

Wetland Delineation Report

**National Grid
New York Energy Solution**

Princeton Junction to New Scotland Segment

**Schenectady and Albany Counties
New York**

Prepared for:

nationalgrid

**300 Erie Boulevard, West
Syracuse, NY 13202**

Prepared by:



**Tetra Tech, Inc.
1000 The American Road
Morris Plains, New Jersey 07950**

**October 2014
Updated August 2016**

Table of Contents

1.0 INTRODUCTION..... 1

 1.1 REGULATORY FRAMEWORK..... 2

2.0 PROJECT SEGMENT DESCRIPTION 3

 2.1 PHYSIOGRAPHIC AND LANDSCAPE SETTING..... 3

 2.2 LAND USE..... 3

 2.3 HYDROGRAPHY 3

3.0 METHODS..... 4

 3.1 WETLAND FIELD DELINEATION METHODS 4

 3.2 SURFACE WATERBODY FIELD DELINEATION METHODS 5

 3.3 FUNCTIONS AND VALUES ASSESSMENT 5

4.0 INFORMATION REVIEWED..... 6

 4.1 MAPPED WETLANDS 6

 4.1.1 *NWI Mapped Wetlands*..... 6

 4.1.2 *NYSDEC Mapped Freshwater Wetlands*..... 6

 4.2 SOILS 7

5.0 RESULTS 7

 5.1 DELINEATED WETLANDS 7

 5.2 DELINEATED NYSDEC WETLANDS AND ADJACENT AREAS 7

 5.3 DELINEATED SURFACE WATERBODIES 8

 5.4 ECOLOGICAL COMMUNITIES AND VEGETATION..... 8

 5.5 SOILS 10

 5.6 HYDROLOGY 11

 5.7 FUNCTIONS AND VALUES..... 11

6.0 SUMMARY 12

7.0 LITERATURE CITED 12



List of Tables

Table 4-1	NWI Mapped Wetlands within the Survey Area
Table 4-2	NYSDEC Mapped Wetlands within the Survey Area
Table 5-1	Delineated Wetlands within the Survey Area
Table 5-2	Delineated Wetland Covertypes
Table 5-3	Delineated NYSDEC Wetland Adjacent Area within the Survey Area
Table 5-4	Delineated Surface Waterbodies within the Survey Area
Table 5-5	Wetland Functions and Values Assessment

List of Figures

Figure 1	Project Location Map
Figure 2	Hydrography and Drainage Boundaries
Figure 3	NWI Mapped Wetlands
Figure 4	NYSDEC Mapped Wetlands and Streams
Figure 5	Delineated Wetlands and Surface Waterbodies

List of Appendices

Appendix A	USACE Wetland Determination Data Forms
Appendix B	Wetland Photographic Log
Appendix C	Surface Waterbody Data Forms
Appendix D	Surface Waterbody Photographic Log
Appendix E	NRCS Mapped Soil Units within the Survey Area

1.0 INTRODUCTION

Beginning in 2012, the New York State Public Service Commission (“NYSPSC” or “Commission”) initiated a number of proceedings to consider potential actions to address long-standing concerns that there is insufficient transmission capacity between upstate power generation sources and downstate consumers on New York's alternating current (AC) bulk electric transmission system. On December 17, 2015, the NYSPSC issued an order (“NYSPSC Order”) identifying numerous public policies that together constitute Public Policy Requirements (“PPR”) driving transmission needs associated with the Central East and UPNY/SENY interfaces of the New York State Transmission System. The NYSPSC referred the Central East and UPNY/SENY transmission needs (collectively named the “AC Transmission Public Policy Transmission Needs”, or “PPTN”) to the New York Independent System Operator (“NYISO”) for the solicitation and evaluation of potential solutions. The NYISO issued the AC Transmission PPTN solicitation on February 29, 2016 and accepted proposals from potential project developers on April 29, 2016.

The NYSPSC Order requested that the New York Transmission Owners (“NYTO”) propose to the NYISO the NYTOs’ Edic to New Scotland (“ED-NS”) and Princeton Junction to Rotterdam (“PT-RD”) transmission solution and the NYTOs’ Knickerbocker to Pleasant Valley (“KB-PV”) transmission solution. National Grid was one of the NYTOs that originally proposed these transmission solutions in the NYSPSC Case 13-M-0457, and National Grid is the developer member of the NYTOs that responded to the NYISO PPTN solicitation with the requested submittal of these transmission solutions collectively as the New York Energy Solution (“NYES”).

