



River Road Mitigation Site Oswego River Service Area Ducks Unlimited In-Lieu Fee Program

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0.0 INTRODUCTION

Ducks Unlimited, Inc. (DU) established the Ducks Unlimited, Inc. New York In-Lieu Fee Program (DU-NY ILF Program) to provide a third party compensatory mitigation option to permit applicants under the permit programs of the U.S. Army Corps of Engineers (USACE) and the New York State Department of Environmental Conservation (NYSDEC). The DU-NY ILF Program has sold 3.25 credits to permit applicants to compensate for wetland impacts in the Oswego River sub-basin (HUC 04140203). Credits were purchased to compensate for impacts to 1.635 acres of wetlands in the Oswego River sub-basin (Appendix A).

DU identified and evaluated an extensive list of potential mitigation sites in coordination with State, Federal and other NGO partners. The River Road site (hereinafter Mitigation Site) was selected as having the highest opportunity for creation and meaningful preservation based on location, size, likelihood of success, and types of existing and potential aquatic resources. The following mitigation plan has been prepared and will be implemented by DU in accordance with 33 CFR 332.4, the “U.S. Army Corps of Engineers New York District Compensatory Mitigation Guidelines” and the “Guidelines for Mitigation Banking in Ohio” (currently used by the U.S. Army Corps of Engineers Buffalo District).

1.0 GOALS AND OBJECTIVES

The overall goal of this compensatory wetland mitigation plan is to generate 28.8 credits in the Oswego River Service Area. The functions and values that will be realized by this proposed wetland mitigation plan aim to replace, at a minimum, the functions and values of the wetlands impacted. These functions and values include groundwater recharge/discharge, floodflow alteration, sediment retention, nutrient removal and wildlife habitat.

The wetland mitigation plan will take into consideration the priority issues and recommendations set forth by the New York State Wildlife Action Plan. These priority issues include degraded water quality, habitats for species of greatest conservation need (SGCN), manage invasive plant species, and protection and restoration of wildlife habitat.

Given the size, cost, and location of the property, it is expected the Mitigation Site would be attractive to buyers looking for land for residential development. Land south of the Mitigation Site has been converted into subdivisions, so development is a threat to the Mitigation Site’s conservation value. The Mitigation Site is located in the Oswego River sub-basin (HUC 04140203), which has 9.2% of its land developed, and 28.3% of its land use in agriculture and grassland.

The Mitigation Site has a stream that flows into the upper main stem of Oswego River (waterbody ID: NY-0701-0021) nearby (i.e. 0.25 mi.), and this portion of Oswego River is on the New York 303(d) Listed Waters for Reporting Year 2012 (Environmental Protection Agency, 2012) classified as needing verification of impacts (Appendix B, Fig. 7). This portion of Oswego River is listed because its aquatic life and recreational use are threatened due to nutrients, pathogens, and sedimentation from agricultural and urban runoff. Restoring wetlands at the

Mitigation Site will improve water quality in the watershed by removing nutrients from surface flow.

This wetland mitigation plan will provide breeding and migration habitat for waterfowl species such as American black duck and wood duck. Other species that will benefit from this project include New York State Department of Conservation (NYSDEC) Species of Greatest Conservation Need (SGCN) such as American woodcock, blue-winged warbler, golden-winged warbler, northern harrier, scarlet tanager, and wood thrush.

Palustrine mineral soil wetlands are the critical aquatic habitat supporting the greatest number of SGCN in the Southeast Lake Ontario basin. The NYSDEC recommends restoring degraded emergent marshes in the Southeast Lake Ontario basin. The objectives of the mitigation work plan are:

- Establish 22.2 acres of palustrine forested (PFO) wetlands
- Establish 5.9 acres of palustrine emergent (PEM) wetlands
- Establish 2.7 acres of palustrine scrub-shrub (PSS) wetlands
- Preserve 20.3 acres of forested upland buffer
- Preserve 18.7 acres of PFO/SS wetlands

2.0 MITIGATION SITE SELECTION

The mitigation site was selected for the following reasons:

1. It is in the Oswego River Service Area.
2. It has the soils, adequate hydrology, and topography conducive to successful wetland establishment.
3. The site presents a cost-effective opportunity to create a greater amount of wetland habitat than the minimum required amount and with a high likelihood of success in replacing wetland functions lost at the impact sites.
4. Wetland mitigation at this site will realize positive impacts to a diversity of wildlife species and will not negatively impact known endangered or threatened plants or animals.
5. The site will not negatively impact cultural resources pending review from an archaeological survey.
6. There are no logistical or design constraints at the site that would inhibit successful wetland establishment.
7. The site is under threat of residential development.

3.0 BASELINE INFORMATION

Location

The Mitigation Site is located at Latitude: 43.217055° and Longitude: -76.300530° on River Road in the town of Lysander, Onondaga County, New York in the Ox Creek/Oswego River watershed (HUC 0414020301).

Site Information

The Mitigation Site encompasses 83 acres of privately owned land. The land composition of the Mitigation Site is detailed in Table 1 and illustrated in Appendix B, Fig. 12. The surrounding land use consists of agriculture, upland forests, and wetlands. The Mitigation Site was used for row crops and hay. A stream runs through the Mitigation Site. There are no known hazardous material sites in the vicinity of the site. The topography of the site ranges from 114 m above sea level to 120 m above sea level (Appendix B, Fig. 3).

Table 1. Land composition of Mitigation Site

<u>Land Type</u>	<u>Acres</u>	<u>Percent</u>
Emergent Wetlands	3.0	3.6
Forested Wetlands	15.7	18.9
Upland Forests	22.9	27.7
Cropland	9.1	10.9
Prairie/Pasture	27.4	33.0
Scrub/Shrub	3.3	4.0
Open Water	1.5	1.8
Total Acreage	83.0	100

Cultural Resources

A request for an environmental review of the Mitigation Site was submitted to the New York State Office of Parks, Recreation and Historic Preservation (OPRHP). Based on the environmental review, the OPRHP recommended a Phase I archaeological survey for the Mitigation Site (Appendix C). A request for proposals will be submitted to qualified archaeological consultants to perform the Phase I archaeological survey. The results of the Phase I archaeological survey will be submitted to the OPRHP for review. Based on findings from the archaeological survey, the design plans will be modified to ensure no damage will occur on historic sites.

Wildlife Usage

According to the NYS Breeding Bird Atlas 2000 – 2005 survey, the site is in an area where several SGCN addressed in the NYSDEC’s State Wildlife Action Plan (NYSDEC, 2015) were observed. These SGCN were American woodcock, blue-winged warbler, golden-winged warbler, Northern harrier, scarlet tanager, and wood thrush. Implementing the mitigation plan

will benefit these SGCN by protecting and/or increasing their habitat. Implementing the mitigation plan will not negatively impact any of these SGCN.

