

**PRELIMINARY  
STORM WATER POLLUTION PREVENTION PLAN  
(SWPPP)**

**FOR**

**HORSE CREEK WIND PROJECT**

Town of Clayton  
Jefferson County  
New York

**Owner/Operator:**

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**Prepared:** March 2011

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**Revision Schedule**

This Storm Water Pollution Prevention Plan (SWPPP) for the Horse Creek Wind Project, located in Jefferson County, New York, is to be revised and updated to address changes in site conditions, new or revised government regulations, and additional on-site stormwater pollution controls.

All revisions to the SWPPP are to be summarized below. The authorized facility representative who approves the SWPPP should be an individual at or near the top of the facility’s management organization, such as the president, vice president, construction manager, site supervisor, or environmental manager. The signature of this representative attests that the SWPPP revisions information is true and accurate. Previous authors and facility representatives are not responsible for the revisions. Specifics pertaining to each revision shall be detailed in the Construction Site Log Book, on the form provided in *Exhibit 7* of this report.

| Number | Date | Author | Company Representative Signature |
|--------|------|--------|----------------------------------|
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**References**

- 1) “HORSE CREEK WIND PROJECT” Civil Design Plans, Prepared by Fisher Associates, dated March 2011.
- 2) “Horse Creek Wind Project Draft Environmental Impact Statement”, Prepared by EDR, dated March 2011.
- 3) “Preliminary Karst Condition Assessment”, Prepared by Terracon Consultants, Inc., dated December 3, 2010.

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## Executive Summary

This Stormwater Pollution Prevention Plan (SWPPP) has been prepared as required by the New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System (SPDES) General Permit For Stormwater Discharges from Construction Activities (Permit No. GP-0-10-001). This project requires both Erosion and Sediment Control Measures and Post-Construction Stormwater Management Practices because there is more than one acre of disturbance and wind-power projects are listed in Table 2 of Appendix B in the GP-0-10-001.

Erosion and Sediment Control measures and Post-Construction Stormwater Management Practices have been incorporated into this project in accordance with the NYSDEC Standards and Specifications for Erosion Control (SSESC) and the June 2010 edition of the NYSDEC Stormwater Management Design Manual (SMDM) respectively.

Iberdrola Renewables has proposed the Horse Creek Wind Farm located in the Town of Clayton, Jefferson County, New York. The project proposes 48 wind turbines within lease areas on multiple privately owned properties. The overall project area is approximately 9,450 acres. Access to the turbines will be through a series of private, 16-foot wide gravel access roads. The turbines will also be connected by a combination of underground and overhead electric cable to a substation in the southern portion of the project area. The access roads will experience minimal traffic once the wind farm is operational, only the occasional maintenance vehicle. The improvements proposed for the project will not significantly change the existing drainage patterns or conditions in the area.

### Stormwater Management Design

In order to meet the requirements of the SMDM, the five-step process outlined in Chapter 3 of the SMDM was utilized in order to incorporate green infrastructure practices to reduce runoff, provide water quality volume, and water quantity volume mitigation.

#### A. Site Planning and Preserve of Natural Features:

The best possible site layout was utilized in order to minimize disturbing areas of important natural qualities, preserve buffers, reduce clearing and grading, minimize disturbing sensitive areas, cluster WTG locations along a single access road, and provide soil restoration in temporarily disturbed areas.

#### B. Reduction of Impervious Cover

The minimum amount of impervious area necessary for the access roads, WTG pads, O&M building, and substation is utilized throughout the project. All non-essential improvements will be removed and restored to preconstruction conditions after construction of the wind farm.

#### C. Stormwater Quality Calculation

Due to the linear nature of the project, the new impervious areas are spread-out throughout multiple drainage areas and have minimal to no effect on the existing water quality conditions. The increase in impervious area is predominately associated with the gravel access roads and gravel crane pads.

The proposed access roads are being designed to match the existing topography as closely as possible to retain the existing drainage patterns, minimize impacts to wetlands, and minimize impacts to the local land owners' agricultural operations.

As discussed in the Storm Water Quality section of the report, the project does not propose to fully meet the regulations as channelized facilities or impoundments for water quality would significantly alter the existing drainage patterns, introduce new pipes and culverts, channelize flow or create standing water and increase hydrostatic pressure on the subsurface soils and bedrock, increase the overall impact area for the project, potentially alter wetland hydrology, and significantly alter agricultural operations. These methods would also be inconsistent with other aspects of the regulations which attempt to minimize the footprint of the project and significantly increase the potential to worsen the existing Karst conditions in the project area.

Further, this section of the report discusses that the proposed access roads will be private facilities, used by the turbine maintenance personnel, typically in pickup trucks, on an infrequent basis, and that these facilities have a very low potential for contaminants due to limited maintenance vehicle use.

Therefore, in an effort to provide storm water quality measures that meet the intent of the regulations, without creating harmful unintended consequences to the environment and the local landowners, the project proposes to employ vegetative filter strips along the access roads and around turbines to connect to the existing pastures, meadows, and forested areas. In active agricultural fields, the project will employ a 5-foot vegetative filter strip around all gravel areas to balance the need to contain any first flush contaminants and not significantly impact local landowner's farms. This approach is also consistent with the recommendations for storm water controls in Karst areas.

In areas where culverts have been located under the proposed gravel roadways, only the flow off the proposed gravel surfaces would require quality treatment. Similar to the discussion above, the project proposes to construct vegetative filter strips to connect to the existing pastures, meadows, and forested areas or maintain a 5-foot vegetative buffer around gravel areas adjacent to active farm fields.

The O&M building site will incorporate green infrastructure practices and standard stormwater management practices to obtain the required runoff reduction and water quality volume per the SMDM. These practices will be designed in accordance with the SMDM during the final design phase.

#### D. Green Infrastructure Technology and Standard SMPs with RRv Capacity

The permanent access roads, WTG pads, and the substation area will be graded to provide sheet flow conditions to adjacent agricultural or wooded areas as described previously. The O&M building will utilize green practices such as tree plantings, filter strips, rain gardens, and/or stormwater planters as necessary to obtain the required runoff reduction and water quality volume. The design of these practices will be in accordance with the SMDM and detailed calculations will be provided during the final design phase.

#### E. Use of Standard SMPs

The O&M building will utilize standard SMPs as necessary to provide the required water quantity volume for the site and water quality volume that cannot be achieved using green practices in the upper portion of the drainage area. Practices such as infiltration or bio-retention basins may be a viable option at this location. The design of these practices will be in accordance with the SMDM and

detailed calculations will be provided during the final design phase. The Karst conditions may limit the feasibility of utilizing standard post-construction stormwater practices at this site.

#### F. Stormwater Quantity

The culverts have been designed to handle the 10-year design storm for non-stream crossings and the 25-year storm for stream crossings. Calculations provided in *Exhibit 9* indicate the project will minimally increase runoff rates for the project area. As the proposed design maintains the existing sheet flow characteristics to convey drainage, the proposed improvements do not include channels or impoundments to capture and slow run-off rates. As discussed previously, these types of facilities are not recommended for the project area due to Karst conditions, the impacts to farm fields, natural drainage characteristics, wetlands, and because they increase the overall footprint of the project into existing natural areas. The minor increases in flow rates will have no significant impact on the area and be virtually imperceptible. Therefore new quantity control measures are not proposed for the project with the exception of the O&M facility which will be designed to fully meet Quality and Quantity regulations as required by the SPDES GP-0-10-001.

#### Spill Prevention

A Spill Prevention, Containment, and Control Plan (SPCCP) is provided as a part of this SWPPP. Hazardous spills are not anticipated during the project activities, however, if a spill occurs, the steps outlined in the SPCCP should be taken.

#### Construction Inspection and Maintenance

Inspections, observations, and maintenance of erosion and sediment control practices and other best management practices (BMP) shall be in accordance with the GP-0-10-001 and all reports are to become a part of the SWPPP. Any necessary modification the SWPPP shall also become a part of the SWPPP.

#### Post-Construction Operation and Maintenance

Observations and maintenance of post-construction stormwater management practices shall be in accordance with the GP-0-10-001 and all reports are to become a part of the SWPPP. Any necessary modification the SWPPP shall also become a part of the SWPPP.

## **I. Introduction**

This Storm Water Pollution Prevention Plan (SWPPP) has been prepared for the proposed Horse Creek Wind Farm located in the Town of Clayton, Jefferson County, New York. The project boundary encompasses approximately 9,450 acres and includes 48 Wind Turbine Generators (WTGs).

The project requires a SWPPP to be prepared in accordance with the Phase II requirements of the New York State Department of Environmental Conservation, State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity (GP-0-10-001). The SWPPP includes, but is not limited to, this document and its appendices.

This Plan was created with the guidance of the New York State Stormwater Management Design Manual (NYS SMDM) and includes, or shall include upon completion of the project, the following items:

- Completed Notice of Intent (NOI) form, blank form attached as *Exhibit 1*;
- Copy of the NYSDEC Permit Authorization Letter from the NYSDEC, to be attached as *Exhibit 2*;
- Copy of the SPDES GP-0-10-001, attached as *Exhibit 3*;
- Notice of Termination (NOT), attached *Exhibit 4*;
- Project Area Information and Supporting Documentation, see *Exhibit 5*;
- Contractor and Subcontractor Certifications, attached as *Exhibit 6*;
- All records of inspections and activities which are created during the course of the project, to be included as *Exhibit 7*;
- Stormwater Quality & Quantity Mitigation Plan and Details, see *Exhibit 8 & 9 for supporting documentation*;
- Erosion and Sedimentation Control Plan and Details, see *Exhibit 10*;
- and other documents as may be included by reference to this SWPPP.

Changes, modifications, revisions, additions, or deletions shall become part of the SWPPP as they occur. *Exhibit 7* includes the forms to be used for such items and a summary is included on the back of the cover page to this report.

The SWPPP is to be terminated when all disturbed areas are stabilized, permanent erosion and sedimentation controls installed, temporary erosion and sedimentation controls removed, all construction activities have ceased, and a completed NOT has been filed.

The Owner/Operator and General Contractor, along with all Sub-Contractors involved in construction activity that disturbs soil or implements pollution prevention controls must sign the SWPPP Certification Forms. The certification forms for the Owner/Operator and Contractors are included in *Exhibit 6*.

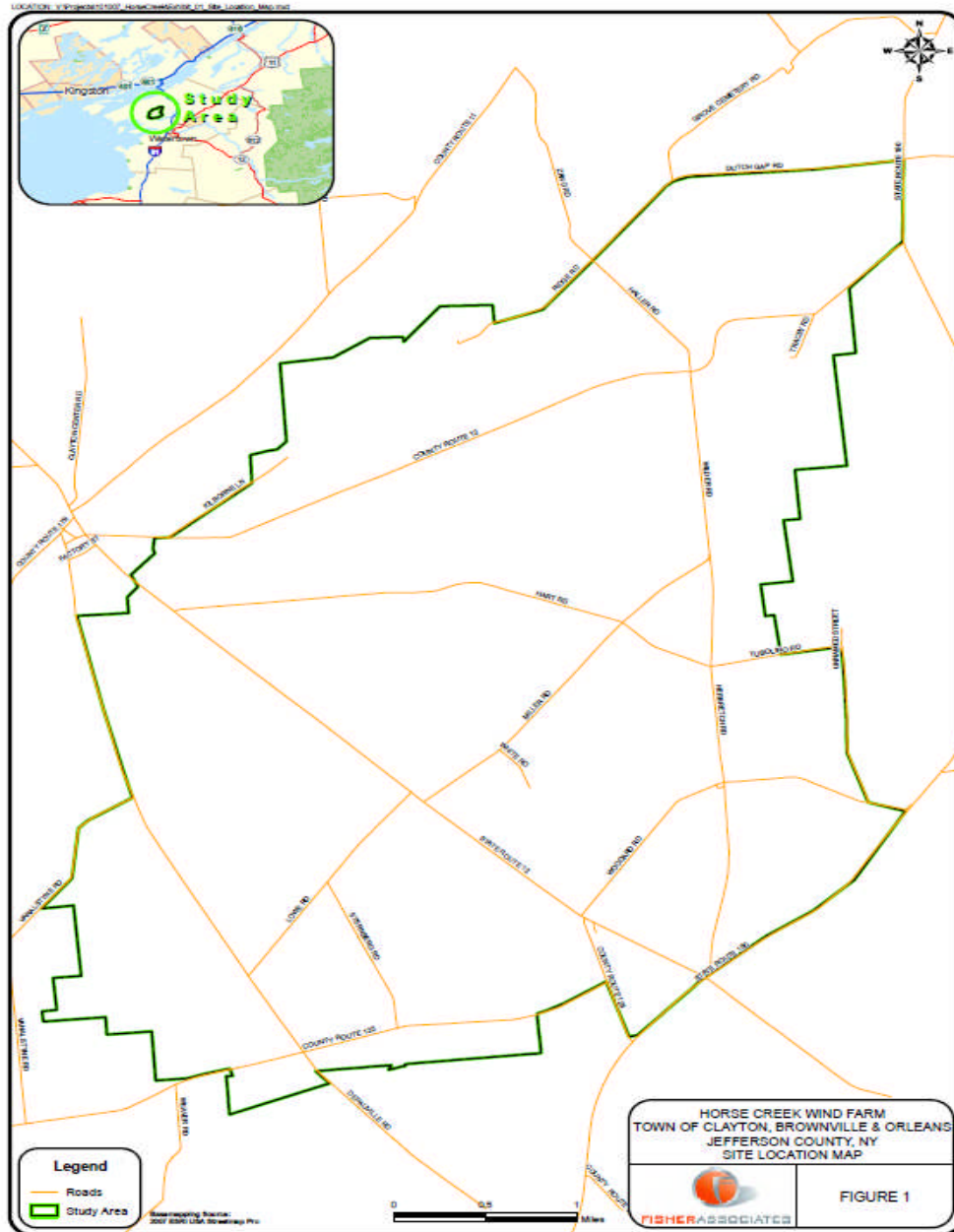
### **A. Project Owner/Operator & Contact Person**

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**B. Project Location**

The proposed project is located in the Town of Clayton, Jefferson County, primarily on either side of NYS Route 12, between NYS Route 180 and County Route 11, in northern New York. The map below depicts the general location of the project and the overall land that it incorporates.



The WTGs are to be located on private land under separate lease agreement with multiple individual property owners. A survey was performed to determine the land owners that would participate. The project plans depict the participating and non-participating property owners and their parcels.

## **II. Pre-Development Stormwater Runoff Conditions**

### **A. Surface Covers & Drainage**

The project location consists mainly of farmland or pasture areas for grazing, with a few pockets of meadow, brush, and forested areas. The area generally consists of rolling knolls, numerous depressions formed by micro-topography, and Karst conditions. These conditions are further detailed hereafter and in the Draft Environmental Impact Statement (DEIS), which was prepared for the proposed development. In general, the overall project area incorporates 3 main drainage areas that inevitably discharge to the Chaumont River, Horse Creek, and Perch River, as depicted in the Existing Watershed Map included in *Exhibit 5*.

### **B. Receiving Waters**

The project area is within the Chaumont-Perch Watershed, USGS Cataloging Unit 04150102, which ultimately drains to the west into Ontario Lake. The Chaumont River is located along the northern border of the project while the Perch River is located along the southern border. Horse Creek is located through the middle of the project and flows directly into Ontario Lake. There are also various unnamed tributaries of the Chaumont River, Perch River, and Horse Creek that traverse the project area. Stormwater runoff from the proposed development will generally be in the form of overland sheet flow to the existing wooded or agricultural areas that overlay the Karst areas and micro-topography found throughout the site.

C. Soils

A map prepared from information obtained by the United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) is included in *Exhibit 5*. The soil types and their corresponding Hydrologic Soil Group (HSG) found within the overall project area are listed in the following table.

| Soil Name                           | Hydrologic Soil Group (HSG) |
|-------------------------------------|-----------------------------|
| Benson channery silt loam, BfF      | D                           |
| Benson-Galoo complex, BgB           | D                           |
| Bombay loam, BoB                    | B                           |
| Bombay loam, CIA                    | D                           |
| Chaumont silty clay, ClB            | D                           |
| Covington silty clay, Cp            | D                           |
| Elmridge fine sandy loam, ElB       | C                           |
| Farmington loam, FaB                | C                           |
| Fluvaquents-Udifluvents complex, Fu | B                           |
| Galoo-Rock outcrop complex, GbB     | C/D                         |
| Galway silt loam, GlA/GlB/GlC       | B                           |
| Galway very stony silt loam, GmC    | B                           |
| Guffin clay, Gv                     | D                           |
| Hudson silt loam, HuB/HuC           | C                           |
| Kingsbury silty clay, KgA/KgB       | D                           |
| Livingston mucky silty clay, Lc     | D                           |
| Minoa fine sandy loam, Mv           | C                           |
| Newstead silt loam, Nn              | C                           |
| Niagara silt loam, NoA              | C                           |
| Rhinebeck silt loam, RhA            | D                           |
| Udorthents, Ub                      | A/D                         |
| Vergennes silty clay loam, VeB/VeC  | C                           |
| Wilpoint silty clay loam, WnB/WnC   | D                           |

The following table quantifies the percent of land found within the overall project area for each HSG:

| HSG A | HSG B | HSG C | HSG D |
|-------|-------|-------|-------|
| 0%    | 3.4%  | 8.1%  | 88.5% |

A map is provided in *Exhibit 5* showing the location of the proposed turbines and access roads. All proposed turbine sites, except for No. 6 and 41, in addition to the majority of the proposed access roads are located over soils classified as HSG D. Therefore, this project does not lend itself to the use of infiltration practices.

### **III. Post-Development Stormwater Runoff Conditions**

#### **A. Surface Covers & Drainage**

Iberdrola Renewables is proposing to develop and operate the Horse Creek Wind Farm in the Town of Clayton, Jefferson County, New York. The project includes the installation of 48 WTGs that are located throughout the project limits. In addition to the WTGs, temporary staging areas (laydown yards); a potential temporary concrete batch plant; access roads and culverts; WTG facilities, such as foundations and temporary turnarounds; crane pads; an underground electrical collection system; an overhead electrical collection line; an Operation and Maintenance (O&M) facility; substations; and meteorological towers will be required for completion of the project as defined below.

1. Temporary Staging Areas (Laydown Yards) - During the construction phase of the project, dedicated staging areas will be required. The staging areas are to be used for storing and moving necessary project components upon arrival to the project site and as emergency safety areas. The staging areas are to be located on the existing ground surface and require minimal grading.
2. Potential Temporary Concrete Batch Plant- A temporary concrete batch plant may be required to furnish concrete for the construction of the foundations. The aggregates, cement, and water required for the operation of the batch plant is to be obtained from offsite sources. The batch plant area may be up to 10 acres and may contain a wash-out pit which may be maintained with silt fence and regular clean-outs. There would be no discharges from the Batch Plant. The location of the Batch Plant would be determined during final design and shown on the project plans.
3. Access Roads and Culverts- Approximately, 13.6 miles of access road and 30 culverts, including, a portion of existing farm lanes to be modified for use, is required for installation and maintenance of the WTGs. The access road is to consist of a 16-foot wide gravel lane, with 10-foot wide compacted earth or gravel shoulders on each side for construction vehicles, turbine component delivery trucks, and transport of cranes. After completion of the project, the shoulders are to be decompacted and reclaimed and a 16-foot wide gravel lane is to remain for maintenance purposes. An additional 1.5 miles of temporary access road is to be constructed to enable construction equipment turnaround. The use of geotextile under the gravel is to be evaluated during the design based on the soil properties.
4. Temporary Crane Path- There will be additional crane transportation routes located between access roads consisting of 36-foot wide compacted earth or gravel. After completion of the project, the crane paths are to be decompacted and reclaimed.
5. Wind Turbine Generator (WTG) Facilities- There are 48 proposed Wind Turbine Generators on the project. The proposed WTGs consist of a multi-coated, conical tubular steel tower, up to 328 feet tall with three rotor blades extending to a height of up to 476 feet. The steel tower has an approximate 18 foot diameter exposed pedestal that extends 6 to 8 inches above grade. The tower foundation is anticipated to be a spread footer approximately 11.5 to 13 feet deep by approximately 60 to 65 feet in diameter. The steel tower is to be installed over the pedestal and bolted down. Each foundation and pedestal will require placement of approximately 550 to 600 cubic yards of concrete. The base of each tower will be surrounded by an 8 foot wide gravel skirt. The turbine components, including tower sections, nacelle and blades, are to be delivered by truck along access roads built by this Project. Cranes will be used to assemble these components on-site. In addition, is anticipated that an approximately 175-foot radius clearing will be required for installation of the temporary turnarounds and other site amenities such as the crane pads.

6. Crane Pads (Turbine Erection and Assembly Area)- A crane pad designed with a maximum slope of 1 percent in all directions is to be constructed at each WTG location to provide an area for the crane during erection of the WTGs. The crane pad areas are to measure approximately 80 feet by 40 feet in size. The turbine components are to be delivered in trucks to each of the turbine sites. The cranes located at the WTG site will offload the components and stage at each WTG site. Upon completion of the foundation and backfilling the area, the heavy cranes will pick up the components and install them over the foundation. These pads are to remain on-site for future operation and maintenance of the WTGs.
7. Underground Electrical Collection System- Typically, the location of the collection system for electric power is grubbed prior to trenching, resulting in a 2 foot wide strip per cable. Depending on the electrical design there may be more than 1 cable trench per strip with a 10-foot separation between them. A 16.1 mile (+/-), 34.5 kV underground collector system is to be installed to collect the electric power generated by the WTGs and bring it to an overhead line and then to the substation. Power generated within the nacelle is transmitted through drop cables which travel down the tower to the underground system. The collection cables are to be placed in trenches that are approximately 4 feet below the ground surface. The 2-foot wide trench is to be immediately backfilled and compacted. The disturbed areas are to be promptly stabilized upon completion of installation of the cables.
8. Overhead Electrical Collection Line- The constructed 5.5 mile (+/-), 34.5 kV, overhead electrical collection line is to connect the project substation and the interconnect station as shown on the project drawings.
9. Operation and Maintenance (O&M) Facility- An operation and maintenance building, outdoor storage yard, parking lot, and drive is to be constructed to house the Supervisory Control and Data Acquisition (SCADA) System, as well as to store other O&M equipment and materials.
10. Substations- Two substations are to be constructed to collect the power generated from the turbines and then transmit to the grid for distribution. A collection substation for low-voltage step-up to transmission voltage is located in the southwest portion of the project, with a utility owned interconnection facility at the NYS Power Grid.
11. Meteorological Towers- Two meteorological towers are to be installed within the project boundary during the construction and operations phases to monitor wind resources.

The following table quantifies the proposed disturbances for each of the above items and associated impervious areas:

| Project Component                   | Quantity (+/-) | Total Disturbance (+/- acres) | Prop. Imperviousness (+/- acres) |
|-------------------------------------|----------------|-------------------------------|----------------------------------|
| Temporary Staging Areas             | 3 ea           | 35                            | N.A.                             |
| Temporary Crane Path                | 8.4 mi         | 102*                          | N.A.                             |
| Access Road                         | 13.6 mi        | 163.4                         | 30                               |
| WTG Facilities and Workspaces       | 48 ea          | 106                           | 9.6                              |
| Buried Electric Collection System** | 16.1 mi        | 38.8**                        | N.A.                             |
| Overhead Collection Line            | 5.5 mi         | 13.3                          | N.A.                             |
| O&M Facility                        | 1 ea           | 5                             | 4                                |
| Substations                         | 2 ea           | 3                             | 2                                |
| Meteorological Towers               | 1              | 1                             | 0.2                              |
| <b>Totals:</b>                      |                | <b>467.5</b>                  | <b>45.8</b>                      |

N.A. = Not Applicable; TBD = To Be Determined

\*Figure is based on additional disturbance from crane path installations located along Buried Electric Collection System and Overhead Collection Line sections that are not adjacent to Access Roads

\*\*Figure is based on 4.6 miles of electric line buried outside of Access Road disturbance. Disturbance from remaining 11.5 miles of buried electric line is accounted for within Access Road disturbance.

The project includes the addition of 45.8 acres of impervious area throughout the project limits, which is only 0.5% of the project area. The project is linear in nature with additional pockets of disturbance for the turbine, O&M, and laydown sites impacting multiple drainage areas. However, the proposed improvements will not significantly change the existing drainage patterns or conditions within the project area.

Refer to the project drawings, referenced in the Table of Contents of this report, for further information.

## B. Historic, Archeological, and Natural Resources

The items listed below pertain to the historic, archeological, and natural resources found throughout the project area, their current reported conditions, and proposed impacts to them. Refer to the DEIS for additional information pertaining to these items.

- The watercourses within the project area are tributaries to the Chaumont River, Perch River, and Horse Creek. This project is located within the Chaumont-Perch Watershed, USGS Cataloging Unit 04150102. The watershed is within the Lake Ontario Drainage Basin.
- There are no watercourses within the project area that are listed on the New York State “2010 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy”, dated June 2010.
- The entire site is located outside of the 500 year floodplain according to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) for the Town of Clayton, New York, Jefferson County, Community Number 360330 and Town of Orleans, Community Number 360345. In addition, the proposed WTG sites are not located within any 100-year floodplains. However, the proposed access roads do cross tributaries at 5 locations, as shown on the map included as part of *Exhibit 5*. Refer to the DEIS for additional information pertaining to permitting and mitigation measures.

