	1,556
496.00	2,550	2,093	3,648
497.00	1,235	1,893	5,541
498.00	1,940	1,588	7,128
499.00	660	1,300	8,428

Device	Routing	Invert	Outlet Devices
#1	Primary	496.69'	**6.0" Round Culvert** L= 425.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 496.69' / 491.59' S= 0.0120 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	493.00'	**0.500 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	494.00'	**2.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

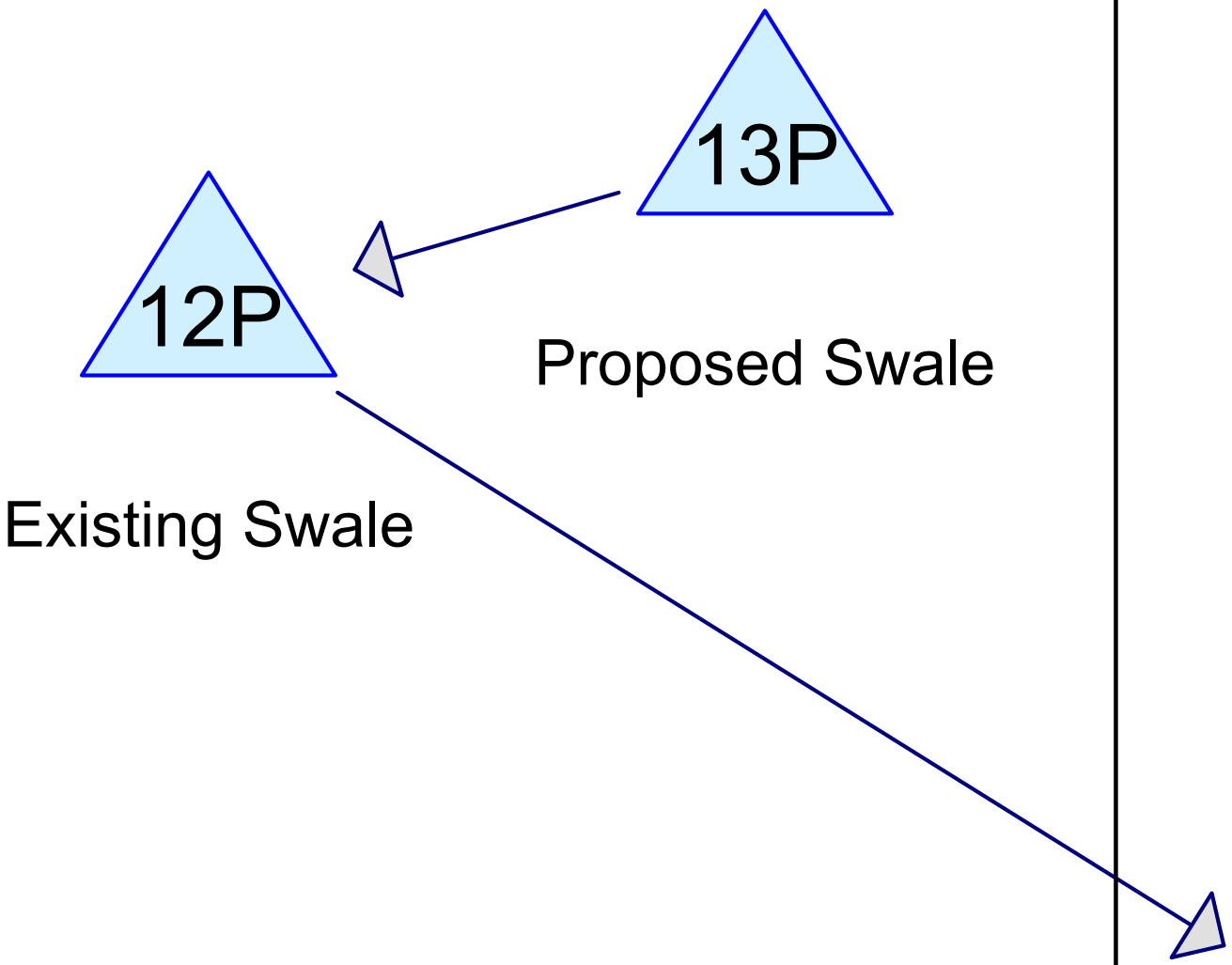
Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=493.00' (Free Discharge)
↑**1=Culvert** (Controls 0.00 cfs)
↑**2=Exfiltration** (Controls 0.00 cfs)

Secondary OutFlow Max=5.20 cfs @ 12.63 hrs HW=494.98' (Free Discharge)
↑**3=Broad-Crested Rectangular Weir** (Weir Controls 5.20 cfs @ 2.65 fps)

Pond 13P: Proposed Swale



WQv Storm for Swale



Subcat Reach Pond Link

Routing Diagram for Proposed Conditions
Prepared by C&S Engineers, Inc, Printed 3/19/2025
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Project Notes

Rainfall events imported from "NRCS-Rain.txt" for 7108 NY St Lawrence
Rainfall events imported from "NRCS-Rain.txt" for 7069 NY Livingston
Rainfall events imported from "NRCS-Rain.txt" for 7081 NY Ontario
Rainfall events imported from "NRCS-Rain.txt" for 7024 NY Chenango
Rainfall events imported from "NRCS-Rain.txt" for 7077 NY Oneida
Defined 9 rainfall events from NY-Old Oneida IDF
Copied 9 events from NY-Old Oneida 24-hr S1 storm

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	90% WQv	NY-Old Oneida 24-hr S1	1-yr	Default	24.00	1	2.18	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.000	**0**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
0.000		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**TOTAL AREA**	

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	12P	490.00	489.70	40.0	0.0075	0.012	0.0	6.0	0.0	
2	13P	496.69	491.59	425.0	0.0120	0.013	0.0	6.0	0.0	

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

Pond 12P: Existing Swale Peak Elev=493.94' Storage=1,091 cf Inflow=0.14 cfs 0.043 af
Primary=0.02 cfs 0.035 af Secondary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.035 af