The NYISO PPTN solicitation reflected the project configuration that was presented in the Commission’s December 17, 2015 Order: Segment A and Segment B. Segment A addresses the Central East transmission need and Segment B addresses the UPNY/SENY transmission need. Segment A of the NYES consists of construction of a new 345 kV line from Edic to Princeton Junction (“ED-PT”) and Princeton Junction to New Scotland (“PT-NS”) on existing right-of-way; construction of two new 345 kV lines from Princeton Junction to Rotterdam (“PT-RD”) on existing right-of-way (to replace two, existing 230 kV lines, which will be removed from this same right-of-way); and includes a rebuild and expansion of the existing 230 kV Rotterdam Substation to include a 345 kV yard, and modifications to the existing Edic and New Scotland Substations. The total distance from the existing Edic Substation to the existing New Scotland Substation, including the distance from Princeton Junction to the existing Rotterdam Substation, is approximately 92 miles.

Segment B of the NYES consists of a new double-circuit 345/115 kV line from a new Knickerbocker Switching Station to the existing Pleasant Valley Substation on existing right-of-way (to include removal of one, existing 115kV line and modification/consolidation of a second, existing 115 kV line), including a rebuild of the Churchtown 115 kV Switching Station and an upgrade of the existing Pleasant Valley 345/115 kV Substation. The Knickerbocker to Pleasant Valley segment of the NYES includes Knickerbocker to Churchtown (“KB-CT”) and Churchtown to Pleasant Valley (“CT-PV”). The total distance from the proposed Knickerbocker Switching Station to the existing Pleasant Valley Substation is approximately 54 miles.

This Wetland Delineation Report documents the wetlands and surface waterbodies that were delineated within the Princeton Junction to New Scotland portion of Segment A of the proposed Project. Wetlands associated with the remaining portions of Segment A and Segment B of the referenced Project (Edic to Princeton Junction to Rotterdam (“ED-PT-RD”), Knickerbocker to Churchtown (“KB-CT”), and Churchtown to Pleasant Valley (“CT-PV”)) are described in three (3) separate reports. The purpose of this Wetland Delineation Report is to describe methods and results of the field survey to identify and delineate freshwater resources that may be subject to regulation under either federal or state jurisdiction and provide a characterization of these resources. Included are a description of the Project segment, methods used to delineate wetlands, information reviewed (concerning wetlands and soils), field survey results (relating to wetlands, surface waterbodies, vegetation, soils, hydrology, and functions and values), a summary, and a literature cited section. Appendices include wetland and surface waterbody data forms and photographic logs, and a description of Natural Resources Conservation Service (NRCS) Mapped Soil Units.

1.1 Regulatory Framework

In New York, wetlands are jointly regulated by the New York State Department of Environmental Conservation (NYSDEC) and the U.S. Army Corps of Engineers (USACE). New York State’s freshwater wetlands are protected under Article 24 of the Environmental Conservation Law, commonly referred to as the Freshwater Wetlands Act. Pursuant to Article 24, New York regulates wetlands greater than 12.4 acres or wetlands of any size that possess unique qualities. In addition, to protect and preserve wetlands New York regulates a wetlands adjacent area, defined as those areas of land or water that are outside a wetland and within 100 feet of the wetland boundary. The USACE has regulatory jurisdiction over waters of the United States including wetlands pursuant to Section 404 of the Clean Water Act, and jurisdiction over Navigable Waters of the United States pursuant to Section 10 of the 1899 Rivers and Harbors Act.

This Project will be subject to Article VII of the NYS Public Service Law, and following selection through the NYISO solicitation process, National Grid will prepare an Article VII Application (Application) for submittal to the NYSPSC to procure a Certificate of Environmental Compatibility and Public Need (Certificate). National Grid will also



prepare a Joint Permit Application (JPA) for submittal to the USACE and the NYS Department of Public Service (DPS) as part of the Article VII Application. In addition, National Grid will develop an Environmental Management and Construction Plan (EM&CP), which will describe measures implemented during and throughout construction and restoration phases of the Project to protect agricultural and environmental resources.

2.0 PROJECT SEGMENT DESCRIPTION

The Princeton Junction to New Scotland segment bisects Schenectady and Albany Counties, New York (Figure 1, Project Location Map). The Princeton Junction to New Scotland segment is approximately 19.8 miles of transmission line corridor.

2.1 *Physiographic and Landscape Setting*

The area associated with the Princeton Junction to New Scotland segment of the Project is located within the Lake State Fruit, Truck Crop, and Dairy Region (Land Resource Region L) of the Ontario-Erie Plain and Finger Lakes Region (USDA/NRCS, 2006). This region makes up 45,715 square miles in Michigan, New York, Ohio, Indiana, and Illinois and is characterized by a nearly level to gently sloping glaciated plain. About 99 percent of the region is privately owned and contains agricultural activities focused on dairy, beef cattle, canning crops, corn, soft winter wheat, beans, sugar beets, sour cherries, and grapes. In the Hudson Valley west of the Hudson River, bedrock consists of sedimentary rock, including shale, sandstone, greywacke, and siltstone (USDA/NRCS, 2013). The elevation along the Project segment ranges from 252 to 1,352 feet (77 to 412 meters).