According to the US Fish and Wildlife Service's (USFWS) Official Species List for the Mitigation Site (Appendix D), the northern long-eared bat, Indiana bat and northern bog turtle may occur within the Mitigation Site's boundary. According to the NYSDEC, the northern long-eared bat and Indiana bat's primary habitats include caves and tunnels, upland forests, and wetland forests (NYSDEC, 2015). The proposed wetland mitigation activities will have no effect on northern long-eared bat or Indiana bat. Efforts will be made within the mitigation area to improve northern long-eared bat and Indiana bat habitat if possible. According to the NYSDEC, the northern bog turtle's primary habitats are wetlands such as fens, sedge meadows and hardwood swamps. The proposed wetland mitigation activities will have no effect on northern bog turtle. Efforts will be made within the mitigation area to improve northern bog turtle habitat if possible.

Watershed

The Mitigation Site is within the Ox Creek/Oswego River watershed (HUC 0414020301) located in the Oswego River sub-basin (HUC 04140203). The Oswego River sub-basin is the smallest sub-basin in New York. The Mitigation Site includes a tributary of Oswego River. Oswego River is the second largest tributary of Lake Ontario in the state. Water quality is a major environmental issue in the watershed. The Oswego River was delisted as an EPA Area of Concern in 2006. The lower main stem of Oswego River (portion 2) (i.e. waterbody ID: 0701-0006) is on the "New York State 2014 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy."

The land use of the Oswego River sub-basin can be characterized as predominately forested in the northern region and land used for agriculture is predominately in the south-west region. Farming operations are mostly horse farms and the primary crop is hay. Agriculture and grassland accounts for 28.3% of the land use in the watershed.

Wetlands

According to the National Wetland Inventory (NWI), there are already wetlands present at the Mitigation Site (Appendix B, Fig. 5). The Mitigation Site supports PSS and PFO wetlands. These wetlands are classified as state-regulated freshwater wetlands (Wetlands ID: BAL-5) (Appendix B, Fig. 6). The Mitigation Site is adjacent to a silver maple-ash swamp in Three Rivers Wildlife Management Area (WMA) classified as a significant natural community by the NYSDEC. An on-site wetland delineation was unable to be performed due to time constraints. A preliminary wetland delineation was performed with GIS software (Appendix E, Fig. 1). The preliminary wetland delineation will be verified in the field during the growing season.

Hydrology

The primary inputs of water to the Mitigation Site are direct precipitation, surface water runoff and groundwater seepage.

According to the Northeast Regional Climate Center, the Mitigation Site is an area where the average annual precipitation is 43.0 inches. A conservative estimate of water loss due to

evapotranspiration is 23.9 inches of water loss during the growing season (May – October). This estimate is based upon a field study conducted with reed canary grass (*Phalaris arundinacea*) in Iowa (Schilling and Kiniry, 2007). In an average year the Mitigation Site will have enough water from direct precipitation to overcome water loss from potential evapotranspiration by 19.1 inches.

In addition, a high water table will help the re-established/rehabilitated wetlands retain water and contribute to the Mitigation Site's hydrology. Monitoring wells with pressure transducers will be installed prior to the construction phase to gather more data regarding the water table.

The Mitigation Site drains an area of 242.0 acres including the footprint of the Mitigation Site (Appendix B, Fig. 8).

Vegetation

The site is primarily in agriculture. There are some forested areas with hardwoods, eastern cottonwoods (*Populus deltoides*), and maples (*Acer* spp.). Wetland areas on the property had willows (*Salix* spp.), sedges (*Carex* spp.), reed canary grass (*Phalaris arundinacea*), common reed (*Phragmites australis*), and cattails (*Typha* spp.). Further evaluation of the existing vegetation community will occur when an onsite wetland delineation is conducted.

Soils

The following soil series are present at the Mitigation Site based on the soil map (Appendix B, Fig. 4).

Canandaigua series consists of very deep, poorly and very poorly drained soils on lowland lake plains and in depressional areas on glaciated uplands. Canandaigua mucky silt loam (Cd) is classified as a hydric soil with a hydric rating of 95%. Cd has a water table at the soil surface. Cd has moderately high saturated hydraulic conductivity.

Collamer series consists of very deep, moderately well-drained soils on lake plains and till plains. Collamer silt loam, 0 – 2% slopes (ChA) and Collamer silt loam, 2 – 6% slopes (ChB) are not classified as a hydric soil. ChA and ChB both have a depth to water table of 21 inches. Both ChA and ChB have moderately high saturated hydraulic conductivity.

Dunkirk series consists of very deep, well-drained silty soils on lake plains and along lower valley sides. Dunkirk silt loam, rolling (DuC) is not classified as a hydric soil. DuC has a depth to water table greater than 78 inches. DuC has moderately high saturated hydraulic conductivity.

Fluvaquents, frequently flooded (FL) are very deep, poorly drained soils in flood plains. FL is classified as a hydric soil with a hydric rating of 90%. FL has a water table at the soil surface. FL has high saturated hydraulic conductivity.

Madrid series consists of very deep, well-drained soils on till plains and moraines. Madrid fine sandy loam, 2 – 8% slopes (MdB) and Madrid fine sandy loam, rolling (MdCK) are not classified as hydric soils. Both MdB and MdCK both have a depth to water table greater than 78 inches. Both MdB and MdCK both have moderately high saturated hydraulic conductivity.

Williamson series consists of deep, moderately well-drained soils on lake plains and uplands. Williamson silt loam, rolling, eroded (WwC2) is not classified as a hydric soil. WwC2 has a depth to water table of 17 inches. WwC2 has moderately high saturated hydraulic conductivity.

Wetland establishment activities will occur primarily on ChB and WwC2 soil map units. ChB has a slow infiltration rate when thoroughly wet wherever drained and a very slow infiltration rate when thoroughly wet wherever undrained. WwC2 has a very slow infiltration rate when thoroughly wet. Both ChB and WwC2 soil map units are suitable for successful wetland establishment with the proper engineering techniques.