Pond 13P: Proposed Swale Peak Elev=494.04' Storage=423 cf Inflow=0.06 cfs 0.038 af
Primary=0.00 cfs 0.000 af Secondary=0.05 cfs 0.029 af Outflow=0.05 cfs 0.029 af

Summary for Pond 12P: Existing Swale

[79] Warning: Submerged Pond 13P Primary device # 1 OUTLET by 2.35'

Inflow Area = 8.780 ac, 6.83% Impervious, Inflow Depth = 0.06" for 90% WQv event
Inflow = 0.14 cfs @ 12.50 hrs, Volume= 0.043 af
Outflow = 0.02 cfs @ 24.00 hrs, Volume= 0.035 af, Atten= 85%, Lag= 689.8 min
Primary = 0.02 cfs @ 24.00 hrs, Volume= 0.035 af
Routed to Reach 10R : Wetland
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 493.94' @ 24.00 hrs Surf.Area= 1,879 sf Storage= 1,091 cf

Plug-Flow detention time= 507.4 min calculated for 0.035 af (82% of inflow)
Center-of-Mass det. time= 432.3 min (1,435.2 - 1,003.0)

Volume	Invert	Avail.Storage	Storage Description
#1	493.00'	21,690 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

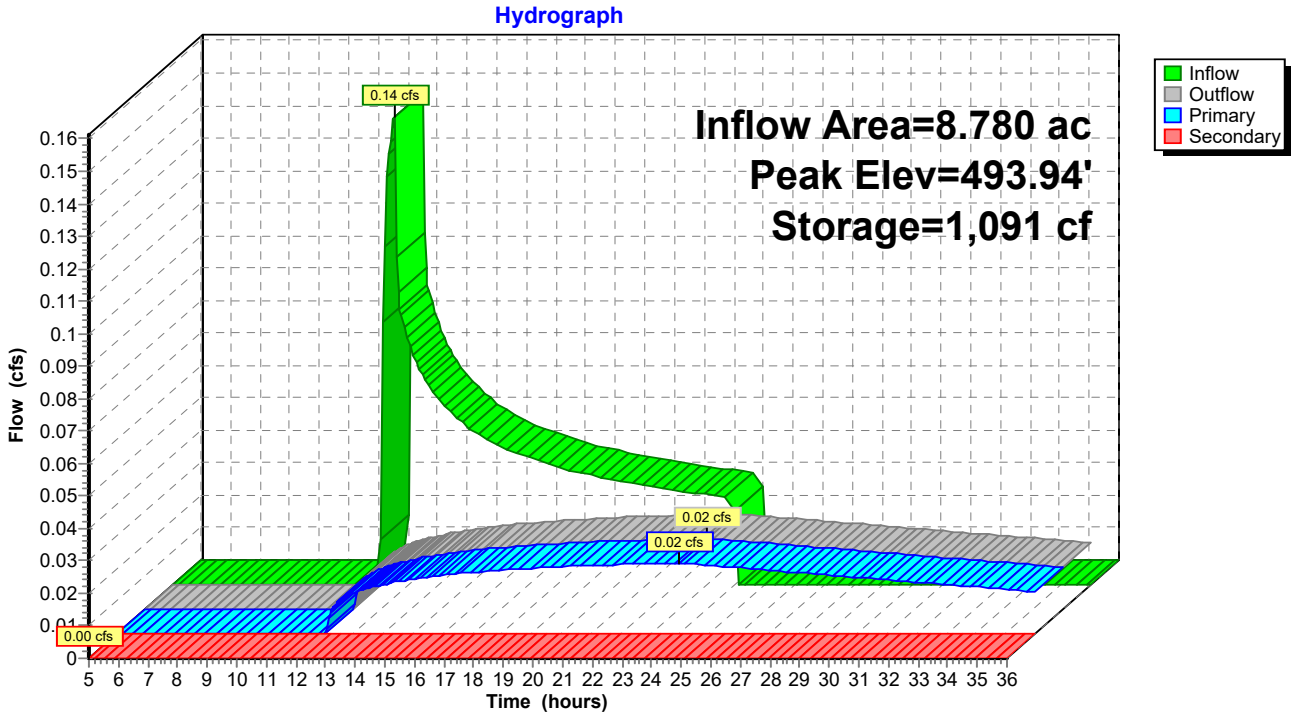
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
493.00	440	0	0
494.00	1,970	1,205	1,205
495.00	4,020	2,995	4,200
496.00	5,900	4,960	9,160
497.00	4,500	5,200	14,360
498.00	2,900	3,700	18,060
499.00	1,430	2,165	20,225
500.00	1,500	1,465	21,690

Device	Routing	Invert	Outlet Devices
#1	Primary	490.00'	**6.0" Round Culvert** L= 40.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 490.00' / 489.70' S= 0.0075 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.20 sf
#2	Device 1	493.00'	**0.500 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	495.00'	**2.0' long x 5.0' 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.02 cfs @ 24.00 hrs HW=493.94' (Free Discharge)
└**1=Culvert** (Passes 0.02 cfs of 1.45 cfs potential flow)
└**2=Exfiltration** (Exfiltration Controls 0.02 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=493.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 12P: Existing Swale



Summary for Pond 13P: Proposed Swale

Inflow Area = 4.740 ac, 5.06% Impervious, Inflow Depth = 0.10" for 90% WQv event
Inflow = 0.06 cfs @ 13.12 hrs, Volume= 0.038 af
Outflow = 0.05 cfs @ 15.12 hrs, Volume= 0.029 af, Atten= 26%, Lag= 119.9 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond 12P : Existing Swale
Secondary = 0.05 cfs @ 15.12 hrs, Volume= 0.029 af

Routing by Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 494.04' @ 15.12 hrs Surf.Area= 724 sf Storage= 423 cf

Plug-Flow detention time= 184.2 min calculated for 0.029 af (76% of inflow)
Center-of-Mass det. time= 90.8 min (1,155.5 - 1,064.7)

Volume	Invert	Avail.Storage	Storage Description
#1	493.00'	8,428 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