- The NYS DEC Stormwater Interactive Map shows that the project area is not currently located in a designated Municipal Separate Storm Sewer System (MS4).
- The project is not located over a Federal aquifer according to the Federal Sole Source Aquifer Map for NYS.
- The project is not located over a Primary Water Supply Aquifer according to the NYS Primary Water Supply & Principal Aquifers Maps.
- There are regulated wetlands in the vicinity of the project according to the National Wetlands Inventory (NWI), which have been identified as indicated on the Civil Design Plans included as part of *Exhibit 10*.
- This project is not classified as a Stormwater Hotspot because it does not involve any land uses or activities listed in Table 4.3 of the SWDM.
- Results of the historic resource screenings performed for this project can be found in the DEIS. Based on the findings and the proposed development, it is believed that this project will not have an effect on any historic or archeological resources that are listed or eligible for listing on the State of National Register of Historic Places.

## **IV. Construction Phasing and Sequence of Activities**

### **A. Phasing**

In accordance with the GP-0-10-001, the Owner/Operator 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 (provided it is not the Owner or Operator).

As the proposed project is linear in nature and is spread out over 9,450 acres, it is anticipated that construction of the project will be able to occur in phases, such that no more than 5 acres of soils will be exposed within a drainage area at any given time. However, as construction activities occurring within separate drainage areas at the same time may exceed the disturbance threshold, the NYSDEC should be contacted to see if written authorization will be required. Note that the GP-0-10-001 requires construction observations to occur 2 times per week if the 5 acre threshold is to be exceeded.

### **B. Sequence of Construction Activities**

Construction of the project is scheduled to take place between the months of April and December of 2012. In general, the proposed construction sequence shall consist of installation of all perimeter E&S Control and Green Practices prior to starting the tasks listed below, unless indicated otherwise on the construction documents. In addition, all disturbed areas are to be vegetated prior to commencement of subsequent tasks.

1. Prepare Temporary Staging Areas;
2. Box out, Compact Subgrade, and Install Access Roads;
3. Set up Concrete Batch Plant, if required;
4. Excavate for WTG Foundations;
5. Pour WTG Foundations
6. Construct Crane Pads;
7. Erect WTGs;
8. Install Substations;
9. Install Underground Electrical Collection System;
10. Construct O&M Building, Driveway, and Parking Lot;
11. Dismantle Temporary Structures;
12. Remove Temporary E&S devices after final stabilization of each area is declared by the Qualified Professional;
13. Restore any disturbed area due to removal of temporary measures.

After construction is completed, the construction access roads are to be reduced from 36 to 16 feet wide by reclamation of the compacted earth or gravel shoulders. Furthermore, all cleared areas are to be reclaimed and allowed to re-vegetate, while agricultural activities are to be permitted to resume to the limits of the permanent 16 foot wide access road and WTG pads or proposed Runoff Reduction Practice (RRP). The crane pads near the turbines are to remain in place, while all other areas not used for maintenance equipment are to be reclaimed with stockpiled topsoil and re-vegetated or developed into RRP as specified by this SWPPP and the proposed construction documents. Refer to the information listed below for a detailed description of the proposed construction sequencing for each of the various project components.

1. Temporary Staging Area and Potential Concrete Batch Plant- The items below provide a generalized construction sequence for the control of erosion and sedimentation during construction of the staging area.



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- Install erosion and sediment controls along perimeter of disturbance.
  - Rough grade site and stockpile topsoil. Install silt fence, straw bales around soil stockpile.
  - Place gravel and geotextile (as determined by design) over the area.
  - After use of the area, restore site to pre-construction contours and stabilize according to specifications.
  - After site has been stabilized, remove erosion and sediment controls.
2. Access Roads (Not Crossing Wetlands or Streams)- The items below provide a generalized construction sequence for the control of erosion and sedimentation during the construction of the access roadways.
- Install stabilized construction entrance at all intersection locations with County or Town roads.
  - Install erosion and sediment controls at the locations shown on the construction drawings.
  - Complete clearing and grubbing.
  - In agricultural areas, remove topsoil for the width of the access roadways.
  - Place geotextile (as determined by design) and place gravel over the geotextile.
  - Use the roadways to deliver equipment and materials to the WTG sites.
  - Stabilize according to temporary/permanent stabilization methods.
  - After the access roadways have been stabilized, remove all erosion and sediment control structures.
3. Access Roads (Crossing Wetlands or Streams)- The items below provide a generalized construction sequence for the control of erosion and sedimentation during the construction of the access roadways crossing wetlands or streams.
- Install erosion and sediment controls at the locations identified on the construction drawings.
  - Limit clearing to minimum width necessary.
  - Install culverts, as identified on the construction drawings, and as described in the following paragraph, to maintain wetland/stream hydrology.
  - Construct the roadway as described above.
  - Stabilize the disturbed areas and restore wetland or stream to pre-construction contours.
  - After the site has been stabilized, remove all erosion and sediment control structures.
4. Culverts- The items below provide a generalized construction sequence for the control of erosion and sedimentation during culvert installation.
- Install the erosion and sediment controls as identified on the construction drawings.
  - Complete the excavation required for the culvert installation.
  - Install the culvert and complete the backfill and compaction operations.
  - Finish slopes around the culvert. Install erosion control blankets on the slopes.
  - Complete final grading and stabilize.
  - After the site has been stabilized, remove all erosion and sediment control structures.
5. WTG Facilities- The items below provide a generalized construction sequence for the control of erosion and sediment during WTG construction:
- Install erosion and sediment controls along perimeter of WTG site area.
  - Complete site clearing and grubbing; stockpile topsoil where required.
  - Rough grade site and stockpile soil. Install silt fencing or straw hay bales around soil stockpiles as required.
  - Finish-grade the slopes around the WTG site.

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- Install erosion control blankets, where applicable, and apply mulch and seeding. All seeding and erosion matting (if required) shall be performed upon completion of the foundations and erection, while construction is still in progress.
  - Excavate and construct the WTG foundations, Crane Pads, and assemble the WTG components.
  - Complete the final grading of the site, replace topsoil, and stabilize according to specifications.
  - After site has been stabilized, remove erosion and sediment controls.
6. Underground Electric Collection System and Overhead Collection Line- The following provides a generalized construction sequence of the construction and implementation of the erosion and sediment controls during construction of the collection system:
- Install the erosion and sediment controls around perimeter of areas to be disturbance.
  - Complete clearing along the cable route.
  - Install pad mounted transformers.
  - Install and backfill trench in one operation.
  - Replace topsoil and place seed and mulch.
  - After the site is stabilized remove erosion and sediment controls.
7. O&M Facility- The items below provide a generalized construction sequence for the control of erosion and sedimentation during construction of the O&M building:
- Install the erosion and sediment controls around perimeter of disturbance.
  - Complete site clearing and grubbing.
  - Rough grade the site.
  - Install gravel parking areas and gravel for outdoor storage yard.
  - Install the building foundations and assemble the pre-fabricated building.
  - Complete the final grading of the site, topsoil, and stabilize according to specifications.
  - After the site is stabilized remove erosion and sediment controls.
8. Substation- The items below provide a generalized construction sequence for the control of erosion and sedimentation during construction of the substation.
- Install the erosion and sediment controls around perimeter of disturbance.
  - Complete site clearing and grubbing.
  - Install stabilized construction entrance.
  - Rough grade site and stockpile soil for reuse. Install silt fencing or straw hay bales around the soil stockpile.
  - Finish the slopes around the substation. Install erosion control blankets, where applicable, and apply mulching and seeding.
  - Install all the substation components.
  - Complete the final grading of the site and install gravels within the substation area. Stabilize the outside areas.
  - After the site has been stabilized, remove erosion and sediment controls.

## **V. Erosion and Sediment Control**

All erosion and sediment control measures are to be selected, installed, and maintained in accordance with the New York Department of Environmental Conservation manual "New York Standards and Specifications for Erosion and Sediment Control" (NYSSDESC), latest edition.

### **A. Overview of Construction Erosion and Sediment Control Measures**

Soil erosion and sediment controls are to be used at all locations where construction disturbances will take place. Locations are to be determined during final design and included in the construction drawings. The following management practices are to be performed by the contractor in conjunction with the erosion and sediment controls specified in this section:

- Minimize exposure time of bare or disturbed areas by properly sequencing construction activities
- Verify that all needed materials are available to complete a specific task without delays
- Apply temporary stabilization immediately after grading
- Stabilize areas prior to disturbing new areas
- Install erosion and sediment controls immediately
- Inspect and maintain all erosion and sediment controls on a regular basis

### **B. Temporary Measures**

The temporary erosion and sediment control measures listed below are to be used during construction of the project and removed after final stabilization of the site is declared by the Qualified Professional. During the design phase, these measures are to be evaluated for use with respect to the conditions at hand and specified accordingly on the final construction drawings.

1. Silt Fence- Silt fence is proposed at the down gradient side of access drives and WTG sites to prevent sediment from disturbing areas outside the construction limits.
2. Straw Bale Dikes- Straw bales are to be used where no other practice is feasible, such as at the base of a steep slope.
3. Temporary Swales- Temporary swales are to be used at all WTG pad locations to prevent sediment from disturbing areas outside of the construction limits and to redirect stormwater around the construction and assembly areas. Vegetative outlets shall be used at all outlets of the temporary swales to prevent erosive velocities of the storm water to occur.
4. Check Dams- Temporary check dams are to be installed as shown on the construction drawings and as required to slow the velocity of runoff, reduce erosion and scour, and trap debris. The check dams are to be constructed of gravel and rock or straw bales, where deemed appropriate.
5. Stabilized Construction Entrance- A stabilized construction entrance shall be constructed at each access road connection to a public roadway (Town, County, State).
6. Sediment Traps- Small impoundments installed in drainage ways downstream of disturbed areas may be used to settle out sediment from runoff water. If deemed necessary for this project, the location of proposed sediment traps are to be identified on the construction drawings.
7. Vegetative Stabilization- Seeding and mulching for temporary stabilization shall be performed, as necessary. In order to obtain temporary stabilization status, 2 tons per acre or 3 bales per 1,000 square

feet of straw mulch shall be tacked into place by a disk with blades set nearly straight or an approved equal method or product shall be used.

### C. Permanent Measures-

The erosion and sediment control measures listed below are to be used during construction of the project and remain in place after project closeout. During the design phase, these measures are to be evaluated for use with respect to the conditions at hand and specified accordingly on the final construction drawings.

1. Diversion Berms & Channels- These devices are to be used to intercept and divert runoff water away from proposed disturbed and impervious areas, where possible. These devices will allow for better treatment of stormwater runoff from the proposed impervious areas by reducing the overall flow to the proposed practices, thus, allowing the use of smaller practices which in turn will reduce overall project disturbance.
2. Erosion Control Blankets- This practice consists of installation of items such as jute mat or engineered erosion control products that will remain in place after completion of the project. Such measures are to be installed where slopes exceed 30% and at locations where immediate stabilization is to be achieved.
3. Vegetative Stabilization- Seeding and mulching for permanent stabilization shall be performed as specified on the final construction documents.

### D. Best Management Practices in Karst Areas

Karst refers to the creation of underground cavities through the process of acidic surface and groundwater eroding the limestone bedrock. This condition can lead to sink holes at the ground surface as the bedrock is not capable of holding the soil above it. Terracon Consultants, Inc. have reviewed the project area for the presence of Karst conditions and summarized their preliminary findings in their "Preliminary Karst Condition Assessment" report, dated December 3, 2010.

Terracon determined that the existing sinkholes are due to soil migrating into existing openings in the bedrock (solution sinkholes). The presence of large collapsing sinkholes could not be determined without further subsurface exploration. During construction, solution sinkholes may be mitigated through the use of grout or lean concrete to fill the bedrock cavities prior to completing construction.

Areas of particular concern are within the O&M Facility #1 location and between WTG #30 and #54 where disappearing streams occur.

Construction practices addressing Karst conditions shall include:

- Delineation of known Karst features within the project boundaries for establishment of buffer zones and installation of appropriate erosion and sediment control practices, as specified on the final construction documents.
- Maintain the existing and proposed drainage patterns to the maximum extent possible to avoid or minimize the creation of additional drainage areas that may negatively affect these features. To accomplish this, construct sections of access road where the finished surface matches the existing ground elevation allowing runoff to sheet flow instead of channelizing.

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- Groundwater levels and hydrostatic pressure shall be maintained to the maximum extent possible and large groundwater withdrawals shall be avoided. No dewatering is permitted unless a site design, along with a geotechnical or hydrogeologic report prepared by a qualified and/or licensed professional (i.e., soil scientist, geologist, hydrogeologist, geotechnical engineer, etc.), is prepared.
  - Recharge areas shall be designated, if necessary, to promote safe infiltration.
  - Natural hydrologic loading rates are to be replicated as much as possible when designing infiltration practices and shall be the goal of the stormwater management plan. Drastically increasing or decreasing the loading rate may promote or accelerate sinkhole development.
  - The addition of impervious surfaces is to be minimized.
  - All existing exploratory boreholes are to be sealed to eliminate surface water entry.
  - Earth disturbance when installing associated stormwater structures are to be minimized.
  - Evidence of pipe/culvert leakage or sagging shall be immediately addressed as these areas quickly become the focus for soil loss into subsurface voids that lead to subsidence and sinkhole collapse.
  - Best Management Practices (such as vegetation buffers) shall be maintained throughout the project to reduce stormwater conveyance and enhance infiltration.
  - Stormwater shall not be conveyed into concentrated runoff flow paths, where possible. Broad and shallow flow dispersion is most effective. Minimizing impervious surfaces should aid in decreasing runoff.
  - Impounded water causes soil saturation and loss of cohesion, producing stress from the weight of the water. Differences in hydraulic head and steep hydraulic gradients can result in sinkhole development. For these reasons, shallow basins with overflow channels are preferred over one large, deep basin. Basins, if they must be used, are to be designed with synthetic liners to prevent failure and sudden loss of water into a subsurface drain.
  - Stormwater management methods are to be employed to help reduce runoff volumes and velocity.
  - Concrete washout locations are to be centralized in a contained area so that the washout is collected safely and conveyed off-site or disposed on site as appropriate.
  - Lining of foundation excavations and associated structures is to be considered or evaluated, so that when concrete is poured into the pit there is no loss of slurry into any Karst features/formation.
  - Snow accumulation shall be avoided through planned plowing efforts to reduce concentrated snow melt issues or stored in SMPs that provide controlled discharge of the melt waters to pre-development conditions.
  - The use of dry and wet detention ponds are to be considered, where conditions warrant, for stormwater attenuation. In permeable soil areas with adequate separation distance to bedrock or groundwater, use of level spreaders and perforated pipes is to be considered. In addition, increased vegetation density/vegetated swales, and rip rap, as appropriate, shall be considered to decrease velocity.

## **VI. Spill Containment and Countermeasure Plan**

Good housekeeping measures for spill containment and countermeasures to maintain a minimum amount of exposure of materials to erosion and sediment controls are to be implemented. The measures to be implemented are:

### **A. Material Handling and Waste Management**

Maintain the facilities and construction sites in a neat and orderly fashion. Clean vehicles and equipment regularly. Remove unused or unneeded products and materials. Maintain access roads to control dust and sediment tracking

### **B. Dust Control**

Construction traffic must enter and exit the site at stabilized construction entrances / exits for the access roads, laydown yard(s), O&M facility, concrete batch plant, substation, and access points for the electrical collection work. The purpose is to trap dust and mud that would otherwise be carried off-site by construction traffic. Water trucks or other dust control agents are to be used as needed during construction to reduce dust generated on the site. After construction, the site shall be stabilized (as described elsewhere) to reduce the potential for dust generation.

### **C. Solid Waste Disposal**

No solid materials, including building materials, are allowed to be discharged from the site with storm water. All solid waste, including disposable materials incidental to the major construction activities, must be collected and placed in containers. The containers are to be emptied as necessary by a contract trash disposal service and hauled away from the site. Substances that have the potential for pollution surface and/or groundwater must be controlled by whatever means necessary in order to ensure that they do not discharge from the site.

### **D. Sanitary Facilities**

All personnel involved with construction activities must comply with state and local sanitary or septic system regulations. Temporary sanitary facilities are to be provided at the site throughout the construction phase. They must be utilized by all construction personnel and be serviced by a commercial operator.

### **E. Water Source**

Non-storm water components of site discharge must be uncontaminated water. Water used for construction which discharges from the site must originate from a public water supply or private well approved by the State Health Department. Water used for construction that does not originate from an approved public supply must not discharge from the site.

#### F. Concrete Batch Plant

Stormwater from a temporary concrete batch plant will discharge to specifically designated diked areas prepared to prevent runoff from discharging from the site. The location of the concrete batch plant is to be determined during final design. The cured residue from the diked areas shall be disposed in accordance with applicable state and federal regulations.

#### G. Concrete Waste from Concrete Ready-Mix Trucks

Discharge of excess or waste concrete and/or wash water from concrete trucks will be allowed on the construction site, but only in specifically designated diked areas prepared to prevent contact between the concrete and/or wash water and storm water that will be discharged from the site. Alternatively, waste concrete can be placed into forms to make riprap or other useful concrete products. The cured residue from the concrete washout diked areas shall be disposed in accordance with applicable state and federal regulations.

#### H. Fuel Tanks

Temporary on-site fuel tanks for construction vehicles shall meet all state and federal regulations. Tanks shall have approved spill containment meeting the capacities required by the applicable regulations. The tank shall be in sound condition free of rust or other damage, which might compromise containment. Hoses, valves, fittings, caps, filler nozzles, and associated hardware shall be maintained in proper working condition, and as specified by the manufacture, at all times.

#### I. Hazardous Waste Management and Spill Reporting

Any hazardous or potentially hazardous waste that is brought onto the construction site shall be handled properly in order to reduce the potential for storm water pollution. All materials used on this construction site to be properly stored, handled and dispensed following any applicable label directions. Material Safety Data Sheets (MSDS) are to be kept on site for any and all applicable materials.

Immediate action shall be taken by the General Contractor to contain and remove any spilled material. All hazardous materials shall be disposed of the Contractor in the manner specified by local, state, and federal regulations and by the manufacturer of such products. Spill shall be reported to the appropriate state and local agencies as soon as possible. The Clean Water Act requires that any spill or discharge entering the waters of the United States be properly reported.

Any spills of hazardous materials in quantities in excess of Reportable Quantities as defined by EPA or the State Agency regulations, shall be immediately reported to the EPA National Response Center (1-800-424-8802) and the NYSDEC Division of Environmental Remediation (NYS Spill Hotline, 1-800-457-7362). The reportable quantity for petroleum products is 5-gal. Refer to Exhibit 1.1-1 of the NYSDEC Division of Environmental Remediation Technical Field Guidance Spill Reporting and Initial Notification Requirements, under separate cover, for hazardous materials spill reportable quantities and procedures.

In order to help minimize the potential for a spill of hazardous materials to come in contact with storm water, the following steps are to be implemented:

- All materials with hazardous properties (such as pesticides, petroleum products, fertilizers, detergents, construction chemicals, acids, paints, paint solvents, cleaning solvents, additives for soil stabilization, concrete curing compounds and additives, etc.) to be stored in a secure location, under cover, when not in use.
- The minimum practical quantity of all such materials shall be kept on the job site and scheduled for delivery as close to time of use as practical.
- A spill control and containment kit (containing for example, absorbents, such as kitty liter or sawdust, acid neutralizing agents, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.) to be provided at the storage site.
- All of the product in a container shall be used before the container is disposed of. All such containers to be triple rinsed, with water prior to disposal. The rinse water used in these containers shall be disposed of in a manner in compliance with state and federal regulations and shall not be allowed to mix with storm water discharges.
- All products to be stored in and used from the original container with the original product label.
- All products to be used in strict compliance with instructions on the product label.
- The disposal of excess or used products shall be in strict compliance with instructions on the product label.

#### J. Allowable Non-Stormwater Discharges

The following non-stormwater discharges are allowed as indicated in this SWPPP:

- Vehicle wash water if no detergents are used
- Firefighting activities
- Fire hydrant flushing, with chlorine residuals of 0.2-ppm or less
- Potable water sources including water line flushing, with chlorine residuals of 0.2-ppm or less
- Uncontaminated groundwater or spring water (with geotechnical evaluation only)
- Building wash water if no detergents are used
- Water used to control dust
- Uncontaminated excavation dewatering (with geotechnical evaluation only)



## **VII. Stormwater Management**

As noted in Chapter 3 of the 2010 NYS SMDM, planners and designers must address stormwater management in accordance with the following five-step process:

1. Site planning to preserve natural features and reduce impervious cover;
2. Calculation of the water quality volume for the site;
3. Incorporation of green infrastructure techniques and standard SMPs with Runoff Reduction Volume (RRv) capacity;
4. Use of standard SMPs, where applicable, to treat the portion of water quality volume not addressed by green infrastructure techniques and standard SMPs with RRv capacity; and
5. Design of volume and peak rate control practices where required.

And as noted in Chapter 4 of the NYS SMMDM, the SWPPP must demonstrate that all green infrastructure planning and design options are evaluated to meet the runoff reduction requirement and provide documentation if any components of the approach are not technically feasible. Thus, the following sections of this report address the above requirements with respect to site constraints and requirements for development of the project.

### **A. Site Planning to Preserve Natural Features (Step 1a)**

1. Preservation of Undisturbed Areas- This technique involves identification and delineation of important existing undisturbed features, such as native vegetated areas, riparian corridors, forests, and wetlands, and placement of the features into permanent conservation areas.

A majority of the project area is currently active agricultural, pasture or meadow, and forested lands. A meteorological study was performed for placement of the WTGs and areas that have been historically disturbed for farming activities were given precedence for location of the sites in order to help minimize the impact on existing undisturbed natural features. Out of the proposed 48 WTG sites, approximately 40 are situated in farm fields. The remaining WTG sites are located in meadows, lightly forested areas, or on the edge of forests. These locations were chosen based on the findings of the meteorological study and the ability to reduce the need for additional access roads where possible. Although the undisturbed natural features have been identified and disturbances to them minimized, placement of existing natural features into permanent conservation areas is not considered feasible due to the multiple private land owners involved and the linear, spread out nature of the project.

2. Preservation of Buffers- This measure involves identification, delineation, and preservation of natural vegetated buffers along perennial streams, rivers, and wetlands. The proposed WTG sites have been located to minimize stream crossings and utilize existing farm field access drives, where possible, to reduce the number of required new crossings. In order to position the WTGs at viable locations, as determined by the meteorological study, the proposed 13.6 miles of access road must cross a tributary of the Chaumont River at 1 location and tributaries of the Buttermilk Creek at 4 locations. These required crossings have been designed as close as possible to right angles and located in sparsely buffered areas to minimize disturbance and help preserve riparian ecosystems and habitats. Refer to the map included as part of *Exhibit 5* for the proposed culvert and electric line crossing locations.
3. Reduction of Clearing and Grading- This component involves limiting clearing and grading of the site to the minimum amount needed for the development to function. As such, the proposed project is to limit clearing along the access roads and WTG sites to the minimum amount required for installation of the infrastructure

and required stormwater management facilities. Thus, areas cleared for installation of the temporary 10 foot wide compacted earth or gravel shoulders, along the 16 foot wide access roads, are to be reclaimed to their pre-construction conditions for post stormwater mitigation. The proposed access roads have been designed to allow for installation of multiple WTG sites in key locations.

4. **Locating Development in Less Sensitive Areas-** This practice involves location of development to avoid sensitive resource areas such as floodplains, steep slopes, erodible soils, wetlands, mature forests, and critical habitat areas. All WTG sites have been located outside of the 100-year floodplain in order to help preserve riparian ecosystems and habitats. Other key environmental areas, such as wetlands and critical habitat areas have been avoided where possible. Crossings of these features have been located at the narrowest points to further reduce potential impacts. The DEIS further addresses sensitive areas requiring mitigation and permitting due to proposed disturbances. In addition, the proposed access roads have been laid out to fit the site terrain and preserve the natural hydrology and drainage ways.
5. **Open Space Design-** This technique involves clustering of development to reduce overall impervious cover while providing more undisturbed open space. The technique is more applicable to site developments such as residential subdivisions and commercial facilities. However, the WTG sites have been located along common access roads, which provide some degree of clustering and preservation of open space.
6. **Soil Restoration-** This component is a required practice to be applied across areas of development scheduled for vegetative measures. It involves mechanical de-compaction, compost amendment, or both if necessary to recover the original properties and porosity of the soils. Thus, areas cleared for installation of the temporary 10 foot wide compacted earth or gravel shoulders and temporary WTG turnarounds are to be restored to pre-construction conditions.

#### **B. Reduction of Impervious Cover (Step 1b)**

1. **Roadway Reduction-** This item involves reduction of roadway lengths and widths, where possible, to reduce overall imperviousness. This component has been addressed as noted above to minimize the impacts on natural features.
2. **Sidewalk Reduction-** This measure involves reduction of sidewalk lengths and widths, where possible, to reduce overall imperviousness. This objective has been met, as sidewalks are not proposed as part of the project.
3. **Driveway Reduction-** This practice involves reduction of driveway lengths and widths, where possible, to reduce overall imperviousness. The proposed O&M facility is to be located as close as possible to the front setback line as permitted by local municipal code and as necessary to allow for adequate room to maneuver equipment required for construction and maintenance of the proposed facilities. This will limit the length of the proposed gravel driveway. Limiting the length of the driveway and the use of a gravel surface instead of asphalt will reduce the creation of imperviousness.
4. **Cul-de-sac Reduction-** This component involves minimizing impervious areas created from cul-de-sacs by reducing pavement to the minimum required diameter for emergency vehicles, incorporating landscape areas, elimination of them or using turnarounds instead, if possible. This objective has been met, as cul-de-sacs are not proposed for this project.
5. **Building Footprint Reduction-** In general, this measure involves use of multi-story residential and commercial buildings, where possible, to reduce the project's impervious footprint. The proposed project

involves installation of only one building for O&M. As its primary use will be for storage of heavy equipment, implementation of a multi-story facility to reduce the building's footprint is neither practical nor necessary for compliance with this measure. However, some other facets of this practice that have been implemented into the design of the O&M site include, reduction of the overall building footprint to the minimum size required for the facility and reduction of directly connected impervious areas to the building, such as the proposed parking lot and storage area.

