

# Westecunk Creek Barrier Removal Project

---

## Draft Environmental Assessment

U. S. Fish and Wildlife Service

6/15/2015

## TABLE OF CONTENTS

<b>1.0 PURPOSE AND NEED</b> .....	<b>1</b>
1.1 INTRODUCTION AND BACKGROUND .....	1
1.2 PURPOSE AND NEED FOR THE PROPOSED ACTION.....	1
1.3 SCOPE OF ANALYSIS .....	5
1.4 PUBLIC PARTICIPATION AND COORDINATION.....	5
<b>2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION</b> .....	<b>7</b>
2.1 ALTERNATIVE A – PROPOSED ACTION.....	7
2.1.1 Restoration Plan .....	8
2.1.2 Invasive Species Management.....	11
2.2 ALTERNATIVE B – NO-ACTION .....	11
<b>3.0 AFFECTED ENVIRONMENTS AND THEIR EXISTING CONDITIONS</b> .....	<b>12</b>
3.1 INTRODUCTION.....	12
3.2 PHYSICAL ENVIRONMENT .....	12
3.2.1 Topography.....	12
3.2.2 Geology and Soils.....	12
3.2.3 Water Quality .....	14
3.2.4 Air Quality.....	16
3.2.5 Wetlands and Streams .....	16
3.3 BIOLOGICAL ENVIRONMENT .....	19
3.3.1 Vegetation.....	19
3.3.2 Fish .....	19
3.3.3 Wildlife.....	20
3.3.4 Threatened and Endangered (T&E) Species .....	21
3.4 CULTURAL RESOURCES.....	23
3.5 SOCIO-ECONOMIC RESOURCES AND ENVIRONMENTAL JUSTICE.....	23
3.6 RECREATION.....	24
3.7 TRANSPORTATION.....	24
<b>4.0 ENVIRONMENTAL CONSEQUENCES AND CUMULATIVE IMPACTS</b> .....	<b>25</b>
4.1 PHYSICAL ENVIRONMENT .....	25
4.1.1 Topography, Geology and Soils, and Air Quality .....	25
4.1.2 Water Quality, Wetlands and Streams .....	25
4.2 BIOLOGICAL ENVIRONMENT .....	26
4.2.1 Vegetation, Fish, Wildlife and Threatened and Endangered Species .....	26
4.3 CULTURAL RESOURCES, SOCIO-ECONOMIC RESOURCES AND ENVIRONMENTAL JUSTICE, RECREATION AND TRANSPORTATION .....	28
4.4 CUMULATIVE IMPACTS .....	28
<b>5.0 REFERENCES</b> .....	<b>30</b>
<b>6.0 LIST OF PREPARERS</b> .....	<b>31</b>

## LIST OF FIGURES

<b>1.1 SREET MAP</b> .....	<b>2</b>
<b>1.2 WATERSHED MAP</b> .....	<b>3</b>
<b>1.3 HEAD OF TIDE MAP</b> .....	<b>4</b>

<b>2.1 RESTORATION PLAN .....</b>	<b>9</b>
<b>3.1 USGS TOPOGRAPHIC MAP .....</b>	<b>13</b>
<b>3.2 SOIL SURVEY MAP .....</b>	<b>15</b>
<b>3.3 NWI MAP.....</b>	<b>17</b>
<b>3.4 NJDEP WETLANDS MAP.....</b>	<b>18</b>

**LIST OF TABLES**

<b>1.1 REQUIRED PERMITS AND AUTHORIZATIONS.....</b>	<b>6</b>
<b>2.1 SITE RESTORATION PLANTING ZONES.....</b>	<b>8</b>
<b>2.2 PLANTING SCHEME .....</b>	<b>10</b>
<b>3.1 SERVICE’S IPAC FINDINGS FOR POTENTIAL FEDERALLY LISTED T&amp;E SPECIES ON OR NEAR THE PROJECT SITE .....</b>	<b>21</b>
<b>3.2 SERVICE’S IPAC FINDINGS FOR POTENTIAL MIGRATORY BIRD SPECIES ON OR NEAR THE PROJECT SITE.....</b>	<b>21</b>
<b>3.3 NJDEP LANDSCAPE PROJECT FINDINGS FOR POTENTIAL STATE-LISTED T&amp;E SPECIES ON OR NEAR THE PROJECT SITE .....</b>	<b>22</b>
<b>3.4 NJDEP NATURAL HERITAGE PROGRAM ADDITIONAL FINDINGS FOR POTENTIAL STATE-LISTED T&amp;E SPECIES ON OR NEAR THE PROJECT SITE.....</b>	<b>23</b>
<b>4.1 NJDEP SURFACE WATER QUALITY STANDARDS FOR FW2-NT WATERS.....</b>	<b>26</b>

**LIST OF APPENDICES**

- APPENDIX A – PHOTOGRAPHS**
- APPENDIX B – EXISTING CONDITIONS PLAN AND PROPOSED CONCEPT PLAN**
- APPENDIX C – LIST OF PLANT SPECIES OBSERVED ON THE SITE**
- APPENDIX D – THREATENED AND ENDANGERED SPECIES FINDINGS**

## Chapter 1 Purpose and Need

### 1.1 Introduction and Background

The National Environmental Policy Act [42 United States Code (U.S.C.) 4321 et seq.; NEPA] and the Council on Environmental Quality's NEPA regulations [40 Code of Federal Regulations (CFR), Parts 1500 to 1508] require that the potential environmental impacts of a Proposed Action be considered before making a decision. In compliance with these regulations, this Environmental Assessment (EA) examines the potential environmental impacts of the Proposed Action and the No-Action Alternative, and identifies the unavoidable adverse environmental impacts identified as a result of the Proposed Action.

The Proposed Action is the Westecunk Creek Barrier Removal Project (Project). The Project is located in the Township of Eagleswood, Ocean County, New Jersey. It is located on a parcel of land owned by the U.S. Fish and Wildlife Service (Service) as a component of the Edwin B. Forsythe National Wildlife Refuge (the Refuge) and identified by the Township as Block 39, Lot 53. It is situated along the east side of Silver Lake Drive, between the Garden State Parkway and U.S. Route 9, and east of County Route 539 (**Figure 1.1**). The parcel is located in the Outer Coastal Plain physiographic section of the state, in the Barnegat Bay Watershed Management Area (WMA 13).

Westecunk Creek originates in the NJ Pinelands, flows southeastward through Stafford Forge, continues through Eagleswood Township, and enters the Barnegat Bay estuary, an estuary of national significance. Tributaries to Westecunk Creek include the Swamp Branch, Governor's Branch, and Rail Branch (**Figure 1.2**). The Head of Tide (HOT) is mapped by the New Jersey Department of Environmental Protection (NDJEP) as immediately downstream of the Project (**Figure 1.3**).