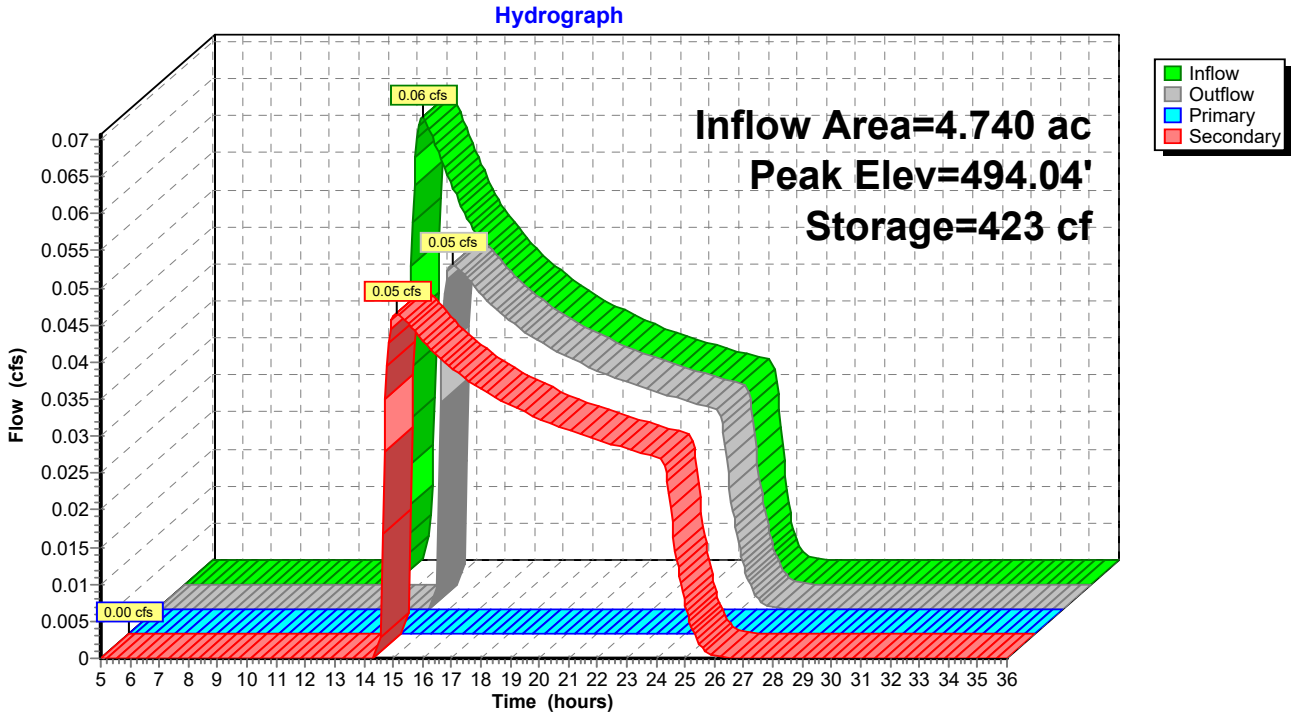
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
493.00	104	0	0
494.00	686	395	395
495.00	1,635	1,161	1,556
496.00	2,550	2,093	3,648
497.00	1,235	1,893	5,541
498.00	1,940	1,588	7,128
499.00	660	1,300	8,428

Device	Routing	Invert	Outlet Devices
#1	Primary	496.69'	**6.0" Round Culvert** L= 425.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 496.69' / 491.59' S= 0.0120 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	493.00'	**0.500 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	494.00'	**2.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=493.00' (Free Discharge)
↑**1=Culvert** (Controls 0.00 cfs)
↑**2=Exfiltration** (Controls 0.00 cfs)

Secondary OutFlow Max=0.04 cfs @ 15.12 hrs HW=494.04' (Free Discharge)
↑**3=Broad-Crested Rectangular Weir** (Weir Controls 0.04 cfs @ 0.50 fps)

Pond 13P: Proposed Swale



Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Metadata for Point	
Smoothing	No
State	
Location	
Latitude	43.179 degrees North
Longitude	75.504 degrees West
Elevation	140 feet
Date/Time	Sun Mar 09 2025 19:24:57 GMT-0400 (Eastern Daylight Time)

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.43	0.52	0.70	0.86	0.99	1yr	0.74	0.97	1.12	1.40	1.72	2.15	2.46	1yr	1.90	2.37	2.80	3.44	4.03	1yr
2yr	0.33	0.50	0.62	0.84	1.03	1.17	2yr	0.89	1.15	1.31	1.64	2.00	2.48	2.78	2yr	2.19	2.67	3.15	3.84	4.44	2yr
5yr	0.39	0.60	0.74	1.02	1.29	1.46	5yr	1.12	1.43	1.63	2.03	2.46	3.04	3.42	5yr	2.69	3.29	3.86	4.57	5.27	5yr
10yr	0.45	0.68	0.85	1.19	1.53	1.73	10yr	1.32	1.69	1.93	2.38	2.89	3.54	4.01	10yr	3.13	3.85	4.49	5.23	6.00	10yr
25yr	0.54	0.82	1.02	1.46	1.93	2.16	25yr	1.66	2.11	2.42	2.94	3.57	4.34	4.94	25yr	3.84	4.75	5.49	6.24	7.12	25yr
50yr	0.62	0.95	1.18	1.70	2.29	2.56	50yr	1.98	2.50	2.86	3.46	4.20	5.07	5.79	50yr	4.48	5.57	6.40	7.14	8.11	50yr
100yr	0.73	1.10	1.38	1.99	2.72	3.04	100yr	2.35	2.97	3.39	4.06	4.93	5.92	6.80	100yr	5.24	6.54	7.46	8.17	9.24	100yr
200yr	0.84	1.27	1.61	2.33	3.25	3.60	200yr	2.80	3.52	4.02	4.78	5.79	6.92	7.98	200yr	6.12	7.67	8.71	9.35	10.53	200yr
500yr	1.04	1.54	1.98	2.88	4.10	4.52	500yr	3.54	4.42	5.05	5.92	7.17	8.51	9.87	500yr	7.53	9.49	10.68	11.18	12.52	500yr