2.2 *Land Use*

This Project segment is located in the town of Princeton in Schenectady County and the towns of Guiderland and New Scotland in Albany County. Much of the area surrounding the right-of-way (ROW) is rural with forests, agriculture, preserved open spaces, low density residential development, and a limited number of commercial businesses.

2.3 *Hydrography*

This Project segment is located west of the Hudson River (Figure 2, Hydrography and Drainage Boundaries) and lies primarily within the Middle Hudson Subbasin (Hydrologic Unit Code (HUC) 02020006), which includes the Normans Kill Watershed (HUC 0202000602) and Hannacrois Creek-Hudson River Watershed (HUC 0202000604). A small portion of the Project segment is located within the Alplaus Kill-Mohawk River Watershed (HUC 0202000411) which is part of the Mohawk Subbasin (HUC 02020004).

Many of the tributaries crossed by this Project segment are tributaries of the NYSDEC Bozer Kill, Vloman Kill, Vly Creek, and Norman's Kill. Vloman Kill and Normans Kill are tributaries of the Hudson River. Other NYSDEC surface waterbodies crossed by the Princeton Junction to New Scotland segment include Black Creek, Indian House Creek, Bonny Brook, and Plotter Kill.

3.0 METHODS

3.1 Wetland Field Delineation Methods

Field delineations were conducted along the Princeton Junction to New Scotland segment of the Project in May, June, July, and October 2014. Information reviewed prior to field mobilization included USGS 7.5-minute topographic maps, NYSDEC Freshwater Wetland Maps, and United States Department of the Interior National Wetland Inventory (NWI) Maps. The reviewed area, hereafter referred to as the Survey Area, included a 370-foot to 590-foot wide corridor along the transmission line and the substation property surrounding the New Scotland substation. Approximately 19.8 miles of transmission line corridor were reviewed as part of the Princeton Junction to New Scotland segment delineation effort.

Wetland boundaries were delineated in the field using the Routine Onsite Determination Method as described in the Corps of Engineers Wetlands Delineation Manual (USACE, Environmental Laboratory, 1987) for USACE jurisdictional wetlands and the Routine Delineation Procedure as described in the 1985 New York State Freshwater Wetlands Delineation Manual (Browne et al., 1995) for NYSDEC jurisdictional wetlands. The Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0 (January 2012), was also employed.

These methods incorporate a three-parameter approach using vegetation, soils, and hydrology to identify the presence of freshwater wetlands. Wetland boundaries were initially identified through visual assessment of vegetation and hydrology. This visual boundary was used to establish two sample locations (one wetland station and one upland station) to verify the boundary of the wetland by analyzing dominant vegetation, soil classification, and hydrology at each sample station. Wetland boundaries and sample stations were identified with pink and blue surveyor flagging, respectively, and corresponding Global Positioning System (GPS) waypoints were recorded using Trimble® Geo XH and XT handheld units. These units generally provide sub-meter accuracy; however, accuracy can range within three to five meters.

Dominant vegetation in each stratum (tree, shrub, herbaceous, and vine) was identified using appropriate regional field guides and assigned a wetland indicator status obtained from Reed, 1988. Cover classes for wetlands were based on the National Wetland Inventory classification hierarchy (Cowardin et al., 1979). Cover classes were assigned by determining the most abundant cover class in the wetland. A wetland was assigned multiple cover classes if more than one class comprised at least 30 percent areal coverage. The plant communities of each wetland sample and corresponding upland sample were also categorized according to a list of ecological communities known to occur in New York State as described in Edinger et al., 2014.

Soil profiles were examined using a hand auger or spade shovel at depths no less than 20 inches unless the auger or spade was refused, typically due to shallow bedrock. Soil characteristics were recorded in standard soil log format and soil colors were determined by using a Munsell Soil Color Chart (Kollmorgen Corporation, 2000). Primary (e.g. inundation, high water table, soil saturation, oxidized rhizospheres, water-stained leaves, etc.), and secondary wetland hydrology indicators (e.g. surface soil cracks, drainage patterns, etc.) were also visually assessed and recorded. Sketch maps and site photographs were recorded concurrent with sample station data. Sample station data sheets (including sketch maps), and wetland photographs recorded during the field efforts are provided in Appendices A and B, respectively.

Nomenclature for delineated wetlands consisted of an alphanumeric coding which identified the team that delineated the feature and the town that the feature was located. The wetland identifier generally started with the delineation team designation (i.e., A, B or C). This was followed by the suffix “W” to indicate wetland and a two letter town designation (i.e., “GU” for Guilderland and “NS” for New Scotland). Sequential numbers followed that identified the individual wetlands within each town. For example, the first wetland that was delineated by team C in Guilderland would be identified as C-WGU-01.