The Westecunk barrier (barrier) comprises a dilapidated low concrete sill (dam) that traverses the creek, a spillway, and appurtenant dikes on each bank. The dikes and original barrier structure were likely constructed in the 1920s to impound water from the creek to create a cranberry bog for farming. A scour pool (depth unknown) has formed just downstream of the barrier. The parcel that the Project area is located on was purchased by the Service in 2007. The Service is interested in removing the barrier and constructing the stream restoration measures necessary to restore natural flow into Westecunk Creek. **Appendix A** presents photographs of the Project area.

### 1.2 Purpose and Need for the Proposed Action

The Refuge is managed as part of the Refuge System, whose mission is “*to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans*” (National Wildlife Refuge System Improvement Act of 1997, Public Law 105-57). The Refuge was established for the following purposes (USFWS 2013):

Figure 1.1 – Street Map

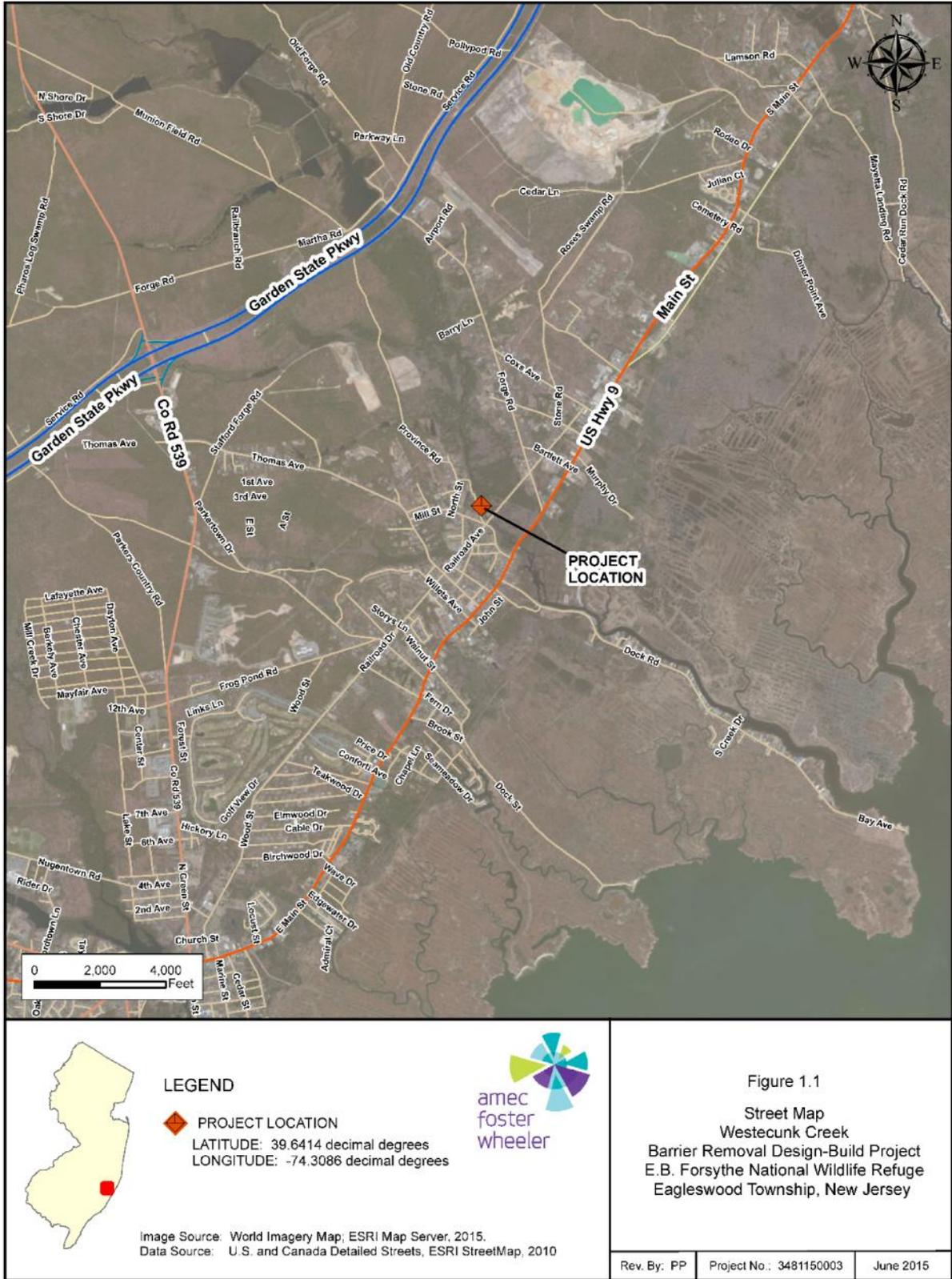


Figure 1.2 – Watershed Map

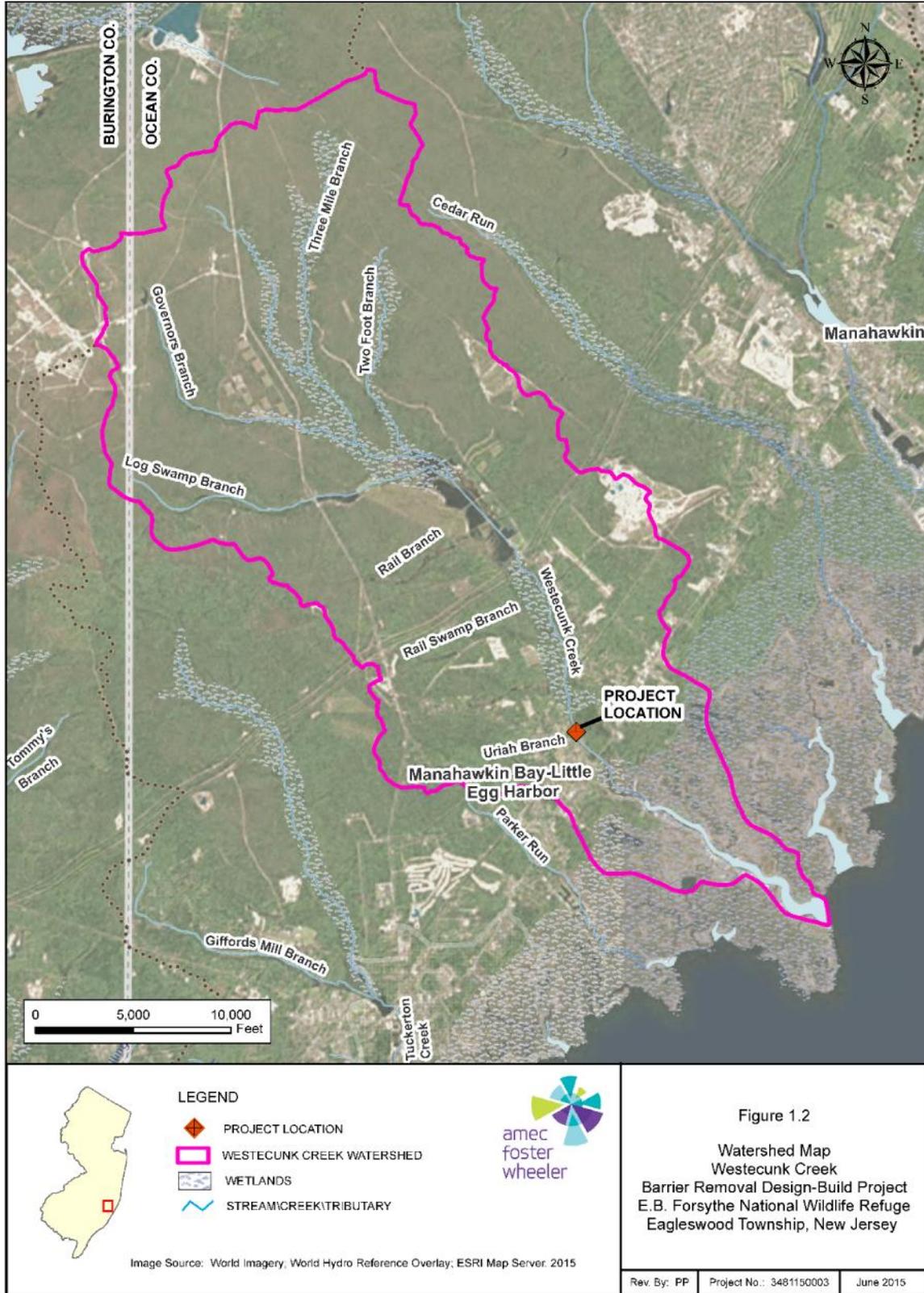


Figure 1.3 – Head of Tide Map



- For lands acquired under the Migratory Bird Conservation Act (16 U.S.C. §715-715r), as amended, “...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds...” (16 U.S.C. §715d)
- “...the development, advancement, management, conservation, and protection of fish and wildlife resources...” (16 U.S.C. §742f(a)(4), Fish and Wildlife Act of 1956)
- “...the conservation of wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations (regarding migratory birds)...” (16 U.S.C. §3901(b), 100 Stat. 3583 Emergency Wetlands Resources Act of 1986)
- “...to secure for the American people of present and future generations the benefits of an enduring resource of wilderness.” (78 State. 890:16 U.S.C. 1211 (note), 1131-1136, Wilderness Act of 1964).

The Project will restore approximately 13 km of fish passage on the Refuge, so it is consistent with this mission. The barrier currently hinders fish passage during low flow conditions for both diadromous (anadromous and catadromous) fish and year-round resident fish. Restoring the connectivity will open upstream spawning and rearing habitat for federal trust species such as alewife (*Alosa pseudoharengus*) and blueback herring (*Alosa aestivalis*) as well as nursery and maturation habitat for American eel (*Anguilla rostrata*). Increased habitat area advances and protects these fishery resources.