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.22	0.35	0.42	0.57	0.70	0.86	1yr	0.60	0.84	0.96	1.11	1.49	1.73	2.19	1yr	1.53	2.10	2.55	3.17	3.44	1yr
2yr	0.32	0.49	0.60	0.81	1.00	1.14	2yr	0.87	1.11	1.27	1.59	1.94	2.40	2.69	2yr	2.12	2.59	3.07	3.75	4.35	2yr
5yr	0.35	0.54	0.67	0.92	1.18	1.33	5yr	1.02	1.30	1.47	1.86	2.26	2.86	3.21	5yr	2.53	3.09	3.61	4.33	5.00	5yr
10yr	0.38	0.59	0.73	1.02	1.31	1.46	10yr	1.13	1.43	1.67	2.06	2.50	3.25	3.63	10yr	2.88	3.49	4.06	4.83	5.52	10yr
25yr	0.43	0.65	0.81	1.15	1.51	1.62	25yr	1.31	1.58	1.92	2.33	2.86	3.83	4.21	25yr	3.39	4.05	4.76	5.56	6.19	25yr
50yr	0.45	0.69	0.86	1.23	1.66	1.72	50yr	1.43	1.68	2.13	2.56	3.16	4.33	4.70	50yr	3.84	4.52	5.37	6.19	6.74	50yr
100yr	0.49	0.74	0.92	1.33	1.83	2.10	100yr	1.58	2.05	2.37	2.78	3.48	4.92	5.24	100yr	4.35	5.04	6.05	6.90	7.33	100yr
200yr	0.52	0.78	0.99	1.44	2.00	2.32	200yr	1.73	2.27	2.62	3.00	3.81	5.58	5.86	200yr	4.94	5.63	6.82	7.70	7.97	200yr
500yr	0.79	1.17	1.50	2.18	3.11	2.66	500yr	2.68	2.60	2.94	3.31	4.30	6.62	6.77	500yr	5.86	6.51	7.98	8.88	8.88	500yr

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.30	0.46	0.57	0.76	0.94	1.10	1yr	0.81	1.07	1.25	1.56	1.89	2.30	2.69	1yr	2.03	2.59	3.10	3.66	4.31	1yr
2yr	0.35	0.53	0.66	0.89	1.10	1.25	2yr	0.95	1.22	1.37	1.75	2.08	2.58	2.91	2yr	2.28	2.80	3.25	3.94	4.63	2yr
5yr	0.42	0.65	0.80	1.10	1.40	1.59	5yr	1.21	1.56	1.78	2.18	2.67	3.23	3.62	5yr	2.85	3.48	4.13	4.81	5.52	5yr
10yr	0.50	0.76	0.94	1.32	1.70	1.94	10yr	1.47	1.90	2.20	2.65	3.25	3.86	4.35	10yr	3.42	4.18	4.95	5.59	6.40	10yr
25yr	0.63	0.95	1.19	1.70	2.23	2.57	25yr	1.93	2.51	2.91	3.44	4.22	4.93	5.56	25yr	4.36	5.35	6.30	6.83	7.81	25yr
50yr	0.75	1.14	1.42	2.04	2.75	3.18	50yr	2.37	3.11	3.61	4.19	5.16	5.92	6.71	50yr	5.24	6.45	7.56	7.96	9.07	50yr
100yr	0.90	1.36	1.71	2.47	3.38	3.92	100yr	2.92	3.84	4.48	5.10	6.32	7.12	8.08	100yr	6.30	7.77	9.08	9.28	10.57	100yr
200yr	1.08	1.63	2.06	2.99	4.17	4.86	200yr	3.60	4.75	5.58	6.24	7.74	8.56	9.75	200yr	7.58	9.37	10.91	10.82	12.30	200yr
500yr	1.28	1.90	2.44	3.55	5.04	6.44	500yr	4.35	6.30	7.47	8.15	10.14	10.92	12.51	500yr	9.67	12.03	13.93	13.26	15.05	500yr

APPENDIX C-6

WQv, RRv, Filter Strip, Dry Swale and Culvert Calculations

APPENDIX D

Appendix D-1: Contractor's Certification Statement

Appendix D-2: Weekly Erosion & Sediment Control Inspection Form

Appendix D-3: Deep Ripping and De- Compaction Requirements

APPENDIX D-1

Contractor's Certification Statement

Contractor's Certification Statement

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

Project Name & Location:
NY Old Oneida Solar Farm, LLC
5792 Old Oneida Road
Rome, NY 13440

Owners Name / Address / Contact Information:

	Contact: Phone: Fax: - E-Mail:

Contr**actor's Name / Address / Contact Information:**

	Contact: Title Phone: Fax: E-Mail:

Contractor's SWPPP Element Responsibilities On-Site:

Contractor's Trained Individual(s) Responsible for SWPPP Implementation:

Signatures

Contractor:

_____
print

_____ _____
sign date

APPENDIX D-2

Weekly Erosion & Sediment Control Inspection Form

C&S Companies
499 Col. Eileen Collins Blvd.
Syracuse, NY 13212
p: (315) 455-2000
f: (315) 455-9667
www.cscos.com

CONSTRUCTION STORMWATER INSPECTION REPORT FOR SPDES GENERAL PERMIT GP-0-10-001

Project Name: NY Old Oneida Solar Farm, LLC	**Date & Time of Inspection:**
Project Location: 5792 Old Oneida Road Rome, NY 13440	**Reason for Inspection:** Weekly SWPPP inspection
Project No. V32.007.001	**NYSDEC Permit No:**
Inspector' Name:	**On-site Representative(s) (phone):**
Current soil conditions: (dry, wet, saturated)	**Current Weather Conditions:**

Visual Observations:

1.) Yes __ No __ N/A __ Is a copy of the NOI and Acknowledgment Letter available on-site and accessible for viewing?
2.) Yes __ No __ N/A __ Is a copy of the MS4 SWPPP acceptance form available on-site and accessible for viewing?
3.) Yes __ No __ N/A __ Is an up-to-date copy of the signed SWPPP retained at the construction site?
4.) Yes __ No __ N/A __ Is a copy of the SPDES General permit retained at the construction site?
5.) Yes __ No __ N/A __ Are all Erosion and Sediment Control measures installed properly?
6.) Yes __ No __ N/A __ Are all Erosion and Sediment Control measures being maintained properly?
7.) Yes __ No __ N/A __ Are there currently more than 5 acres of disturbed soil at the site without prior approval?
8.) Yes __ No __ N/A __ Have stabilization measures been implemented in inactive areas per Erosion and Sediment Control Standards?
9.) Yes __ No __ N/A __ Are Post-Construction stormwater management practices constructed and installed correctly?
10.) Yes __No__ N/A __ Was there a discharge from the site on the day of the inspection? If yes, complete Water Quality Observations.

Water Quality Observations (if applicable):

Describe the discharge(s): location, source(s), impact on receiving water(s), etc..

Describe the quality of the receiving water(s) both upstream and downstream of the discharge:

Describe any other water quality standards or permit violations:

Inspection Checklist:

INSPECTION ITEM	YES	NO	PERSON NOTIFIED	COMMENTS
a. For sediment trapping devices, what percentage of the sediment storage volume is currently utilized? Record percentage 0 % (SPDES permit requires sediment to be removed once it exceeds 50% of the sediment storage volume provided.) Is clean-out required?				
b. Are protected areas such as wetlands, property boundaries, and vegetation preservation areas, properly delineated?				
c. Have silt fences been installed? If so, are they in need of maintenance?				
d. Any erosion at the outlet of pipes, swales or ditches?				
e. Is the construction entrance stabilized and operating correctly?				
f. If Diversion Berms and/or Earth Dikes are required, have they been installed? If so, are they in need of maintenance?				
g. If Check Dams are present, is cleanout of accumulated sediment required? If so, does stone need to be cleaned or replaced?				
h. Do catch basins and drainage inlets have proper protection - i.e., filter fabric, stone and block, etc. - inlet protection? If so, is maintenance required?				
i. Is there any loss of stabilizing vegetation, or seeding and mulching?				
j. Any evidence of rill or gully erosion occurring on slopes?				

Additional Comments:

__ Photographs Attached __ Site Map Attached

Overall Inspection Rating: ___Satisfactory ___Marginal ___Unsatisfactory	
Signature of Inspector:	**Date:**
Qualified Professional (Printed name)	**Qualified Professional Signature**

APPENDIX D-3

Deep Ripping and De- Compaction Requirements

New York State
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Water

Deep-Ripping and Decompaction

April 2008

New York State
Department of Environmental Conservation

Document Prepared by:

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

Alternative Stormwater Management
Deep-Ripping and Decompaction

Description

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

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

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

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

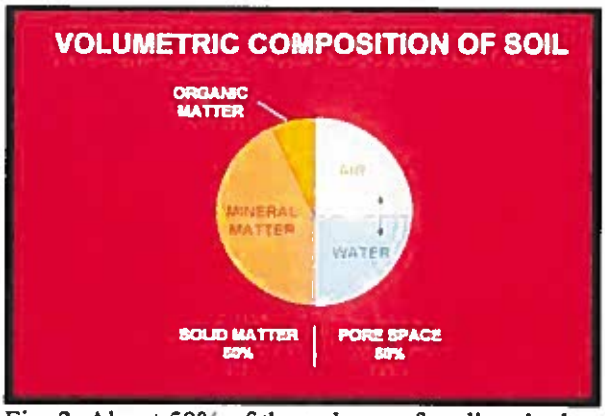


Fig. 2. About 50% of the volume of undisturbed loam surface soil is pore space, when soil is in good condition for plant growth. Brady, 2002.

Recommended Application of Practice

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

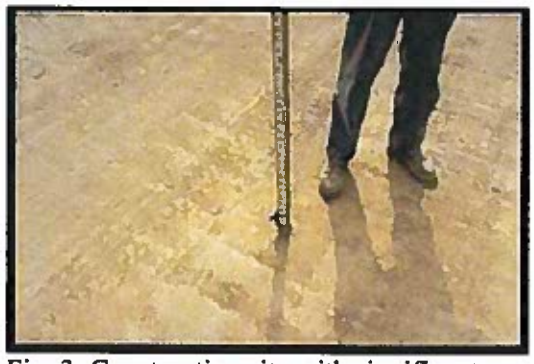


Fig. 3. Construction site with significant compaction of the deep basal till subsoil extends 24 inches below this exposed cut-and-fill work surface.

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

Benefits

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

- Increases the project (larger size) area's direct surface infiltration of rainfall by providing the open site's mitigated soil condition and lowers the demand on concentrated runoff control structures

- Enhances direct groundwater recharge through greater dispersion across and through a broader surface than afforded by some runoff-control structural measures

- Decreases runoff volume generated and provides hydrologic source control

- May be planned for application in feasible open locations either alone or in

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

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

Feasibility/Limitations

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

Soil

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

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

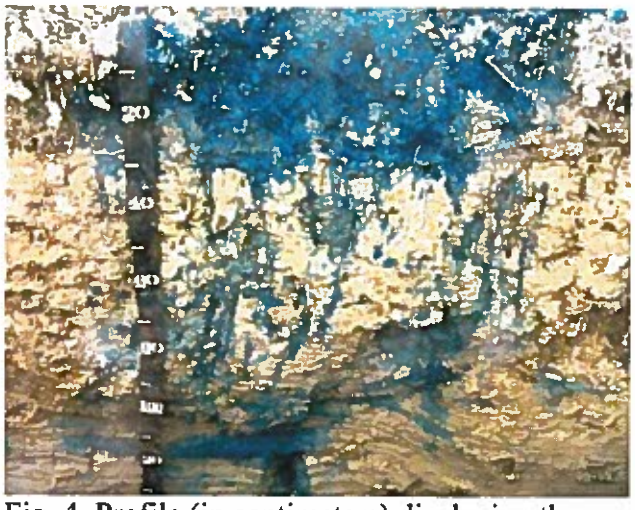


Fig. 4. Profile (in centimeters) displaying the infiltration test result of the natural undisturbed horizons of a soil in Hydrologic Soil Group C.