4.0 MITIGATION WORK PLAN

4.1 CONSTRUCTION AND PLANNED HYDROLOGY

The following work plan is for a wetland mitigation plan based on site visits and existing data including USGS topographic maps, USDA soil surveys, state and federal wetland and floodplain maps, tax maps, aerial photos and topographic survey. The concept wetland design plan has been attached to this plan (Appendix F, Fig. 1). The final design will include a full-size construction plan with the following components:

1. Overall property map showing the property boundary and Mitigation Site boundary. The overall map will show areas to be re-established, rehabilitated, and protected.
2. Project site plan and grading plan showing the proposed restored wetland areas including current and proposed elevations.
3. Details for construction of water control structures and embankment.
4. Cross sections of proposed earth moving activities.
5. A planting plan showing the areas of different planting regimes.
6. An Erosion and Sediment Control Plan.
7. A Monitoring Plan detailing the location of monitoring plots, photo points, and hydrology sampling points.
8. Specifications that include applicable construction methods and materials.

Construction of the mitigation wetlands shall commence in fall 2016, depending on permit approval and appropriate site conditions. DU will secure a qualified contractor to construct the wetland mitigation plan. An erosion and sediment control plan will be implemented and maintained during construction. DU staff shall be on-site during critical parts of construction to monitor construction of the wetland mitigation areas to ensure compliance with the mitigation plan and to make adjustments when appropriate to meet mitigation goals.

- Wetland establishment activities will occur in the agricultural field.
- Wetland rehabilitation will occur in the wetlands already present in the agricultural fields.
- Areas not established or rehabilitated will be preserved, including the stream running through the Mitigation Site.

Shallow excavations will be created in planned PEM areas in the agricultural field. These shallow excavations will provide the appropriate topography for establishing PEM and PSS wetlands. Using material from the excavations, several low-level berms will be

constructed along the border of these PEM areas. These berms will allow surface water to accumulate which will promote ponding in the areas planned for establishing PEM and PSS wetlands.

4.2 PLANNED VEGETATION AND HABITAT FEATURES

The ponded areas adjacent to the berms will be seeded with emergent herbaceous vegetation to re-establish PEM wetlands. The edges of these PEM wetlands will be planted with hydrophytic shrubs to transition to PSS wetlands. The edges of these restored PSS wetlands will be planted with shrubs and trees to transition to PFO wetlands. Most of the remainder of the agricultural field will be planted with shrubs and trees to establish PFO wetlands.

Seeding and planting will be used to supplement the existing seed bank to establish diverse wetland plant communities as follows:

- The planned PFO wetlands (22.2 acres) will be planted to establish hardwood swamps. (Table 2, 3 and 4)
- The planned PSS wetlands (2.7 acres) will be planted to establish shrub swamps as described in “Ecological Communities of New York State” (Edinger et al., 2014). (Table 3 and 4)
- The planned PEM wetlands (5.9 acres) will be seeded with a seed mix to re-establish wet meadows grading into shallow emergent marshes as described in “Ecological Communities of New York State” (Edinger et al., 2014). (Table 5)
- The planned berms will be seeded with a mix of warm season grasses, cool season grasses and ground cover (Table 6)

Table 2. Planting list for planned PFO hardwood swamp wetland plant community (all plantings are 3 – 4’ tall bare root plants [BRP])

Common Name	Scientific Name	WIS	CoC	Woody stems per acre
Red Maple	<i>Acer rubrum</i>	FAC	2.5	15
Silver Maple	<i>Acer saccharinum</i>	FACW	5	20
Black Gum	<i>Nyssa sylvatica</i>	FAC	7	25
American Sycamore	<i>Platanus occidentalis</i>	FACW	6.5	25
Eastern Cottonwood	<i>Populus deltoides</i>	FAC	3	20
Swamp White Oak	<i>Quercus bicolor</i>	FACW	5	35
Pin Oak	<i>Quercus palustris</i>	FACW	7.5	30
Pussy Willow	<i>Salix discolor</i>	FACW	3	15
Black Willow	<i>Salix nigra</i>	OBL	4.5	15
			TOTAL	200

Table 3. Planting list for shrub community in the planned PFO and PSS wetlands (all plantings are 3 – 4’ tall BRP)

Common Name	Scientific Name	WIS	CoC	PFO Shrubs/Acre	PSS Shrubs/Acre
Speckled Alder	<i>Alnus incana</i>	FACW	3	15	30
Black Chokeberry	<i>Aronia melanocarpa</i>	FAC	6	25	
Common Hackberry	<i>Celtis occidentalis</i>	FAC	7	25	
Common Buttonbush	<i>Cephalanthus occidentalis</i>	OBL	6.5		70
Red Osier	<i>Cornus alba</i>	FACW	3	25	50
Silky Dogwood	<i>Cornus amomum</i>	FACW	4	25	50
Spicebush	<i>Lindera benzoin</i>	FACW	7	30	60
Swamp Rose	<i>Rosa palustris</i>	OBL	6		50
Silky Willow	<i>Salix sericea</i>	OBL	3.5		30
White Meadowsweet	<i>Spiraea alba</i>	FACW	5	30	60
American Bladdernut	<i>Staphylea trifolia</i>	FAC	7	25	
TOTAL				200	400

Table 4. Seeding list for PSS and PFO wetlands with an estimated VIBI-FQ of 54.

Common Name	Scientific Name	WIS	CoC	Percent by weight
Greater Bladder Sedge	<i>Carex intumescens</i>	FACW	4	10
Pointed Broom Sedge	<i>Carex scoparia</i>	FACW	2	10
Squarrose Sedge	<i>Carex squarrosa</i>	OBL	4	10
Common Buttonbush	<i>Cephalanthus occidentalis</i>	OBL	6.5	10
Red Osier	<i>Cornus alba</i>	FACW	3	10
Silky Dogwood	<i>Cornus amomum</i>	FACW	4	10
Spotted St. John’s-Wort	<i>Hypericum punctatum</i>	FAC	5	2
Lesser Poverty Rush	<i>Juncus tenuis</i>	FAC	2	3
Spicebush	<i>Lindera benzoin</i>	FACW	7	20
Narrow-leaf Mountain-Mint	<i>Pycnanthemum tenuifolium</i>	FAC	5	1
Swamp Rose	<i>Rosa palustris</i>	OBL	6	5
Crooked-Stem American-Aster	<i>Symphotrichum prenanthoides</i>	FAC	5	4
Golden Alexanders	<i>Zizia aurea</i>	FAC	4	5
Seed mix application rate			15 lbs./acre	

Table 5. Seeding list for planned PEM wet meadow/shallow emergent marsh wetland plant community with an estimated vegetation index of biotic integrity “floristic quality” (VIBI-FQ) metric of 50.