The Service reports (USFWS 1997) that steady declines in the Atlantic anadromous fish stocks have been heavily influenced by non-fishing human activities in the coastal zone, such as suburbanization, and hydrologic barriers (emphasis added). Similarly, the National Oceanic and Atmospheric Administration (NOAA 2010) reports that diadromous fish, particularly American shad (*Alosa sapidissima*), herring, American eel, and Atlantic sturgeon (*Acipenser oxyrinchus*), have declined as a result of culverts, weirs, dams, and other human-made barriers to their migration. These blockages also limit adequate spawning flows necessary for egg and fry survival (NOAA 2010). The most common means of surmounting fish barriers is to move fish over or around these structures as efficiently as possible, with the simplest solution being removing all or part of the structure (USFWS 1997).

### 1.3 Scope of Analysis

This EA documents current environmental and habitat conditions in the project area, an assessment of the improvements from implementation of the project, and an assessment of the project area should the project not be performed. The evaluations of the alternatives and recommendations are based on site-specific technical information and literature research. This information includes recent surveys and new mapping as well as hydraulic modeling and evaluations.

### 1.4 Public Participation and Coordination

NEPA requirements help ensure that environmental information is made available to the public during the decision-making process and prior to implementing an action. The premise of the NEPA is that the quality of decisions will be enhanced if proponents provide information to the

public and involve the public in the planning process. The Service has conducted public outreach for the Project through mailings to surrounding landowners and has been and will continue to be in coordination with state and federal agencies, and the public as part of the permitting process required to implement this Project. State and federal permits and authorizations will include public comment periods. Federal and state laws relevant to this Project are as follows:

- Federal level
  - The Federal Water Pollution Control Act (Clean Water Act; 33 U.S.C. 1251 *et seq.*)
  - The Rivers and Harbors Act of 1899 (33 U.S.C. 407)
  - The Endangered Species Act of 1973 (ESA; 16 U.S.C. 1531-1544)
  
- State level
  - Waterfront Development Law (N.J.S.A. 12:5-3)
  - Freshwater Wetlands Protection Act (N.J.S.A. 13:9B-1 *et seq.*)
  - Safe Dam Act (N.J.S.A. 58:4-1)

A number of agencies have been and will be involved in the review and permitting of the Project. These agencies are as follows:

- State level
  - NJDEP, Division of Land Use Regulation (DLUR)
  - NJDEP, Bureau of Coastal Management
  - NJDEP, Bureau of Dam Safety and Flood Control
  - NJDEP, Historic Preservation Office (HPO)
  - NJDEP, Division of Fish and Wildlife (DFW)
  
- County level
  - Ocean Soil Conservation District (OSCD)

Coordination and consultation with state agencies have been conducted throughout the planning stages of this Project. **Table 1-1** below presents a summary of the permits sought to complete this Project.