6. **Parking Reduction-** This practice involves reduction of the overall imperviousness by elimination of unneeded spaces, minimizing stall dimensions, utilizing efficient parking lot layouts, and using porous pavements in overflow parking areas where possible. The proposed gravel parking lot for the O&M site has been laid out to the minimum requirements of the municipality, while using standard 90 degree stalls to minimize access aisles. The proposed vegetated areas around the parking lot and building can be used for overflow parking, if necessary. The outdoor storage area is proposed at the minimum size needed for future component staging during maintenance. As the proposed parking lot and storage area are to remain gravel and pervious pavement will not be required for overflow parking, the proposed project will achieve further reduction of imperviousness.

### C. Storm Water Quality Calculation (Step 2)

The proposed project involves soil disturbances and installation of impervious surfaces over multiple properties and drainage areas. As such, a typical access road and associated turbine sites have been selected that represent the overall stormwater conditions that will be encountered during final design of the project. The area is identified as WTG 1-5, SDA 1 through 9 on the map included as part of *Exhibit 8*.

In accordance with Chapter 4 of the SMDM, projects that cannot be designed to achieve runoff reduction to pre-construction conditions must, at minimum, reduce a percentage of the runoff (calculated WQv) from impervious areas to be constructed on site. This percent reduction is to be based on the soil conditions at hand, as indicated in the following table.

| Hydrologic Soil Group<br>(HSG) | Reduction Factor<br>(S) |
|--------------------------------|-------------------------|
| A                              | 0.55                    |
| B                              | 0.40                    |
| C                              | 0.30                    |
| D                              | 0.20                    |

Based on the existing soils in the project area, the project needs to address slightly above 20 percent of the proposed impervious area runoff as a majority of the project area is classified as Type D soils. The following is a discussion of the proposed design and the methods employed to address Storm Water Quality.

The proposed access roads are being designed to match the existing topography as closely as possible to retain the existing drainage patterns, minimize impacts to wetlands, and minimize impacts to the local land owners' agricultural operations.

In the example provided in Exhibit 8, 90% of the proposed access roads and crane pads can be constructed at grade with the existing ground surface. One culvert is required to cross an existing channelized water course and/or to achieve the necessary vertical curve design criteria for the construction traffic. The following is a discussion of the approach to the storm water quality controls in both situations.

Proposed Gravel Surfaces At-Grade with the Existing Ground Surface:

Based on the current Storm Water regulations for the example area in *Exhibit 8*, the proposed gravel surfaces that are at grade with the existing ground would require Storm Water Quality practices to divert approximately 257 acres of water through new up gradient channelized facilities to reduce the treatment area, or create large down gradient channels or impoundments as a method of treatment. While implementation of these water quality treatment practices could meet the letter of the law with respect to the Storm Water regulations, either technique would significantly alter the existing drainage patterns, introduce new pipes and culverts, channelize flow or create standing water and increase hydrostatic pressure on the subsurface soils and bedrock, increase the overall impact area for the project, potentially alter wetland hydrology, and significantly alter agricultural operations. These methods would also be inconsistent with Step 1a above which is intended to minimize the footprint of the project and significantly increase the potential to worsen the existing Karst conditions in the project area.

In addition, it is important to consider the nature and function of the proposed gravel surfaces and the potential for contaminants that the Storm Water quality regulations have been designed to address. The proposed access roads will be private facilities, used by the turbine maintenance personnel, typically in pickup trucks, on an infrequent basis. Unlike public roadways, parking lots, or other impervious asphalt developments, subject to constant traffic, roadway maintenance (periodic asphalt overlays, oil and stone chip sealing, cold patch pothole filling, etc), and de-icing operations, the proposed gravel surfaces will not be subject to these conditions. The potential for contaminants is very low due to limited maintenance vehicle use.

During a typical storm event, there will be a first flush of the proposed gravel surface that will either cause the contaminants to infiltrate into the gravel surface, or migrate to the down gradient side of the roadway. At that point, any contaminants that may have been present on the roadway will be filtered through the reclaimed and existing vegetative strips that extend well beyond the 60-120 feet (as required by the regulations if a vegetative strip is created for a new development project). As the roads will not be subject to continual traffic, and are not asphalt, no additional contaminants will be introduced and further sheet flow conditions over the roadway will not likely contain contaminants that need to be filtered.

Therefore, in an effort to provide storm water quality measures that meet the intent of the regulations, without creating harmful unintended consequences to the environment and the local landowners, the project will employ vegetative filter strips along the access roads and around turbines to connect to the existing pastures, meadows, and forested areas. In active agricultural fields, the project will employ a 5-foot vegetative filter strip around all gravel areas to balance the need to contain any first flush contaminants and not significantly impact local landowner's farms. This approach is also consistent with the recommendations for storm water controls in Karst areas.

Proposed Culverts Located in Existing Channels or to Meet Design Criteria:

Approximately 30 pipes or culverts will be required for the project along the proposed access roads. Twenty-six (26) of the culverts will carry a proposed access road over an existing water channel. In these areas, any water collected by the toe of slope, on the up gradient side of the proposed roadway, will be diverted along the toe of slope to the existing water channel and through the proposed culvert under the roadway. The water will then continue on the original intended drainage path. No quality treatment is required.

In the four (4) locations where a clearly defined channel may not exist, but the project requires a new pipe due to an increase in the roadway profile over the existing ground surface, the up gradient toe of slope of the proposed roadway will collect any surface water drainage and convey it through the new culvert under the

proposed roadway. In these instances, water will likely only flow through the pipe in large storm events. Otherwise, the up- and down gradient sides of the proposed roadway will retain the existing surface characteristics.

In both culvert situations, only the flow off the proposed gravel surfaces would require quality treatment. Similar to the discussion above, the project proposes to construct vegetative filter strips to connect to the existing pastures, meadows, and forested areas or maintain a 5-foot vegetative buffer around gravel areas adjacent to active farm fields.

*Exhibit 8* contains a table of Water Quality Volumes (WQv) for the typical string of turbines. The table contains the volumes that would be required to fully mitigate flows based on the current regulations, and the flows if only the proposed gravel surfaces are considered for quality treatment.

It is the conclusion of this report that the discussion and methods provided above do not meet the explicit regulations for Storm Water Quality controls but that they do meet the intent and goals of the NYS DEC related to Storm Water Quality.

Beyond the proposed permanent gravel surfaces, the final stormwater quality mitigation design is to provide WQv and RRv treatment via the methods indicated below for the following proposed development components:

1. Temporary Staging Areas and Potential Temporary Concrete Batch Plant- As these areas are temporary, no permanent post-construction storm water quality controls are required or proposed. However, natural filter strips, sediment traps, silt fence, and other measures deemed appropriate for use in Karst areas or near waterways are to be implemented and detailed during final design.
2. Underground Electric Collection System and Overhead Collection Lines- As these items will add no imperviousness to the drainage areas, no permanent post-construction storm water quality controls are required or proposed. However, natural filter strips, sediment traps, silt fence, and other measures for E&S Control, which will also provide some stormwater quality treatment, are to be installed and maintained, as necessary, until all disturbed soils due to construction activities are re-vegetated.
3. O&M Facility- The stormwater quality practices that are to be considered and detailed further during final design of the project for this portion of the development include Sheet Flow to Filter Strips; Tree Plantings/Tree Boxes; Stormwater Planters; Standard SMPs with RRv Capacity such as Infiltration and Bioretention basins.; and all other conforming practices identified in the SMDM for treating the remaining WQv and stormwater quantity from the site. The O&M facility will be designed to meet Storm Water regulations.
4. Substations- Maintain existing drainage conditions and sheet flow to natural agricultural or forested filter strips similar to the gravel access roads and turbine sites. Note that gravel substation pads were commented on in the question / answer period prior to adoption of the current regulations. The response was that these types of facilities may not require treatment measures as the pads are not typically compacted to be impervious. The NYSDEC indicated the regional office should be contacted for further direction.
5. Meteorological Towers- Maintain existing drainage conditions and sheet flow to adjacent agricultural or forested filter strips.

The following sections of this report substantiate the selection of green infrastructure and SMPs specified above for mitigation of the RRv and WQv, which are to be implemented during final design of the project to achieve compliance.

**D. Green Infrastructure Technology and Standard SMPs with RRv Capacity (Step 3).**

1. Conservation of Natural Areas- This green infrastructure measure involves permanent preservation of natural areas. This practice requires establishment of legal protective easements that would be required over various properties and across multiple farmlands. As the proposed project involves leasing of these property for installation of the WTGs and access roads, this practice is not considered technically feasible for credit towards RRv. It should be noted, however, that the rural nature and use of the existing lands does not lend itself to significant future development that would significantly reduce the existing / proposed vegetative filter strips along the proposed gravel roadways. Further, the current local code for wind farms includes a provision that occupied residences should be 1,250 feet from turbines. The local codes requirements will further minimize the potential for future development in the existing pastures, forests and agricultural lands.
  
2. Sheet flow to Riparian Buffers or Filter Strips- This measure involves the use of vegetative filter strips or riparian buffers and stream buffers for stormwater quality treatment. This practice is the primary treatment option as discussed above.

The design of these devices is to be based on a maximum contributing length of 150 feet. As the Impervious Contributing (IC) area of the proposed haul road is 16 feet, the Pervious Contributing (PC) area that drains to the proposed devices shall not exceed 134 feet. In addition, the proposed vegetated filters and undisturbed riparian buffers to be implemented shall be based on the conditions and widths specified in the following table:

| Filter Strip or Riparian Buffer Slope (%) | Width for HSG A & B (ft) | Width for HSG C (ft) | Width for HSG D (ft) |
|---|--------------------------|----------------------|----------------------|
| 0 to 8                                    | 50 feet                  | 58 feet              | 60 feet              |
| 8 to 12                                   | 75 feet                  | 87 feet              | 90 feet              |
| 12 to 15                                  | 100 feet                 | 115 feet             | 120 feet             |
| >15                                       | Do Not Use               | Do Not Use           | Do Not Use           |

\*A level spreader shall be used for slopes that exceed 3%.

Although the design of the proposed filter strips vary from the standards in the SMDM, utilizing the natural features adjacent to the disturbed areas provides more than the minimum width required and meets the intent of the SMDM. In no case is an existing filter strip width less than the required 60 feet.

Refer to *Exhibit 8* for a map that delineates the typical sub-drainage area used and the typical calculations performed for the above proposed practice.

3. Vegetated Open Swales- This measure involves use of natural turf lined drainage paths or engineered channels in lieu of closed conduits or paved channels to increase the time of concentration, reduce peak discharge, and provide infiltration. As the proposed project is mainly situated within and over Karst areas, poor draining soils, shallow bedrock, and in a cold-climate area, the use of this practice is not advised. Further, as discussed above, the use of channels will significantly impact drainage patterns and local farming operations.
  
4. Tree Plantings/Tree Boxes- This practice involves conservation of existing trees and, or planting of new trees in concentrated groupings and individual trees in tree boxes or pits near impervious areas to reduce

runoff, promote evapotranspiration, increase nutrient uptake, provide shading and thermal reductions, and encourage wildlife habitat. Preservation of trees was performed to the extent possible, as discussed under Section A above. Further, while new trees will not be planted for the project, the temporary impact areas will be restored, stabilized and trees will be allowed to regrow to preconstruction conditions. The O&M Facility may include new tree plantings, which are to be considered during final design.

5. Disconnection of Rooftop Runoff- This measure involves disconnection of direct runoff from residential rooftop areas and upland runoff flow to designated pervious areas to reduce runoff volumes and rates. This practice can only be applied where filtration/infiltration areas follow. Use of this practice is proposed for the O&M building. However, calculation to determine its effectiveness are not included herein, as the proposed treatment facility for the O&M site is to be sized to provide full water quality mitigation for the site.
6. Stream Daylighting for Redevelopment Projects- This practice involves removal of existing culverts and piped networks to restore streams to their natural condition for better attenuation of runoff by increasing storage size, promoting infiltrations, reducing velocity, and to help mitigate pollutant loads where feasible and practical. This practice is not applicable, as the proposed project does not involve redevelopment or contain piping that can be removed.
7. Rain Garden- The intent of this practice is to manage and treat small volumes of runoff by use of a planted shallow depressed area overlying a conditioned soil bed for filtration of runoff. This simplified version of a bioretention facility is most commonly used in residential settings and in accordance with Chapter 5 of the SMDM, cannot be used to treat parking lot or roadway runoff. Thus, this practice is not a valid option for the proposed access roads. In addition, as this practice requires approximately 6 to 8 feet of usable soil and the majority of the WTG site are located over shallow bedrock or near Karst areas, its use is not technical feasible.
8. Green Roof- This measure is used to capture and treat runoff via a layer of vegetation and soil installed on flat or sloping roofs. It utilizes evaporation and evapotranspiration process to reduce runoff volume and provides filtration for stormwater quality treatment. This practice is only applicable to the O&M building. As the project proposes treatment of the entire WQv from the site, as indicated above, use of this practice is not necessary.
9. Stormwater Planter- This measure consists of small landscaped vessels designed to filter and infiltrate stormwater to decrease stormwater quantity and improve quality. These planters are uniquely suited for urban redevelopment sites. This practice is only applicable to the O&M building and is to be implemented on site if necessary.
10. Rain Barrel/Tank/Cistern- These types of practices are used to capture and store stormwater runoff for watering of lawn and landscaped areas or other non-potable water use activities such as washing vehicles or filling swimming pools. Although these items could be implemented for treatment of stormwater from the O&M building rooftop, the collected water would be infrequently used due to the type of facility, and lack of use will result in unattenuated discharges. Thus, due to the nature of the proposed facility, this practice is not considered a viable option.
11. Porous Pavement- This practice is an alternative to conventional paved surfaces for infiltration of rainfall to achieve a reduction in runoff and some treatment of pollutants through filtration by the underlying soils. There are various types of these surfaces that can be used for items such as roads, parking lots, and sidewalks. While not identified as a porous pavement, the proposed gravel access roads will experience

some level of infiltration. Further, the major limitations to this type of practice consist of site grades, sub-soils, drainage characteristics, groundwater conditions, and climate. As the proposed project is mainly situated within and over Karst areas, poor draining soils, shallow bedrock, and is located in a cold-climate areause of this practice is not advised.

#### E. Use of Standard SMPs (Step 4)

The intent of the project layout is to balance impacts to agricultural and wooded areas and minimize impacts to wetlands, agricultural operations, and sensitive environmental areas. The project is to only disturb the minimum amount of land required for installation of the proposed project components and to obtain runoff reduction to the fullest extent practicable with respect to the conditions at hand. As this is a linear utility project with soil disturbance and proposed impervious areas scattered over multiple properties and drainage courses, the use of traditional post-construction SMPs is not feasible or appropriate as justified above, except possibly at the O&M Facility, as noted above.

#### F. Stormwater Quantity (Step 5)

The proposed culverts have been designed to handle the 10-year design storm for non-stream crossings and the 25-year design storm for stream crossings. Peak flow was determined using the HydroCAD 9.1 computer program which utilized the TR-20 methodology. In addition, culverts were sized using the Bentley Culvert Master 3.3 computer program which incorporates the Federal Highway Administration (FHWA) Hydraulic Design of Highway Culverts (HDS #5) manual design requirements. *Exhibit 9* includes the design calculations to size the proposed culvert shown along the access road between turbines 1 to 5. Based on the table, the runoff rate increases range from 0.11 cfs to 2.98 cfs.

As the proposed design maintains the existing sheet flow characteristics to convey drainage, the proposed improvements do not include channels or impoundments to capture and slow run-off rates. As discussed previously, these types of facilities are not recommended for the project area due to Karst conditions, the impacts to farm fields, natural drainage characteristics, wetlands, and because they increase the overall footprint of the project into existing natural areas. The minor increases in flow rates for the project will have no significant impact on the area and be virtually imperceptible. Therefore, new quantity control measures are not proposed for the project with the exception of the O&M facility which will be designed to fully meet Quality and Quantity regulations as required by the SPDES GP-0-10-001.



## **VIII. Construction Inspection and Maintenance**

### **A. Inspection Schedule**

The Owner/Operator shall have a Qualified Professional conduct an assessment of the site prior to the commencement of any non-erosion and sediment control construction work and report that the appropriate erosion and sediment controls described herein have been installed adequately for construction of the project to begin.

Construction observations shall be completed upon commencement of disturbance at least one time every 7 days until final stabilization of the site is achieved. Construction observation reports shall be performed by the Qualified Inspector after each observation and filed with the SWPPP. A digital photograph, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions shall be included with the inspection report. In addition, the Qualified Inspector shall take a digital photograph, with date stamp, that clearly shows the condition of the practice after the corrective action has been completed. A copy of each required report form is included as part of *Exhibit 7*.

### **B. Observation and Maintenance Practices**

The following observation and maintenance practices shall be used to maintain the proposed erosion and sediment controls and all post construction stormwater management practices identified herein throughout construction:

1. Construction Entrances are to be inspected for evidence of off-site sediment tracking where vehicles exit the project area. Each contractor and subcontractor is responsible for maintaining the construction entrance and other controls as previously described.
2. Material storage areas that are exposed to precipitation are to be inspected. Offsite storage areas for materials used exclusively for the project are to be included in the inspections and inspections reports are to be completed.
3. Swales shall be observed for breaches and they shall be repaired when found.
4. Check Dams shall be inspected for depth of sediment and built-up sediment shall be removed prior to it exceeding a depth of one-third the height of the dam.
5. Sediment Traps, if required, shall be inspected for depth of sediment and built-up sediment shall be removed prior to it exceeding a depth greater than 50-percent of the basin, as measured at the outlet of the structure. Vegetation within the structure shall be limited to a maximum height of 18-inches. The outlet device shall be cleaned when drawdown time exceeds 36 hours and repaired as necessary. Note that these devices shall be used for snow storage, if required, during construction.
6. All sediment and debris removed from a practice shall be disposed of in accordance with all applicable waste disposal regulations.
7. Temporary and Permanent Seeding, as well as Plantings shall be inspected for washouts, bare spots, and healthy growth. Washout areas shall be stabilized by jute-mesh, sod, or other approved energy dissipation means. Bare spots and unhealthy growth areas shall be re-established, as required.

8. All measures shall be maintained in good working order and in accordance with the latest edition of the NYSSESC. If a repair is necessary, it shall be initiated within 24 hours of report and completed within 48-hours thereafter.

#### C. Inspection Reporting

Construction observation reports shall be performed by the Qualified Professional after each observation and filed with the SWPPP.

Additional forms, which can be found on the NYS DEC webpage, such as the “NYS DEC Inspection Checklist”, should be reviewed by the Owner/Operator or a duly authorized representative, prior to allowing commencement of construction. Note that a duly authorized representative must have written authorization from the Owner/Operator to sign documents and that a copy of the authorization must be submitted to the NYS DEC. The forms shall be posted on-site in a publicly-accessible location.

#### D. Site Stabilization Inspections

The site shall be cleaned of all construction debris prior to demobilization. Temporary erosion and sediment control practices shall be removed when soils are stabilized, as determined by the Qualified Professional. After the Qualified Professional declares final stabilization of the site and reports that all temporary controls have been removed, the NOT shall be signed by the Owner/Operator and filed with the NYS DEC. Note that all permanent stormwater management structures, including required structures due to modifications of the SWPPP, shall be listed on the NOT.

#### E. Modifications/Revisions

Any necessary modifications to this SWPPP shall be implemented within 7 calendar days of an inspection. Modifications are necessary if a control measure or procedure does not provide adequate pollutant control. All revisions are to be recorded in the Construction Log Book, included in *Exhibit 7* within 7 calendar days of an inspection.

## **IX. Post-Construction Operation and Maintenance Procedures**

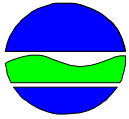
As the proposed project involves permanent storm water management practices, a post-construction operation and maintenance plan is to be developed during final design. The plan shall be in accordance with the GP-0-10-001 and the SMDM and contain at minimum the following items:

1. Inspection and maintenance schedules and actions to ensure continuous and effective operation of each proposed post-construction stormwater management practice;
2. Identification of the entity that will be responsible for the long term operation and maintenance of each practice;
3. A legally binding and enforceable mechanism, such as a deed covenant for continued operation and maintenance of the facility by the Owner/Operator. The mechanism shall protect the post-construction stormwater mitigation practices specified herein from neglect, adverse alterations and, or unauthorized removal;
4. A sign posted in the immediate vicinity of the of each Runoff Reduction Practice (RRP) and SMP bearing the Name of the Practice, SPDES Construction Permit Number, "Must Be Maintained in Accordance with O&M Plan, and "DO NOT REMOVE OR ALTER". As this project is linear in nature and extends over 1,100 acres of land, this SWPPP proposed that only one sign be posted at the O&M facility for identification and location of each post-construction stormwater mitigation practices in a conspicuous location. This sign is to be at minimum 18 x 24 inches and contain an overall map of the project area that identifies the specific location of each practice;
5. A copy of the design schematics for each specified practice with the measurements of design specifications clearly defined; and
6. A list of maintenance requirements and frequency and a maintenance log for tracking and observation of each post-construction stormwater mitigation practice.

**APPENDIX A**

***Exhibit 1: Notice of Intent (NOI ) Application***

# NOTICE OF INTENT



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

**NYR**   
(For DEC use only)

**Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-10-001**  
All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

**- IMPORTANT -**  
**RETURN THIS FORM TO THE ADDRESS ABOVE**  
OWNER/OPERATOR MUST SIGN FORM

### Owner/Operator Information

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

Owner/Operator Contact Person Last Name (NOT CONSULTANT)

Owner/Operator Contact Person First Name

Owner/Operator Mailing Address

City

State  Zip  -

Phone (Owner/Operator)  -  -  Fax (Owner/Operator)  -  -

Email (Owner/Operator)

FED TAX ID  -  (not required for individuals)



3. Select the predominant land use for both pre and post development conditions.  
**SELECT ONLY ONE CHOICE FOR EACH**

**Pre-Development  
Existing Land Use**

- FOREST
- PASTURE/OPEN LAND
- CULTIVATED LAND
- SINGLE FAMILY HOME
- SINGLE FAMILY SUBDIVISION
- TOWN HOME RESIDENTIAL
- MULTIFAMILY RESIDENTIAL
- INSTITUTIONAL/SCHOOL
- INDUSTRIAL
- COMMERCIAL
- ROAD/HIGHWAY
- RECREATIONAL/SPORTS FIELD
- BIKE PATH/TRAIL
- LINEAR UTILITY
- PARKING LOT
- OTHER

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**Post-Development  
Future Land Use**

- SINGLE FAMILY HOME
- SINGLE FAMILY SUBDIVISION
- TOWN HOME RESIDENTIAL
- MULTIFAMILY RESIDENTIAL
- INSTITUTIONAL/SCHOOL
- INDUSTRIAL
- COMMERCIAL
- MUNICIPAL
- ROAD/HIGHWAY
- RECREATIONAL/SPORTS FIELD
- BIKE PATH/TRAIL
- LINEAR UTILITY (water, sewer, gas, etc.)
- PARKING LOT
- CLEARING/GRADING ONLY
- DEMOLITION, NO REDEVELOPMENT
- OTHER

Number of Lots

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

5. Is this a project which does not require coverage under the General Permit (e.g. Project done under an Individual SPDES Permit, or department approved remediation)?  Yes  No

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

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

| Total Site<br>Acreage  | Acreage To<br>Be Disturbed | Existing Impervious<br>Area Within Disturbed | Future Impervious<br>Area Within Disturbed |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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8. Do you plan to disturb more than 5 acres of soil at any one time?  Yes  No

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

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30. Provide the total water quality volume required and the total provided for the site.

WQv Required  
   .    acre-feet

WQv Provided  
   .    acre-feet

31. Provide the following Unified Stormwater Sizing Criteria for the site.

**Total Channel Protection Storage Volume (CPv)** - Extended detention of post-developed 1 year, 24 hour storm event

CPv Required  
   .    acre-feet

CPv Provided  
   .    acre-feet

31a. The need to provide for channel protection has been waived because:

- Site discharges directly to fourth order stream or larger

**Total Overbank Flood Control Criteria (Qp)** - Peak discharge rate for the 10 year storm

Pre-Development  
   .    CFS

Post-development  
   .    CFS

**Total Extreme Flood Control Criteria (Qf)** - Peak discharge rate for the 100 year storm

Pre-Development  
   .    CFS

Post-development  
   .    CFS

31b. The need to provide for flood control has been waived because:

- Site discharges directly to fourth order stream or larger
- Downstream analysis reveals that flood control is not required

**IMPORTANT:** For questions 31 and 32, impervious area should be calculated considering the project site and all offsite areas that drain to the post-construction stormwater management practice(s). (Total Drainage Area = Project Site + Offsite areas)

32. Pre-Construction Impervious Area - As a percent of the Total Drainage Area enter the percentage of the existing impervious areas before construction begins.