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

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

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

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

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

Slope

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

Local Weather/Timing/Soil Moisture

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

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

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

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

Design Guidance

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

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

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

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

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

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

Implements

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

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

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

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

Pulling-Power of Equipment

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

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

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

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

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

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

Depth and Patterns of Movement

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

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

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

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

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

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

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

Large, Unobstructed Areas

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

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

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

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

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

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

Corridors

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

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

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

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

Maintenance and Cost

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

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

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

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

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

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

Resources

Publications:

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- US Department of Agriculture in cooperation with Cornell University Agricultural Experiment Station. Various years. *Soil Survey of (various names) County, New York.* USDA.

Internet Access:

- Examples of implements:

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

- Soils data of USDA Natural Resources Conservation Service. *NRCS Web Soil Survey.* http://websoilsurvey.nrcs.usda.gov/app/ and *USDA-NRCS Official Soil Series Descriptions; View by Name.* http://ortho.ftw.nrcs.usda.gov/cgi-bin/osd/osdname.cgi . *Last visited Jan. 08.*

- Soil penetrometer information. Access by internet searches of: *Diagnosing Soil Compaction using a Penetrometer (soil compaction tester), PSU Extension;* as well as *Dickey-john Soil Compaction Tester.* http://www.dickey-johnproducts.com/pdf/SoilCompactionTest.pdf and http://cropsoil.psu.edu/Extension/Facts/uc178pdf Last visited Sept. 07

APPENDIX E

Appendix E-1: Maryland Stormwater Design Guidance for Solar Panel Installation

Appendix E-2: Long Term Maintenance Recommendations

Appendix E-3: NYSDEC Solar Panel Construction Stormwater Permitting Memorandum

APPENDIX E-1

Maryland Design Guidance for Solar Panel Installation

Stormwater Design Guidance – Solar Panel Installations

Revisions to Maryland's stormwater management regulations in 2010 require that environmental site design (ESD) be used to the maximum extent practicable (MEP) to mimic natural hydrology, reduce runoff to reflect forested wooded conditions, and minimize the impact of land development on water resources. This applies to any residential, commercial, industrial, or institutional development where more than 5,000 square feet of land area is disturbed. Consequently, stormwater management must be addressed even when permeable features like solar panel installations exceed 5,000 square feet of land disturbance.

Depending on local soil conditions and proposed imperviousness, the amount of rainfall that stormwater requirements are based on varies from 1.0 to 2.6 inches. However, addressing stormwater management does not mean that structural or micro-scale practices must be constructed to capture and treat large volumes of runoff. Using nonstructural techniques like disconnecting impervious cover reduces runoff by promoting overland filtering and infiltration. Commonly used with smaller or narrower impervious areas like driveways or open roads, the Disconnection of Non-Rooftop Runoff technique (see pp. 5.61 to 5.65 of the **2000 Maryland Stormwater Design Manual**[1]) is a low cost alternative for treating runoff in situations like rows of solar panels.

When non-rooftop disconnection is used to treat runoff, the following factors should be considered:

- The vegetated area receiving runoff must be equal to or greater in length than the disconnected surface (e.g., width of the row of solar panels)
- Runoff must sheet flow onto and across vegetated areas to maintain the disconnection
- Disconnections should be located on gradual slopes (≤ 5%) to maintain sheetflow. Level spreaders, terraces, or berms may be used to maintain sheetflow conditions if the average slope is steeper than 5%. However, installations on slopes greater than 10% will require an engineered plan that ensures adequate treatment and the safe and non-erosive conveyance of runoff to the property line or downstream stormwater management practice.
- Disconnecting impervious surfaces works best in undisturbed soils. To minimize disturbance and compaction, construction vehicles and equipment should avoid areas used for disconnection during installation of the solar panels.
- Groundcover vegetation must be maintained in good condition in those areas receiving disconnected runoff. Typically this maintenance is no different than other lawn or landscaped areas. However, areas receiving runoff should be protected (e.g., planting shrubs or trees along the perimeter) from future compaction.

Depending on the layout and number of panels installed, the disconnection of non-rooftop runoff technique may address some or all of the stormwater management requirements for an individual project. Where the imperviousness is high or there is other infrastructure (e.g., access roads, transformers), additional runoff may need to be treated. In these situations, other ESD techniques or micro-scale practices may be needed to provide stormwater management for these features.

Example 1 – Using Non-Rooftop Disconnection Where the Average Slope ≤ 5%

Several rows of solar panels will be installed in an existing meadow. The soils within the meadow are hydrologic soil group (HSG) B and the average slope does not exceed 5%. Each row of panels is 10 feet wide and the distance between rows is 20 feet. The rows of solar panels will be installed according to Figure 1 below. In this scenario, the disconnection length is the same as the distance between rows (20 feet) and is greater than the width of each row (10 feet). Therefore, each row of panels is adequately disconnected and the runoff from 1.0 inch of rainfall is treated.