<b>Table 1-1 Required Permits and Authorizations</b>		
<b>Permit or Authorization</b>	<b>Agency</b>	<b>Status</b>
Dam Safety Permit	NJDEP	Application in progress
Coastal General Permit 29	NJDEP	Application in progress
Erosion and Sedimentation Control Plan	OSCD	Application in progress

## Chapter 2 Alternatives Including the Proposed Action

Two alternatives were assessed during the development of this EA. The Proposed Action, the removal of the in-stream barrier, is considered to be the most direct and effective way of meeting the project objectives. This alternative and the No-Action Alternative are discussed in the following sections.

### 2.1 Alternative A – Proposed Action

The Service performed topographic surveys on October 22, 2013 from approximately 300 feet upstream to 130 feet downstream of the barrier. A local benchmark (pin) was placed into a large tree located on the right bank, near the barrier wall. This benchmark was initially set at a preliminary reference elevation of 100.0 feet, and then converted to North American Vertical Datum (NAVD88).

Additional topographic surveying was conducted by Civil Dynamics, Inc. on January 20, 2015 to depict the existing conditions of the barrier and Westecunk Creek immediately upstream and downstream of the barrier. Real Time Kinematic (RTK) Global Positioning System (GPS) equipment was then used on February 11, 2015 to establish a NAVD88 vertical control at the Project site. Digital Light Detection and Ranging (LiDAR)-based contour mapping was also used to depict the areas upstream and downstream of the barrier.

A wetland delineation was performed by Amec Foster Wheeler on January 20, 2015 to identify the wetland boundaries in accordance with methods presented in the New Jersey Freshwater Wetlands Act Protection Rules (N.J.A.C. 7:7A). Civil Dynamics surveyed the wetland flags as part of the survey efforts. The results of the delineation are depicted on the Existing Conditions Plan and Proposed Concept Plan presented as **Appendix B**.

A summary of the barrier removal components to be performed is listed below and the Concept Plan is presented in **Appendix B**:

- Clear trees that are within the limits of work, but only remove stumps that are within the areas to be excavated.
- Remove all concrete sills and walls, except the sluiceway walls at the right abutment. Properly dispose of the concrete and associated steel debris off-site.
- Remove or flush cut all in-stream timbers.
- Excavate and/or regrade the channel bottom within the limits of the barrier to yield an elevation of 0.3 feet (which is consistent with the upstream channel bottom) and connect the upstream and downstream thalweg at an elevation of -1.0 ft.
- Place excavated soil materials in the pool area immediately upstream of the barrier and sluiceway, on River Right (the west shore), to restore the shoreline and yield a ground surface elevation of 3 feet (which is similar to the upstream channel cross section).
- Place excavated soil materials to fill the sluiceway.
- Remove the dock

- Regrade the barrier area to the proposed slopes.
- Install and maintain temporary erosion controls (e.g., silt fence, staked straw bales, straw wattles) where necessary at the end of each work day, during construction. Additional erosion control measures may be used based upon field conditions.

The work will be performed during periods of low flow<sup>1</sup> in Westecunk Creek, and barrier removal activities will be overseen by the Service. All disturbed areas will be restored per the Restoration Plan described below.

### 2.1.1 Restoration Plan

Following the demolition and removal of the concrete barrier, the project area will be re-graded to yield a cross-section that closely matches the upstream channel conditions. Cut and fill will be balanced, meaning that the on-site soils will be re-used with no intention of exporting or importing soils. Following the establishment of the proposed contours and grades, the top four inches of the surface soil will be amended with an imported soil additive as specified by NJ Department of Transportation (DOT) Specifications Section 917.02. Compost is an acceptable additive if it meets the requirements of Table 917.02.02-1.

The restoration of the project area will re-establish a native vegetation community of similar composition to the existing surrounding community and that of the Outer Coastal Plain physiographic section of New Jersey. The following three planting zones will be established according to site elevation or location (**Figure 2.1**):

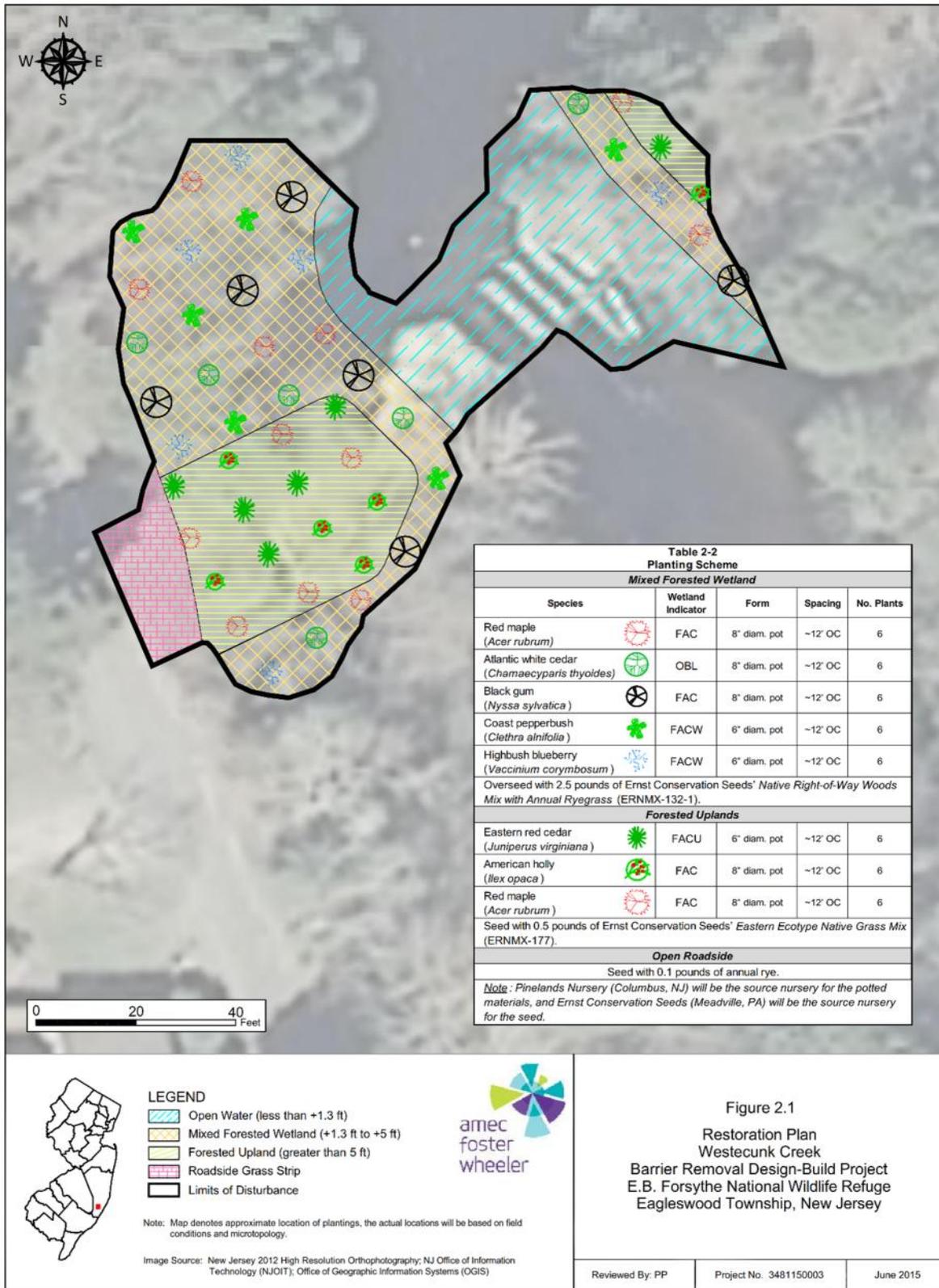
<b>Proposed Community</b>	<b>Elevation (ft) or Location</b>	<b>Acreage</b>
Mixed forested wetland	+1.3 to +5.0 feet	0.07 (River right) 0.01 (River left) Total = 0.08
Forested Upland	Greater than +5.0 feet	0.04 (River right) 0.004 (River left) Total = 0.044
Open roadside	Strip adjacent to Silver Lake Drive	0.01