3.2 Surface Waterbody Field Delineation Methods

Surface waterbodies, including ponds and linear surface water conveyance systems with a discrete channel, that were identified within the Survey Area were flagged with orange or blue surveyor flagging and corresponding GPS waypoints were recorded. For streams greater than five feet in width both banks were delineated. For streams less than five feet in width only the centerline of the water course was delineated. Waterbodies were photo-documented and their characteristics, including width, depth, substrate, and bankside vegetation, were recorded on stream datasheets. Wetland drainage patterns were noted on sketch maps but not recorded on stream sheets unless a distinct bed and bank were observed. Surface waterbody nomenclature was similar to that established for wetlands with the addition of “S” suffix instead of “W” to indicate the presence of a stream or pond versus a wetland. Copies of stream data sheets and stream photographs recorded during the field effort are provided in Appendices C and D, respectively.

3.3 Functions and Values Assessment

A wetland functions and values assessment was conducted for the wetlands that were identified within the Survey Area using the USACE New England District Highway Methodology, Supplement Wetland Functions and Values Descriptive Approach (USACE, 1999). This method employs a descriptive approach to evaluate eight wetland functions (groundwater recharge/discharge, fish and shellfish habitat, flood flow alteration, sediment/toxicant/pathogen retention, nutrient removal, production export, sediment/shoreline stabilization, and wildlife habitat), and five wetland values (recreation,

education/scientific value, uniqueness/heritage, visual quality/aesthetics, and threatened or endangered species habitat).

Each wetland was evaluated considering the presence or absence of the eight wetland functions and five wetland values previously described. Wetland functions and values data was collected during the wetland delineation field effort. A field assessment of upland habitats within the Study Area that could potentially be utilized by threatened and endangered species was not performed concurrent to this wetland delineation effort.

4.0 INFORMATION REVIEWED

4.1 Mapped Wetlands

Federal (NWI) and State (NYSDEC) data regarding mapped wetlands were reviewed for the Survey Area. In several locations, both NWI and NYSDEC freshwater mapped wetlands coincide. Maps of the NWI and NYSDEC mapped freshwater wetlands associated with the Princeton Junction to New Scotland segment are provided as Figure 3 and Figure 4, respectively.

4.1.1 NWI Mapped Wetlands

The NWI maps wetlands by cover class. Based on NWI wetland mapping, 116.40 acres of NWI mapped wetlands, from 33 mapped wetland polygons, occur within the Princeton Junction to New Scotland segment. Table 4.1 provides the number of polygons and acreage of the federally mapped wetlands identified within the Survey Area by cover class. NWI data is provided for comparison purposes only and associated features are not included in calculating delineated wetland area within the Survey Area.

4.1.2 NYSDEC Mapped Freshwater Wetlands

The NYSDEC Freshwater Wetlands Act (1975) ranks wetlands in one of four classes ranging from Class I, which provide the most benefits, to Class IV, which provide the fewest benefits. Benefits derived from wetlands may include flood and storm control, wildlife habitat, protection of subsurface water resources, recreation, pollution treatment, erosion control, education, open space, and sources of nutrients. Class I, II, and III wetlands were identified within the Survey Area. Class IV wetlands were not identified within the Survey Area. Based on the State wetland maps, 97.40 acres of NYSDEC mapped freshwater wetlands, from six (6) separate NYSDEC mapped wetland polygons, occur within the Princeton Junction to New Scotland segment. Table 4.2 provides the number of NYSDEC mapped wetlands polygons and associated acreage identified within the Survey Area by Class.

4.2 Soils

A review of the USDA NRCS Soil Survey Geographic Database for Schenectady and Albany Counties, New York (1992) was conducted to determine what soils were present within the Survey Area. Sixty nine (69) mapped soil units were identified within the Survey Area of the Prinetown Junction to New Scotland segment of the Project. Fourteen (14) of the mapped soil units were identified as hydric soils or soils with hydric inclusions (USDA, 2014). A detailed description of each mapped soil unit within the Survey Area is presented in Appendix E.

5.0 RESULTS

One hundred and twenty three (123) field delineated wetlands and 85 field delineated surface waterbodies were identified within the Survey Area. The locations of these delineated features are identified on Figure 5, Delineated Wetlands and Surface Waterbodies.

5.1 Delineated Wetlands

One hundred and twenty three (123) wetland polygons comprising 287.60 acres were field delineated within the Survey Area. Delineated wetlands identified within the Survey Area are provided in Table 5-1. Delineated wetland locations are depicted on Figure 5, Delineated Wetlands and Surface Waterbodies.