Common Name	Scientific Name	WIS*	CoC**	Percent by weight
Several-Vein Sweetflag	<i>Acorus americanus</i>	OBL	6	2
American Water Plantain	<i>Alisma subcordatum</i>	OBL	4	4
Bearded Sedge	<i>Carex comosa</i>	OBL	4	5
Shallow Sedge	<i>Carex lurida</i>	OBL	3	15
Common Fox Sedge	<i>Carex vulpinoidea</i>	OBL	2	20
Common Spike-Rush	<i>Eleocharis palustris</i>	OBL	5	2
Rattlesnake Manna Grass	<i>Glyceria canadensis</i>	OBL	5	2
Lamp Rush	<i>Juncus effusus</i>	OBL	2	5
Rice Cut-Grass	<i>Leersia oryzoides</i>	OBL	3	4
Fowl Blue Grass	<i>Poa palustris</i>	FACW	4	15
Hard-stem Club-rush	<i>Schoenoplectus acutus</i>	OBL	7	1
Three-square	<i>Schoenoplectus pungens</i>	OBL	7	1
Dark-Green Bulrush	<i>Scirpus atrovirens</i>	OBL	5	5
Cottongrass Bulrush	<i>Scirpus cyperinus</i>	OBL	5	3
Broad-Fruit Burr-Reed	<i>Sparganium americanum</i>	OBL	5	4
American Burr-Reed	<i>Sparganium eurycarpum</i>	OBL	5	4
Simpler’s Joy	<i>Verbena hastata</i>	FACW	4	8
Seed mix application rate			20 lbs. per acre	

*WIS: Wetland Indicator Status

**CoC: Coefficient of Conservatism

Table 6. Seeding list for planned berms

Common Name	Scientific Name	WIS	Percent by Weight
Rough Bent	<i>Agrostis scabra</i>	FAC	5
Big Bluestem	<i>Andropogon gerardii</i>	FAC	10
Nodding Wild Rye	<i>Elymus canadensis</i>	FACU	20
Red Fescue	<i>Festuca rubra</i>	FACU	10
Perennial Rye Grass	<i>Lolium perenne</i>	FACU	30
Garden Bird’s-Foot-Trefoil	<i>Lotus corniculatus</i>	FACU	5
Wand Panic Grass	<i>Panicum virgatum</i>	FAC	5
Kentucky Blue Grass	<i>Poa pratensis</i>	FACU	10
Red Clover	<i>Trifolium pratense</i>	FACU	5

5.0 PERFORMANCE AND SUCCESS STANDARDS

The following performance standards are based on the goals and objectives of the mitigation project as well as the character of existing wetlands surrounding the mitigation site. These standards will be used to evaluate development and overall success of the mitigation project:

1. Construction has been completed in accordance with approved plans and specifications in the permit.
2. The soils on the site will be stable and any non-biodegradable erosion controls will be removed.
3. The wetland re-establishment and re-habilitation areas will meet the conditions for indicators of wetland hydrology according to the “Corps of Engineers Wetlands Delineation Manual”, dated January, 1987. The presence of wetland hydrology will be based on soil saturation and/or evidence of inundation via water potential, water depth measurements during the growing season and water table depth data from the monitoring wells.
4. At the end of the 10-year monitoring period:
 - a. The wetlands shall have 90% relative coverage by native perennial hydrophytic plants (those with a regional indicator status of FAC, FACW, or OBL in the report entitled “Northcentral and Northeast 2014 Regional Wetland Plant List”).
 - b. The planned wetlands shall have a VIBI-FQ metric of at least 40.
 - c. The planned PFO and PSS areas will have at least 400 woody stems per acre, and the PFO areas will have at least 200 woody stems of tree species per acre.
 - d. The planned wetland areas shall have no more than 5% coverage of the following invasive plant species: purple loosestrife (*Lythrum salicaria*), common reed (*Phragmites australis*), reed canary grass (*Phalaris arundinacea*), cattails (*Typha angustifolia* and *Typha x glauca*), buckthorn (*Rhamnus cathartica*) and Japanese knotweed (*Polygonum cuspidatum*).
 - e. The forested upland buffer re-establishment areas will have 80% coverage of native perennials and no more than 10% coverage of the following invasive plant species: buckthorn (*Rhamnus cathartica*), honeysuckles (*Lonicera* spp.), and reed canary grass (*Phalaris arundinacea*).
 - f. The re-established and re-habitated wetlands will meet the federal wetland criteria outlined in the report entitled “Corps of Engineers Wetlands Delineation Manual”, dated January, 1987, with current Corps of Engineers Northcentral and Northeast Regional Supplement.

In addition to the performance standards mentioned above, three interim goals must be met during the 10-year monitoring period. Each interim goal will release 15% of the credits for re-establishment and rehabilitation when the goal has been met.

1st Interim Goal:

- The planned wetland areas will have 50% coverage by native perennial hydrophytes.
- The planned wetland areas will demonstrate progress in vegetative development towards meeting the final VIBI-FQ goal.

- The planned PFO and PSS areas will have at least 150 trees/shrubs per acre.
- The planned wetland areas will have no more than 25% coverage of the following invasive plant species: purple loosestrife (*Lythrum salicaria*), common reed (*Phragmites australis*), reed canary grass (*Phalaris arundinacea*), cattails (*Typha angustifolia* and *Typha x glauca*), buckthorn (*Rhamnus cathartica*), and Japanese knotweed (*Polygonum cuspidatum*).
- Upland buffer rehabilitation areas will have 50% coverage of native perennials.
- The upland buffer rehabilitation area will have no more than 35% coverage of the following invasive plant species: buckthorn (*Rhamnus cathartica*), honeysuckles (*Lonicera* spp.), and reed canary grass (*Phalaris arundinacea*).

2nd Interim Goal:

- The planned wetland areas will have 60% coverage by native perennial hydrophytes.
- The planned wetland areas will demonstrate progress in vegetative development towards meeting the final VIBI-FQ goal.
- The planned PFO and PSS areas will have at least 250 trees/shrubs per acre.
- The planned wetland areas will have no more than 20% coverage of the following invasive plant species: purple loosestrife (*Lythrum salicaria*), common reed (*Phragmites australis*), reed canary grass (*Phalaris arundinacea*), cattails (*Typha angustifolia* and *Typha x glauca*), buckthorn (*Rhamnus cathartica*), and Japanese knotweed (*Polygonum cuspidatum*).
- The upland buffer rehabilitation area will have no more than 25% coverage of the following invasive plant species: buckthorn (*Rhamnus cathartica*), honeysuckles (*Lonicera* spp.), and reed canary grass (*Phalaris arundinacea*).