%

33. Post-Construction Impervious Area - As a percent of the Total Drainage Area, enter the percentage of the future impervious areas that will be created/remain on the site after completion of construction.

%

34. Indicate the total number of post-construction stormwater management practices to be installed/constructed.

35. Provide the total number of stormwater discharge points from the site. (include discharges to either surface waters or to separate storm sewer systems)



***Exhibit 2: NYSDEC Permit Authorization Letter***



*Exhibit 3: SPDES GP-0-10-001*



NEW YORK STATE  
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT  
FOR STORMWATER DISCHARGES

from

**CONSTRUCTION ACTIVITY**

Permit No. GP-0-10-001

Issued Pursuant to Article 17, Titles 7, 8 and Article 70  
of the Environmental Conservation Law

Effective Date: January 29, 2010

Expiration Date: January 28, 2015

William R. Adriance  
Chief Permit Administrator

*William R. Adriance*  
Authorized Signature

*January 28, 2010*  
Date

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

## PREFACE

Pursuant to Section 402 of the Clean Water Act (“CWA”), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System* (“NPDES”) permit or by a state permit program. New York’s *State Pollutant Discharge Elimination System* (“SPDES”) is a NPDES-approved program with permits issued in accordance with the *Environmental Conservation Law* (“ECL”).

This general permit (“permit”) is issued pursuant to Article 17, Titles 7, 8 and Article 70 of the ECL. An *owner or operator* may obtain coverage under this permit by submitting a Notice of Intent (“NOI”) to the Department. Copies of this permit and the NOI for New York are available by calling (518) 402-8109 or at any New York State Department of Environmental Conservation (“the Department”) regional office (see Appendix G). They are also available on the Department’s website at:

<http://www.dec.ny.gov/>

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

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

**NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES**

**FROM CONSTRUCTION ACTIVITIES**

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## **Part I. PERMIT COVERAGE AND LIMITATIONS**

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

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;
2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants* to *surface waters of the State*.
3. *Construction activities* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land.

**B. Maintaining Water Quality** - It shall be a violation of this permit and 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.

### **C. 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 D. of this Part.
2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater discharges from *construction activities*.

**(Part I. C)**

3. Notwithstanding paragraphs C.1 and C.2 above, the following non-stormwater *discharges* may be authorized by this permit: discharges from fire fighting activities; fire hydrant flushings; waters to which cleansers or other components have not been added that are used to wash vehicles or control dust in accordance with the SWPPP, routine external building washdown which does not use detergents; pavement washwaters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used; air conditioning condensate; uncontaminated groundwater or spring water; uncontaminated discharges from construction site de-watering operations; and foundation or footing drains where flows are not contaminated with process materials such as solvents. For those entities required to obtain coverage under this permit, and who discharge as noted in this paragraph, and with the exception of flows from fire fighting activities, these discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with water quality standards in Part I.B.

**D. Activities Which Are Ineligible for Coverage Under This General Permit** - All of the following are **not** authorized by this permit:

1. *Discharges* after *construction activities* have been completed and the site has undergone *final stabilization*;
2. *Discharges* that are mixed with sources of non-stormwater other than those expressly authorized under subsection C.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, subparagraph K of this permit;
4. *Discharges* from *construction activities* that adversely affect a listed, or proposed to be listed, endangered or threatened species, or its critical habitat;
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 that:
  - a. are tributary to waters of the state classified as AA or AA-s; and

**(Part I. D. 6)**

- b. disturb one or more acres of land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey for the County in which the disturbance will occur.
7. *Construction activities* for linear transportation projects and linear utility projects that:
  - a. are tributary to waters of the state classified as AA or AA-s; and
  - b. disturb two or more acres of land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey for the County in which the disturbance will occur.
8. *Construction activities* that adversely affect a property that is listed or is eligible for listing on the State or National Register of Historic Places (Note: includes Archeological sites), unless there are written agreements in place with the NYS Office of Parks, Recreation and Historic Preservation (OPRHP) or other governmental agencies to mitigate the effects, or there are local land use approvals evidencing the same.

**Part II. OBTAINING PERMIT COVERAGE**

**A. Notice of Intent (NOI) Submittal**

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a *regulated, traditional land use control MS4* must first develop a SWPPP in accordance with all applicable requirements of this permit and then submit a completed NOI form to the address below in order to be authorized to *discharge* under this permit. The NOI form shall be one which is associated with this permit, signed in accordance with Part VII.H. of this permit.

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

2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first develop a SWPPP in accordance with all applicable requirements of this permit and then have its SWPPP reviewed and accepted by the *MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the “MS4 SWPPP Acceptance” form 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, and then submit that form along with the NOI to the address referenced under “Notice of Intent (NOI) Submittal”.



**(Part II. A)**

3. This requirement does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.E. (Change of Owner or Operator).
4. 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.
5. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

**B. Permit Authorization**

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.
2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied all of the following criteria:
  - a. project review pursuant to the State Environmental Quality Review Act (SEQRA) have been satisfied, when SEQRA is applicable,
  - b. where required, all necessary Department permits subject to the *Uniform Procedures Act (UPA)* (see 6 NYCRR Part 621) have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators of construction activities* that are required to obtain *UPA* permits must submit a preliminary SWPPP to the appropriate DEC Regional Office 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. an NOI has been submitted to the Department in accordance with the requirements of this permit.
3. An *owner or operator* that has satisfied the requirements of Part II.B.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:

**(Part II. B. 3)**

- 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 NOI for *construction activities* with a SWPPP that has been prepared in conformance with the technical standards referenced in Parts III.B.1, 2 and/or 3, or
  - ii. Sixty (60) business days from the date the Department receives a complete NOI for *construction activities* with a SWPPP that has not been prepared in conformance with the technical standards referenced in Parts III.B.1, 2 or 3.
- 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 a complete NOI and signed “MS4 SWPPP Acceptance” form,
4. The Department may suspend or deny an *owner’s or operator’s* coverage under this permit if the Department determines that the SWPPP does not meet the permit requirements.
5. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department.

**C. General Requirements For Owners or Operators With Permit Coverage**

1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination (NOT) has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4.
2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-10-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form and inspection reports at the construction site until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department.

**(Part II. C. 2)**

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 MS4 (provided the 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. 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 been temporarily or permanently ceased, temporary and/or permanent soil stabilization measures shall be installed and/or implemented within seven (7) days from the date the soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the most current version of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control.
  - 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. 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.

**(Part II. C)**

5. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the *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 *MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *MS4* prior to commencing construction of the post-construction stormwater management practice.

**D. Permit Coverage for Discharges Authorized Under GP-0-08-001**

1. Upon renewal of SPDES General Permit for Stormwater Discharges from Construction Activity (Permit No. GP-0-08-001), an *owner or operator* of *construction activity* with coverage under GP-0-08-001, as of the effective date of GP-0-10-001, shall be authorized to *discharge* in accordance with GP-0-10-001 unless otherwise notified by the Department.

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

Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or operator* was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

**Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)**

**A. General SWPPP Requirements**

1. 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*.

**(Part III. A)**

2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the pollutants in stormwater discharges and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.
3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.
4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP:
  - a. whenever the current provisions prove to be ineffective in minimizing pollutants in stormwater *discharges* from the site;
  - b. whenever there is a change in design, construction, or operation at the construction site that has or could have an effect on the discharge of pollutants; and
  - c. to address issues or deficiencies identified during an inspection by the *qualified inspector*, the Department or other regulatory authority.
5. The Department may notify the *owner or operator* at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit.
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.

**(Part III. A. 6)**

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

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.
8. The SWPPP must include documentation supporting the determination of permit eligibility with regard to Part I.D.8. (Historic Places or Archeological Resource). At a minimum, the supporting documentation shall include the following:

**(Part III. A. 8)**

- a. Information on whether the stormwater discharge or *construction activities* would have an effect on a property (historic or archeological resource) that is listed or eligible for listing on the State or National Register of Historic Places;
- b. Results of historic resources screening determinations conducted. Information regarding the location of historic places listed, or eligible for listing, on the State or National Registers of Historic Places and areas of archeological sensitivity that may indicate the need for a survey can be obtained online by viewing the New York State Office of Parks, Recreation and Historic Places (OPRHP) online resources located on their web site at: <http://nysparks.state.ny.us/shpo/online-tools/> (using The Geographic Information System for Archeology and National Register). OPRHP can also be contacted at: NYS OPRHP, State Historic Preservation Office, Peebles Island Resources Center, P.O. Box 189, Waterford, NY 12188-0189, phone: 518-237-8643;
- c. A description of measures necessary to avoid or minimize adverse impacts on places listed, or eligible for listing, on the State or National Register of Historic Places. If the *owner or operator* fails to describe and implement such measures, the stormwater *discharge* is ineligible for coverage under this permit; and
- d. Where adverse effects may occur, any written agreements in place with OPRHP or other governmental agency to mitigate those effects, or local land use approvals evidencing the same.

**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 most current version of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control. Where erosion and sediment control practices are not designed in conformance with this 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;

**(Part III. B. 1)**

- 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), wetlands and drainage patterns that could be affected by the construction activity; existing and final slopes; 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 the most current version of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, 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;



**(Part III. B. 1)**

- i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6., 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 most current version of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control;
  - 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 requirements in the most current version of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control. 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 standards.
2. Post-construction stormwater management practice component - All construction projects 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 most current version of the technical standard, New York State Stormwater Management Design Manual (“Design Manual”). If the Design Manual is revised during the term of this permit, an *owner or operator* must begin using the revised version of the Design Manual to prepare their SWPPP six (6) months from the final revision date of the Design Manual.

Where post-construction stormwater management practices are not designed in conformance with this technical standard, the *owner or operator* must demonstrate equivalence to the technical standard.

At a minimum, 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;

**(Part III. B. 2)**

- b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;
  - c. The dimensions, material specifications and installation details for each post-construction stormwater management practice;
  - d. Identification of any elements of the design that are not in conformance with the Design Manual. 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 standards;
  - e. A hydrologic and hydraulic analysis for all structural components of the stormwater management control system;
  - f. A detailed summary (including calculations) of the sizing criteria that was used to design all post-construction stormwater management practices. At a minimum, the summary shall address the required design criteria from the applicable chapter of the Design Manual; including the identification of and justification for any deviations from the Design Manual, and identification of any design criteria that are not required based on the design criteria or waiver criteria included in the Design Manual; and
  - g. 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 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.g. above.

**(Part III. C)**

**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. *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.

**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 and all post-construction stormwater management practices identified in the SWPPP are maintained in effective operating condition at all times.
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. Owner or Operator Maintenance Inspection Requirements**

1. The *owner or operator* shall inspect, in accordance with the requirements in the most current version of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, the erosion and sediment controls identified in the SWPPP to ensure that they are being maintained in effective operating condition at all times.
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 *owner or operator* can stop conducting the maintenance inspections. The *owner or operator* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. as soon as soil disturbance activities resume.
3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *owner or operator* 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.

(Part IV. C)

**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. **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

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

1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, 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 (5000) 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.

(Part IV. C. 2)

- b. For construction sites where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part II.C.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.
- c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the Regional Office stormwater contact person (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4*, the MS4 (provided the 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 Regional Office stormwater contact person (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4*, the MS4 (provided the 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.A.1..

**(Part IV. C. 3)**

3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices 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 that need repair or maintenance;
  - g. Identification of all erosion and sediment control practices that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;
  - h. Description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and/or final) since the last inspection;

**(Part IV. C 4)**

- 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 to correct deficiencies identified with the construction of the post-construction stormwater management practice(s); and
  - k. 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 any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.
  6. All inspection reports shall be signed by the *qualified inspector*. Pursuant to Part II.C.2., 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.A.1. The NOT form shall be one which is associated with this general permit, signed in accordance with Part VII.H.
2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:

**(Part V. A. 2)**

- 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.E.
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 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.
  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 also have the MS4 sign the “MS4 Acceptance” statement on the NOT. The *owner or operator* shall have the principal executive officer, ranking elected official, or duly authorized representative from the *regulated, traditional land use control MS4*, sign the “MS4 Acceptance” statement. The 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 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.3.
  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:



**(Part V. A. 5)**

- 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 modified their deed of record to include a deed covenant that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan,
- d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, college, university), or government agency or authority, 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 OF RECORDS**

**A. Record Retention** - The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the site achieves *final stabilization*. This period may be extended by the Department, in its sole discretion, at any time upon written notification.

**B. Addresses** - With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.A.1), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate Department 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.

**(Part VII. A)**

The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

**B. Continuation of the Expired General Permit** - This permit expires five (5) years from the effective date. However, coverage may be obtained under the expired general permit, which will continue in force and effect, until a new general permit is issued. Unless otherwise notified by the Department in writing, an *owner or operator* seeking authorization under the new general permit must submit a new NOI in accordance with the terms of such new general permit.

**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 make available to the Department for review and copying or furnish to the Department within five (5) business days of receipt of a Department request for such information, any information requested for the purpose of determining compliance with this permit. This can include, but is not limited to, the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form, executed maintenance agreement, and inspection reports. Failure to provide information requested by the Department within the request timeframe shall be a violation 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 the NOI, SWPPP or inspection reports. 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 other report, 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)

**(Part VII. G)**

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. 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

**(Part VII. H. 1. c)**

- 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. 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.;
  - 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.

**(Part VII. K)**

**K. Denial of Coverage Under This Permit**

1. At its sole discretion, 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 Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Regional Water Engineer, 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. Any *owner or operator* authorized by this permit may request to be excluded from the coverage under this permit by applying for an individual permit or another general permit. In such cases, the *owner or operator* shall submit an individual application or an alternative general permit application in accordance with the requirements of this general permit, 40 CFR 122.26(c)(1)(ii) and 6 NYCRR Part 621, with reasons supporting the request, to the Department at the address for the appropriate Department Office (see addresses in Appendix F). The request may be granted by issuance of an individual permit or another general permit at the discretion of the Department.
3. 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 the Department or an authorized representative of EPA, the State, 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:

**(Part VII. M)**

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).

**N. Permit Actions** - At the Department's sole discretion, this permit may, at any time, be modified, suspended, revoked, or renewed. 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. 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** – Article 17 of the ECL provides for a civil penalty of \$37,500 per day per violation of this permit. Articles 175 and 210 of the New York State Penal Law provide for a criminal penalty of a fine and/or imprisonment for falsifying forms and reports required by this permit.

**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

### Definitions

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

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

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

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

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

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

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

**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 authorizing a category of discharges.

**Groundwater** - 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.

**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.

**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) application, 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.

**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).

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



**Owner or Operator** - means the person, persons or legal entity which owns or leases the property on which the construction activity is occurring; and/or an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications.

**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 Parts 700 et seq of this Title.

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

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

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

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

**Qualified Professional** - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics in order to prepare a SWPPP that conforms to the Department's technical standard. 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.

**Regulated, Traditional Land Use Control MS4** - means a city, town or village with land use control authority that is required to gain coverage under New York State DEC's SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s).

**Routine Maintenance Activity** - means construction activity that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Stream bank restoration projects (does not include the placement of spoil material),
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that makes the transition between the road shoulder and the ditch or embankment,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or embankment,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

**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.

**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 or underground 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.

**Temporary Stabilization** - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

**Total Maximum Daily Loads (TMDLs)** - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet water quality standards, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for point source discharges, load allocations (LAs) for nonpoint sources, and a margin of safety (MOS).

**Trained Contractor** - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* will be 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**

|  |
|--|
| <p><b>The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:</b></p> <ul style="list-style-type: none"><li>• Single family home <u>not</u> located in one of the watersheds listed in Appendix C and <u>not directly discharging</u> to one of the 303(d) segments listed in Appendix E</li><li>• Single family residential subdivisions with 25% or less impervious cover at total site build-out and <u>not</u> located in one of the watersheds listed in Appendix C and <u>not</u> directly discharging to one of the 303(d) segments listed in Appendix E</li><li>• Construction of a barn or other agricultural building, silo, stock yard or pen.</li></ul>   |
| <p><b>The following construction activities that involve soil disturbances of one (1) or more acres of land:</b></p> <ul style="list-style-type: none"><li>• Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains</li><li>• Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects</li><li>• Bike paths and trails</li><li>• Sidewalk construction projects that are not part of a road/ highway construction or reconstruction project</li><li>• Slope stabilization projects</li><li>• Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics</li><li>• Spoil areas that will be covered with vegetation</li><li>• Land clearing and grading for the purposes of creating vegetated open space (i.e. recreational parks, lawns, meadows, fields), excluding projects that <i>alter hydrology from pre to post development</i> conditions</li><li>• Athletic fields (natural grass) that do not include the construction or reconstruction of <i>impervious area</i> <u>and</u> do not <i>alter hydrology from pre to post development</i> conditions</li><li>• Demolition project where vegetation will be established and no redevelopment is planned</li><li>• Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with <i>impervious cover</i></li><li>• Structural practices as identified in Table II in the “Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State”, excluding projects that involve soil disturbances of less than five acres and construction activities that include the construction or reconstruction of impervious area</li></ul> |
| <p><b>The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:</b></p> <ul style="list-style-type: none"><li>• All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land.</li></ul>   |

**Table 2**  
**CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP**  
**THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES**

**The following construction activities that involve soil disturbances of one (1) or more acres of land:**

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other agricultural building(e.g. silo) and structural practices as identified in Table II in the “Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State” that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional, includes hospitals, prisons, schools and colleges
- Industrial facilities, includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW’s and water treatment plants
- Office complexes
- Sports complexes
- Racetracks, includes racetracks with earthen (dirt) surface
- Road construction or reconstruction
- Parking lot construction or reconstruction
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover*, and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project or other linear utility project
- All other construction activities that include the construction or reconstruction of *impervious area* and alter the hydrology from pre to post development conditions, and are not listed in Table 1

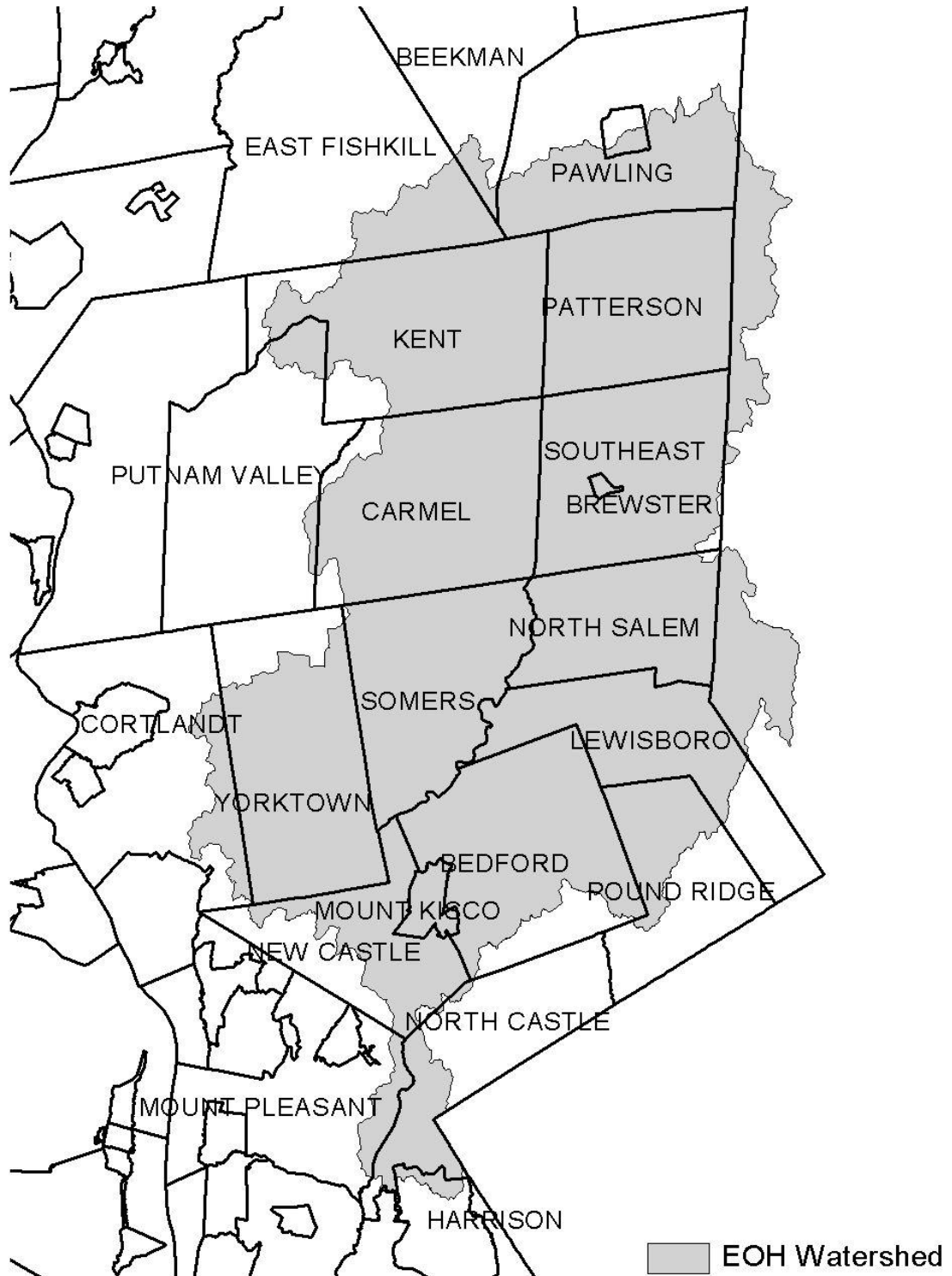
## APPENDIX C

### Watersheds Where Enhanced Phosphorus Removal Standards Are Required

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual (“Design Manual”).

