

Environmental Feasibility Assessment

Johnson Farm Solar Site Orange County, New York

CHA Project Number: 28909.1000.31000

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LIST OF ACRONYMS & ABBREVIATIONS

AOI	Area of Interest
FEMA	Federal Emergency Management Agency
HUC	Hydrologic Unit Codes
JD	Jurisdictional Determination
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
NYSDEC	New York State Department of Environmental Conservation
T&E	Threatened and Endangered (Species)
TNW	Traditional Navigable Waters
USACE	United States Army Corps of Engineers
USFWS	United States Department of the Interior, Fish and Wildlife Service
USGS	United States Geological Survey

ENVIRONMENTAL FEASIBILITY ASSESSMENT

JOHNSON FARM

1.0 INTRODUCTION

This focus of this study is to identify wetlands and other sensitive ecological resources and to evaluate access constraints, construction suitability and potential permitting requirements on the proposed Johnson Farm site in Orange County, NY. A field visit to the Johnson Farm site was conducted on August 19, 2014. The site investigation focused primarily on the proposed Area of Interest (AOI) provided by First Wind Solar Group. Desktop review was used to identify potential constraints within the remaining portion of the parcels. This report includes a summary of the results of the desktop review and field observations.

2.0 RESOURCE DATA REVIEW

Prior to visiting the site, CHA reviewed various maps, regulatory websites, GIS data and other sources of background information. The information reviewed included all areas within the Area of Interest (AOI) (identified as project boundary on the enclosed figures) for each site and includes the following data sources (maps and data provided in the Appendices):

- United States Geological Survey (USGS) 7.5 minute topographic maps (Goshen USGS Quadrangles)
- New York State Department of Environmental Conservation (NYSDEC) Freshwater Wetlands Mapping
- United States Department of the Interior, Fish and Wildlife Service (USFWS), National Wetlands Inventory (NWI) Maps
- Natural Resources Conservation Service (NRCS) Soil Survey for Orange County
- Federal Emergency Management Agency (FEMA) Floodplain Maps
- New York State Parks, Recreation and Historic Preservation (SHPO) National Register Listing Internet Application
- NYSDEC Environmental Resource Mapper (ERM)
- USFWS Information, Planning, and Conservation (IPaC) Decision Support System

Table 1 provides an overview of each environmental resource that occurs or will need to be evaluated further on the site.

Table 1: Overview of Site Environmental Resources

Site	Wetlands	Floodplains	Threatened or Endangered Species	Cultural Resources Sensitivity
Johnson Farm	X	X	X	

2.1 USGS TOPOGRAPHIC MAPS

The Johnson Farm site is located on the Goshen USGS Quadrangle map. This site lies within a small valley within the towns of Blooming Grove Chester, and Goshen, New York. The topography ranges from approximately 420 feet to approximately 460 feet above mean sea level (see Figure 6).

2.2 NYSDEC ENVIRONMENTAL RESOURCE MAPPER

The New York State Environmental Resources Mapper (ERM) provides information on streams and wetlands regulated by the state as well as general information concerning rare plants and animals, and significant natural communities. Regulated wetlands include wetlands greater than 12.4 acres and are ranked according to their ability to perform wetland functions and provide wetland benefits. Class I wetlands have the highest rank and the ranking descends through Classes II, III and IV. Streams are also ranked and regulated according to their classification. The water quality of surface waters in New York State are classified by the NYSDEC as either “AA”, “A”, “B”, “C”, or “D”. A “T” used with the classification indicates that the stream supports, or may support, a trout population. All streams and water bodies with a classification or water quality standard of C(T) or higher are regulated by the NYSDEC. The rare plants and animals (including threatened and endangered species) layer shows zones where rare plants and animals might be located. Finally the significant natural communities layers shows locations of rare or high-quality wetlands, forests, grassland, ponds, streams and other types of habitats, ecosystems and ecological areas.

No mapped State wetlands are shown within the AOI of the Johnson Farm site; however NYSDEC does map a stream traversing through the property (see Figure 6). This stream is classified as a Class C, Standard C Stream. There are no significant natural communities or rare plants and animals identified within this site.