3rd Interim Goal:

- The planned wetland areas will have 75% coverage by native perennial hydrophytes.
- The planned wetland areas will demonstrate progress in vegetative development towards meeting the final VIBI-FQ goal.
- The planned PFO and PSS areas will have at least 350 trees/shrubs per acre.
- The planned wetland areas will have no more than 15% coverage of the following invasive plant species: purple loosestrife (*Lythrum salicaria*), common reed (*Phragmites australis*), reed canary grass (*Phalaris arundinacea*), cattails (*Typha angustifolia* and *Typha x glauca*), buckthorn (*Rhamnus cathartica*), and Japanese knotweed (*Polygonum cuspidatum*).
- The upland buffer rehabilitation area will have no more than 15% coverage of the following invasive plant species: buckthorn (*Rhamnus cathartica*), honeysuckles (*Lonicera* spp.), and reed canary grass (*Phalaris arundinacea*).

The success of this wetland mitigation project will be assessed based on the performance standards and interim goals outlined above and include any additional conditional standards identified and agreed upon by the USACE upon final design and during the permitting process.

6.0 CREDIT DETERMINATION

The Mitigation Site will generate approximately 28.8 credits based on the following ratios and acreages for each mitigation activity. Actual credits generated will be determined based on the final design plan.

Table 9. Credits generated by wetland mitigation activity

Mitigation Activity	Acres	Ratio	Credits
PEM Establishment	4	1:1	4
PEM Establishment (within 50 m of property line)	1.9	1:2	0.95
PFO Establishment	12.8	1:1	12.8
PFO Establishment (within 50 m of property line)	9.4	1:2	4.7
PSS Establishment	2.2	1:1	2.2
PSS Establishment (within 50 m of property line)	0.5	1:2	0.25
Preserved Upland Buffer (within 50 m of wetlands)	20.3	1:10	2.03
Preserved Wetlands	18.7	1:10	1.87
Total			28.8

The credit release schedule will include:

- All of the credits associated with the preservation will be released upon documentation of preservation (recorded deed) with associated approved stewardship plan (long-term management plan).
- 10% of the credits for re-establishment and rehabilitation will be released upon approval of this mitigation plan
- 20% of the credits for re-establishment and rehabilitation will be released at as-built production and approval by the IRT.
- 15% of the credits for re-establishment and rehabilitation will be released after meeting the first interim goal.
- 15% of the credits for re-establishment and rehabilitation will be released after meeting the second interim goal.
- 15% of the credits for re-establishment and rehabilitation will be released after meeting the third interim goal.
- 25% of the credits for re-establishment and rehabilitation will be released after the final vegetation goals have been met for 10-year monitoring period.

7.0 MITIGATION SITE PROTECTION

The Mitigation Site is currently privately owned, and a letter of intent to purchase the property has been submitted. Currently a purchase agreement is being drafted. The property will be purchased by Wetlands America Trust, Inc. (WAT). WAT; a wholly owned subsidiary of DU, is a non-profit conservation organization that is an Accredited Land Trust.

Ownership of the Mitigation Site by WAT meets the site protection requirements of 33 CFR 332.7(a)(1). In addition to ownership, WAT will record a Notice of Mitigation Agreement (Appendix G) in the land records of Onondaga County, upon approval of this mitigation plan. The Notice of Mitigation Agreement will give the USACE the ability to enforce compliance with the approved Mitigation Plan.

DU is working with the New York State Department of Environmental Conservation regarding their interest in holding this property in perpetuity. If NYSDEC is the future landowner, a management agreement will be put in place with appropriate restrictions as approved by the Corps and IRT.

If the NYSDEC determines they are not interested in owning the property, DU will secure a qualified land trust (with approval by the USACE and IRT) to hold a conservation easement. A long-term protection endowment will be established per the approved project budget for long-term protection monitoring in perpetuity.

8.0 MONITORING

DU staff, experienced with wetland restoration and mitigation, will coordinate and oversee monitoring activities. A surveyed drawing showing the As-Built conditions of the mitigated area will be submitted within 60 days following the completion of the mitigation project. The site will be monitored and a monitoring report will be submitted annually to the USACE for years 1, 2,3,5,7, and 10 or when performance and success standards have been met. Observations will occur in late summer/early fall.

The reports will address the performance standards in the summary data section and will address the additional items noted in the monitoring report requirements, in the appropriate section. The reports will also include the monitoring-report appendices. The first year of monitoring will be the first year that the Mitigation Site has been through a full growing season after completion of construction and planting. Each annual monitoring report, in the format provided in the New York District Compensatory Mitigation Guidelines, will be submitted to the USACE, Regulatory Division, Policy Analysis and Technical Support Branch, no later than December 15 of each monitoring year and include the following information:

1. A copy of the USACE permit referencing the approved mitigation plan.
2. A copy of the approved mitigation plan including the goals, objectives and performances standards.
3. Identification of any structural failures or external disturbances to the Mitigation Site.
4. A description of management activities and remedial actions implemented during the past year.
5. A surveyed drawing of the mitigation area, including water level elevations and acreage of wetlands. The locations of focused 20 m x 50 m VIBI-FQ plots, random 10 m x 10 m plots, vegetation communities, and planting zones will also be identified on the drawings. The plans will include overlays to show pre-construction

- conditions and changes from monitoring year to monitoring year. A sample focused 20 m x 50 m VIBI-FQ plot is attached in Appendix H.
6. Color photographs from monitoring stations and a photograph location map showing all representative areas of each cover type within the mitigation site.
 7. A plant species list that gives USFWS Wetland Indicator Status and strata (herb, shrub, tree). Dominant plants will be highlighted and the percent of the aerial cover noted. Plants introduced through seeding or planting will be indicated. A vegetation cover map based on the collected plant data will be provided.
 8. Water depth and the date of measurement from fixed locations including monitoring wells within the wetland will be recorded. These sample points will be plotted on the survey drawings.
 9. Anecdotal list of wildlife species observed using the wetlands.
 10. Methodologies used to control nuisance vegetation (e.g., *Phalaris arundinacea*, *Phragmites australis*, *Lythrum salicaria*, *Rhamnus cathartica*).
 11. A quantitative assessment of monitoring data (e.g., VIBI-FQ, percent coverage of invasive species, and woody stems per acre) and a statement as to whether or not the goals of the mitigation project are being met and a plan with an implementation time table to correct any deficiencies.
 12. A narrative summary of the monitoring data and conclusions of the monitoring.

A post-construction assessment report and wetland delineation survey will be submitted to the USACE in conjunction with the monitoring reports for the fifth and tenth years of the monitoring period.