*Note: River Right refers to the right side of Westecunk Creek when facing downstream or, more specifically, the western shore. River Left refers to the left side of the creek when facing downstream or, more specifically, the eastern shore.*

---

<sup>1</sup> Based on U.S. Geological Survey stream gage statistics for the Westecunk Creek station, September has the lowest monthly mean flow rate and October and November have mean values below the average daily flow. In general, a fall construction schedule should be a relatively low flow period. Within the proposed construction schedule, there will also be flexibility such that the in-stream work need not be conducted immediately following a storm event if the flow rates are too high.

Figure 2.1 – Restoration Plan



The dominant wetland community in the region is a mixed forested wetland, dominated by red maple (*Acer rubrum*), Atlantic white cedar (*Chamaecyparis thyoides*), and black gum (*Nyssa sylvatica*), with an understory of coast pepperbush (*Clethra alnifolia*) and highbush blueberry (*Vaccinium corymbosum*). The proposed mixed forested wetland will be planted with a mix of these five species to replace the approximately 30 trees that will be removed. This wetland planting zone will then be over-seeded with Ernst Conservation Seeds' *Native Right-of-Way Woods Mix with Annual Ryegrass* (ERNMX-132-1) at a rate of 30 lbs per acre.

The sparsely vegetated open uplands in the project area exhibited plants such as broom sedge (*Andropogon virginicus*) and switchgrass (*Panicum virgatum*), and a mix of non-native ruderal (early colonizing) species. To further increase the ecological health of the project area, disturbance of this open upland will be mitigated with the establishment of a forested upland. Thus this area will be planted with a mix of Eastern red cedar (*Juniperus virginiana*), American holly (*Ilex opaca*), and red maple, then over-seeded with Ernst Conservation Seeds' *Eastern Ecotype Native Grass Mix* (ERNMX-177) at a rate of 15 lbs per acre. Lastly, the open roadside strip will be seeded with annual rye (*Lolium multiflorum*) at a rate of 10 lbs per acre. **Table 2-2** presents the planting scheme for the restoration, which is also reproduced on **Figure 2.1**.

<b>Table 2-2 Planting Scheme</b>				
<b><i>Mixed Forested Wetland</i></b>				
<b>Species</b>	<b>Wetland Indicator</b>	<b>Form</b>	<b>Spacing</b>	<b>No. Plants</b>
Red maple ( <i>Acer rubrum</i> )	FAC	8" diam. pot	~12' OC	6
Atlantic white cedar ( <i>Chamaecyparis thyoides</i> )	OBL	8" diam. pot	~12' OC	6
Black gum ( <i>Nyssa sylvatica</i> )	FAC	8" diam. pot	~12' OC	6
Coast pepperbush ( <i>Clethra alnifolia</i> )	FACW	6" diam. pot	~12' OC	6
Highbush blueberry ( <i>Vaccinium corymbosum</i> )	FACW	6" diam. pot	~12' OC	6
Overseed with 2.5 pounds of Ernst Conservation Seeds' <i>Native Right-of-Way Woods Mix with Annual Ryegrass</i> (ERNMX-132-1).				
<b><i>Forested Uplands</i></b>				
Eastern red cedar ( <i>Juniperus virginiana</i> )	FACU	6" diam. pot	~12' OC	6
American holly ( <i>Ilex opaca</i> )	FAC	8" diam. pot	~12' OC	6
Red maple ( <i>Acer rubrum</i> )	FAC	8" diam. pot	~12' OC	6

<b>Table 2-2 Planting Scheme</b>
<b><i>Forested Uplands</i></b>
Seed with 0.5 pounds of Ernst Conservation Seeds' <i>Eastern Ecotype Native Grass Mix</i> (ERNMX-177).
<b><i>Open Roadside</i></b>
Seed with 0.1 pounds of annual rye.

*Note: Pinelands Nursery (Columbus, NJ) will be the source nursery for the potted materials, and Ernst Conservation Seeds (Meadville, PA) will be the source nursery for the seed.*

### 2.1.2 Invasive Species Management

There are several non-native plant species within the project area such as field garlic (*Allium vineale*), English ivy (*Hedera helix*), Japanese honeysuckle (*Lonicera japonica*), and multiflora rose (*Rosa multiflora*). With the exception of field garlic, these species have the potential to become invasive at the site and compromise the ecological integrity of the restoration area. Although the barrier removal activities are anticipated to remove the observed specimens, the seeds and the belowground portions of these plants may persist and propagate. Therefore, monitoring of the restoration area by the Service will be conducted for the early detection of these species and other common non-native, invasive species that may pose a threat to this site, such as common reed (*Phragmites australis*) or Japanese stiltgrass (*Microstegium vimineum*).

The management of these species may be conducted by hand-pulling, hand digging, or treating with herbicide. If hand-pulling or digging is the method used to remove invasive plants, the removed plants will be placed into garbage bags and disposed of. If herbicide applications are needed, a glyphosate-based herbicide will be used and will be applied during early afternoon hours, since plant translocation activity diminishes by this time of the day.