- Entire New York City Watershed located east of the Hudson River - Figure 1
- Onondaga Lake Watershed - Figure 2
- Greenwood Lake Watershed -Figure 3
- Oscawana Lake Watershed – Figure 4

**Figure 1 - New York City Watershed East of the Hudson**

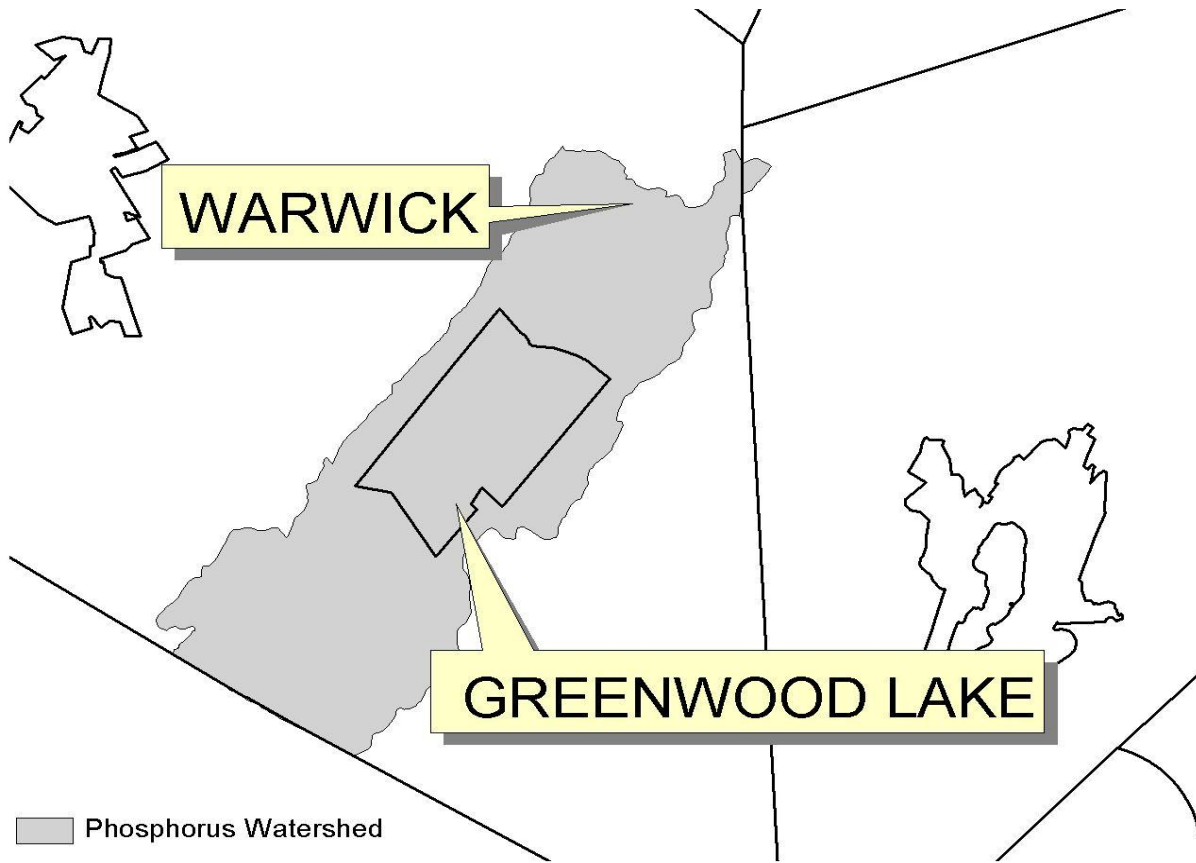


**Figure 2 - Onondaga Lake Watershed**

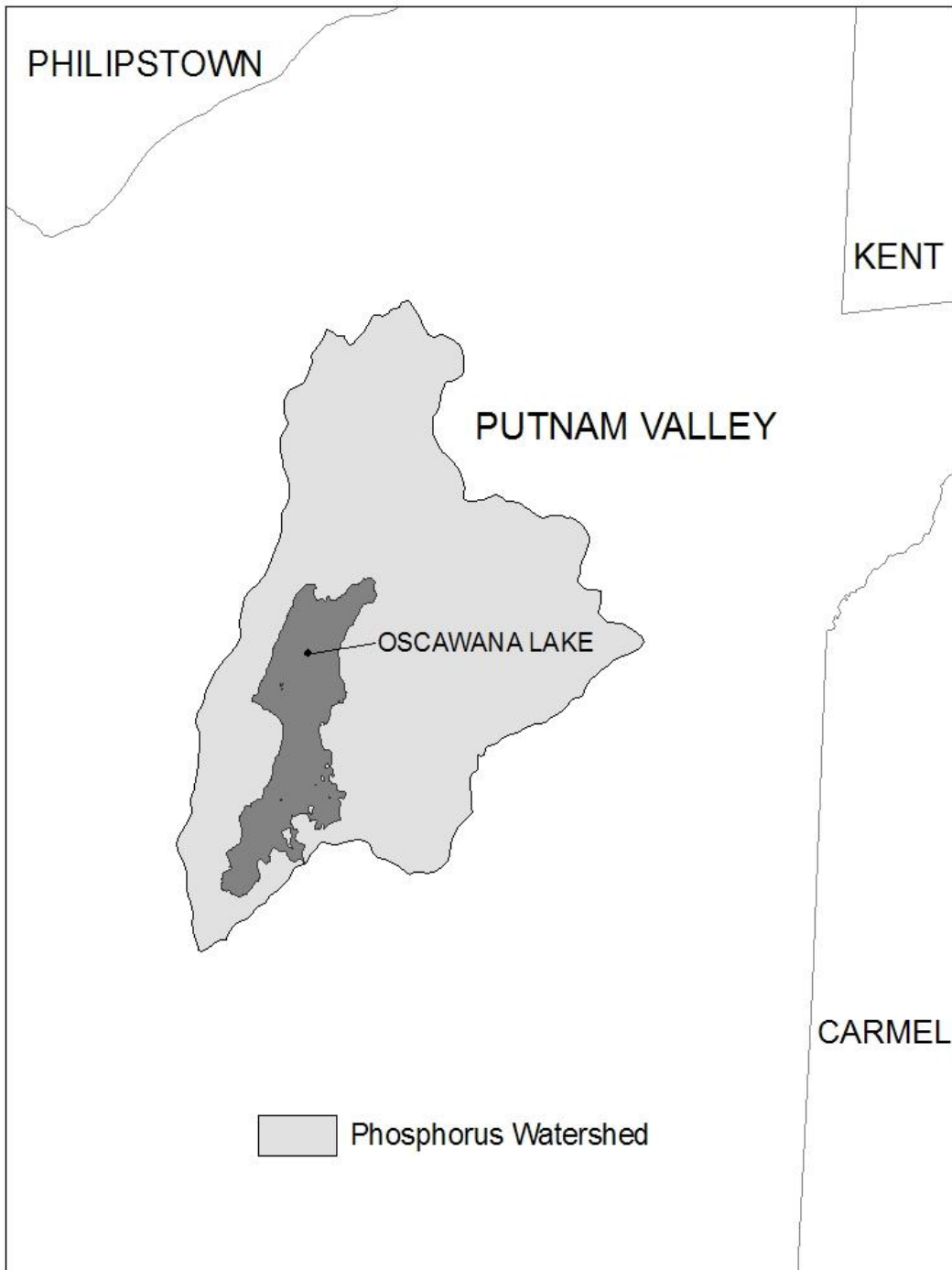




**Figure 3 - Greenwood Lake Watershed**



**Figure 4 - Oscawana Lake Watershed**



## APPENDIX D

**Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.**

Entire New York City Watershed that is located east of the Hudson River - See Figure 1 in Appendix C

**APPENDIX E**

List of 303(d) segments impaired by pollutants related to construction activity (e.g. silt, sediment or nutrients). *Owners or operators* of single family home and single family residential subdivision construction activities 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 most current version of the technical standard, New York State Stormwater Management Design Manual (“Design Manual”).

| COUNTY     | WATERBODY                                     | COUNTY      | WATERBODY                                |
|------------|---|-------------|--|
| Albany     | Ann Lee (Shakers) Pond, Stump Pond            | Monroe      | Genesee River, Lower, Main Stem          |
| Albany     | Basic Creek Reservoir                         | Monroe      | Genesee River, Middle, Main Stem         |
| Bronx      | Van Cortlandt Lake                            | Monroe      | Black Creek, Lower, and minor tribs      |
| Broome     | Whitney Point Lake/Reservoir                  | Monroe      | Buck Pond                                |
| Broome     | Beaver Lake                                   | Monroe      | Long Pond                                |
| Broome     | White Birch Lake                              | Monroe      | Cranberry Pond                           |
| Chautauqua | Chautauqua Lake, North                        | Monroe      | Mill Creek and tribs                     |
| Chautauqua | Chautauqua Lake, South                        | Monroe      | Shipbuilders Creek and tribs             |
| Chautauqua | Bear Lake                                     | Monroe      | Minor tribs to Irondequoit Bay           |
| Chautauqua | Chadakoin River and tribs                     | Monroe      | Thomas Creek/White Brook and tribs       |
| Chautauqua | Lower Cassadaga Lake                          | Nassau      | Glen Cove Creek, Lower, and tribs        |
| Chautauqua | Middle Cassadaga Lake                         | Nassau      | LI Tribs (fresh) to East Bay             |
| Chautauqua | Findley Lake                                  | Nassau      | East Meadow Brook, Upper, and tribs      |
| Clinton    | Great Chazy River, Lower, Main Stem           | Nassau      | Hempstead Bay                            |
| Columbia   | Kinderhook Lake                               | Nassau      | Hempstead Lake                           |
| Columbia   | Robinson Pond                                 | Nassau      | Grant Park Pond                          |
| Dutchess   | Hillside Lake                                 | Niagara     | Bergholtz Creek and tribs                |
| Dutchess   | Wappinger Lakes                               | Oneida      | Ballou, Nail Creeks                      |
| Dutchess   | Fall Kill and tribs                           | Onondaga    | Ley Creek and tribs                      |
| Dutchess   | Rudd Pond                                     | Onondaga    | Onondaga Creek, Lower and tribs          |
| Erie       | Rush Creek and tribs                          | Onondaga    | Onondaga creek, Middle and tribs         |
| Erie       | Ellicott Creek, Lower, and tribs              | Onondaga    | Onondaga Creek, Upper, and minor tribs   |
| Erie       | Beeman Creek and tribs                        | Onondaga    | Harbor Brook, Lower, and tribs           |
| Erie       | Murder Creek, Lower, and tribs                | Onondaga    | Ninemile Creek, Lower, and tribs         |
| Erie       | South Branch Smoke Cr, Lower, and tribs       | Onondaga    | Minor tribs to Onondaga Lake             |
| Erie       | Little Sister Creek, Lower, and tribs         | Ontario     | Honeoye Lake                             |
| Essex      | Lake George (primary county listed as Warren) | Ontario     | Hemlock Lake Outlet and minor tribs      |
| Genesee    | Black Creek, Upper, and minor tribs           | Ontario     | Great Brook and minor tribs              |
| Genesee    | Tonawanda Creek, Middle, Main Stem            | Oswego      | Lake Neatahwanta                         |
| Genesee    | Tonawanda Creek, Upper, and minor tribs       | Putnam      | Oscawana Lake                            |
| Genesee    | Little Tonawanda Creek, Lower, and tribs      | Putnam      | Lake Carmel                              |
| Genesee    | Oak Orchard Creek, Upper, and tribs           | Queens      | Jamaica Bay, Eastern, and tribs (Queens) |
| Genesee    | Bowen Brook and tribs                         | Queens      | Bergen Basin                             |
| Genesee    | Bigelow Creek and tribs                       | Queens      | Shellbank Basin                          |
| Greene     | Schoharie Reservoir                           | Rensselaer  | Snyders Lake                             |
| Greene     | Sleepy Hollow Lake                            | Richmond    | Grasmere, Arbutus and Wolfes Lakes       |
| Herkimer   | Steele Creek tribs                            | Saratoga    | Dwaas Kill and tribs                     |
| Kings      | Hendrix Creek                                 | Saratoga    | Tribs to Lake Lonely                     |
| Lewis      | Mill Creek/South Branch and tribs             | Saratoga    | Lake Lonely                              |
| Livingston | Conesus Lake                                  | Saratoga    | Schuyler Creek and tribs                 |
| Livingston | Jaycox Creek and tribs                        | Schenectady | Collins Lake                             |
| Livingston | Mill Creek and minor tribs                    |             |  |

## APPENDIX E

### List of 303(d) segments impaired by pollutants related to construction activity, cont'd.

| COUNTY       | WATERBODY                                    | COUNTY | WATERBODY |
|--------------|--|--------|-----------|
| Schoharie    | Engleville Pond                              |        |           |
| Schoharie    | Summit Lake                                  |        |           |
| St. Lawrence | Black Lake Outlet/Black Lake                 |        |           |
| Steuben      | Lake Salubria                                |        |           |
| Steuben      | Smith Pond                                   |        |           |
| Suffolk      | Millers Pond                                 |        |           |
| Suffolk      | Mattituck (Marratooka) Pond                  |        |           |
| Suffolk      | Tidal tribs to West Moriches Bay             |        |           |
| Suffolk      | Canaan Lake                                  |        |           |
| Suffolk      | Lake Ronkonkoma                              |        |           |
| Tompkins     | Cayuga Lake, Southern End                    |        |           |
| Tompkins     | Owasco Inlet, Upper, and tribs               |        |           |
| Ulster       | Ashokan Reservoir                            |        |           |
| Ulster       | Esopus Creek, Upper, and minor tribs         |        |           |
| Warren       | Lake George                                  |        |           |
| Warren       | Tribs to L.George, Village of L George       |        |           |
| Warren       | Huddle/Finkle Brooks and tribs               |        |           |
| Warren       | Indian Brook and tribs                       |        |           |
| Warren       | Hague Brook and tribs                        |        |           |
| Washington   | Tribs to L.George, East Shore of Lake George |        |           |
| Washington   | Cossayuna Lake                               |        |           |
| Wayne        | Port Bay                                     |        |           |
| Wayne        | Marbletown Creek and tribs                   |        |           |
| Westchester  | Peach Lake                                   |        |           |
| Westchester  | Mamaroneck River, Lower                      |        |           |
| Westchester  | Mamaroneck River, Upper, and minor tribs     |        |           |
| Westchester  | Sheldrake River and tribs                    |        |           |
| Westchester  | Blind Brook, Lower                           |        |           |
| Westchester  | Blind Brook, Upper, and tribs                |        |           |
| Westchester  | Lake Lincolndale                             |        |           |
| Westchester  | Lake Meahaugh                                |        |           |
| Wyoming      | Java Lake                                    |        |           |
| Wyoming      | Silver Lake                                  |        |           |

Note: The list above identifies those waters from the final New York State “2008 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy”, dated May 26, 2008, that are impaired by silt, sediment or nutrients.

APPENDIX F

LIST OF NYS DEC REGIONAL OFFICES

| <u>Region</u> | <u>COVERING THE FOLLOWING COUNTIES:</u>  | <u>DIVISION OF ENVIRONMENTAL PERMITS (DEP) PERMIT ADMINISTRATORS</u>                               | <u>DIVISION OF WATER (DOW) WATER (SPDES) PROGRAM</u>   |
|---------------|--|--|--|
| 1             | NASSAU AND SUFFOLK   | 50 CIRCLE ROAD<br>STONY BROOK, NY 11790<br>TEL. (631) 444-0365                                     | 50 CIRCLE ROAD<br>STONY BROOK, NY 11790-3409<br>TEL. (631) 444-0405                                |
| 2             | BRONX, KINGS, NEW YORK, QUEENS AND RICHMOND  | 1 HUNTERS POINT PLAZA,<br>47-40 21ST ST.<br>LONG ISLAND CITY, NY 11101-5407<br>TEL. (718) 482-4997 | 1 HUNTERS POINT PLAZA,<br>47-40 21ST ST.<br>LONG ISLAND CITY, NY 11101-5407<br>TEL. (718) 482-4933 |
| 3             | DUTCHESS, ORANGE, PUTNAM, ROCKLAND, SULLIVAN, ULSTER AND WESTCHESTER                               | 21 SOUTH PUTT CORNERS ROAD<br>NEW PALTZ, NY 12561-1696<br>TEL. (845) 256-3059                      | 100 HILLSIDE AVENUE, SUITE 1W<br>WHITE PLAINS, NY 10603<br>TEL. (914) 428 - 2505                   |
| 4             | ALBANY, COLUMBIA, DELAWARE, GREENE, MONTGOMERY, OTSEGO, RENSSELAER, SCHENECTADY AND SCHOHARIE      | 1150 NORTH WESTCOTT ROAD<br>SCHENECTADY, NY 12306-2014<br>TEL. (518) 357-2069                      | 1130 NORTH WESTCOTT ROAD<br>SCHENECTADY, NY 12306-2014<br>TEL. (518) 357-2045                      |
| 5             | CLINTON, ESSEX, FRANKLIN, FULTON, HAMILTON, SARATOGA, WARREN AND WASHINGTON                        | 1115 STATE ROUTE 86, PO BOX 296<br>RAY BROOK, NY 12977-0296<br>TEL. (518) 897-1234                 | 232 GOLF COURSE ROAD,<br>PO BOX 220<br>WARRENSBURG, NY 12885-0220<br>TEL. (518) 623-1200           |
| 6             | HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE  | STATE OFFICE BUILDING<br>317 WASHINGTON STREET<br>WATERTOWN, NY 13601-3787<br>TEL. (315) 785-2245  | STATE OFFICE BUILDING<br>207 GENESEE STREET<br>UTICA, NY 13501-2885<br>TEL. (315) 793-2554         |
| 7             | BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS                  | 615 ERIE BLVD. WEST<br>SYRACUSE, NY 13204-2400<br>TEL. (315) 426-7438                              | 615 ERIE BLVD. WEST<br>SYRACUSE, NY 13204-2400<br>TEL. (315) 426-7500                              |
| 8             | CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES | 6274 EAST AVON-LIMA ROAD<br>AVON, NY 14414-9519<br>TEL. (585) 226-2466                             | 6274 EAST AVON-LIMA RD.<br>AVON, NY 14414-9519<br>TEL. (585) 226-2466                              |
| 9             | ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING                                       | 270 MICHIGAN AVENUE<br>BUFFALO, NY 14203-2999<br>TEL. (716) 851-7165                               | 270 MICHIGAN AVE.<br>BUFFALO, NY 14203-2999<br>TEL. (716) 851-7070                                 |

***Exhibit 4: Notice of Termination (NOT) Form***



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

\*(NOTE: Submit completed form to address above)\*

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

**Please indicate your permit identification number:** NYR \_\_\_\_ \_

**I. Owner or Operator Information**

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person:

4a. Telephone:

5. Contact Person E-Mail:

**II. Project Site Information**

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

**III. Reason for Termination**

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

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

9c.  Other (Explain on Page 2)

**IV. Final Site Information:**

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

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

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



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

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

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

- Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.
- Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).
- For post-construction stormwater management practices that are privately owned, the deed of record has been modified to include a deed covenant that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.
- For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, college, university), or government agency or authority, 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:

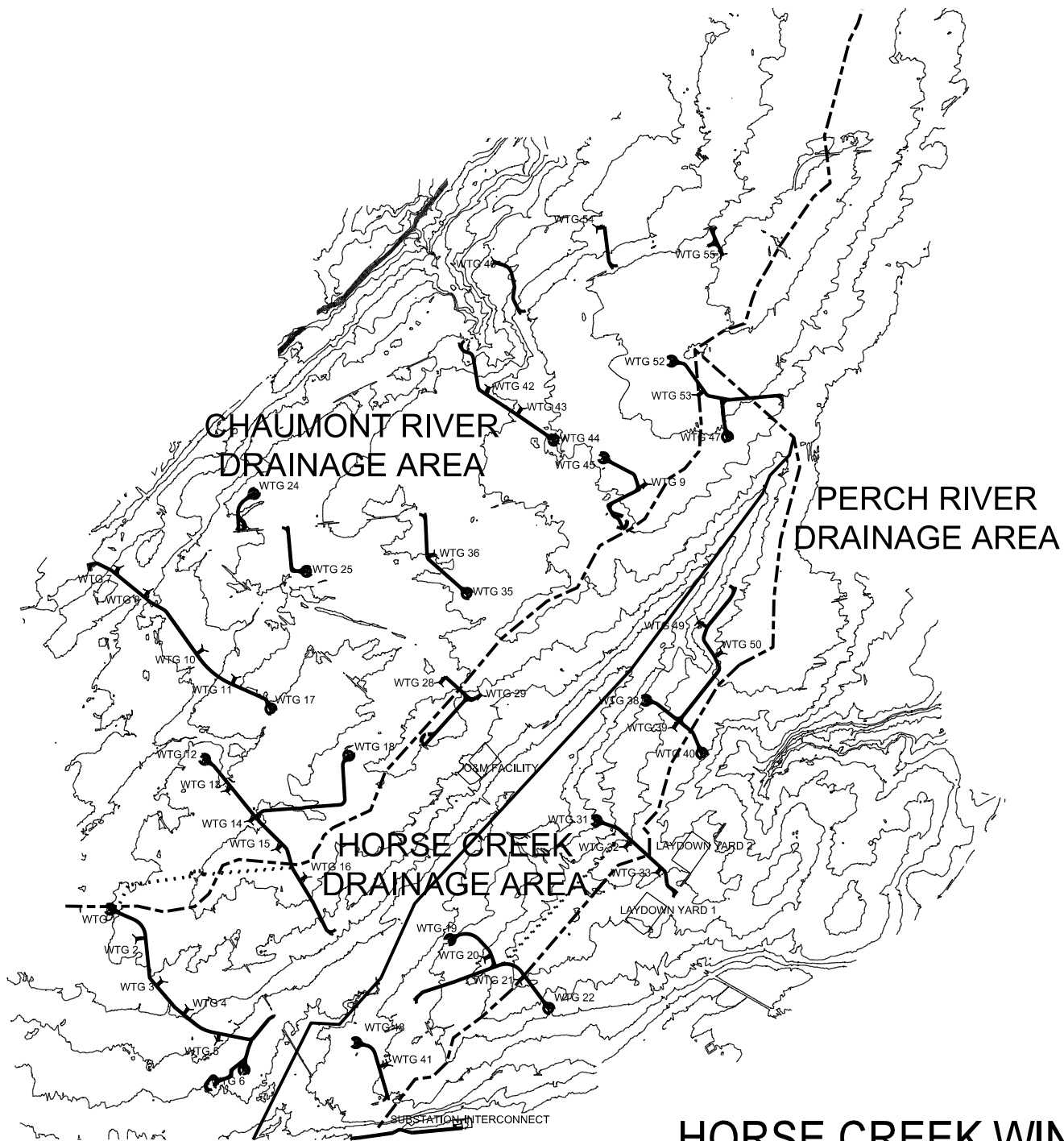
Title/Position:

Signature:

Date:

(NYS DEC Notice of Termination - January 2010)

***Exhibit 5: Project Area Information and Supporting Documentation***



# HORSE CREEK WIND EXISTING WATERSHEDS



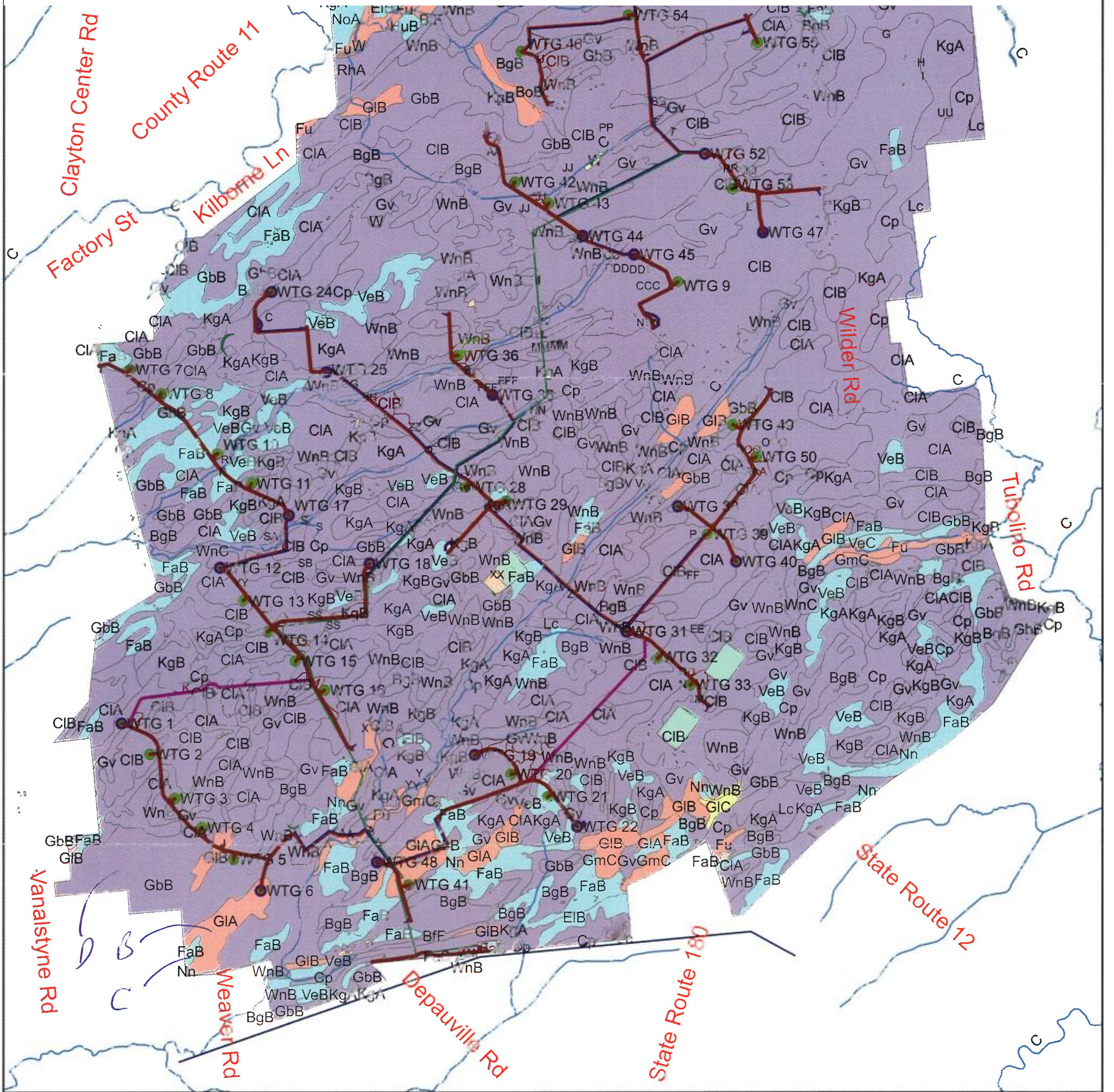
**FISHER ASSOCIATES**  
 135 Calkins Road, Rochester, NY 14623  
 Phone: 585-334-1310







# Horse Creek Wind Soils Map





***Exhibit 6: Contractor & Subcontractor Certification(s)***

**CONTRACTOR & SUBCONTRACTOR**  
**CERTIFICATION(S)**

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

**General Contractor**

Company Name: \_\_\_\_\_ Phone No: \_\_\_\_\_  
Company Address: \_\_\_\_\_  
Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Print Name & Title \_\_\_\_\_

**Subcontractor**

Company Name: \_\_\_\_\_ Phone No: \_\_\_\_\_  
Company Address: \_\_\_\_\_  
Company Address: \_\_\_\_\_  
Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Print Name & Title \_\_\_\_\_

**Subcontractor**

Company Name: \_\_\_\_\_ Phone No: \_\_\_\_\_  
Company Address: \_\_\_\_\_  
Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Print Name & Title \_\_\_\_\_

**Subcontractor**

Company Name: \_\_\_\_\_ Phone No: \_\_\_\_\_  
Company Address: \_\_\_\_\_  
Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Print Name & Title \_\_\_\_\_

**Subcontractor**

Company Name: \_\_\_\_\_ Phone No: \_\_\_\_\_  
Company Address: \_\_\_\_\_  
Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Print Name & Title \_\_\_\_\_

Signature-

a. For a corporation: by (1) president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person authorized to and who performs similar policy or decisions making functions for the corporation; or (2) the manager of one or more manufacturing, production or operating facilities employing more



than 250 persons or having gross annual sales or expenditures exceeding \$250,000,000 (in second-quarter 1980 dollars) if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

c. For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes (1) the chief executive officer or the agency, or (2) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA)

*Exhibit 7: NYS SESC Construction Site Log Book*

## APPENDIX H

### STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM FOR CONSTRUCTION ACTIVITIES CONSTRUCTION SITE LOG BOOK

#### Table of Contents

---

- I. Pre-Construction Meeting Documents
  - a. Preamble to Site Assessment and Inspections
  - b. Operator's Certification
  - c. Qualified Professional's Credentials & Certification
  - d. Pre-Construction Site Assessment Checklist
  
- II. Construction Duration Inspections
  - a. Directions
  - b. Modification to the SWPPP

Properly completing forms such as those contained in Appendix H meet the inspection requirement of NYS-DEC SPDES GP for Construction Activities. Completed forms shall be kept on site at all times and made available to authorities upon request.