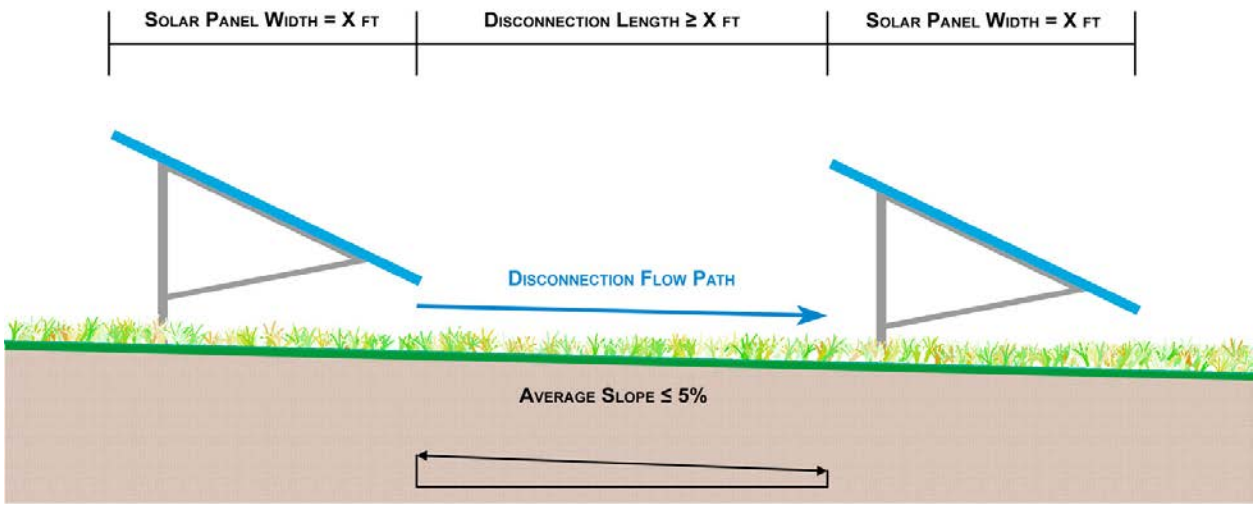

Figure 1. Typical Installation - Slope ≤ 5%

Example 2 – Using Non-Rooftop Disconnection Where the Average Slope ≥ 5% but ≤ 10%

Several rows of solar panels will be installed in an existing meadow. The soils within the meadow are hydrologic soil group (HSG) B and the average slope is greater than 5% but less than 10%. Each row of panels is 10 feet wide and the distance between rows is 20 feet. The rows of solar panels will be installed as shown in Figure 2 below. The disconnection length is the same as the distance between rows (20 feet) and is greater than the width of each row (10 feet). However, in this example, a level spreader (typically 1 to 2-foot wide and 1 foot deep) has been located at the drip edge of each row of panels to dissipate energy and maintain sheetflow.

Discussion

To meet State and local stormwater management requirements, ESD must be used to the MEP to reduce runoff to reflect forested conditions. While all reasonable options for implementing ESD must be investigated, minimally, the runoff from 1 inch of rainfall must be treated. In each of the examples above, there may be additional opportunities to implement ESD techniques or practices and reduce runoff that should be explored. However, simply disconnecting the runoff from the solar panel arrays captures and treats the runoff from 1.0 inch of rainfall. Where imperviousness is low and soil conditions less optimal (e.g., HSG C or D), this may be sufficient to completely address stormwater management requirements. In more dense applications or in sandy soils, additional stormwater management may be required.

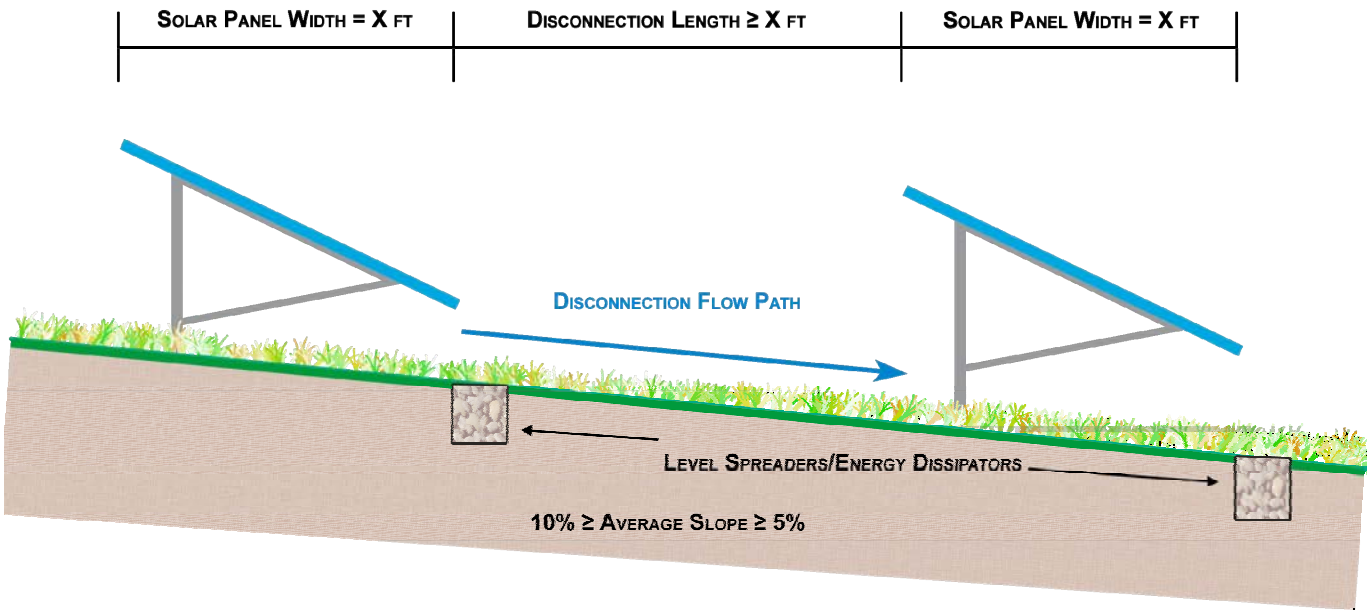

Figure 2. Typical Installation – Slope ≥ 5% but ≤ 10%

Conclusion

The primary purpose of Maryland's stormwater management program is to mimic natural hydrologic runoff characteristics and minimize the impact of land development on water resources. Any land development project that exceeds 5,000 square feet of disturbance, including solar panel projects, must address stormwater management. However, for solar panels, stormwater management may be provided in a cost-effective manner by disconnecting each row of panels and directing runoff over the vegetated areas between the individual rows.