### 2.2 Alternative B – No-Action

The preferred alternative is to perform the barrier removal as proposed and described in Section 2.1 of this document. The completion of this project would satisfy the objective of the Project, which is to restore the connectivity of upstream spawning and rearing habitat for diadromous (migratory between fresh and salt waters) and year-round resident fish. Under the preferred alternative, natural stream function would be restored in terms of hydraulics, hydrology, and ecosystem support.

Another alternative explored for this project was the No-Action Alternative, which means leaving the barrier in place. This No-Action Alternative is not preferred since it will continue to leave a barrier in place for fish, preventing their movement upstream and downstream for reproducing, feeding, etc. The fish populations on either side of the barrier would essentially be trapped in their respective portions of the stream. Removing the barrier would prevent this situation from occurring and result in a well-functioning and healthier fish community.

Leaving the barrier in place will also make the conditions worse for fish when taking into account sea level rise. As sea level rises, saltwater moves farther upstream. If the barrier is present, it will block this saltwater from moving farther upstream. Fish that require freshwater to reproduce and live, but that are trapped downstream of the barrier, will be squeezed into a very small section of stream (Titus 1990). This leaves fish with only a very small area to reproduce and survive.

Rising sea levels with the barrier in place can also affect the surrounding wetlands and properties through increased flooding. As described above, sea level rise causes more water to build up downstream of the barrier because it is blocked from moving farther upstream. As water builds up, it can flood wetlands and properties along Westecunk Creek.

## **Chapter 3 Affected Environments and their Existing Conditions**

### 3.1 Introduction

This section describes the existing environmental resources in the project area, grouped according to physical resources (topography, geology, etc.), biological resources (vegetation, wildlife, etc.), and other categories such as cultural resources, socio-economic and environmental justice, and transportation.

### 3.2 Physical Environment

#### 3.2.1 Topography

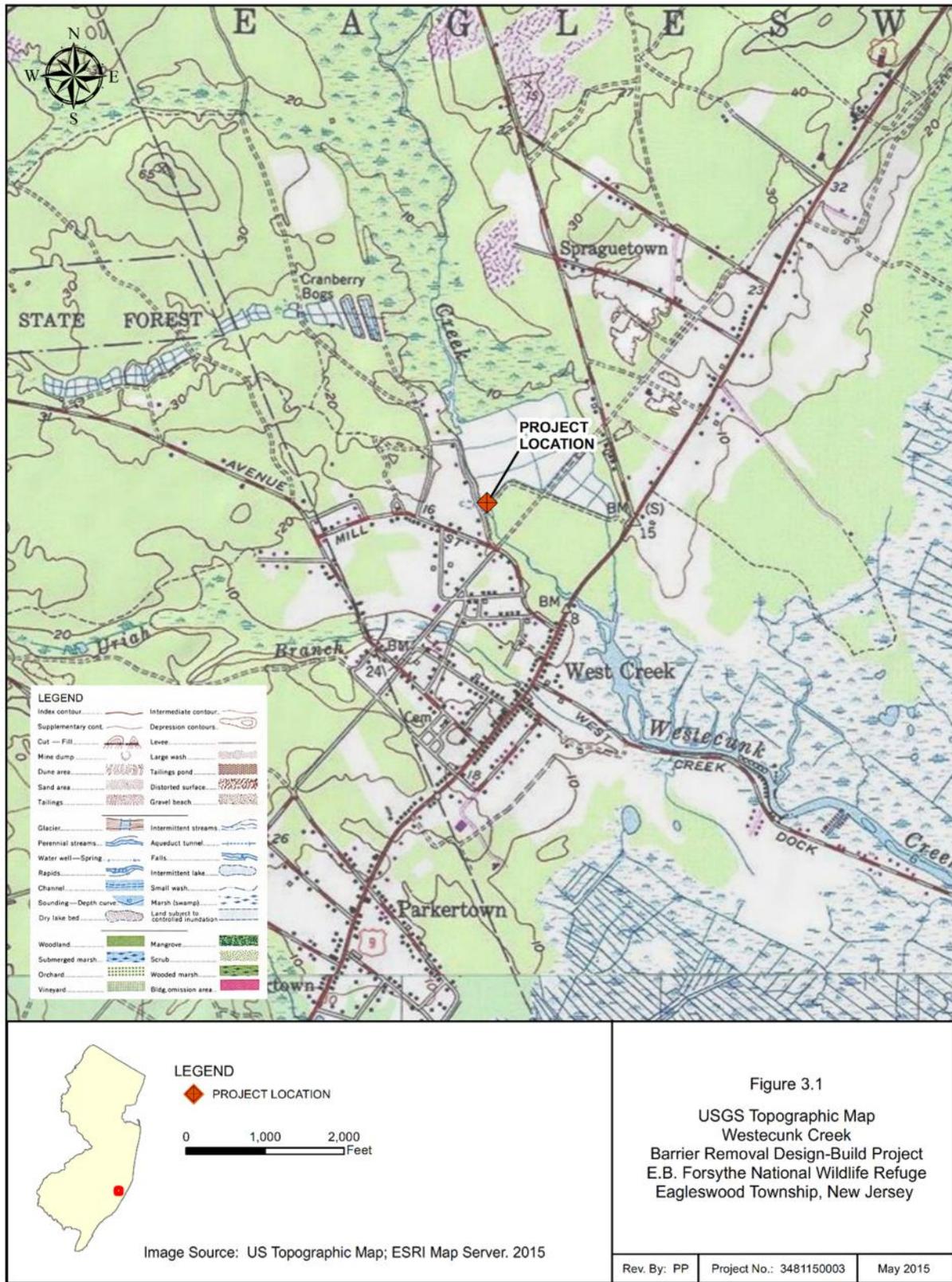
The topography surrounding the project area is relatively flat and is situated between 10 and 20 feet above mean sea level (**Figure 3.1**). Net local drainage from Silver Lake Drive and from undeveloped land to the east of the Project drains into the mixed forested wetlands on both sides of Westecunk Creek.

#### 3.2.2 Geology and Soils

The site is located within the Outer Coastal Plain Physiographic section of New Jersey. The unconsolidated deposits of this province range in age from the upper Lower Cretaceous to the Miocene (90 to 10 million years old) and gently dip to the southeast (Dalton 2003). The topography is relatively flat to very gently undulating and erosion-resistant gravel or iron-cemented sediment underlie upland areas and isolated hills. The sediments consist of alternately-deposited layers of sand, silt, and clay within deltaic and marine environments occurring as sea levels fluctuated during Cretaceous and Tertiary time (NJDEP 1999).