2.3 NATIONAL WETLAND INVENTORY (NWI) MAPS

The U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory maps were also reviewed to determine if there were any other mapped wetland resources within each site. Under the Clean Water Act, the federal government (U.S. Army Corps of Engineers and U.S. Environmental Protection Agency) regulates activities within Waters of the United States which includes wetland areas that are not regulated by the State of New York. Federally regulated wetlands have no official mapping. Federal jurisdiction is determined through on-site wetland delineation. The NWI maps serve as a resource for identifying areas that may contain federal jurisdictional wetlands.

Review of the NWI map indicates there are six NWI mapped wetlands within the AOI of the Johnson Farm site (see Figure 6). Two wetlands are classified as freshwater emergent wetlands, three are ponds and one is classified a forested/shrub wetland.

2.4 SOIL SURVEY MAPS

Soils descriptions were taken from the NRCS Web Soil Survey. This information was used in conjunction with on-site soil sampling to determine the presence of hydric soils. The primary constraint for development associated with soils is the presence of hydric soils that are indicators of the presence of wetlands. Steep slopes are also important to note. Soils data is also important for determining the types of foundations necessary to support the proposed structures. That level of analysis is not included in this report.

The following soils are mapped as occurring within the Johnson Farm site (see Figure 5):

- Alden silt loam (Ab) - This soil is very deep and very poorly drained and located in depressions and low areas on upland till Plains. Depth to water table is 0 inches. This soil is hydric.
- Erie gravelly silt loam, 0-3% slopes (ErA) – This soil is somewhat poorly drained with a depth to water table at about 6-18 inches. Depth to fragipan is 10 to 21 inches.
- Madalin silt loam (Ma) – This soil series consists of very deep, poorly drained soils on lake plains and depressions in uplands. Depth to water table is 0 inches and ponding is frequent.
- Mardin gravelly silt loam, 3-8% slopes (MdB), 8-15% slopes (MdC), 15-25% slopes (MdD), and steep (MNE) – these are moderately well drained soils with a depth to fragipan at 14-26 inches and depth to water table 18-24 inches.

Rock outcrop – Nassau complex, hilly (RSD) – This soil is somewhat excessively drained with a depth to water table at more than 80 inches. Lithic bedrock is 10 to 20 inches deep.

2.5 FLOODPLAIN MAP

FEMA Floodplains within the AOI of the Johnson Farm site (Figure 4) appear to be directly correlated to the stream channels shown on the wetland map (Figure 6). The area is situated between some steeper rises providing a greater area for water to spread throughout the bottom land.

2.6 ARCHAEOLOGICAL SENSITIVITY

The SHPO maps for the Johnson Farm site are provided in Appendix B. Based on our desktop review, although archaeologically sensitive areas are identified nearby, this site is not located within or immediately adjacent to an archaeologically sensitive area.

2.7 THREATENED & ENDANGERED SPECIES

The New York State Environmental Resources Mapper (ERM) provides general information on rare plants and animals, and significant natural communities that may occur in the vicinity of project sites. The rare plants and animals layer shows generalized locations of animals and plants that are rare in the state, but does not limit the areas to endangered and threatened species. Finally the significant natural communities layers shows locations of rare or high-quality wetlands, forests, grassland, ponds, streams and other types of habitats, ecosystems and ecological areas.

An official list should be requested from the NY Natural Heritage Program for site-specific information relating to rare plants and animals and significant natural communities. On occasion the official list will provide different information than the ERM.

The USFWS IPaC support system was consulted for an informal list of federally-listed threatened, endangered and proposed species that may occur on or near the project vicinity.

The results of these inquiries are as follows:

ERM: The ERM did not identify the presence of rare plants or animals or significant natural communities in the vicinity of this site. An official information request will be needed to verify this.

IPaC: This review identified that the following federally-listed species should be considered in an effects analysis for the project:

- Dwarf wedgemussel (*Alasmidonta heterodon*) – endangered
- Small whorled pogonia (*Isotria medeoloides*) - threatened
- Indiana bat (*Myotis sodalis*) – endangered
- Northern long-eared bat (*Myotis septentrionalis*) – proposed endangered
- Bog turtle (*Clemmys muhlenbergii*) - threatened

This review also identified twelve migratory birds of concern that should be considered in an effects analysis for the project. Please refer to Appendix C for the list

3.0 WETLAND FIELD INVESTIGATION RESULTS

At the time of the site visit the majority of the Johnson Farm identified for solar panel installation was planted with feed corn. The farthest north area contained additional wetland abutting the mapped NWI wetlands (see Figure 6). This area is being utilized as pasture. One wetland indicated by NWI mapping located at the southern portion of the property was planted with corn and would be considered active farmland.