Predominant wetland cover types encountered were palustrine scrub shrub (PSS) and palustrine emergent (PEM) as defined by Cowardin and others (1979). Acreages of delineated wetland polygons by cover type are provided in Table 5-2. Specific community characteristics of all wetland cover types encountered during field efforts are summarized in Section 5.4.

5.2 Delineated NYSDEC Wetlands and Adjacent Areas

Delineated wetlands that were located within the boundaries of NYSDEC mapped freshwater wetland polygons were designated as NYSDEC wetlands. A 100-foot adjacent area was generated for each wetland identified as a NYSDEC wetland. Adjacent areas from more than one wetland were joined to prevent an over estimate of adjacent areas acreage.

Nine (9) of the 123 wetlands that are intersected by the Survey Area were identified as NYSDEC wetlands (146.05 acres total). State regulated delineated wetlands and the associated acreages within the Survey Area are identified by an asterisk (*) and bold text in Table 5-1.

Thirty-one and a half (31.49) acres of NYSDEC adjacent area also occurs within the Survey Area. The acreages of the state regulated adjacent areas that occur within the Survey Area, and their wetland associations, are provided in Table 5-3. It should be noted that the acres

of NYSDEC adjacent area within the Survey Area may be underestimated as delineation efforts were limited to the right-of-way (ROW).

5.3 *Delineated Surface Waterbodies*

Eighty-five (85) surface waterbodies, including 39,198 linear feet (7.4 miles) of streams and ditches and 1.57 acres of ponds, were identified within the Survey Area. The surface waterbodies included 59 streams (19 perennial, 25 intermittent, and 15 ephemeral), six ponds, seven agricultural ditches, 11 roadside ditches, one railroad ditch, and one ditch. Table 5-4 lists each surface waterbody identified in the Survey Area for this segment, its NYSDEC classification, and location. Surface waterbodies are depicted on Figure 5, Delineated Wetlands and Surface Waterbodies.

Under the Environmental Conservation Law (Article 15), New York regulates surface freshwater resources by their best uses (fishing, source of drinking water, etc.) (6 NYCRR Part 701) or as Wild, Scenic and Recreation Rivers (6 NYCRR Part 666). No Wild, Scenic and Recreational Rivers were identified within the Princeton Junction to New Scotland segment of the Project. State water quality classifications of watercourses fall into three (3) categories: Class A, B, and C streams. The classification AA or A is assigned to waters used as a source of drinking water. Classification B indicates a best usage for swimming and other contact recreation, but not for drinking water. Classification C is for waters supporting fisheries and suitable for non-contact activities. The lowest classification and standard is D. Waters with classifications A, B, and C may also have a standard of (T), indicating that it may support a trout population, or (TS), indicating that it may support trout spawning. Special requirements apply to sustain these waters that support these valuable and sensitive fisheries resources (NYSDEC, 2010).

There are no Class B or D surface waterbodies within the Princeton Junction to New Scotland segment Survey Area. Three (3) of the surface waterbodies (1,723 linear feet, or 0.33 miles) delineated within the Survey Area are classified as Class A waters. Twenty-one (21) of the surface waterbodies (14,161 linear feet, or 2.68 miles) delineated within the Survey Area are classified as Class C waters. One (1) Class C surface waterbody (869 feet, 0.17 miles) was designated as T. The remaining 35 streams (13,891 linear feet, or 2.63 miles), 20 ditches (9,422 linear feet, or 1.78 miles), and 6 ponds (1.57 acres) are not classified.

5.4 *Ecological Communities and Vegetation*

Vegetative communities identified in the Survey Area included riverine, palustrine, and terrestrial systems as described in Edinger et al. (2014). Riverine systems consist of non-tidal linear flowing aquatic communities with a discrete channel. These systems may include abundant submerged or floating-leaved aquatic vegetation. Palustrine systems consist of non-tidal, perennial wetlands characterized by emergent vegetation. Hydrologic regimes include permanently saturated, permanently flooded, seasonally flooded and

intermittently flooded. Wetland communities are further distinguished by their plant composition and substrate. Terrestrial systems consist of upland habitats. These habitats include dry to mesic well-drained soils and cover that is never dominated by hydrophytic vegetation (Edinger et al., 2014).

The most frequent land use encountered during field surveys was brushy cleared land within existing maintained electric transmission corridors, consisting of vegetative communities of various successional stages corresponding to the time since the most recent maintenance activities (e.g. clearing or mowing). There were few forested communities within the Survey Area, given the historic clearing activities associated with maintaining the existing ROW. Most of the area adjacent to the Survey Area was upland forested communities interspersed with agriculture along the Princeton Junction to New Scotland segment.