## I. PRE-CONSTRUCTION MEETING DOCUMENTS

**Project Name** \_\_\_\_\_  
**Permit No.** \_\_\_\_\_ **Date of Authorization** \_\_\_\_\_  
**Name of Operator** \_\_\_\_\_  
**Prime Contractor** \_\_\_\_\_

### a. Preamble to Site Assessment and Inspections

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

The Operator agrees to have a qualified professional<sup>1</sup> conduct an assessment of the site prior to the commencement of construction<sup>2</sup> and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Prior to the commencement of construction, the Operator shall certify in this site logbook that the SWPPP has been prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements.

When construction starts, site inspections shall be conducted by the qualified professional at least every 7 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater (Construction Duration Inspections). The Operator shall maintain a record of all inspection reports in this site logbook. The site logbook shall be maintained on site and be made available to the permitting authorities upon request. The Operator shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis (Monthly Summary Report).

The operator shall also prepare a written summary of compliance with this general permit at a minimum frequency of every three months (Operator's Compliance Response Form), while coverage exists. The summary should address the status of achieving each component of the SWPPP.

Prior to filing the Notice of Termination or the end of permit term, the Operator shall have a qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization<sup>3</sup> using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed. In addition, the Operator must identify and certify that all permanent structures described in the SWPPP have been constructed and provide the owner(s) with an operation and maintenance plan that ensures the structure(s) continuously functions as designed.

1 "Qualified Professional means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a Certified Professional in Erosion and Sediment Control (CPESC), soil scientist, licensed engineer or someone working under the direction and supervision of a licensed engineer (person must have experience in the principles and practices of erosion and sediment control).

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

3 "Final stabilization" means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

**b. Operators Certification**

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. Further, I hereby certify that the SWPPP meets all Federal, State, and local erosion and sediment control requirements. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law.

**Name (please print):** \_\_\_\_\_

**Title** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Address:** \_\_\_\_\_

**Phone:** \_\_\_\_\_ **Email:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**c. Qualified Professional's Credentials & Certification**

"I hereby certify that I meet the criteria set forth in the General Permit to conduct site inspections for this project and that the appropriate erosion and sediment controls described in the SWPPP and as described in the following Pre-construction Site Assessment Checklist have been adequately installed or implemented, ensuring the overall preparedness of this site for the commencement of construction."

**Name (please print):** \_\_\_\_\_

**Title** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Address:** \_\_\_\_\_

**Phone:** \_\_\_\_\_ **Email:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**d. Pre-construction Site Assessment Checklist**

**(NOTE: Provide comments below as necessary)**

1. Notice of Intent, SWPPP, and Contractors Certification:

**Yes No NA**

- Has a Notice of Intent been filed with the NYS Department of Conservation?
- Is the SWPPP on-site? Where? \_\_\_\_\_
- Is the Plan current? What is the latest revision date? \_\_\_\_\_
- Is a copy of the NOI (with brief description) onsite? Where? \_\_\_\_\_
- Have all contractors involved with stormwater related activities signed a contractor's certification?

2. Resource Protection

**Yes No NA**

- Are construction limits clearly flagged or fenced?
- Important trees and associated rooting zones, on-site septic system absorption fields, existing vegetated areas suitable for filter strips, especially in perimeter areas, have been flagged for protection.
- Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

3. Surface Water Protection

**Yes No NA**

- Clean stormwater runoff has been diverted from areas to be disturbed.
- Bodies of water located either on site or in the vicinity of the site have been identified and protected.
- Appropriate practices to protect on-site or downstream surface water are installed.
- Are clearing and grading operations divided into areas <5 acres?

4. Stabilized Construction Entrance

**Yes No NA**

- A temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway has been installed.
- Other access areas (entrances, construction routes, equipment parking areas) are stabilized immediately as work takes place with gravel or other cover.
- Sediment tracked onto public streets is removed or cleaned on a regular basis.

5. Perimeter Sediment Controls

**Yes No NA**

- Silt fence material and installation comply with the standard drawing and specifications.
- Silt fences are installed at appropriate spacing intervals
- Sediment/detention basin was installed as first land disturbing activity.
- Sediment traps and barriers are installed.

6. Pollution Prevention for Waste and Hazardous Materials

**Yes No NA**

- The Operator or designated representative has been assigned to implement the spill prevention avoidance and response plan.
- The plan is contained in the SWPPP on page \_\_\_\_\_
- Appropriate materials to control spills are onsite. Where? \_\_\_\_\_

## II. CONSTRUCTION DURATION INSPECTIONS

### a. Directions:

**Inspection Forms will be filled out during the entire construction phase of the project.**

Required Elements:

- (1) On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;
- (2) Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;
- (3) Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;
- (4) Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume (for example, 10 percent, 20 percent, 50 percent);
- (5) Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass water; and
- (6) Immediately report to the Operator any deficiencies that are identified with the implementation of the SWPPP.

**SITE PLAN/SKETCH**

\_\_\_\_\_  
**Inspector (print name)**

\_\_\_\_\_  
**Date of Inspection**

\_\_\_\_\_  
**Qualified Professional (print name)**

\_\_\_\_\_  
**Qualified Professional Signature**

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



**Maintaining Water Quality**

**Yes No NA**

- Is there an increase in turbidity causing a substantial visible contrast to natural conditions?
- Is there residue from oil and floating substances, visible oil film, or globules or grease?
- All disturbance is within the limits of the approved plans.
- Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

**Housekeeping**

1. General Site Conditions

**Yes No NA**

- Is construction site litter and debris appropriately managed?
- Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?
- Is construction impacting the adjacent property?
- Is dust adequately controlled?

2. Temporary Stream Crossing

**Yes No NA**

- Maximum diameter pipes necessary to span creek without dredging are installed.
- Installed non-woven geotextile fabric beneath approaches.
- Is fill composed of aggregate (no earth or soil)?
- Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

**Runoff Control Practices**

1. Excavation Dewatering

**Yes No NA**

- Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.
- Clean water from upstream pool is being pumped to the downstream pool.
- Sediment laden water from work area is being discharged to a silt-trapping device.
- Constructed upstream berm with one-foot minimum freeboard.

2. Level Spreader

**Yes No NA**

- Installed per plan.
- Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.
- Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales

**Yes No NA**

- Installed per plan with minimum side slopes 2H:1V or flatter.
- Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.
- Sediment-laden runoff directed to sediment trapping structure

4. Stone Check Dam

**Yes No NA**

- Is channel stable? (flow is not eroding soil underneath or around the structure).
- Check is in good condition (rocks in place and no permanent pools behind the structure).
- Has accumulated sediment been removed?.

5. Rock Outlet Protection

**Yes No NA**

- Installed per plan.
- Installed concurrently with pipe installation.

**Soil Stabilization**

1. Topsoil and Spoil Stockpiles

**Yes No NA**

- Stockpiles are stabilized with vegetation and/or mulch.
- Sediment control is installed at the toe of the slope.

2. Revegetation

**Yes No NA**

- Temporary seedings and mulch have been applied to idle areas.
- 4 inches minimum of topsoil has been applied under permanent seedings

**Sediment Control Practices**

1. Stabilized Construction Entrance

**Yes No NA**

- Stone is clean enough to effectively remove mud from vehicles.
- Installed per standards and specifications?
- Does all traffic use the stabilized entrance to enter and leave site?
- Is adequate drainage provided to prevent ponding at entrance?

2. Silt Fence

**Yes No NA**

- Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
  - Joints constructed by wrapping the two ends together for continuous support.
  - Fabric buried 6 inches minimum.
  - Posts are stable, fabric is tight and without rips or frayed areas.
- Sediment accumulation is \_\_\_% of design capacity.

**Sediment Control Practices (continued)**

**3. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated practices)**

**Yes No NA**

- Installed concrete blocks lengthwise so open ends face outward, not upward.
  - Placed wire screen between No. 3 crushed stone and concrete blocks.
  - Drainage area is 1acre or less.
  - Excavated area is 900 cubic feet.
  - Excavated side slopes should be 2:1.
  - 2" x 4" frame is constructed and structurally sound.
  - Posts 3-foot maximum spacing between posts.
  - Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
  - Posts are stable, fabric is tight and without rips or frayed areas.
- Sediment accumulation \_\_\_% of design capacity.

**4. Temporary Sediment Trap**

**Yes No NA**

- Outlet structure is constructed per the approved plan or drawing.
  - Geotextile fabric has been placed beneath rock fill.
- Sediment accumulation is \_\_\_% of design capacity.

**5. Temporary Sediment Basin**

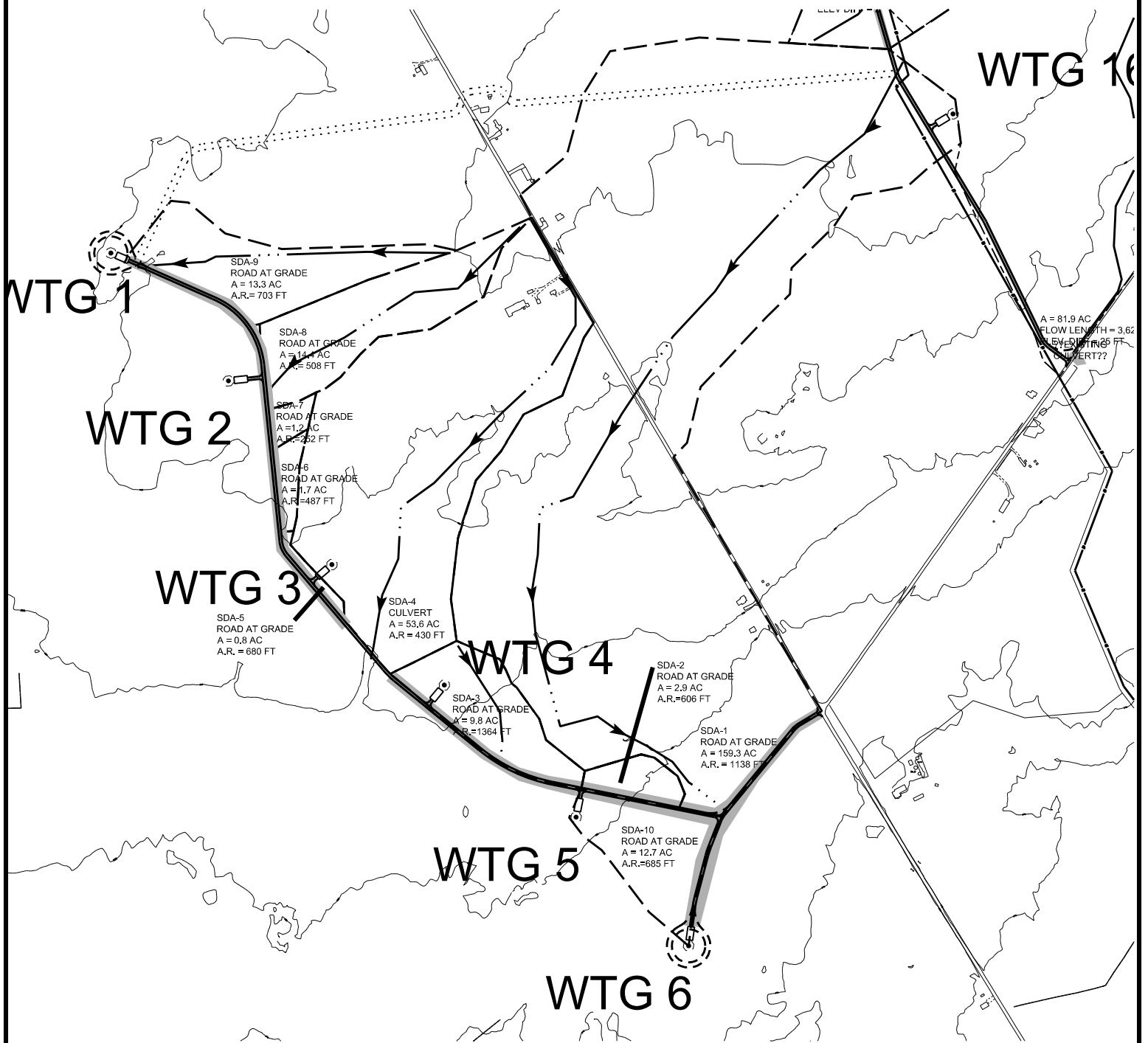
**Yes No NA**

- Basin and outlet structure constructed per the approved plan.
  - Basin side slopes are stabilized with seed/mulch.
  - Drainage structure flushed and basin surface restored upon removal of sediment basin facility.
- Sediment accumulation is \_\_\_% of design capacity.

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design.  
Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.



***Exhibit 8: Stormwater Quality Maps & Calculations***



WTG 10

WTG 1

WTG 2

WTG 3

WTG 4

WTG 5

WTG 6

# HORSE CREEK WIND PROPOSED DRAINAGE AREAS

- ACCESS ROAD TOP AT GRADE
- DRAINAGE AREA LIMITS
- RUNOFF FLOW DIRECTION



**FISHER ASSOCIATES**  
135 Calkins Road, Rochester, NY 14623  
Phone: 585-334-1310

Preliminary  
Water Quality Calculations  
Horse Creek Wind Farm  
Jefferson County, New York

$WQv = (P * Rv * A) / 12$

WQv = Water Quality Volume (ac-ft)

P = 90% Rainfall Event Number (in)

Rv = Runoff Coefficient =  $0.05 + (0.009 * I)$ , I = impervious cover (%)

A = Area (ac)

$RRv \text{ (in acre-feet of storage)} = [(P)(Rv^*)( Ai)] / 12$

$Ai = (S)(Aic)$

Ai = impervious cover targeted for runoff reduction

(Aic)= Total area of new impervious cover

$Rv^* = 0.05 + 0.009(I)$  where I is 100% impervious

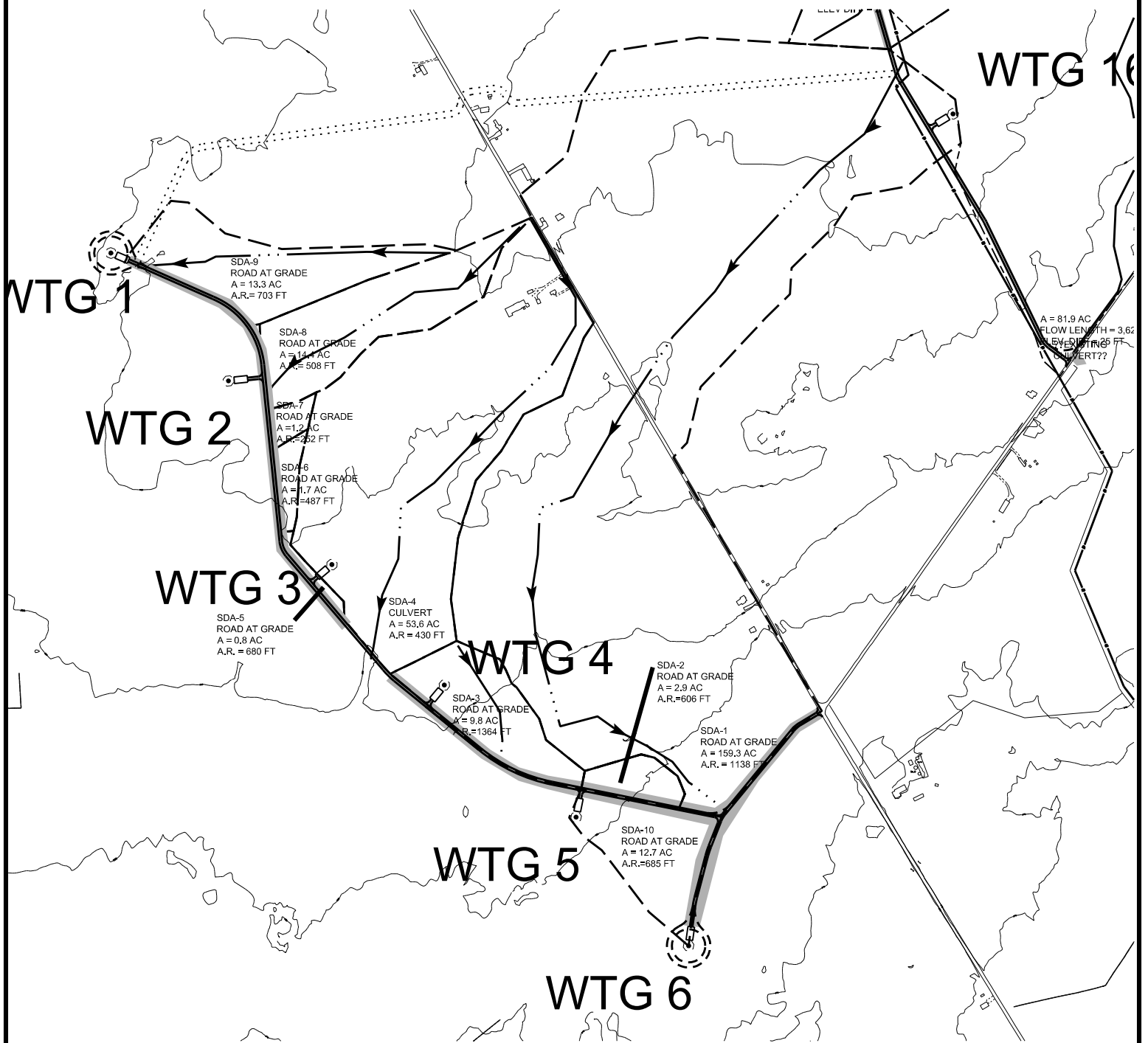
S = Hydrologic Soil Group (HSG) Specific Reduction Factor (S)

P = 0.9 in


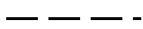

| SUBAREA               | Drainage Area (ac) | Proposed Additional Impervious Area (ac) | Drainage Area I % | Drainage Area Rv | Drainage Area WQv (cf) | Access Road I % | Access Road Rv | Access Road WQv (cf) | S          | Ai          | Rv*         | RRv (cf)    |
|-----------------------|--------------------|--|-------------------|------------------|------------------------|-----------------|----------------|----------------------|------------|-------------|-------------|-------------|
| SDA-1                 | 159.3              | 0.42                                     | 0                 | 0.2              | 104087                 | 100             | 0.95           | 1297                 | 0.2        | 0.08        | 0.95        | 259         |
| SDA-2                 | 2.9                | 0.22                                     | 8                 | 0.2              | 1895                   | 100             | 0.95           | 691                  | 0.2        | 0.04        | 0.95        | 138         |
| SDA-3                 | 9.8                | 0.50                                     | 5                 | 0.2              | 6403                   | 100             | 0.95           | 1555                 | 0.2        | 0.10        | 0.95        | 311         |
| SDA-4                 | 53.6               | 0.19                                     | 0                 | 0.2              | 35022                  | 100             | 0.95           | 604                  | 0.2        | 0.04        | 0.95        | 121         |
| SDA-5                 | 0.8                | 0.25                                     | 31                | 0.3              | 865                    | 100             | 0.95           | 775                  | 0.2        | 0.05        | 0.95        | 155         |
| SDA-6                 | 1.7                | 0.18                                     | 11                | 0.2              | 1111                   | 100             | 0.95           | 555                  | 0.2        | 0.04        | 0.95        | 111         |
| SDA-7                 | 1.2                | 0.09                                     | 8                 | 0.2              | 784                    | 100             | 0.95           | 287                  | 0.2        | 0.02        | 0.95        | 57          |
| SDA-8                 | 14.4               | 0.19                                     | 1                 | 0.2              | 9409                   | 100             | 0.95           | 579                  | 0.2        | 0.04        | 0.95        | 116         |
| SDA-9                 | 13.3               | 0.26                                     | 2                 | 0.2              | 8690                   | 100             | 0.95           | 801                  | 0.2        | 0.05        | 0.95        | 160         |
| <b>SECTION TOTALS</b> | <b>257.0</b>       | <b>2.30</b>                              | <b>1</b>          | <b>0.2</b>       | <b>167924</b>          |                 |                | <b>7146</b>          | <b>0.2</b> | <b>0.46</b> | <b>0.95</b> | <b>1429</b> |

***Exhibit 9: Stormwater Quantity Maps & Calculations***





# HORSE CREEK WIND PROPOSED DRAINAGE AREAS

-  ACCESS ROAD TOP AT GRADE
-  DRAINAGE AREA LIMITS
-  RUNOFF FLOW DIRECTION



**FISHER ASSOCIATES**  
 135 Calkins Road, Rochester, NY 14623  
 Phone: 585-334-1310

Preliminary  
Water Quantity Calculations  
Horse Creek Wind Farm  
Jefferson County, New York

| SUBAREA | Drainage Area (ac) | Existing Peak Runoff Rate (cfs) | Proposed Peak Runoff Rate (cfs) | Runoff Rate Increase |
|---------|--------------------|---------------------------------|---------------------------------|----------------------|
| SDA-1   | 159.3              | 60.47                           | 60.63                           | 0.16                 |
| SDA-2   | 2.9                | 6.10                            | 6.96                            | 0.86                 |
| SDA-3   | 9.8                | 28.12                           | 31.10                           | 2.98                 |
| SDA-4   | 53.6               | 32.35                           | 32.46                           | 0.11                 |
| SDA-5   | 0.8                | 1.98                            | 3.20                            | 1.22                 |
| SDA-6   | 1.7                | 2.61                            | 3.28                            | 0.67                 |
| SDA-7   | 1.2                | 2.61                            | 2.98                            | 0.37                 |
| SDA-8   | 14.4               | 11.14                           | 11.29                           | 0.15                 |
| SDA-9   | 13.3               | 10.08                           | 10.27                           | 0.19                 |

## Culverts at WTG 1-5 Existing

Prepared by Fisher Associates, P.E., L.S., P.C.