4.0 PERMITTING REQUIREMENTS

Wetland delineation would be required to determine the actual extent of wetlands and other aquatic features at the Johnson Farm site. To determine jurisdiction, the wetland delineation reports would need to be submitted to the USACE and NYSDEC.

In most cases, any impacts to jurisdictional wetlands, streams and other “waters of the U.S.” will require a permit from the U.S. Army Corps of Engineers (USACE). Impacts ranging from 0.10-acre to less than 0.5-acre would require a Nationwide Permit from the USACE and Section 401 Water Quality Certification from the NYSDEC. Mitigation is also typically required. The permitting process typically requires 3-4 months to complete. Impacts for 0.5-acre or greater will require an Individual Permit and 401 Water Quality Certification from the NYSDEC. This process is extensive and can take 8-12 months or more, depending on the extent of impact.

Any proposed work within NYS Department of Environmental Conservation (NYSDEC) Freshwater Wetlands or within their 100-foot Adjacent Areas will require an Article 24 Permit from the NYSDEC. Obtaining permits for State regulated wetlands or their buffers can be very difficult. Impacts to state-regulated streams will require an Article 15 Protection of Waters

Permit from the NYSDEC. There is a joint application process in NY whereby permit applications are reviewed by both USACE and NYSDEC.

5.0 CONCLUSION

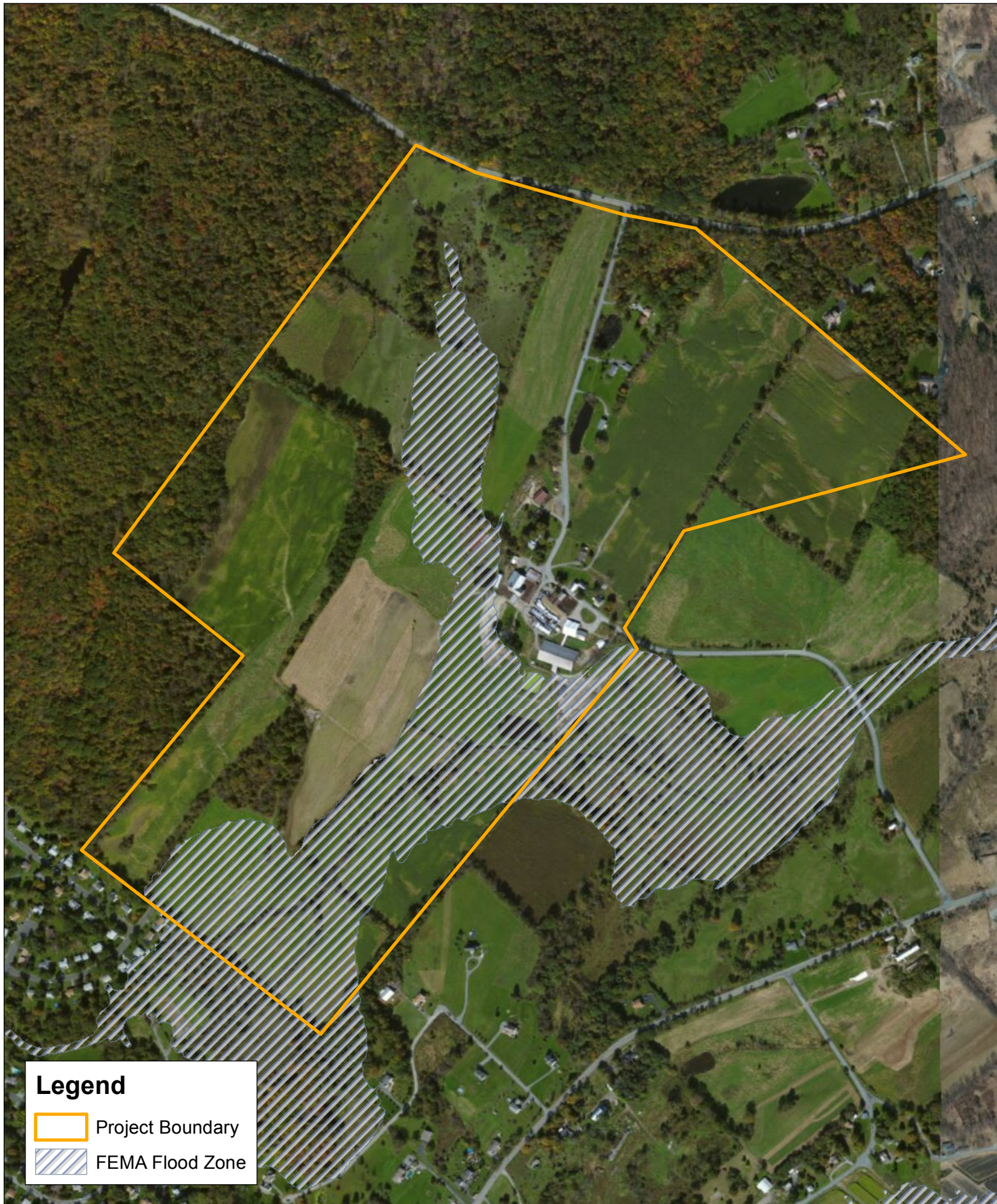
The primary constraint to development on the Johnson Farm site is potential jurisdictional wetlands. Wetland delineation should be conducted for this site to verify wetland boundaries and determine extent of potential impact. The site appears to have the potential for the presence of threatened and endangered species and would require a habitat assessment by a qualified biologist to determine whether or not suitable habitat is present for each of the listed species. Those areas identified as “archeologically sensitive” will likely require a Phase 1A cultural resources survey. Additional field survey may also be required. Even agricultural activities do not destroy archeological sites and plowing is often considered an acceptable method of preparing the site for a field survey.