The Coastal Plain province is made up of the Kirkwood-Cohansey Formations, which consists of medium- to coarse-grained quartz sand at the site (NJDEP 2014). The surficial geology along the eastern bank of the creek is listed as Swamp and Marsh Deposits. These soils are described

Figure 3.1 – USGS Topographic Map



as gray, black, or brown peat and organic clay, silt and minor sand. They are deposited in modern freshwater wetlands and can be as thick as 40 feet. They were deposited during the late Pleistocene and Holocene Eras. The western bank of the creek is listed as Cape May Formation, Unit 2 soils. These are described as very pale brown, yellow, reddish yellow, white, olive yellow, or gray soils made up of sand, pebble gravel, minor silt, clay, peat, and cobble gravel. They were deposited during the late Pleistocene Era, and form a marine terrace with surface altitudes up to 40 feet and are generally less than 50 feet thick in the project area.

The site is mapped to occur on Manahawkin muck, 0-2% slopes, frequently flooded surficial soils (MakAt; **Figure 3.2**). The Manahawkin series is described by the United States Department of Agriculture (USDA) as a very deep, very poorly drained, sandy or sandy-skeletal, siliceous, dysic, mesic Terric Haplosaprist soil, found in the Coastal Plain, and derived from organic materials underlain by fluviomarine sediments (USDA 2015). Manahawkin soils were previously mapped as miscellaneous land types, named Muck, Muck shallow, or Freshwater marsh.

### 3.2.3 Water Quality

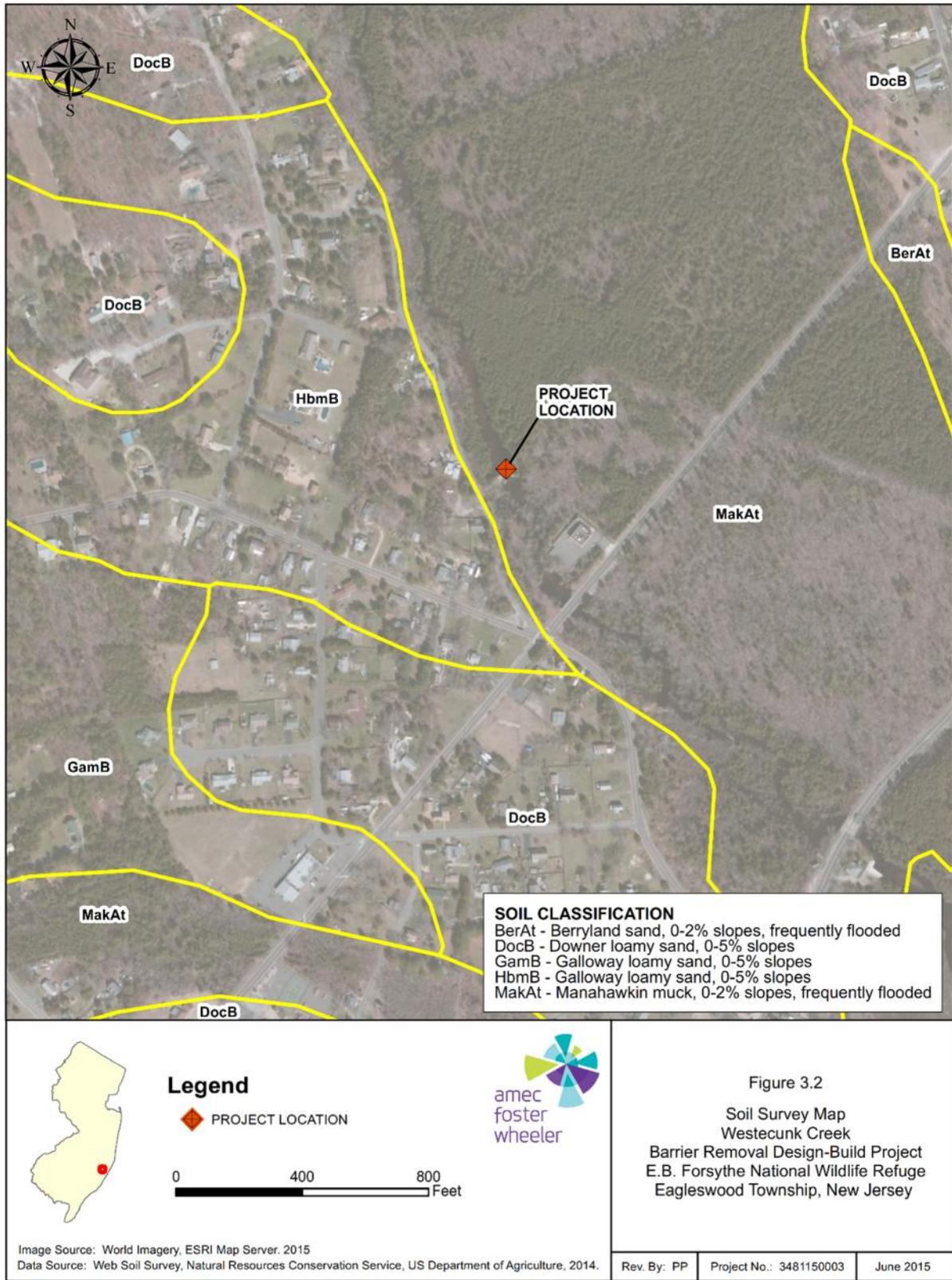
According to the NJDEP (2008):

*“The Surface Water Quality Standards are developed and administered in conformance with requirements of the Federal Water Pollution Control Act 33 U.S.C. §1251 (also called the Clean Water Act) and the Federal regulatory program established by the United States Environmental Protection Agency (USEPA) at 40 C.F.R. Part 131. The Surface Water Quality Standards are also developed pursuant to the New Jersey Water Quality Planning Act, N.J.S.A. 58:11A et. seq. and the New Jersey Water Pollution Control Act, N.J.S.A. 58:10A et. seq. Surface Water Quality Standards establish designated uses, classify streams based on uses, designate anti-degradation categories, and develop water quality criteria to protect those uses. In addition, the standards specify general, technical, and interstate policies, and policies pertaining to establishment of water quality-based effluent limitations.”*

Westecunk Creek is a tributary flowing directly into back bays of the Atlantic Ocean and is classified as a FW2-NT/SE1 according to New Jersey Surface Water Quality Standards (NJDEP 2011). This classification is for freshwater not set aside for trout maintenance as well as for saline estuarine waters with shellfish harvesting as a designated use. Although the site is located within the Pinelands National Preserve, it is not located within the Pinelands Protection and Preservation area. Therefore, Westecunk Creek is not listed as a Pinelands Water (PL) and is not afforded special protection.