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Type II 24-hr 10-Year Rainfall=3.50"

Printed 1/19/2011

Page 1

### Summary for Subcatchment 1S: SDA-1 Existing

Runoff = 60.47 cfs @ 14.07 hrs, Volume= 18.289 af, Depth> 1.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type II 24-hr 10-Year Rainfall=3.50"

| Area (ac) | CN | Description                          |
|-----------|----|--------------------------------------|
| 159.300   | 80 | Pasture/grassland/range, Good, HSG D |
| 159.300   |    | 100.00% Pervious Area                |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description    |
|----------|---------------|---------------|-------------------|----------------|----------------|
| 173.1    | 6,048         | 0.0060        | 0.58              |                | Lag/CN Method, |

### Summary for Subcatchment 2S: SDA-2 Existing

Runoff = 6.10 cfs @ 12.07 hrs, Volume= 0.362 af, Depth> 1.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type II 24-hr 10-Year Rainfall=3.50"

| Area (ac) | CN | Description                          |
|-----------|----|--------------------------------------|
| 2.900     | 80 | Pasture/grassland/range, Good, HSG D |
| 2.900     |    | 100.00% Pervious Area                |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description    |
|----------|---------------|---------------|-------------------|----------------|----------------|
| 14.9     | 600           | 0.0200        | 0.67              |                | Lag/CN Method, |

### Summary for Subcatchment 3S: SDA-3 Existing

Runoff = 28.12 cfs @ 11.97 hrs, Volume= 1.227 af, Depth> 1.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type II 24-hr 10-Year Rainfall=3.50"

| Area (ac) | CN | Description                          |
|-----------|----|--------------------------------------|
| 9.800     | 80 | Pasture/grassland/range, Good, HSG D |
| 9.800     |    | 100.00% Pervious Area                |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description    |
|----------|---------------|---------------|-------------------|----------------|----------------|
| 5.6      | 290           | 0.0450        | 0.87              |                | Lag/CN Method, |

## Culverts at WTG 1-5 Existing

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Type II 24-hr 10-Year Rainfall=3.50"

Printed 1/19/2011

Page 2

### Summary for Subcatchment 4S: SDA-4 Existing

Runoff = 32.35 cfs @ 13.12 hrs, Volume= 6.451 af, Depth> 1.44"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type II 24-hr 10-Year Rainfall=3.50"

| Area (ac) | CN | Description                          |
|-----------|----|--------------------------------------|
| 53.600    | 80 | Pasture/grassland/range, Good, HSG D |
| 53.600    |    | 100.00% Pervious Area                |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description    |
|----------|---------------|---------------|-------------------|----------------|----------------|
| 95.3     | 3,160         | 0.0070        | 0.55              |                | Lag/CN Method, |

### Summary for Subcatchment 5S: SDA-5 Existing

Runoff = 1.98 cfs @ 12.02 hrs, Volume= 0.100 af, Depth> 1.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type II 24-hr 10-Year Rainfall=3.50"

| Area (ac) | CN | Description                          |
|-----------|----|--------------------------------------|
| 0.800     | 80 | Pasture/grassland/range, Good, HSG D |
| 0.800     |    | 100.00% Pervious Area                |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description    |
|----------|---------------|---------------|-------------------|----------------|----------------|
| 10.1     | 224           | 0.0090        | 0.37              |                | Lag/CN Method, |

### Summary for Subcatchment 6S: SDA-6 Existing

Runoff = 2.61 cfs @ 12.20 hrs, Volume= 0.211 af, Depth> 1.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type II 24-hr 10-Year Rainfall=3.50"

| Area (ac) | CN | Description                          |
|-----------|----|--------------------------------------|
| 1.700     | 80 | Pasture/grassland/range, Good, HSG D |
| 1.700     |    | 100.00% Pervious Area                |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description    |
|----------|---------------|---------------|-------------------|----------------|----------------|
| 26.1     | 603           | 0.0066        | 0.39              |                | Lag/CN Method, |

## Culverts at WTG 1-5 Existing

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Type II 24-hr 10-Year Rainfall=3.50"

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### Summary for Subcatchment 7S: SDA-7 Existing

Runoff = 2.61 cfs @ 12.06 hrs, Volume= 0.150 af, Depth> 1.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type II 24-hr 10-Year Rainfall=3.50"

| Area (ac) | CN | Description                          |
|-----------|----|--------------------------------------|
| 1.200     | 80 | Pasture/grassland/range, Good, HSG D |
| 1.200     |    | 100.00% Pervious Area                |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description    |
|----------|---------------|---------------|-------------------|----------------|----------------|
| 13.9     | 333           | 0.0090        | 0.40              |                | Lag/CN Method, |

### Summary for Subcatchment 8S: SDA-8 Existing

Runoff = 11.14 cfs @ 12.76 hrs, Volume= 1.755 af, Depth> 1.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type II 24-hr 10-Year Rainfall=3.50"

| Area (ac) | CN | Description                          |
|-----------|----|--------------------------------------|
| 14.400    | 80 | Pasture/grassland/range, Good, HSG D |
| 14.400    |    | 100.00% Pervious Area                |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description    |
|----------|---------------|---------------|-------------------|----------------|----------------|
| 68.9     | 1,950         | 0.0062        | 0.47              |                | Lag/CN Method, |

### Summary for Subcatchment 9S: SDA-9 Existing

Runoff = 10.08 cfs @ 12.79 hrs, Volume= 1.620 af, Depth> 1.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type II 24-hr 10-Year Rainfall=3.50"

| Area (ac) | CN | Description                          |
|-----------|----|--------------------------------------|
| 13.300    | 80 | Pasture/grassland/range, Good, HSG D |
| 13.300    |    | 100.00% Pervious Area                |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description    |
|----------|---------------|---------------|-------------------|----------------|----------------|
| 70.9     | 1,856         | 0.0054        | 0.44              |                | Lag/CN Method, |

# Culverts at WTG 1-5 Proposed

Type II 24-hr 10-Year Rainfall=3.50"

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## Summary for Subcatchment 1S: SDA-1 Proposed

Runoff = 60.63 cfs @ 14.07 hrs, Volume= 18.337 af, Depth> 1.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type II 24-hr 10-Year Rainfall=3.50"

| Area (ac) | CN | Description                          |
|-----------|----|--------------------------------------|
| 159.300   | 80 | Pasture/grassland/range, Good, HSG D |
| * 0.420   | 98 |                                      |
| 159.720   | 80 | Weighted Average                     |
| 159.300   |    | 99.74% Pervious Area                 |
| 0.420     |    | 0.26% Impervious Area                |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description    |
|----------|---------------|---------------|-------------------|----------------|----------------|
| 173.1    | 6,048         | 0.0060        | 0.58              |                | Lag/CN Method, |

## Summary for Subcatchment 2S: SDA-2 Proposed

Runoff = 6.96 cfs @ 12.07 hrs, Volume= 0.407 af, Depth> 1.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type II 24-hr 10-Year Rainfall=3.50"

| Area (ac) | CN | Description                          |
|-----------|----|--------------------------------------|
| 2.900     | 80 | Pasture/grassland/range, Good, HSG D |
| * 0.220   | 98 |                                      |
| 3.120     | 81 | Weighted Average                     |
| 2.900     |    | 92.95% Pervious Area                 |
| 0.220     |    | 7.05% Impervious Area                |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description    |
|----------|---------------|---------------|-------------------|----------------|----------------|
| 14.5     | 600           | 0.0200        | 0.69              |                | Lag/CN Method, |

## Summary for Subcatchment 3S: SDA-3 Proposed

Runoff = 31.10 cfs @ 11.96 hrs, Volume= 1.349 af, Depth> 1.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type II 24-hr 10-Year Rainfall=3.50"

| Area (ac) | CN | Description                          |
|-----------|----|--------------------------------------|
| 9.800     | 80 | Pasture/grassland/range, Good, HSG D |
| * 0.500   | 98 |                                      |
| 10.300    | 81 | Weighted Average                     |
| 9.800     |    | 95.15% Pervious Area                 |
| 0.500     |    | 4.85% Impervious Area                |

**Culverts at WTG 1-5 Proposed**

Type II 24-hr 10-Year Rainfall=3.50"

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| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description           |
|-------------|------------------|------------------|----------------------|-------------------|-----------------------|
| 5.4         | 290              | 0.0450           | 0.90                 |                   | <b>Lag/CN Method,</b> |

**Summary for Subcatchment 4S: SDA-4 Proposed**

Runoff = 32.46 cfs @ 13.12 hrs, Volume= 6.474 af, Depth&gt; 1.44"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type II 24-hr 10-Year Rainfall=3.50"

| Area (ac) | CN | Description                          |
|-----------|----|--------------------------------------|
| 53.600    | 80 | Pasture/grassland/range, Good, HSG D |
| * 0.190   | 98 |                                      |
| 53.790    | 80 | Weighted Average                     |
| 53.600    |    | 99.65% Pervious Area                 |
| 0.190     |    | 0.35% Impervious Area                |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description           |
|-------------|------------------|------------------|----------------------|-------------------|-----------------------|
| 95.3        | 3,160            | 0.0070           | 0.55                 |                   | <b>Lag/CN Method,</b> |

**Summary for Subcatchment 5S: SDA-5 Proposed**

Runoff = 3.20 cfs @ 12.00 hrs, Volume= 0.157 af, Depth&gt; 1.79"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type II 24-hr 10-Year Rainfall=3.50"

| Area (ac) | CN | Description                          |
|-----------|----|--------------------------------------|
| 0.800     | 80 | Pasture/grassland/range, Good, HSG D |
| * 0.250   | 98 |                                      |
| 1.050     | 84 | Weighted Average                     |
| 0.800     |    | 76.19% Pervious Area                 |
| 0.250     |    | 23.81% Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description           |
|-------------|------------------|------------------|----------------------|-------------------|-----------------------|
| 8.9         | 224              | 0.0090           | 0.42                 |                   | <b>Lag/CN Method,</b> |

**Summary for Subcatchment 6S: SDA-6 Proposed**

Runoff = 3.28 cfs @ 12.18 hrs, Volume= 0.256 af, Depth&gt; 1.63"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type II 24-hr 10-Year Rainfall=3.50"

**Culverts at WTG 1-5 Proposed**

Type II 24-hr 10-Year Rainfall=3.50"

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| Area (ac) | CN | Description                          |
|-----------|----|--------------------------------------|
| 1.700     | 80 | Pasture/grassland/range, Good, HSG D |
| * 0.180   | 98 |                                      |
| 1.880     | 82 | Weighted Average                     |
| 1.700     |    | 90.43% Pervious Area                 |
| 0.180     |    | 9.57% Impervious Area                |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description           |
|----------|---------------|---------------|-------------------|----------------|-----------------------|
| 24.5     | 603           | 0.0066        | 0.41              |                | <b>Lag/CN Method,</b> |

**Summary for Subcatchment 7S: SDA-7 Proposed**

Runoff = 2.98 cfs @ 12.06 hrs, Volume= 0.168 af, Depth> 1.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type II 24-hr 10-Year Rainfall=3.50"

| Area (ac) | CN | Description                          |
|-----------|----|--------------------------------------|
| 1.200     | 80 | Pasture/grassland/range, Good, HSG D |
| * 0.090   | 98 |                                      |
| 1.290     | 81 | Weighted Average                     |
| 1.200     |    | 93.02% Pervious Area                 |
| 0.090     |    | 6.98% Impervious Area                |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description           |
|----------|---------------|---------------|-------------------|----------------|-----------------------|
| 13.5     | 333           | 0.0090        | 0.41              |                | <b>Lag/CN Method,</b> |

**Summary for Subcatchment 8S: SDA-8 Proposed**

Runoff = 11.29 cfs @ 12.76 hrs, Volume= 1.779 af, Depth> 1.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type II 24-hr 10-Year Rainfall=3.50"

| Area (ac) | CN | Description                          |
|-----------|----|--------------------------------------|
| 14.400    | 80 | Pasture/grassland/range, Good, HSG D |
| * 0.190   | 98 |                                      |
| 14.590    | 80 | Weighted Average                     |
| 14.400    |    | 98.70% Pervious Area                 |
| 0.190     |    | 1.30% Impervious Area                |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description           |
|----------|---------------|---------------|-------------------|----------------|-----------------------|
| 68.9     | 1,950         | 0.0062        | 0.47              |                | <b>Lag/CN Method,</b> |



# Culverts at WTG 1-5 Proposed

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Type II 24-hr 10-Year Rainfall=3.50"

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## Summary for Subcatchment 9S: SDA-9 Proposed

Runoff = 10.27 cfs @ 12.79 hrs, Volume= 1.651 af, Depth> 1.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr 10-Year Rainfall=3.50"

| Area (ac) | CN | Description                          |
|-----------|----|--------------------------------------|
| 13.300    | 80 | Pasture/grassland/range, Good, HSG D |
| * 0.260   | 98 |                                      |
| 13.560    | 80 | Weighted Average                     |
| 13.300    |    | 98.08% Pervious Area                 |
| 0.260     |    | 1.92% Impervious Area                |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description           |
|----------|---------------|---------------|-------------------|----------------|-----------------------|
| 70.9     | 1,856         | 0.0054        | 0.44              |                | <b>Lag/CN Method,</b> |

# Culvert Calculator Report

## Culverts at WTG 1-5, Sta 24+00

Solve For: Section Size

| Culvert Summary          |           |                        |               |
|--------------------------|-----------|------------------------|---------------|
| Allowable HW Elevation   | 394.00 ft | Headwater Depth/Height | 1.62          |
| Computed Headwater Elev: | 393.04 ft | Discharge              | 32.35 cfs     |
| Inlet Control HW Elev.   | 393.04 ft | Tailwater Elevation    | 0.00 ft       |
| Outlet Control HW Elev.  | 392.81 ft | Control Type           | Inlet Control |

| Grades          |           |                   |           |
|-----------------|-----------|-------------------|-----------|
| Upstream Invert | 389.40 ft | Downstream Invert | 389.00 ft |
| Length          | 40.00 ft  | Constructed Slope | 1.0000 %  |

| Hydraulic Profile   |               |                   |          |
|---------------------|---------------|-------------------|----------|
| Profile             | S2            | Depth, Downstream | 1.81 ft  |
| Slope Type          | Steep         | Normal Depth      | 1.78 ft  |
| Flow Regime         | Supercritical | Critical Depth    | 1.96 ft  |
| Velocity Downstream | 9.43 ft/s     | Critical Slope    | 0.8493 % |

| Section          |                        |                      |         |
|------------------|------------------------|----------------------|---------|
| Section Shape    | Circular               | Mannings Coefficient | 0.012   |
| Section Material | HDPE (Smooth Interior) | Span                 | 2.25 ft |
| Section Size     | 27 inch                | Rise                 | 2.25 ft |
| Number Sections  | 1                      |                      |         |

| Outlet Control Properties |           |                        |         |
|---------------------------|-----------|------------------------|---------|
| Outlet Control HW Elev.   | 392.81 ft | Upstream Velocity Head | 1.21 ft |
| Ke                        | 0.20      | Entrance Loss          | 0.24 ft |

| Inlet Control Properties |                       |               |                     |
|--------------------------|-----------------------|---------------|---------------------|
| Inlet Control HW Elev.   | 393.04 ft             | Flow Control  | Submerged           |
| Inlet Type               | Groove end projecting | Area Full     | 4.0 ft <sup>2</sup> |
| K                        | 0.00450               | HDS 5 Chart   | 1                   |
| M                        | 2.00000               | HDS 5 Scale   | 3                   |
| C                        | 0.03170               | Equation Form | 1                   |
| Y                        | 0.69000               |               |                     |

*Exhibit 10: SWPPP Drawings & Details*

# STANDARD AND SPECIFICATIONS FOR MULCHING



## **Definition**

Applying coarse plant residue or chips, or other suitable materials, to cover the soil surface.

## **Purpose**

The primary purpose is 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 is also used alone for temporary stabilization in non-growing months.

## **Conditions Where Practice Applies**

On soils subject to erosion and on new seedlings 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. 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 3.7**  
**Guide to Mulch Materials, Rates, and Uses**

| <b>Mulch Material</b>                              | <b>Quality Standards</b>   | <b>per 1000 Sq. Ft.</b>                               | <b>per Acre</b>        | <b>Depth of Application</b> | <b>Remarks</b>   |
|--|--|---|------------------------|-----------------------------|--|
| 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          | 8" x 100" 2-sided plastic, 48" x 180" 1-sided plastic | —                      | —                           | Use without additional mulch. Excellent for seeding establishment. Tie down as per manufacturers specifications. Approximately 72 lbs./roll for excelsior with plastic on both sides. Use two sided plastic for centerline of waterways. |
| Compost  | Up to 3" pieces, moderately to highly stable                                       | 3-9 cu. yds.  | 134-402 cu. yds.       | 1-3"                        | Coarser textured mulches may be more effective in reducing weed growth and wind erosion.   |
| 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 3.8**  
**Mulch Anchoring Guide**

| <b>Anchoring Method<br/>or Material</b> | <b>Kind of Mulch to<br/>be Anchored</b> | <b>How to Apply</b>   |
|---|---|---|
| 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 <sup>0</sup> Fahrenheit are required.   |

# STANDARD AND SPECIFICATIONS FOR ROCK OUTLET PROTECTION



## Definition

A section of rock protection placed at the outlet end of the culverts, conduits, or channels.

## Purpose

The purpose of the rock outlet protection is to reduce the depth, velocity, and energy of water, such that the flow will not erode the receiving downstream reach.

## Scope

This standard applies to the planning, design, and construction of rock riprap and gabions for protection of downstream areas. It does not apply to rock lining of channels or streams.

## 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 5B.12 on page 5B.25 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 5B.13 on page 5B.26 as an example. Pipes which outlet onto flat areas with no defined channel may be assumed to have a Minimum Tailwater Condition; see Figure 5B.12 on page 5B.25 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 5B.12 on page 5B.25
- Maximum Tailwater – Use Figure 5B.13 on page 5B.26

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.

Riprap shall be composed of a well-graded mixture of stone 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 stone sizes, but with a sufficient mixture of other sizes to fill the smaller voids between the stones. The diameter of the largest stone 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 stone diameter for  $d_{50}$  of 15 inches or less; and 1.2 times the maximum stone size for  $d_{50}$  greater than 15 inches. The following chart lists some examples:

| $D_{50}$<br>(inches) | $d_{max}$<br>(inches) | Minimum<br>Blanket Thickness<br>(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                                       |

## Stone Quality

Stone for riprap shall consist of field stone or rough unhewn quarry stone. The stone 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 stones shall be at least 2.5.

Recycled concrete equivalent may be used provided it has a

density of at least 150 pounds per cubic foot, and does not have any exposed steel or reinforcing bars.

## 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 Riprap Slope Protection on page 5B.57.

## 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 manufacturers 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 stones. 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. Enter 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.

- Calculate apron width at the downstream end if a flare section is to be employed.

### Examples

Example 1: Pipe Flow (full) with discharge to unconfined section.

Given: A circular conduit flowing full.

$Q = 280$  cfs, diam. = 66 in., tailwater (surface) is 2 ft. above pipe invert (minimum tailwater condition).

Find: Read  $d_{50} = 1.2$  and apron length ( $L_a$ ) = 38 ft.

Apron width = diam. +  $L_a = 5.5 + 38 = 43.5$  ft.

Use:  $d_{50} = 15''$ ,  $d_{max} = 22''$ , blanket thickness = 32''

Example 2: Box Flow (partial) with high tailwater

Given: A box conduit discharging under partial flow conditions. A concrete box 5.5 ft. x 10 ft. flowing 5.0 ft. deep,

$Q = 600$  cfs and tailwater surface is 5 ft. above invert (max. tailwater condition).

Since this is not full pipe and does not directly fit the nomograph assumptions of Figure 7B.13 substitute depth as the diameter, to find a discharge equal to full pipe flow for that diameter, in this case 60 inches.

Since,  $Q = AV$  and  $A = \frac{\pi D^2}{4}$

First, compute velocity:

$V = (Q/A) = (600/(5)(10)) = 12$  fps

Then substituting:

$$Q = \frac{\pi D^2}{4} \times V = \frac{3.14 (5 \text{ ft})^2}{4} \times 12 \text{ fps} = 236 \text{ cfs}$$

At the intersection of the curve  $d = 60$  in. and  $Q = 236$  cfs, read  $d_{50} = 0.4$  ft.

Then reading the  $d = 60$  in. curve, read apron length ( $L_a$ ) = 40 ft.

Apron width,  $W = \text{conduit width} + (6.4)(L_a) = 10 + (0.4)(40) = 26$  ft.

Example 3: Open Channel Flow with Discharge to Unconfined Section

Given: A trapezoidal concrete channel 5 ft. wide with 2:1 side slopes is flowing 2 ft. deep,  $Q = 180$  cfs (velocity = 10 fps) and the tailwater surface downstream is 0.8 ft. (minimum tailwater condition).

Find: Using similar principles as Example 2, compute equivalent discharge for a 2 foot, using depth as a diameter, circular pipe flowing full at 10 feet per second.

Velocity:

$$Q = \frac{\pi (2 \text{ ft})^2}{4} \times 10 \text{ fps} = 31.4 \text{ cfs}$$

At intersection of the curve,  $d = 24$  in. and  $Q = 32$  cfs, read  $d_{50} = 0.6$  ft.

Then reading the  $d = 24$  in. curve, read apron length ( $L_a$ ) = 20 ft.

Apron width,  $W = \text{bottom width of channel} + L_a = 5 + 20 = 25$  ft.

Example 4: Pipe flow (partial) with discharge to a confined section

Given: A 48 in. pipe is discharging with a depth of 3 ft.  $Q = 100$  cfs, and discharge velocity of 10 fps (established from partial flow analysis) to a confined trapezoidal channel with a 2 ft. bottom, 2:1 side slopes,  $n = .04$ , and grade of 0.6%.

Calculation of the downstream channel (by Manning's Equation) indicates a normal depth of 3.1 ft. and normal velocity of 3.9 fps.

Since the receiving channel is confined, the maximum tailwater condition controls.

Find: discharge using previous principles:

$$Q = \frac{\pi (3 \text{ ft})^2}{4} \times 10 \text{ fps} = 71 \text{ cfs}$$

At the intersection of  $d = 36$  in. and  $Q = 71$  cfs, read  $d_{50} = 0.3$  ft.

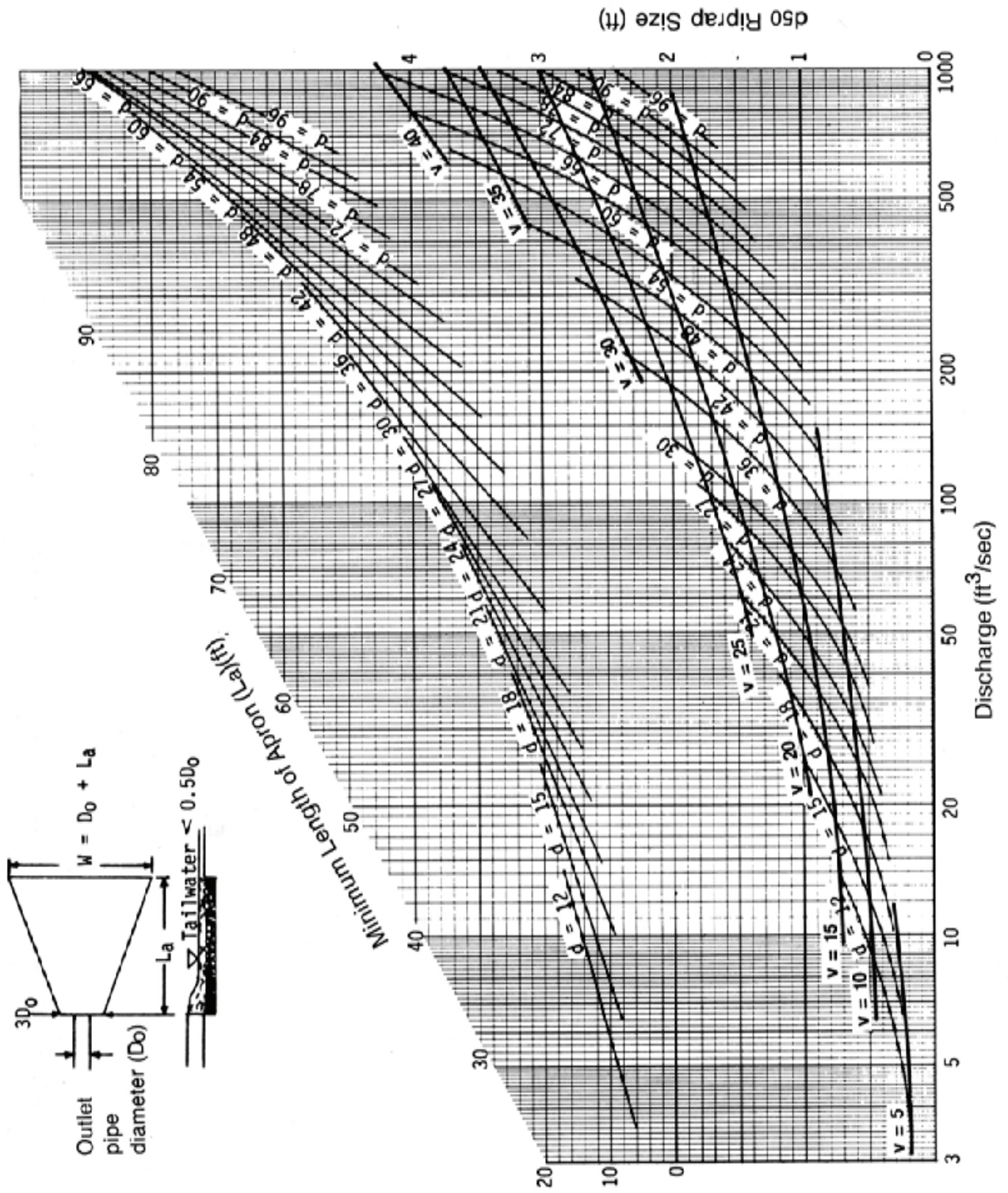
Reading the  $d = 36''$  curve, read apron length ( $L_a$ ) = 30 ft.

Since the maximum flow depth in this reach is 3.1 ft., that is the minimum depth of riprap to be maintained for the entire length.

## **Construction Specifications**

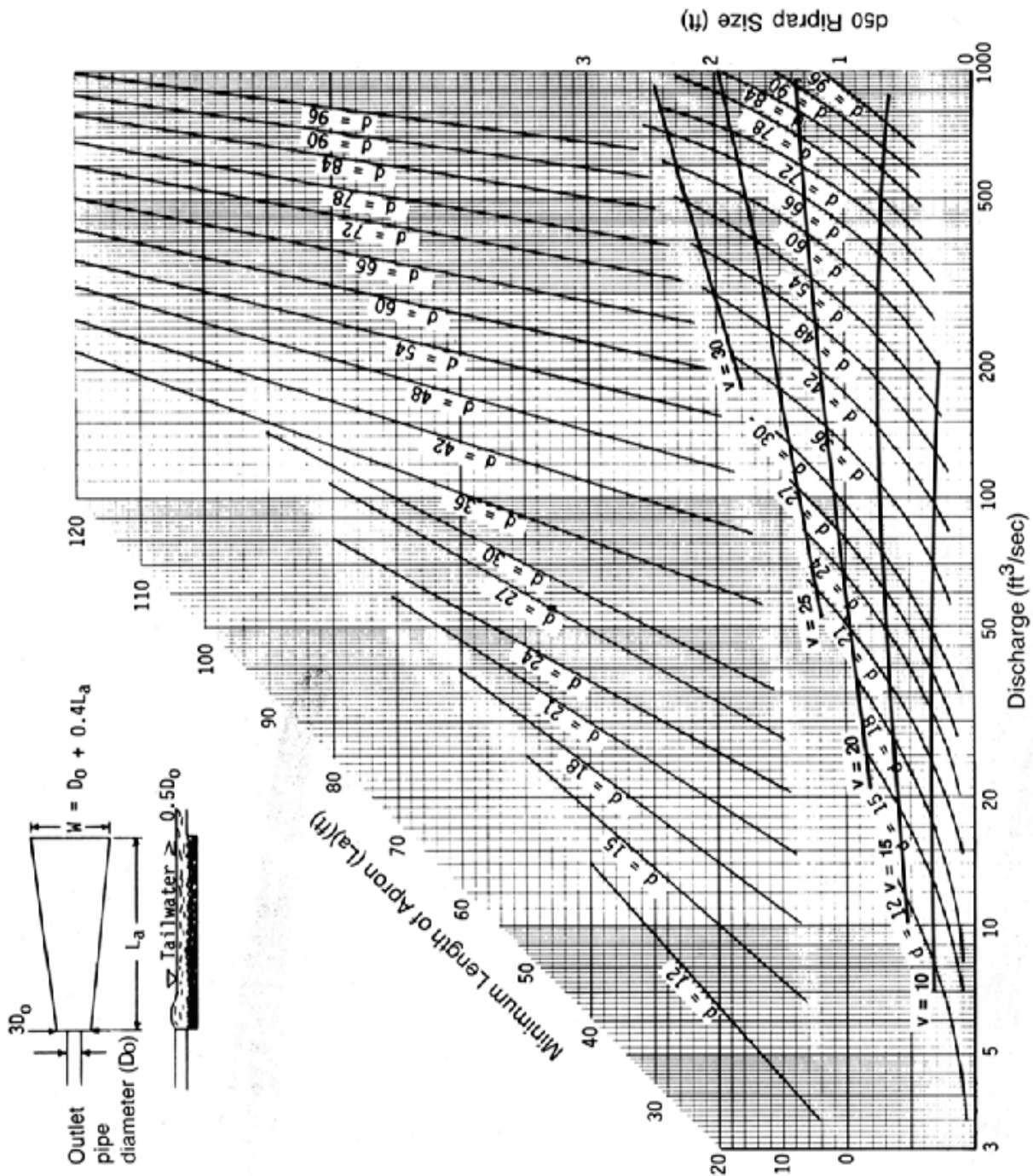
1. The subgrade for the filter, riprap, or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.
2. The rock or gravel shall conform to the specified grading limits when 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. Stone 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 stone for riprap or gabion outlets shall be delivered and placed in a manner that will ensure that it is reasonably homogenous with the smaller stones and spalls filling the voids between the larger stones. 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.