Good site design practice that avoids wetland impacts and minimizes impacts to undisturbed areas such as forests will help to reduce the permitting requirements and will likely result in a successful project. The following next steps are recommended for this site:

- Wetland delineation
- Consultation with NYSDEC and USFWS for threatened and endangered species and habitat assessment.
- Letter to SHPO requesting a No Effect/Impact determination for cultural resources.

APPENDIX A

FIGURES



Legend

-  Project Boundary
-  FEMA Flood Zone



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**Figure 4: Johnson Farm Site
FEMA Floodplains**

Chester, NY



1 inch = 650 feet

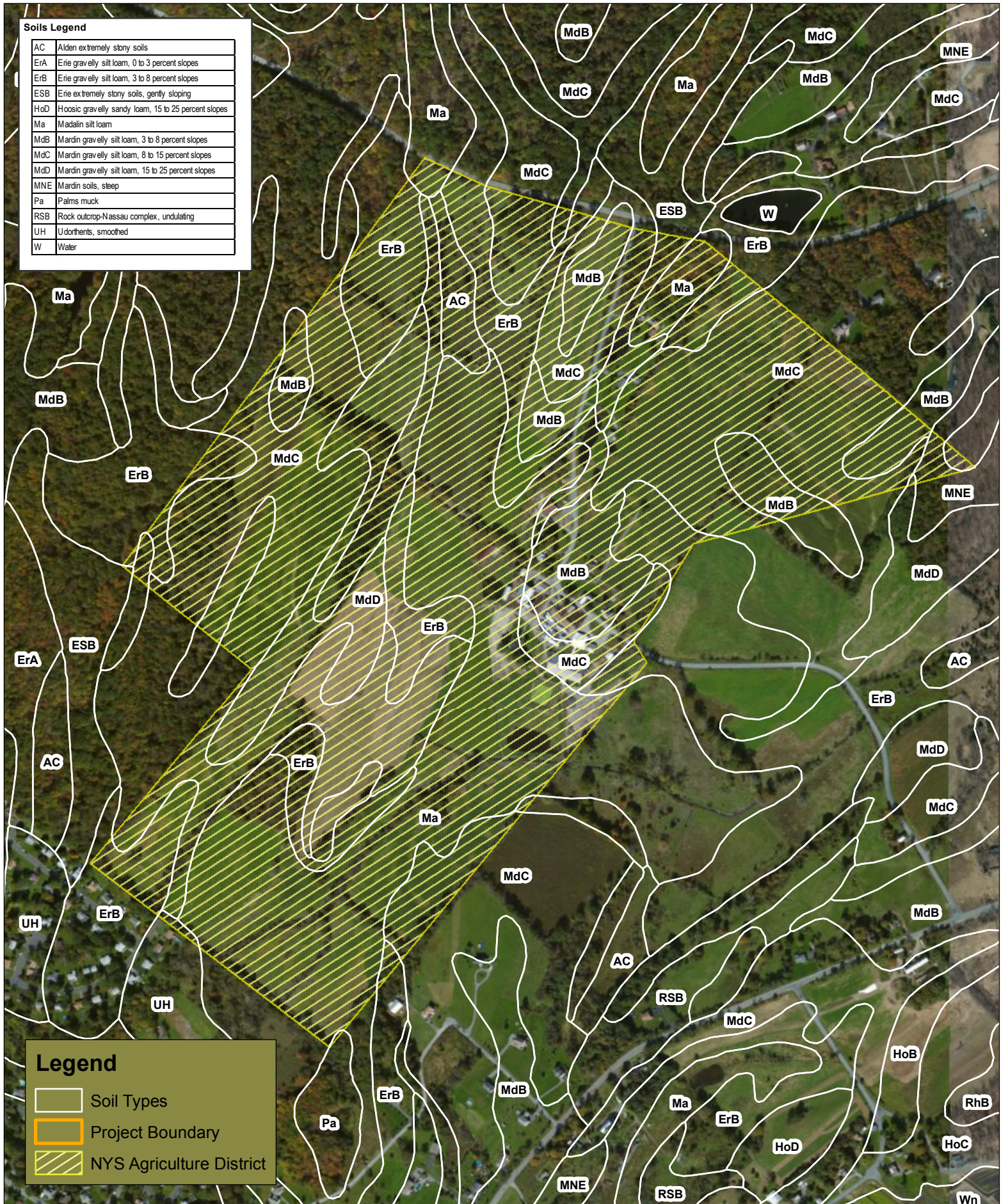
Project No. : 28909

Date : August, 2014

0 250 500
Feet

Soils Legend

AC	Alden extremely stony soils
ErA	Erie gravelly silt loam, 0 to 3 percent slopes
ErB	Erie gravelly silt loam, 3 to 8 percent slopes
ESB	Erie extremely stony soils, gently sloping
HoD	Hoosic gravelly sandy loam, 15 to 25 percent slopes
Ma	Madalin silt loam
MdB	Mardin gravelly silt loam, 3 to 8 percent slopes
MdC	Mardin gravelly silt loam, 8 to 15 percent slopes
MdD	Mardin gravelly silt loam, 15 to 25 percent slopes
MNE	Mardin soils, steep
Pa	Palms muck
RSB	Rock outcrop-Nassau complex, undulating
UH	Udorthents, smoothed
W	Water