9.0 MAINTENANCE AND ADAPTIVE MANAGEMENT PLAN

DU will conduct adaptive management activities during the monitoring period. When monitoring indicates that a performance standard is not being met, then that standard will be evaluated to determine if simply more time is needed or a remedial action may be required. This will be accomplished by consulting wetland experts and permitting agencies to determine an appropriate course of action. Remedial actions may include seeding or planting, non-native plant control, and erosion control measures. Remedial actions requiring earth movement or changes in hydrology will not be implemented without written approval from the USACE. Once the monitoring period is over, the completed wetland will be managed by the long-term steward and managed only as needed and specified in the site management plan.

10.0 LONG-TERM STEWARDSHIP PLAN

DU will be responsible for the maintenance and management of the Mitigation Site.

A long-term management endowment will be established per the approved project budget for long-term management of the Mitigation Site in perpetuity using DU-NY-ILF program funds.

Long-term management for this site to ensure it is maintained as a high quality wetland will include invasive species management every 3 years. It is anticipated that the only threat to the wetland beyond the initial 10 years of the project will be encroachment by invasive species.

Although sufficient efforts will be made to eradicate invasive species from the site, it is likely that they will recolonize and need control. DU will provide written notice to the USACE if ownership of the Mitigation Site is transferred to a third party by WAT (A transfer prior to attaining the final performance standard will require the approval of the USACE).

For said transfer to also include responsibility for the long-term stewardship of the Mitigation Site, it will only occur upon approval of the USACE. If the long-term stewardship responsibility is transferred, the long-term management endowment will also be transferred.

11.0 FINANCIAL ASSURANCES

Financial assurances for the construction and performance of the Mitigation Site will be provided by DU in the form of a “letter of credit.” The letter of credit will extend sufficient financial resources to complete significant alterations to the project if necessary to achieve success. The letter of credit will be in the full amount of the construction estimate (for a maximum of three years) and for the replanting of 25% of the PSS, PFO and Upland forest areas if these areas fail to meet stem count performance objectives (for the duration of the monitoring period). The letter of credit will not be called upon unless DU has exhausted the existing project budget, including all money set aside for contingency and wetland maintenance

References:

- Edinger, G. J., Evans, D. J., Gebauer, S., Howard, T. G., Hunt, D.M., and Olivero, A. M. (Eds.). (2014) *Ecological communities of New York State* (2nd ed.): *A revised and expanded edition of Carol Reschke's ecological communities of New York State*. Albany, NY: New York Natural Heritage Program, New York State Department of Environmental Conservation.
- New York State Department of Environmental Conservation. (2015). *State wildlife action plan*. Retrieved from http://www.dec.ny.gov/docs/wildlife_pdf/swapfinaldraft2015.pdf
- Schilling, K.E., and Kiniry, J. R. (2007). Estimation of evapotranspiration by reed canarygrass using field observations and model simulation. *Journal of Hydrology*, 337(3), 356 – 363.
- United States Department of Agriculture – Natural Resources Conservation Service. (2010). *New York rapid watershed assessment profile: Oswego watershed*. Retrieved from: <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/ny/technical/dma/rwa/?cid=stelprdb1246990>

APPENDIX A:
SUMMARY OF IMPACTS TO WETLANDS

Table 1. Impacts to wetlands in the Oswego River Service Area

DA Permit Number	HUC 8	Resource Type	Acres Impacted	Credits Purchased
2011-01347	04140203	PFO	0.49	1
2010-00244	04140203	PFO	0.39	0.4
2014-00950	04140203	PFO & RSB	0.434	0.85
2010-00244	04140203	PFO	0.321	1
TOTAL			1.635	3.25