Palustrine classes identified within the Survey Area were mainly non-forested wetlands consisting of scrub-shrub swamps and shallow emergent marshes generally located on mineral soils. Approximately 283.75 acres (99 percent) of the wetlands delineated within the Survey Area were identified as scrub shrub or emergent. The remaining delineated wetlands were identified as forested, forested and scrub shrub or forested and emergent communities. Acreages of delineated wetland polygons by cover type are provided in Table 5-2.

Species identified in the palustrine emergent wetlands of the Princeton Junction to New Scotland segment included bedstraw (*Galium* sp.), branched bur-reed (*Sparganium angrocladum*), broad-leaf meadowsweet (*Spiraea latifolia*), bulrush (*Scirpus* sp.), cattail (*Typha* sp.), jewelweed (*Impatiens capensis*), meadowgrass (*Poa pratensis*), common reed (*Phragmites australis*), soft rush (*Juncus effusus*), gray dogwood (*Cornus racemosa*), flat-topped white aster (*Doellingeria umbellata*), giant goldenrod (*Solidago gigantea*), Tartarian honeysuckle (*Lonicera tatarica*), manna grass (*Glyceria melicaria*), marsh fern (*Thelypteris palustris*), horsetail (*Equisetum* sp.), New England Aster (*Symphotrichum novae-angliae*), purple loosestrife (*Lythrum salicaria*), Queen Anne's lace (*Daucus carota*), rice cutgrass (*Leersia oryzoides*), red fescue (*Festuca rubra*), reed canary grass (*Phalaris arundinacea*), sedges (*Carex* spp.), sensitive fern (*Onoclea sensibilis*), southern arrowwood (*Viburnum dentatum*), Spanish lotus (*Lotus unifoliolatus*), timothy (*Phleum pratense*), water hemlock (*Cicuta maculata*), and woolgrass (*Scirpus cyperinus*).

Species found within palustrine scrub-shrub wetlands included American willow (*Salix discolor*), black willow (*Salix nigra*), green ash (*Fraxinus pennsylvanica*), grey alder (*Alnus incana*), Tartarian honeysuckle, dogwood (*Cornus* sp.), red maple (*Acer rubrum*), and southern arrowwood in the shrub layer and bedstraw, bulrush, cattail, common reed, soft rush, fringed loosestrife (*Lysimachia ciliate*), goldenrods (*Solidago* spp.), sensitive fern, meadow hawkweed (*Hieracium caespitosum*) meadow horsetail (*Equisetum*

pratense), purple loosestrife, reed canary grass, rough bentgrass (*Agrostis scabra*), sedges (*Carex* spp.), Spanish lotus, stiff cowbane (*Oxypolis rigidior*), sweet vernal grass (*Anthoxanthum odoratum*), timothy, vetch (*Vicia cracca*), tussock sedge (*Carex stricta*), and wild strawberry (*Fragaria virginiana*) in the herbaceous layer.

The palustrine forested community in the Survey Area of the of the Princeton Junction to New Scotland segment included American elm (*Ulmus americana*), American hornbeam (*Carpinus caroliniana*) Canadian hemlock (*Tsuga canadensis*), green ash, sugar maple (*Acer saccharum*), and red oak (*Quercus rubra*) in the tree stratum, and cinnamon fern (*Osmunda cinnamomea*), jewelweed, meadow horsetail, red maple, and sensitive fern, in the herbaceous stratum.

Dominant plant species observed in the contiguous upland communities included bedstraw (*Galium* sp.), bent grass (*Agrostis* sp.), brown knapweed (*Centaurea jacea*), Canada thistle (*Cirsium arvense*), clover (*Trifolium* sp.), common juniper (*Juniperus communis*), meadowgrass, dandelion (*Taraxacum officinale*), fescue (*Festuca* sp.), goldenrods, morrow's honeysuckle (*Lonicera morrowii*), gray dogwood, ox-eye daisy (*Leucanthemum vulgare*), parsnip (*Pastinaca sativa*), red maple, ryegrass (*Lolium perenne*), poison ivy (*Toxicodendron radicans*), Spanish lotus, and wild strawberry.

Nine (9) non-native plant species, as identified by the New York State Non-Native Plant Species Invasiveness Assessment, compiled by the Cornell Cooperative Extension Invasive Species Program, were observed within the Survey Area. Six of the species noted occur on the *Interim List of Invasive Plant Species in New York State* (NYSDEC, 2012). The invasive species encountered along the ROW included brown knapweed, Canada thistle, common reed, morrow's honeysuckle, Tartarian honeysuckle, purple loosestrife, reed canary grass, timothy, and vetch (NYIS, 2014).