Legend

- Soil Types
- Project Boundary
- NYS Agriculture District

**Figure 5: Johnson Farm Site
Soils & NYS Agriculture Districts**

Chester, NY



1 inch = 650 feet

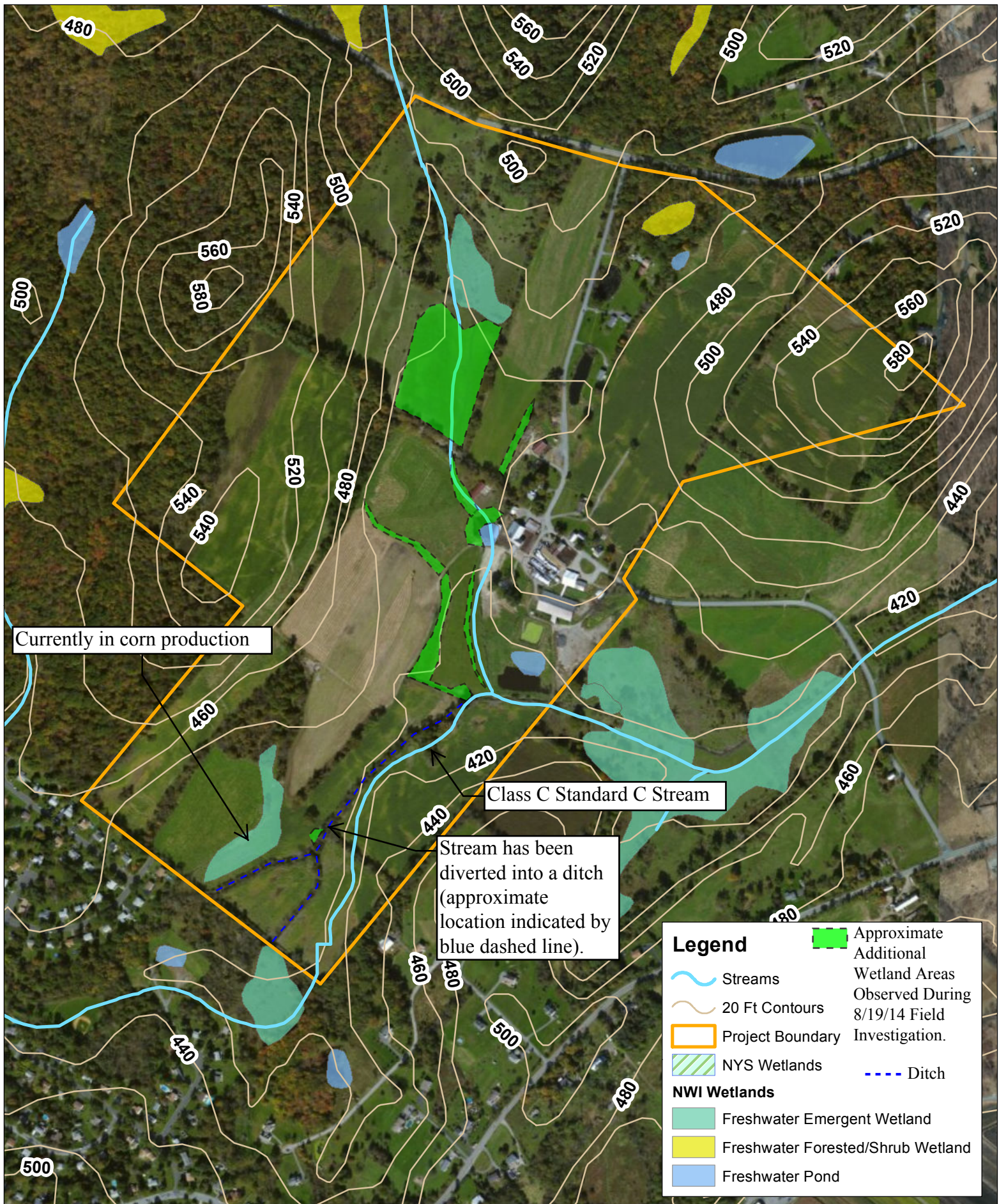
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Date : August, 2014

0 250 500
Feet



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**Fig 6: Johnson Farm Site
Wetlands, Streams, Contours**