APPENDIX B
BASELINE INFORMATION

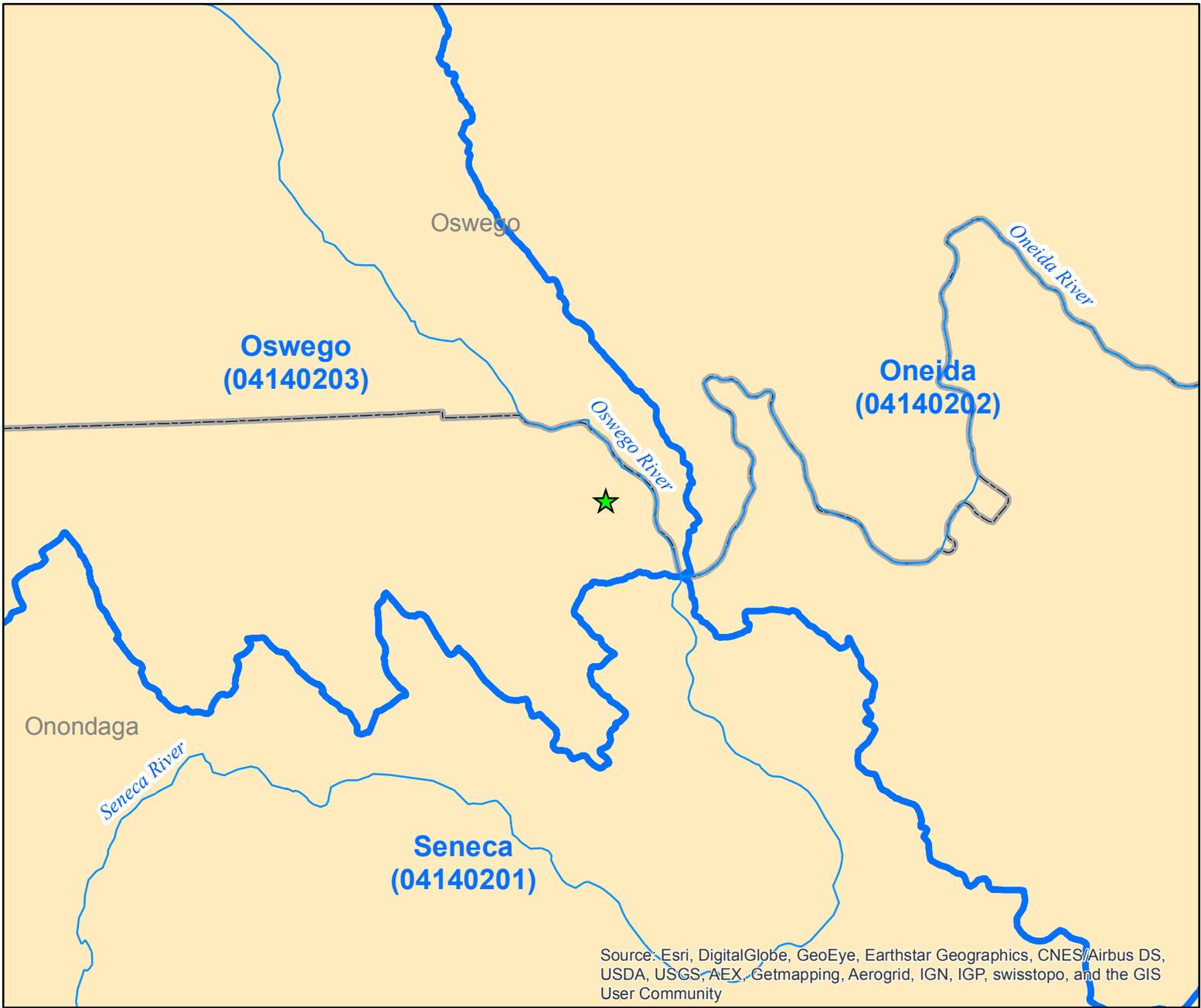
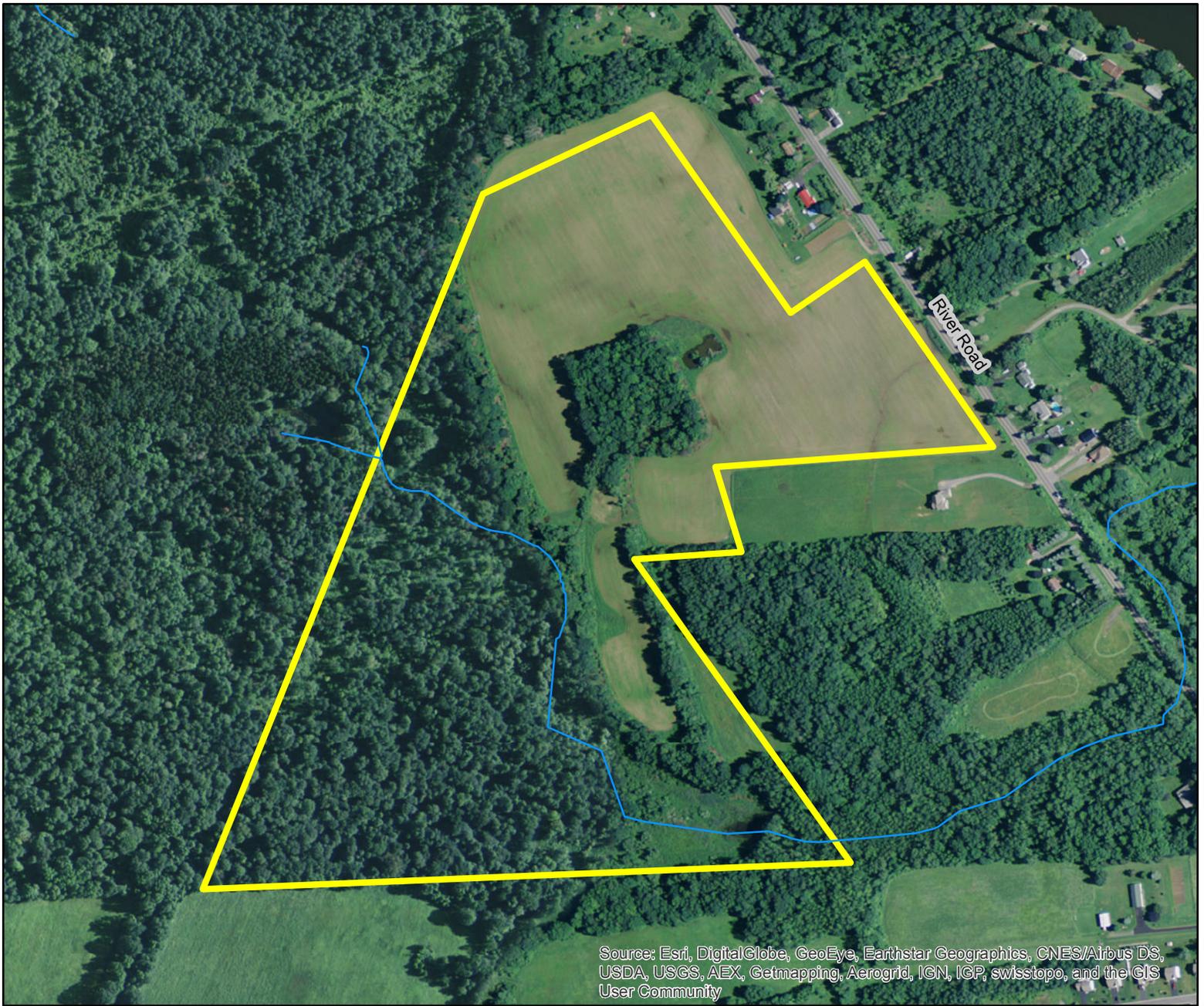


Fig. 1: River Road Watershed



- ★ Mitigation Site
- Watershed (HUC 8)





Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



Fig. 2: River Rd. Aerial

 Property Boundary (83 Acres)