5.5 Soils

Sixty nine (69) soil units mapped by the NRCS occur within the Survey Area. According to the National List of Hydric Soils, 14 soil units (Ae – Allis Silt Loam; Br – Birdsall mucky silt loam; FL – Fluvaquents, loamy; Fr – Fredon silt loam; Fx – Fluvaquents-Udfluvents complex, frequently flooded; IIA – Ilion silt loam; IIB – Ilian silt loam; In – Ilion silt loam; Ma – Madalin silty clay loam; Mh – Medihemists and Hydraquents, ponded; Ra – Raynham very fine sandy loam; TvA - Tuller-Brockport complex; TvB - Tuller-Brockport complex; and Wo – Wayland soils complex, non-calcareous substratum) are designated by the NRCS as hydric (NRCS, 2014). The hydric criteria for soils in the Northeast Region have been updated in the Northcentral and Northeast Supplement (USACE, 2012). A detailed description of each mapped soil unit along the Project segment is presented in Appendix E.

Glacial activity has been the driving mechanism in the development of the existing soil structures throughout the Survey Area. Repeated advance and retreat of glacial ice resulted in large scale erosion and re-deposition throughout the Hudson River valley which acted as the primary drainage of sediment-laden glacial melt water from the Great Lakes. In general, the Survey Area is located in an area formed in glacial till with a makeup influenced by the composition of the local bedrock over which glaciation moved and picked up rock material. The Survey Area is underlain primarily by sedimentary rock composed of shale, sandstone, and limestone, with most of the soils consisting of a mixture of several of these rock types, none of which are dominant (USDA/SCS, 1992).

Soils within the Survey Area matched the silty loam and silty clay loam soils mapped by the NRCS for the area. Soils observed in the wetlands of the Prinetown Junction to New Scotland segment generally consisted of silts and loamy soils over silts and clays. Silt and loamy soil horizon colors included gray (10YR 5/1), grayish brown (10YR 5/2), dark gray (10YR 4/1), dark grayish brown (10YR 4/2), very dark gray (10YR 3/1), very dark grayish brown (10YR 3/2) and black (10YR 2/1). Subsoil horizon colors included light grayish brown (10YR 6/2) dark grayish brown (10YR 5/2), and dark grayish brown (10YR 4/2).

A depleted matrix was the most commonly observed hydric soil indicators (F3: Depleted Matrix). Soils located in upland areas did not exhibit the required combination of matrix value and chroma, redox features, and thickness for hydric soil classification.

5.6 Hydrology

Wetland hydrology largely results from a seasonally high water table and seasonal inundation due to clayey soils with slow surface drainage and very slow water movement through the subsoil and substratum. The most prevalent indicators recorded for delineated wetlands along the Prinetown Junction to New Scotland segment included A1: Surface Water, A2: High Water Table, and A3: Saturation.

5.7 Functions and Values

Wildlife Habitat and Groundwater Recharge/Discharge were the most prevalent primary and secondary wetland functions associated with the delineated wetlands within the Prinetown Junction to New Scotland segment of the Project. Wetland values, when identified for this segment, were observed as secondary indicators only. Recreation and Visual Quality/Aesthetics were the most prevalent secondary indicators for wetland value.

Five of the delineated wetlands were identified as supporting habitat preferred by threatened and endangered species. These five wetlands comprised habitat potentially suitable for bog turtles (*Clemmys muhlenbergii*); however, based on consultation with the NYSDEC and USFWS, there have been no recent known occurrences of bog turtles in the vicinity of the Prinetown Junction to New Scotland segment. Two of the five wetlands identified as potentially supporting threatened and endangered species are associated with

the Black Creek Marsh Wildlife Management Area at the border of New Scotland and Guilderland, which may provide habitat for wetland-dependant avian species such as the pied-billed grebe (*Podilymbus podiceps*), the king rail (*Rallus elegans*), and the least bittern (*Ixobrychus exilis*). Wetland functions and values observed during the wetland delineation effort are provided by wetland ID in Table 5-5.

6.0 Summary

This Wetland Delineation Report documents the wetlands and surface waterbodies that were delineated within the Princeton Junction to New Scotland segment of the proposed Project. The Survey Area included a 370-foot to 590-foot wide corridor along the transmission line. One hundred and twenty three (123) wetland polygons comprising 287.60 acres and 85 surface water bodies including 39,198 linear feet (7.4 miles) of streams and ditches and 1.57 acres of ponds were identified within the Survey Area of the Princeton Junction to New Scotland segment. The predominant wetland cover type encountered was PSS and PEM. Nine (9) of the 123 wetlands that are intersected by the Survey Area were identified as NYSDEC wetlands (146.05 acres total). Thirty-one and a half (31.49) acres of NYSDEC adjacent area also occurs within the Survey Area.