Chester, NY



1 inch = 650 feet

Project No. : 28909

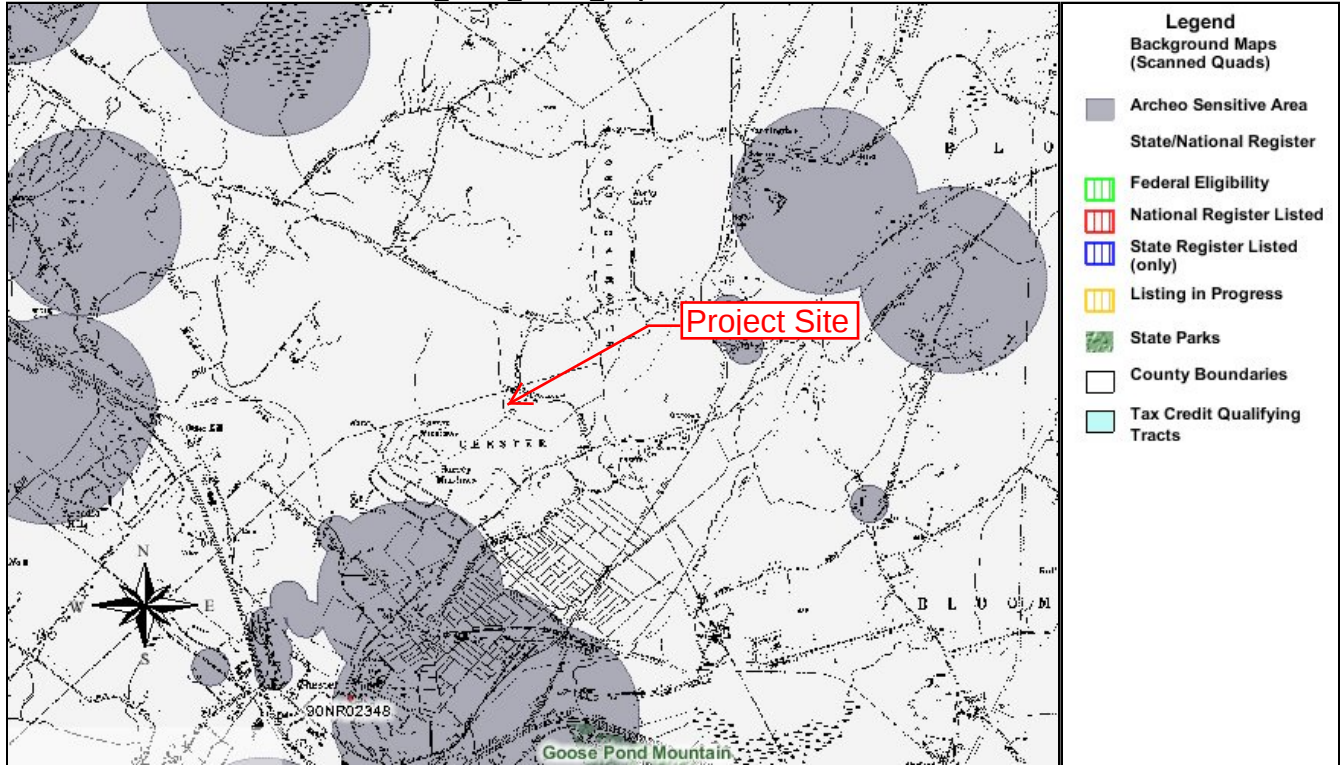
Date : August, 2014

0 250 500
Feet

APPENDIX B

SHPO MAPS

Johnson_Farm_SHPO_Map



August 26, 2014

Disclaimer: This map was prepared by the New York State Parks, Recreation and Historic Preservation National Register Listing Internet Application. The information was compiled using the most current data available. It is deemed accurate, but is not guaranteed.

APPENDIX C

USFWS T&E INFORMATION



U.S. Fish and Wildlife Service

Trust Resources List

This resource list is to be used for planning purposes only — it is not an official species list.

Endangered Species Act species list information for your project is available online and listed below for the following FWS Field Offices:

New York Ecological Services Field Office
3817 LUKER ROAD
CORTLAND, NY 13045
(607) 753-9334
<http://www.fws.gov/northeast/nyfo/es/section7.htm>

Project Name:

Johnson Farm T&E



U.S. Fish and Wildlife Service

Trust Resources List

Project Location Map:



Project Counties:

Orange, NY

Geographic coordinates (Open Geospatial Consortium Well-Known Text, NAD83):

MULTIPOLYGON (((-74.2580657 41.3864963, -74.2580657 41.3801852, -74.2642884 41.3743244, -74.2678075 41.3766108, -74.2639451 41.3834374, -74.2602973 41.3868183, -74.2580657 41.3864963)))

Project Type:

Power Generation



Trust Resources List

Endangered Species Act Species List ([USFWS Endangered Species Program](#))

There are a total of 5 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fishes may appear on the species list because a project could cause downstream effects on the species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section below for critical habitat that lies within your project area. Please contact the designated FWS office if you have questions.

Species that should be considered in an effects analysis for your project:

Clams	Status		Has Critical Habitat	Contact
Dwarf wedgemussel (<i>Alasmidonta heterodon</i>) Population: Entire	Endangered	species info		New York Ecological Services Field Office
Flowering Plants				
Small Whorled pogonia (<i>Isotria medeoloides</i>)	Threatened	species info		New York Ecological Services Field Office
Mammals				
Indiana bat (<i>Myotis sodalis</i>) Population: Entire	Endangered	species info		New York Ecological Services Field Office
northern long-eared Bat (<i>Myotis septentrionalis</i>) Population:	Proposed Endangered	species info		New York Ecological Services Field Office
Reptiles				
Bog Turtle (<i>Clemmys muhlenbergii</i>) Population: northern	Threatened	species info		New York Ecological Services Field Office

Critical habitats within your project area:

There are no critical habitats within your project area.