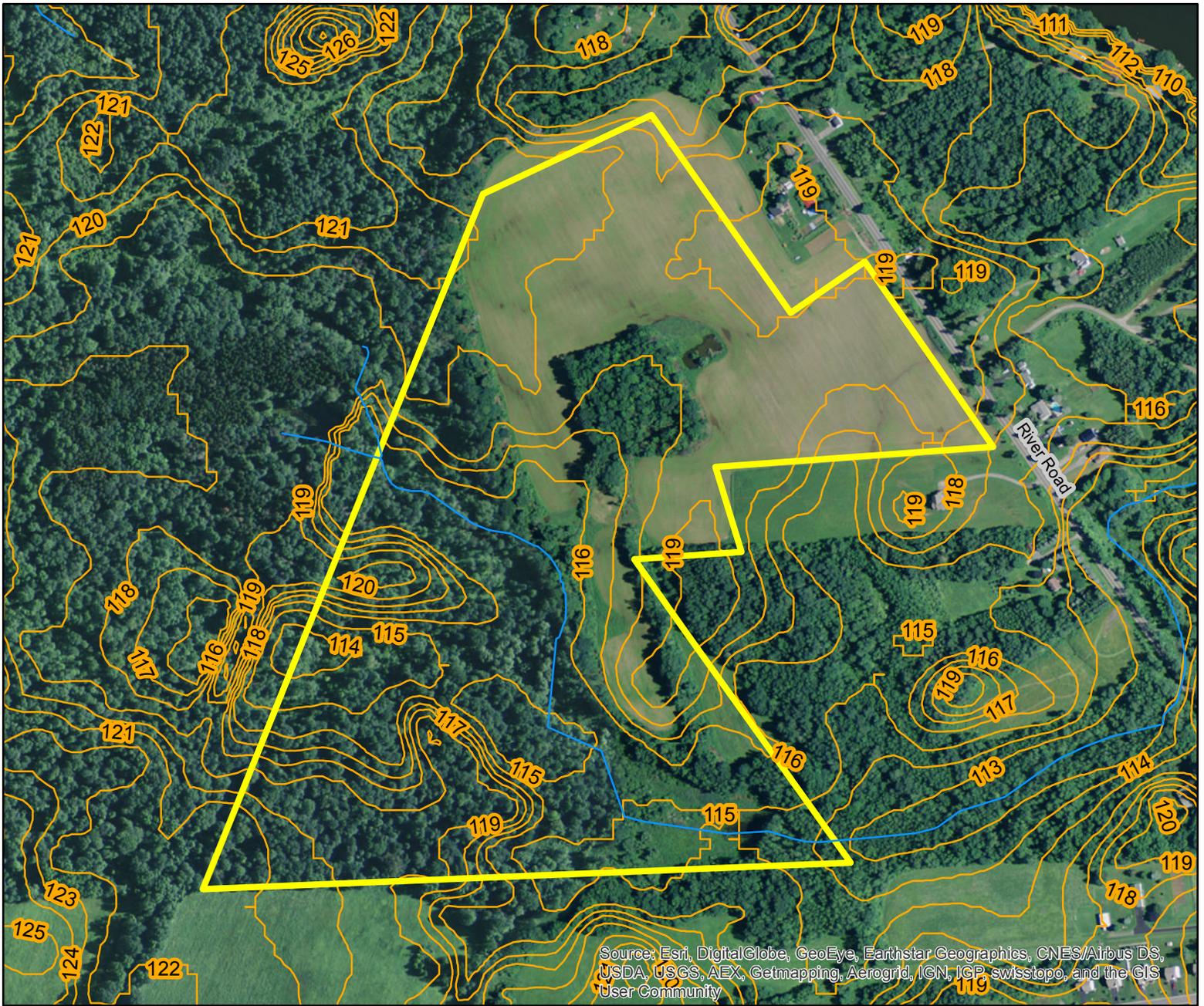


Fig. 3: River Rd. Topography (m)



-  Property Boundary (83 Acres)
-  Contours (1 m)



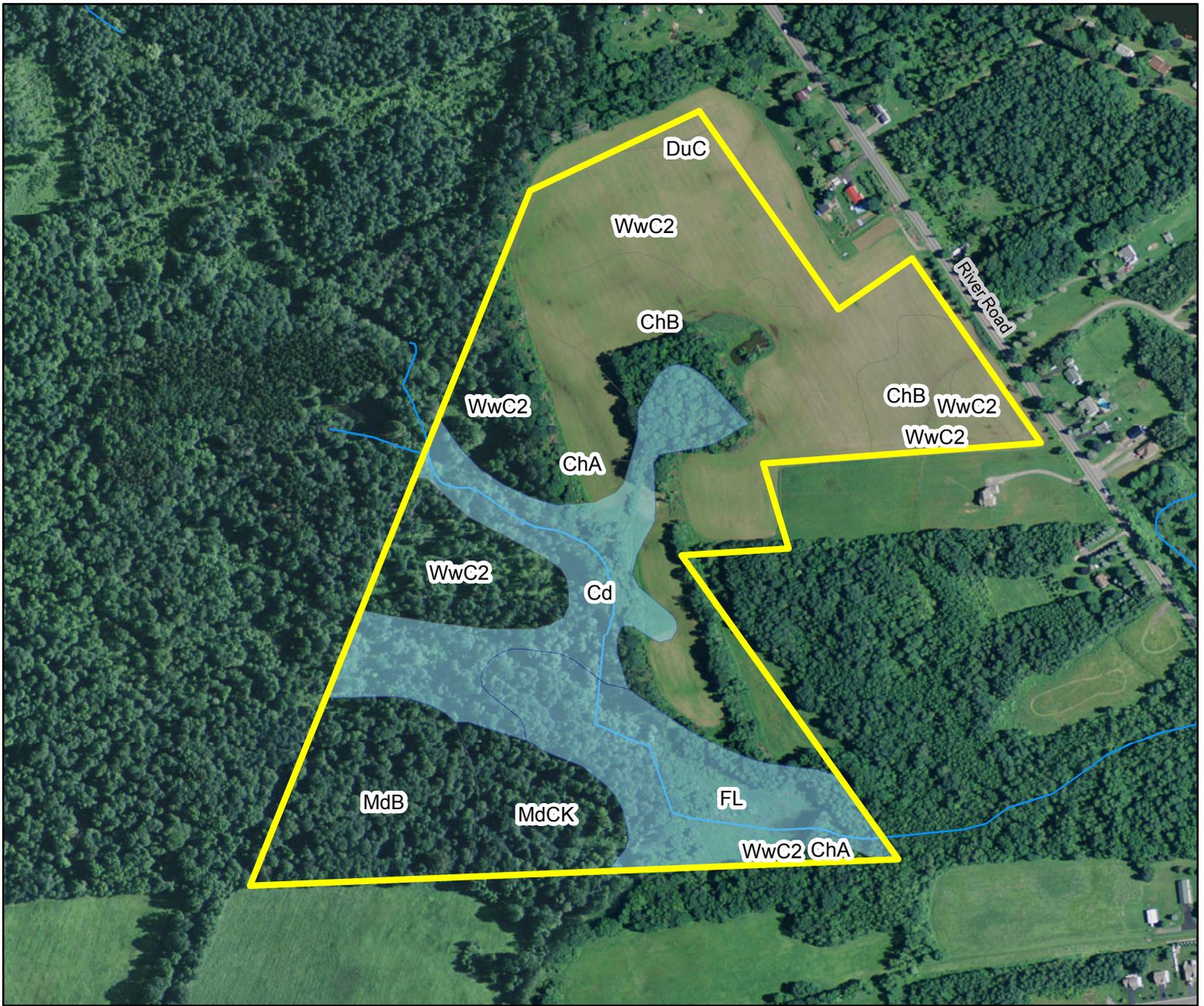


Fig. 4: River Rd. Soils (SSURGO)



 Property Boundary (83 Acres)  Hydric Soils

Soil Map Unit Symbol	Soil Map Unit Name
Cd	Canandaigua mucky silt loam
ChA	Collamer silt loam, 0 to 2 percent slopes
ChB	Collamer silt loam, 2 to 6 percent slopes
DuC	Dunkirk silt loam, rolling
FL	Fluvaquents, frequently flooded
MdB	Madrid fine sandy loam, 2 to 8 percent slopes
MdCK	Madrid fine sandy loam, rolling
WwC2	Williamson silt loam, rolling, eroded