Resources

[1] 2000 Maryland Stormwater Design Manual, Volumes I and II, MDE, October 2000 (http://www.mde.state.md.us/programs/Water/StormwaterManagementProgram/MarylandStormwaterDesignManual/Pages/Programs/WaterPrograms/SedimentandStormwater/stormwater_design/index.aspx)

APPENDIX E-2

Long Term Maintenance Recommendations

LONG-TERM MAINTENANCE RECOMMENDATIONS

Periodic maintenance of the storm water management and green infrastructure practices is required to ensure proper functioning of these facilities. The following are recommendations for maintenance frequency of these facilities once they have been accepted by the NYSDEC, City of Rome, and the Owner has assumed responsibility for their maintenance. Specific design data for all drainage facilities is included in this SWPPP as well as the Approved Contract Drawing's and Final SWPPP which are retained by the City.

Item	Initial Year (Year 1)	Subsequent Years
Inspection of side-slope vegetation and erosion – fill, reseed and mulch when necessary	Monthly	Annually
Mowing of filter strips	--	Annually (18"-24")
Filter Strips and Buffer Areas	After rainfall events of 0.5" or more of rainfall to: Detect erosion	Repair and re-seed; Replace lost material as necessary
Level Spreader	Semi- annually After rainfall events of 0.5" or more to: Detect channelization and sand/ debris accumulation	Annually Repair and/ or rake out sediment. Replace gravel if necessary
Inspection of the primary outlet structures	After installation, 6 months for settlement and clogging	Annually
Mowing of swales	--	Annually
Rock Outlet Protection	Annually and after significant rainfall events to: Inspect for scour and loss of rip-rap Inspect for accumulated sediment within rip-rap voids	Repair and/or replace rip-rap Remove accumulated sediment and replace rip-rap
Drainage Swales	After rainfall events of 0.5" or more of rainfall to: Detect erosion; Detect scour or loss of rip-rap at culvert outfalls.	Repair and re-seed; Replace lost material and rip-rap as necessary.

It is recommended that all facilities be inspected after significant (2.5 inches or greater) rainfall events to ensure that the storm water quantity management features are adequately functioning.

APPENDIX E-3

NYSDEC Solar Panel Construction Stormwater Permitting Memorandum

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Water, Bureau of Water Permits
625 Broadway, Albany, New York 12233-3505
P: (518) 402-8111 | F: (518) 402-9029
www.dec.ny.gov

MEMORANDUM

TO: Regional Water Engineers

FROM: Robert Wither, Chief, South Permit Section

SUBJECT: Solar Panel Construction Stormwater Permitting/SWPPP Guidance

DATE: April 6, 2018

Issue

The Department is seeing an increase in the number of solar panel construction projects across New York State. This has resulted in an increase in the number of questions on Construction General Permit (CGP) and Stormwater Pollution Prevention Plan (SWPPP) requirements from design professionals because the current CGP (GP-0-15-002) does not include a specific reference to the SWPPP requirements for solar panel projects in Tables 1 and 2 of Appendix B. To address this issue, the Division of Water (DOW) has developed the following guidance on CGP/SWPPP requirements for the different types of solar panel projects.

Scenario 1

The DOW considers solar panel projects designed and constructed in accordance with the following criteria to be a "*Land clearing and grading for the purposes of creating vegetated open space (i.e. recreational parks, lawns, meadows, fields)*" type project as listed in Table 1, Appendix B of the CGP. Therefore, the SWPPP for this type of project will typically just need to address erosion and sediment controls.

1. Solar panels are constructed on post or rack systems and elevated off the ground surface,
2. The panels are spaced apart so that rain water can flow off the down gradient side of the panel and continue as sheet flow across the ground surface*,
3. For solar panels constructed on slopes, the individual rows of solar panels are generally installed along the contour so rain water sheet flows down slope*,
4. The ground surface below the panels consist of a well-established vegetative cover (see "Final Stabilization" definition in Appendix A of the CGP),
5. The project does not include the construction of any traditional impervious areas (i.e. buildings, substation pads, gravel access roads or parking areas, etc.),
6. Construction of the solar panels will not alter the hydrology from pre-to post development conditions (see Appendix A of the CGP, for definition of "Alter the hydrology…"). Note: The design professional shall perform the necessary site assessment/hydrology analysis to make this determination.

*Refer to Maryland's "Stormwater Design Guidance- Solar Panel Installations" attached for guidance on panel installation.
**See notes below for additional criteria.

Scenario 2

If the design and construction of the solar panels meets all the criteria above, except for item 6, the project will fall under the "*All other construction activities that include the construction or reconstruction of impervious area or alter the hydrology from pre-to post development conditions, and are not listed in Table 1*" project type as listed in Table 2, Appendix B of the CGP. Therefore, the SWPPP for this type of project must address post-construction stormwater practices designed in accordance with the sizing criteria in Chapter 4 of the NYS Stormwater Management Design Manual, dated January 2015 (Note: Chapter 10 for projects in NYC EOH Watershed). The Water Quality Volume (WQv)/Runoff Reduction Volume (RRv) sizing criteria can be addressed by designing and constructing the solar panels in accordance with the criteria in items 1 – 4 above, however, the quantity control sizing criteria (Cpv, Qp and Qf) from Chapter 4 (or 10) of the Design Manual must still be addressed, unless one of the waiver criteria from Chapter 4 can be applied. **See notes below for additional criteria.

**** Notes**

- Item 1: For solar panel projects where the panels are mounted directly to the ground (i.e. no space below panel to allow for infiltration of runoff), the SWPPP must address post-construction stormwater management controls designed in accordance with the sizing criteria in Chapter 4 of the NYS Stormwater Management Design Manual, dated January 2015 (Note: Chapter 10 for projects in NYC EOH Watershed).

- Item 5: For solar panel projects that include the construction of traditional impervious areas (i.e. buildings, substation pads, gravel access roads or parking areas, etc.), the SWPPP must address post-construction stormwater management controls for those areas of the project. This applies to both Scenario 1 and 2 above.

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