Trust Resources List

FWS National Wildlife Refuges ([USFWS National Wildlife Refuges Program](#)).

There are no refuges found within the vicinity of your project.

FWS Migratory Birds ([USFWS Migratory Bird Program](#)).

The protection of birds is regulated by the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA). Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. For more information regarding these Acts see <http://www.fws.gov/migratorybirds/RegulationsandPolicies.html>.

All project proponents are responsible for complying with the appropriate regulations protecting birds when planning and developing a project. To meet these conservation obligations, proponents should identify potential or existing project-related impacts to migratory birds and their habitat and develop and implement conservation measures that avoid, minimize, or compensate for these impacts. The Service's Birds of Conservation Concern (2008) report identifies species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become listed under the Endangered Species Act as amended (16 U.S.C 1531 et seq.).

For information about Birds of Conservation Concern, go to <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Management/BCC.html>.

Migratory birds of concern that may be affected by your project:

There are 12 birds on your Migratory birds of concern list. The Division of Migratory Bird Management is in the process of populating migratory bird data with an estimated completion time of Fall 2014; therefore, the list below may not include all the migratory birds of concern in your project area at this time. While this information is being populated, please contact the Field Office for information about migratory birds in your project area.

Species Name	Bird of Conservation Concern (BCC)	Species Profile	Seasonal Occurrence in Project Area
American bittern (<i>Botaurus lentiginosus</i>)	Yes	species info	Breeding
Bald eagle (<i>Haliaeetus leucocephalus</i>)	Yes	species info	Year-round
Black-billed Cuckoo (<i>Coccyzus erythrophthalmus</i>)	Yes	species info	Breeding



Trust Resources List

Canada Warbler (<i>Wilsonia canadensis</i>)	Yes	species info	Breeding
Golden-Winged Warbler (<i>Vermivora chrysoptera</i>)	Yes	species info	Breeding
Least Bittern (<i>Ixobrychus exilis</i>)	Yes	species info	Breeding
Louisiana Waterthrush (<i>Parkesia motacilla</i>)	Yes	species info	Breeding
Pied-billed Grebe (<i>Podilymbus podiceps</i>)	Yes	species info	Year-round
Purple Sandpiper (<i>Calidris maritima</i>)	Yes	species info	Wintering
Rusty Blackbird (<i>Euphagus carolinus</i>)	Yes	species info	Wintering
Wood Thrush (<i>Hylocichla mustelina</i>)	Yes	species info	Breeding
Worm eating Warbler (<i>Helmitheros vermivorum</i>)	Yes	species info	Breeding

NWI Wetlands ([USFWS National Wetlands Inventory](#)).

The U.S. Fish and Wildlife Service is the principal Federal agency that provides information on the extent and status of wetlands in the U.S., via the National Wetlands Inventory Program (NWI). In addition to impacts to wetlands within your immediate project area, wetlands outside of your project area may need to be considered in any evaluation of project impacts, due to the hydrologic nature of wetlands (for example, project activities may affect local hydrology within, and outside of, your immediate project area). It may be helpful to refer to the USFWS National Wetland Inventory website. The designated FWS office can also assist you. Impacts to wetlands and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes. Project Proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate [U.S. Army Corps of Engineers District](#).

Data Limitations, Exclusions and Precautions

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high



Trust Resources List

altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery and/or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Exclusions - Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Precautions - Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

The following wetland types intersect your project area in one or more locations:

Wetland Types	NWI Classification Code	Total Acres
Freshwater Emergent Wetland	PEM1C	2.4723
Freshwater Emergent Wetland	PEM1A	15.1198
Freshwater Emergent Wetland	PEM1B	4.451
Freshwater Forested/Shrub Wetland	PFO1Eh	0.7641
Freshwater Pond	PUBHh	0.2288
Freshwater Pond	PUBHx	0.4328