There are no Class B or D surface waterbodies within the Princeton Junction to New Scotland segment Survey Area. Three (3) of the surface waterbodies (1,723 linear feet, or 0.33 miles) delineated within the Survey Area are classified as Class A waters. Twenty-one (21) of the surface waterbodies (14,161 linear feet, or 2.68 miles) delineated within the Survey Area are classified as Class C waters. One (1) Class C surface waterbody (869 feet, 0.17 miles) was designated as T. The remaining 35 steams (13,891 linear feet, or 2.63 miles), 20 ditches (9,422 linear feet, or 1.78 miles), and 6 ponds (1.57 acres) are not classified.

Wildlife Habitat and Groundwater Recharge/Discharge were the most prevalent primary and secondary wetland functions associated with the delineated wetlands within the Princeton Junction to New Scotland segment of the Project. Wetland values, when identified for this segment, were observed as secondary indicators only. Recreation and Visual Quality/Aesthetics were the most prevent secondary indicators for wetland value. Five of the delineated wetlands were identified as supporting habitat that could potentially be used by threatened and endangered species. Further evaluation, beyond this functions and values assessment, may be required to determine the presence or absence of threatened and endangered plant and animal species habitat occurring within the Study Area.

7.0 Literature Cited

Browne, S., Crocoll, S., Goetke, D., Heaslip, N., Kerpez, T., Kogut, K., Sanford, S., and Spada, D., 1995. New York State Freshwater Wetlands Delineation Manual. New York State Department of Environment and Conservation, July 1995. 35 pp plus appendices.

- Cowardin, L. M., V. Carter, F. C. Golet, E. T. LaRoe, 1979. Classification of Wetlands and Deepwater Habitats of the United States. U. S. Department of the Interior, Fish and Wildlife Service FWS/OBS-79/31. Washington, D.C. 131pp.
- Edinger, G.J., D.J. Evans, S. Gebauer, T.G. Howard, D.M. Hunt, and A.M. Olivero (editors), 2014. Ecological Communities of New York State. Second Edition. A revised and expanded edition of Carol Reschke's Ecological Communities of New York State. New York Natural Heritage Program, New York State Department of Environmental Conservation, Albany, NY.
- Kollmorgen Corporation, 2000. Munsell Soil Color Charts. Macbeth Division of Kollmorgen Corp., Baltimore, MD.
- New York State Department of Environmental Conservation (NYSDEC), 2010. Division of Water, Bureau of Water Assessment and Monitoring, NYDEC Surface Water Quality Classifications (WQC).
- NYSDEC, 1999. New York State Regulatory Freshwater Wetlands For Schenectady and Albany Counties.
- New York Invasive Species (NYIS), 2014. Non-Native Plant Species Invasiveness Assessment. New York Invasive Species Clearing House. Cornell Cooperative Extension Invasive Species Program and Sea Grant New York.
- New York State Digital Ortho-imagery Program (NYSDOP), 2009 through 2011. NYS Office of Information Technology Services, GIS Program Office. High Resolution Digital Ortho Photography for Schenectady and Albany Counties. 2009, 2009, 2010, and 2011 respectively.
- Reed, P.B., Jr. 1988. National List of Plant Species that Occur in Wetlands: Northeast (Region 1). U.S. Fish and Wildlife Service, Biological Report 88(26.14). 111 pp.
- Soil Survey Geographic (SSURGO), 2013. Database for Albany County, New York. U.S. Department of Agriculture, Natural Resources Conservation Service
- U.S. Army Corps of Engineers (USACE), 2012. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0), ed. J.S. Wakeley, R.W. Lichvar, C.V. Noble, and J.F. Berkowitz. ERDC/EL TR-12-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- USACE, 1999. The Highway Methodology Workbook Supplement. New England District, U.S. Army Corps of Engineers. NAEPP-360-1-30a. Concord, MA.
- USACE, 1987. Environmental Laboratory. Corps of Engineers Wetland Delineation Manual. Department of the Army. Technical Report. Y-87-1. U.S. Army Engineers Waterways Experiment Station, Vicksburg, MS. 99 pp. plus appendices.

- U.S. Department of Agriculture, Natural Resources Conservation Service (USDA/NRCS), 2014. National List of Hydric Soils, March 2014.
- USDA/NRCS, 2013. Soil Survey Geographic (SSURGO) database for Schenectady and Albany Counties, New York.
- USDA/NRSC, 2006. Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin. United States Department of Agriculture Handbook 296. Pp. 306
- U.S. Department of Agriculture, Soil Conservation Service (USDA/SCS), 1978. Soil Survey for Schenectady County, New York. p. 163.
- USDA/SCS, 1992. Soil Survey for Albany County, New York. In cooperation with Cornell University Agricultural Experiment Station.
- U.S. Fish and Wildlife Service (USFWS), 2014. National Wetland Inventory for New York State. May 2014 database.
- U.S. Geological Survey in cooperation with U.S. Environmental Protection Agency, USDA Forest Service, and other Federal, State and local partners, 2010. National Hydrography Dataset. New York.

Figures

Tables