**Figure 5B.12**  
**Outlet Protection Design—Minimum Tailwater Condition**  
**(Design of Outlet Protection from a Round Pipe Flowing Full,**  
**Minimum Tailwater Condition:  $T_w < 0.5D_o$ ) (USDA - NRCS)**

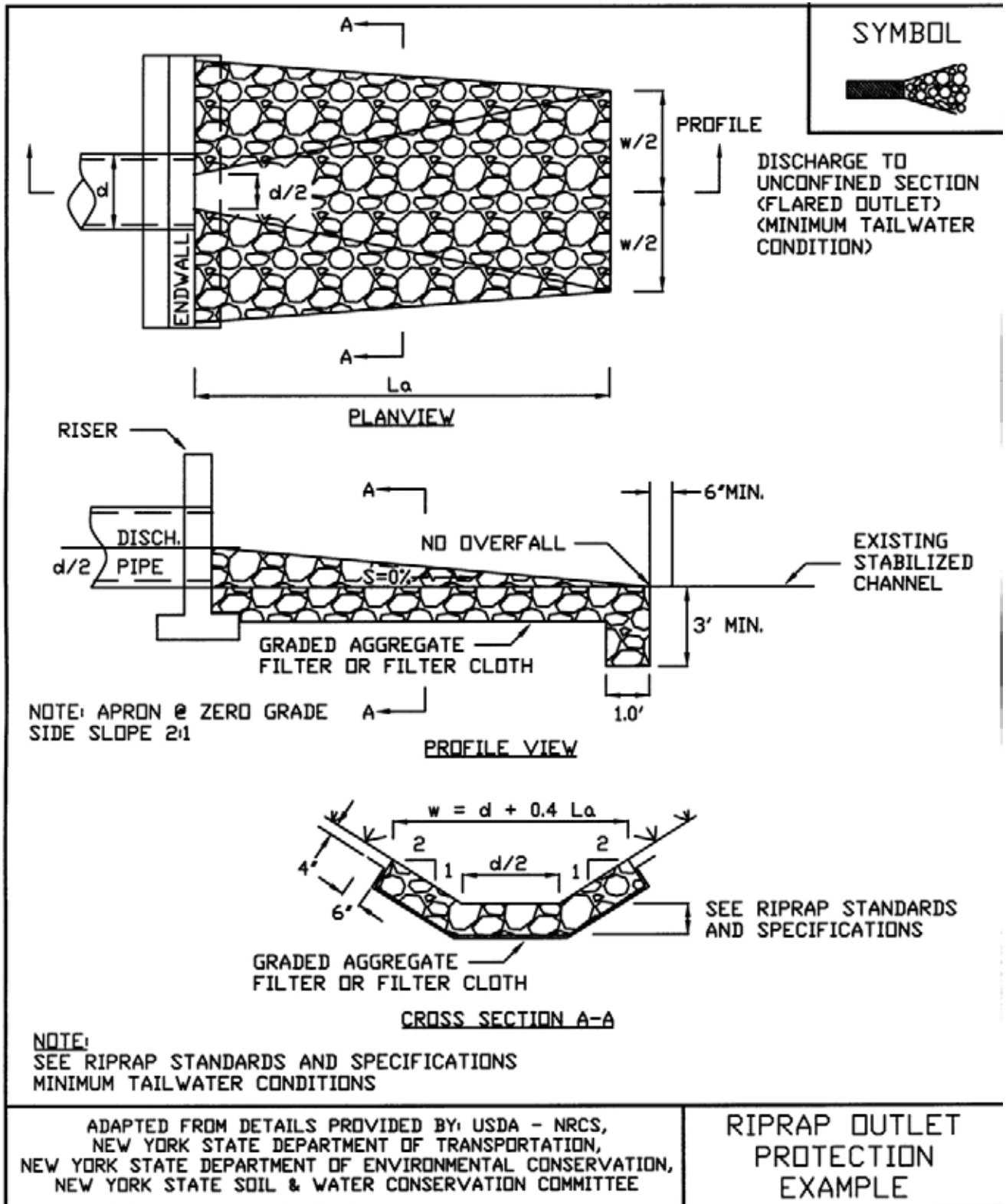




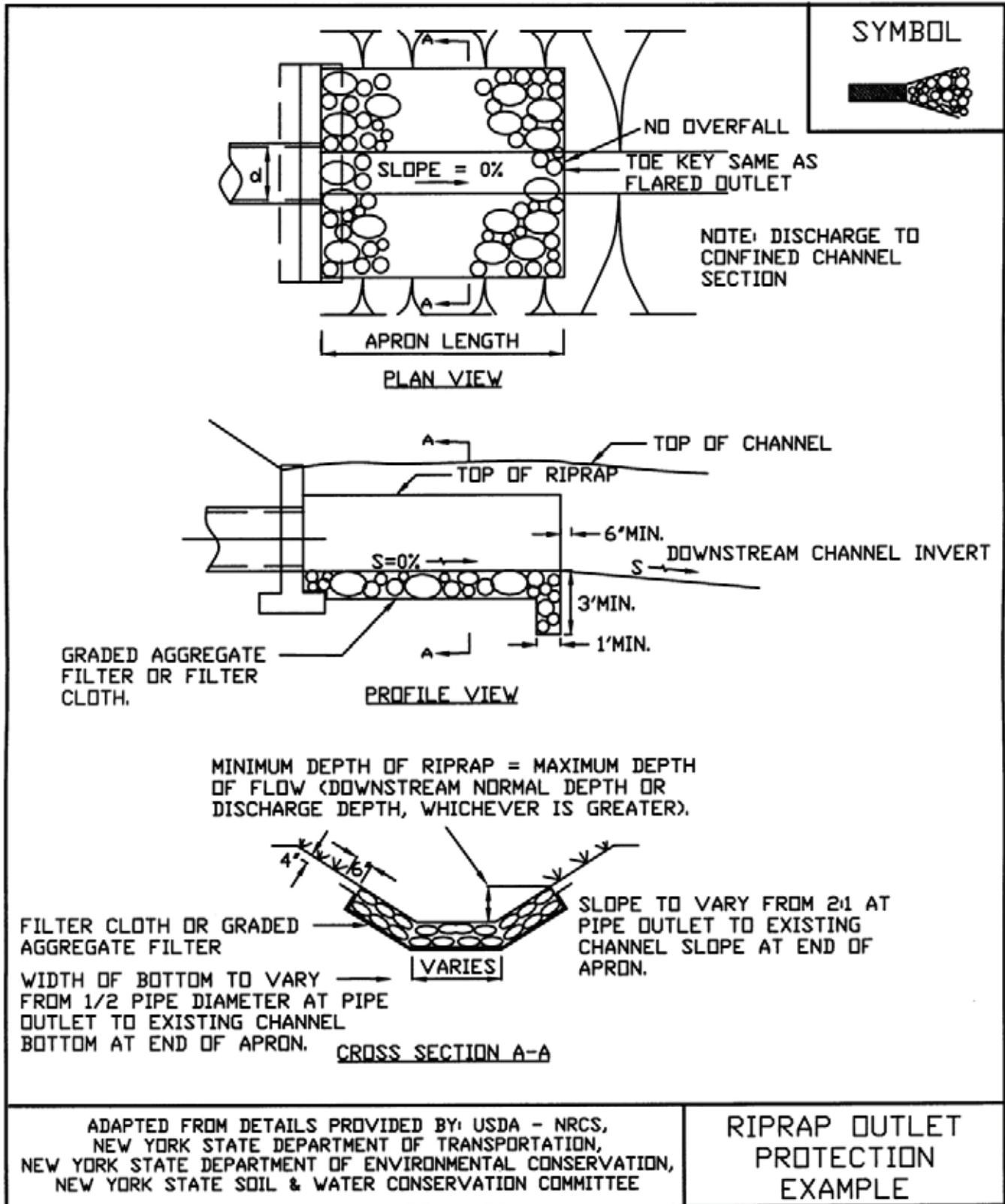
**Figure 5B.13**  
**Outlet Protection Design—Maximum Tailwater Condition**  
**(Design of Outlet Protection from a Round Pipe Flowing Full,**  
**Maximum Tailwater Condition:  $T_w \geq 0.5D_o$ ) (USDA - NRCS)**



**Figure 5B.14  
Riprap Outlet Protection Detail (1)**

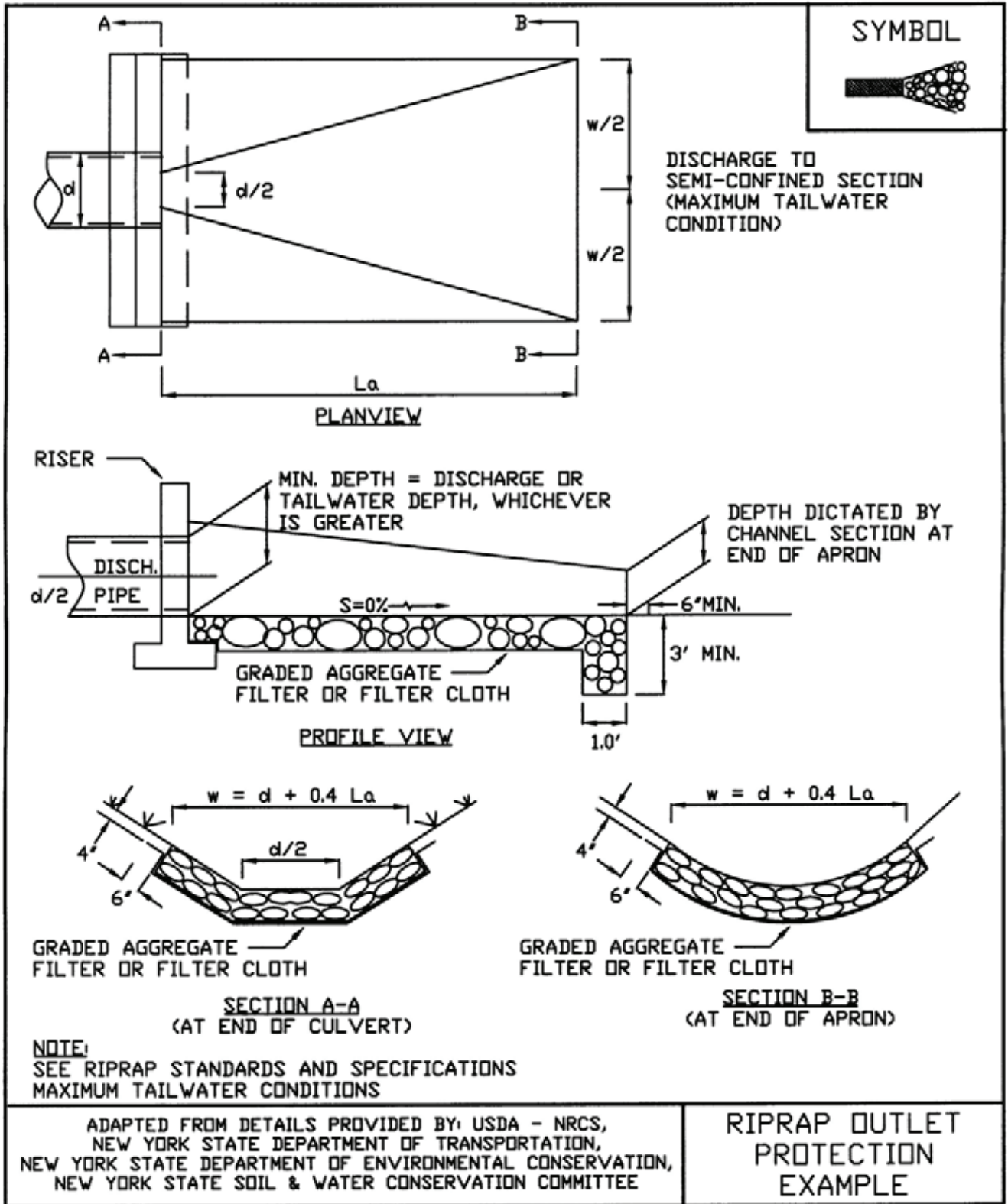


**Figure 5B.15**  
**Riprap Outlet Protection Detail (2)**





**Figure 5B.16  
Riprap Outlet Protection Detail (3)**



# STANDARD AND SPECIFICATIONS FOR SILT FENCE



2. Maximum drainage area for overland flow to a silt fence shall not exceed ¼ acre per 100 feet of fence, with 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.

## Definition

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.

## Purpose

The purpose of a silt fence is to reduce runoff velocity and effect deposition of transported sediment load. Limits imposed by ultraviolet stability of the fabric will dictate the maximum period the silt fence may be used (approximately one year).

## Conditions Where Practice Applies

A silt fence may be used subject to the following conditions:

1. Maximum allowable slope lengths contributing runoff to a silt fence placed on a slope are:

| <u>Slope Steepness</u> | <u>Maximum Length (ft.)</u> |
|------------------------|-----------------------------|
| 2:1                    | 25                          |
| 3:1                    | 50                          |
| 4:1                    | 75                          |
| 5:1 or flatter         | 100                         |

## Design Criteria

Design computations are not required for installations of 1 month or less. Longer installation periods should be designed for expected runoff. All silt fences shall be placed as close to the areas as possible, but at least 10 feet from the toe of a slope to allow for maintenance and roll down. The area beyond the fence must be undisturbed or stabilized.

Sensitive areas to be protected by silt fence may need to be reinforced by using heavy wire fencing for added support to prevent collapse.

Where ends of filter cloth come together, they shall be overlapped, folded and stapled to prevent sediment bypass. A detail of the silt fence shall be shown on the plan. See Figure 5A.8 on page 5A.21 for details.

## 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.

| <u>Fabric Properties</u>    | <u>Minimum Acceptable Value</u> | <u>Test Method</u> |
|-----------------------------|---------------------------------|--------------------|
| Grab Tensile Strength (lbs) | 90                              | ASTM D1682         |
| Elongation at Failure (%)   | 50                              | ASTM D1682         |



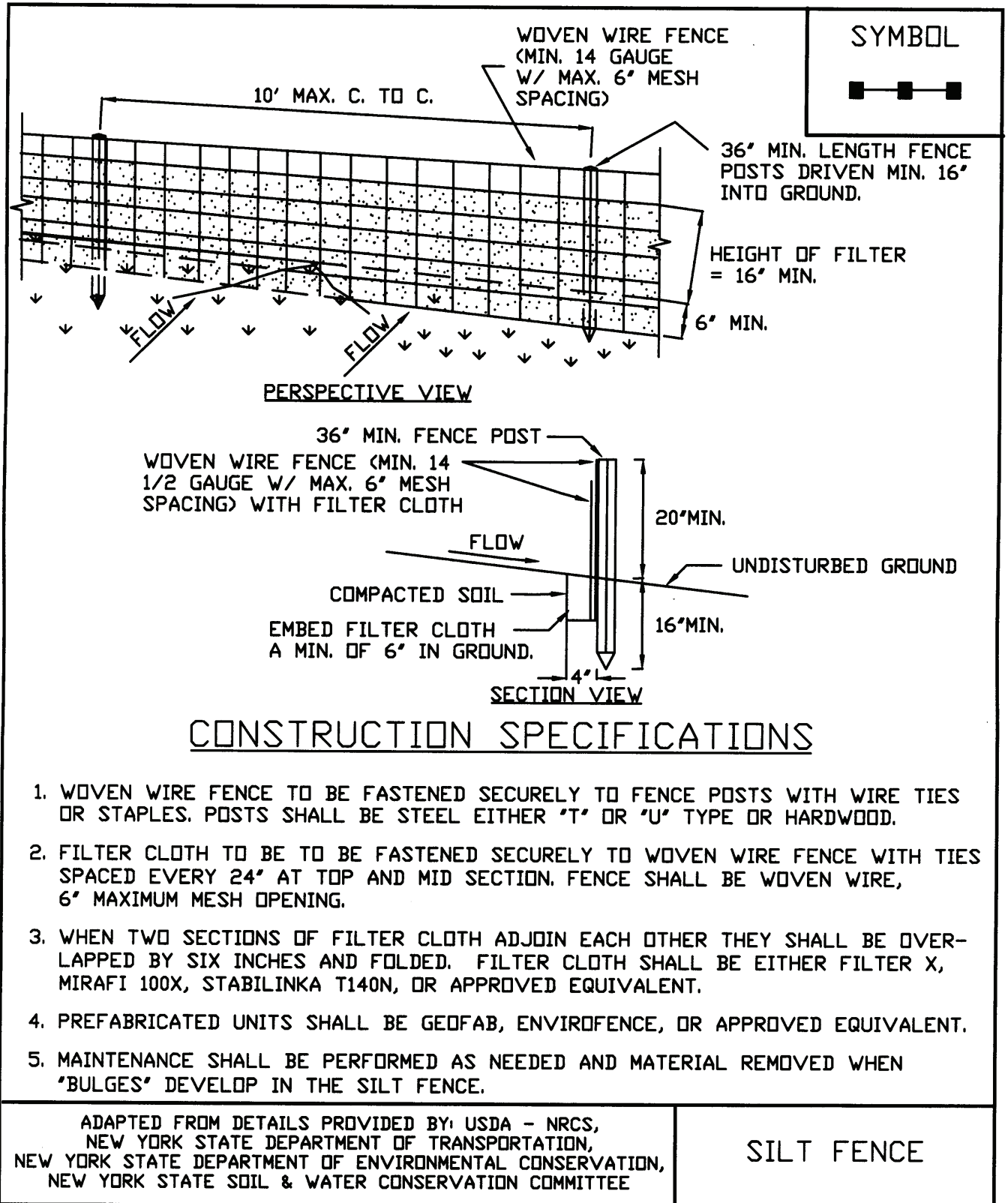
|                                     |       |                       |
|-------------------------------------|-------|-----------------------|
| Mullen Burst Strength (PSI)         | 190   | ASTM D3786            |
| Puncture Strength (lbs)             | 40    | ASTM D751 (modified)  |
| Slurry Flow Rate (gal/min/sf)       | 0.3   |                       |
| Equivalent Opening Size             | 40-80 | US Std Sieve CW-02215 |
| Ultraviolet Radiation Stability (%) | 90    | ASTM G-26             |

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 3.0 square inches. Steel posts will be standard T and U section weighing not less than 1.00 pound per linear foot.

3. Wire Fence (for fabricated units): Wire fencing shall be a minimum 14 gage with a maximum 6 in. mesh opening, or as approved.

4. Prefabricated Units: Envirofence, Geofab, or approved equal, may be used in lieu of the above method providing the unit is installed per details shown in Figure 5A.8.

**Figure 5A.8**  
**Silt Fence**



# STANDARD AND SPECIFICATIONS FOR TOPSOILING



## **Definition**

Spreading a specified quality and quantity of topsoil materials on graded or constructed subsoil areas.

## **Purpose**

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.
3. Refer to USDA Soil Conservation Service (presently 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 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 to a minimum depth of 12 inches with a deep ripper or chisel plow prior to topsoiling.
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.

## **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 following amounts:

| <b>Site Conditions</b>                          | <b>Intended Use</b>   | <b>Minimum Topsoil Depth</b> |
|---|-----------------------|------------------------------|
| 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, loam, or silt | Mowed lawn            | 4 in.                        |
|   | Tall legumes, unmowed | 1 in.                        |
|   | Tall grass, unmowed   | 1 in.                        |

# STANDARD AND SPECIFICATIONS FOR PROTECTING VEGETATION DURING CONSTRUCTION



## **Definition**

The protection of trees, shrubs, ground cover and other vegetation from damage by construction equipment.

## **Purpose**

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.

## **Condition Where Practice 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 Section 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.



# STANDARD AND SPECIFICATIONS FOR STABILIZED CONSTRUCTION ENTRANCE



## Definition

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.

## Purpose

The purpose of stabilized construction entrance is to reduce or eliminate the tracking of sediment onto public rights-of-way or streets.

## Conditions Where Practice Applies

A stabilized construction entrance shall be used at all points of construction ingress and egress.

## Design Criteria

See Figure 5A.35 on page 5A.76 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 <sup>3</sup> | Light Duty <sup>1</sup> | Heavy Duty <sup>2</sup> | Test Method           |
|--------------------------------|-------------------------|-------------------------|-----------------------|
|                                | Roads Grade Subgrade    | Haul Roads Rough Graded |                       |
| Grab Tensile Strength (lbs)    | 200                     | 220                     | ASTM D1682            |
| Elongation at Failure (%)      | 50                      | 60                      | ASTM D1682            |
| Mullen Brust Strength (lbs)    | 190                     | 430                     | ASTM D3786            |
| Puncture Strength (lbs)        | 40                      | 125                     | ASTM D751 modified    |
| Equivalent Opening Size        | 40-80                   | 40-80                   | US Std Sieve CW-02215 |
| Aggregate Depth                | 6                       | 10                      | --                    |

<sup>1</sup>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.

<sup>2</sup>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.

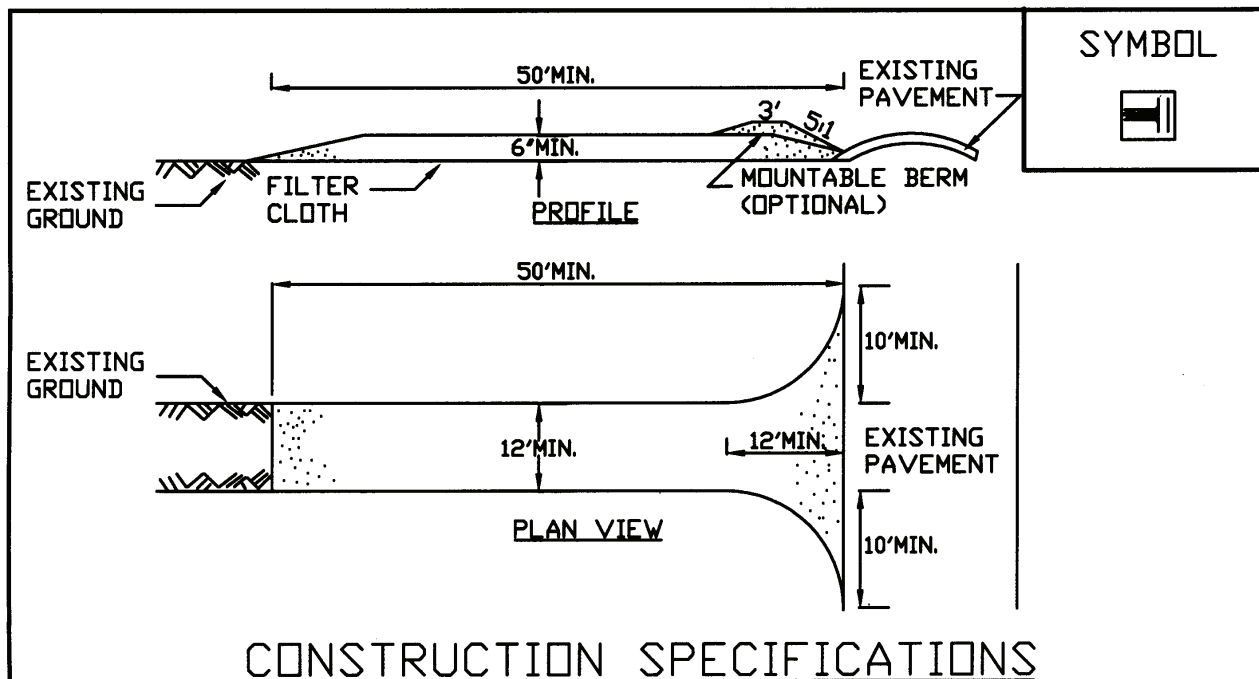
<sup>3</sup>Fabrics not meeting these specifications may be used only when design procedure and supporting documentation are supplied to determine aggregate depth and fabric strength.

## Maintenance

The entrance 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 5A.35  
Stabilized Construction Entrance**



### 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 ENTRANCES 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 TRACTED 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  
ENTRANCE**



# STANDARD AND SPECIFICATIONS FOR DUST CONTROL



## Definition

The control of dust resulting from land-disturbing activities.

## Purpose

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 local permitting authority.

## 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 routes.

**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 geotextiles 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.

All Stormwater Pollution Prevention Plans must contain the NYS DEC issued “Conditions for Use” and “Application Instructions” for any polymers used on the site. This information can be obtained from the NYS DEC website.

### **Maintenance**

Maintain dust control measures through dry weather periods until all disturbed areas are stabilized.



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