Water quality parameters such as temperature, salinity, pH, dissolved oxygen, total suspended solids and turbidity have not been measured at the project site. These parameters will be collected prior to construction in order to ascertain the existing conditions.

Figure 3.2 - Soil Survey Map



### 3.2.4 Air Quality

The USEPA has set National Ambient Air Quality Standards (NAAQS) for six commonly found air pollutants as part of the Federal Clean Air Act requirements. These pollutants (also known as criteria pollutants) include particle pollution (often referred to as particulate matter), ground-level ozone, carbon monoxide (CO), sulfur oxides (SO<sub>x</sub>), nitrogen oxides (NO<sub>x</sub>), and lead. These pollutants are known to harm human health and the environment and also cause property damage. The USEPA regulates pollutants by developing human health-based and/or environmentally-based criteria (science-based guidelines) for setting permissible levels (NJDEP 2015). New Jersey is located in the Northeast Ozone Transport Region, an area that covers the 11 northeastern states from Maryland to Maine as well as Washington, DC, and portions of Northern Virginia. Ocean County, along with the rest of New Jersey, is designated as a moderate non-attainment area for the 8-hour ozone (O<sub>3</sub>) standard, but it is in attainment of all other standards.

The Wilderness Area of the Refuge is classified as a Class I Air Quality Area, which affords it special protection under the Clean Air Act. The Service was charged with the responsibility of protecting air quality and air quality-related values, including vegetation, wildlife, soils, water quality, visibility, odors, and the historic properties of the areas from manmade pollution (USFWS 2013).

The USEPA and NJDEP regulations require proposed projects to demonstrate that predicted impacts will not cause or significantly contribute to a violation of the NAAQS or the New Jersey Ambient Air Quality Standards (NJAAQS). Toward that end, the USEPA and NJDEP have established Significant Impact Levels (SILs), which are a small fraction of the NAAQS/NJAAQS. Predicted impacts less than SILs are deemed insignificant, and therefore will not cause or contribute to an air quality standard violation.

### 3.2.5 Wetlands and Streams

The Service's National Wetlands Inventory (NWI) indicates that the Project is located within the following wetland community (**Figure 3.3**):

- Palustrine, forested, broad-leaved deciduous/needle-leaved evergreen, seasonally flooded/saturated organic soil wetlands (PF01/4Eg)

The NJDEP indicates that the Project is located within the following three wetland communities (**Figure 3.4**):

- Palustrine, open water, permanently flooded, diked/impounded (POWHh)
- Palustrine, scrub-shrub, Atlantic white cedar/broad leaved deciduous, seasonally flooded (PSS8/1C)
- Palustrine, forested, broad leaved deciduous/Atlantic white cedar, seasonally flooded (PF01/8C)

Figure 3.3 – NWI Map

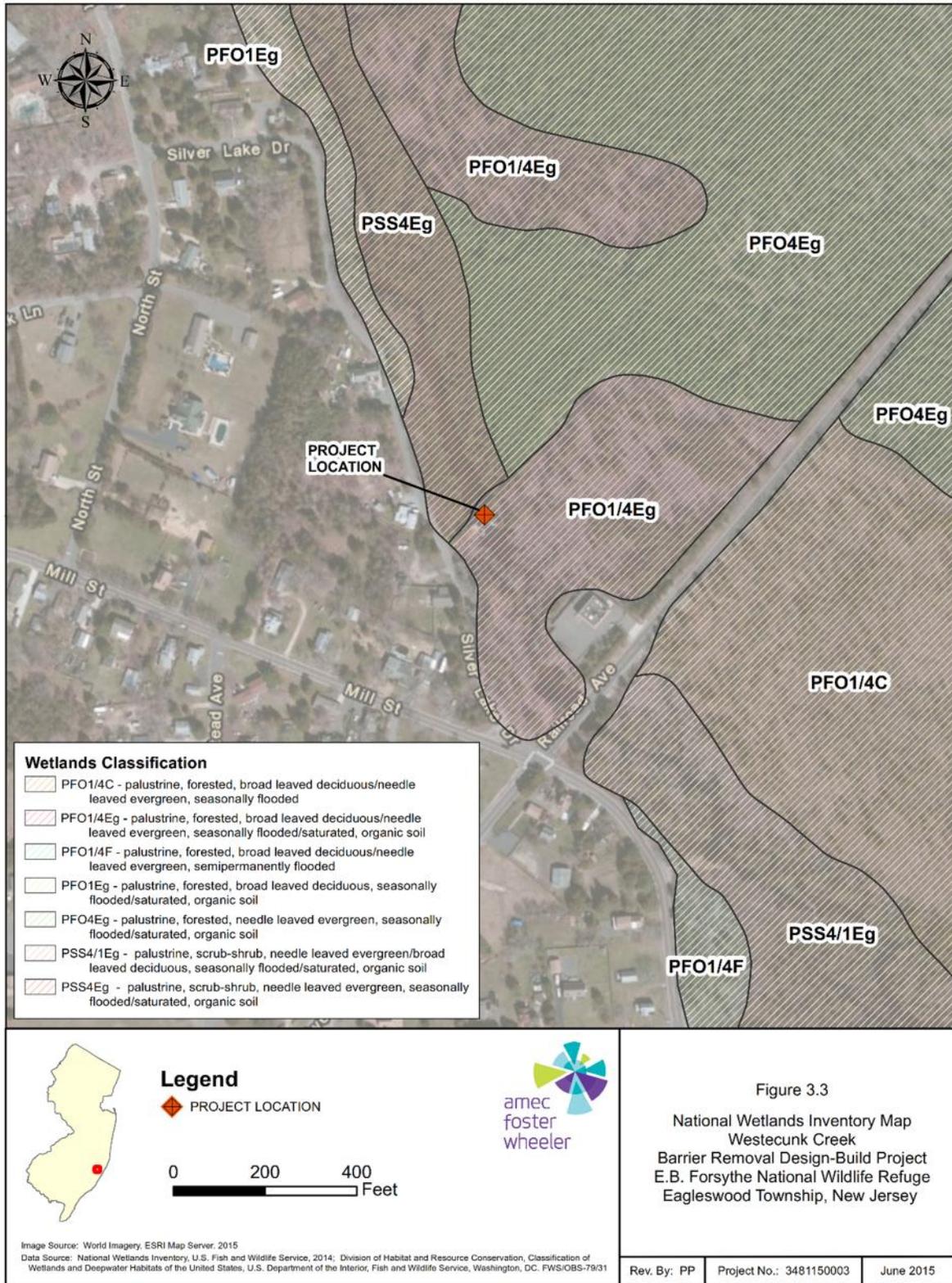
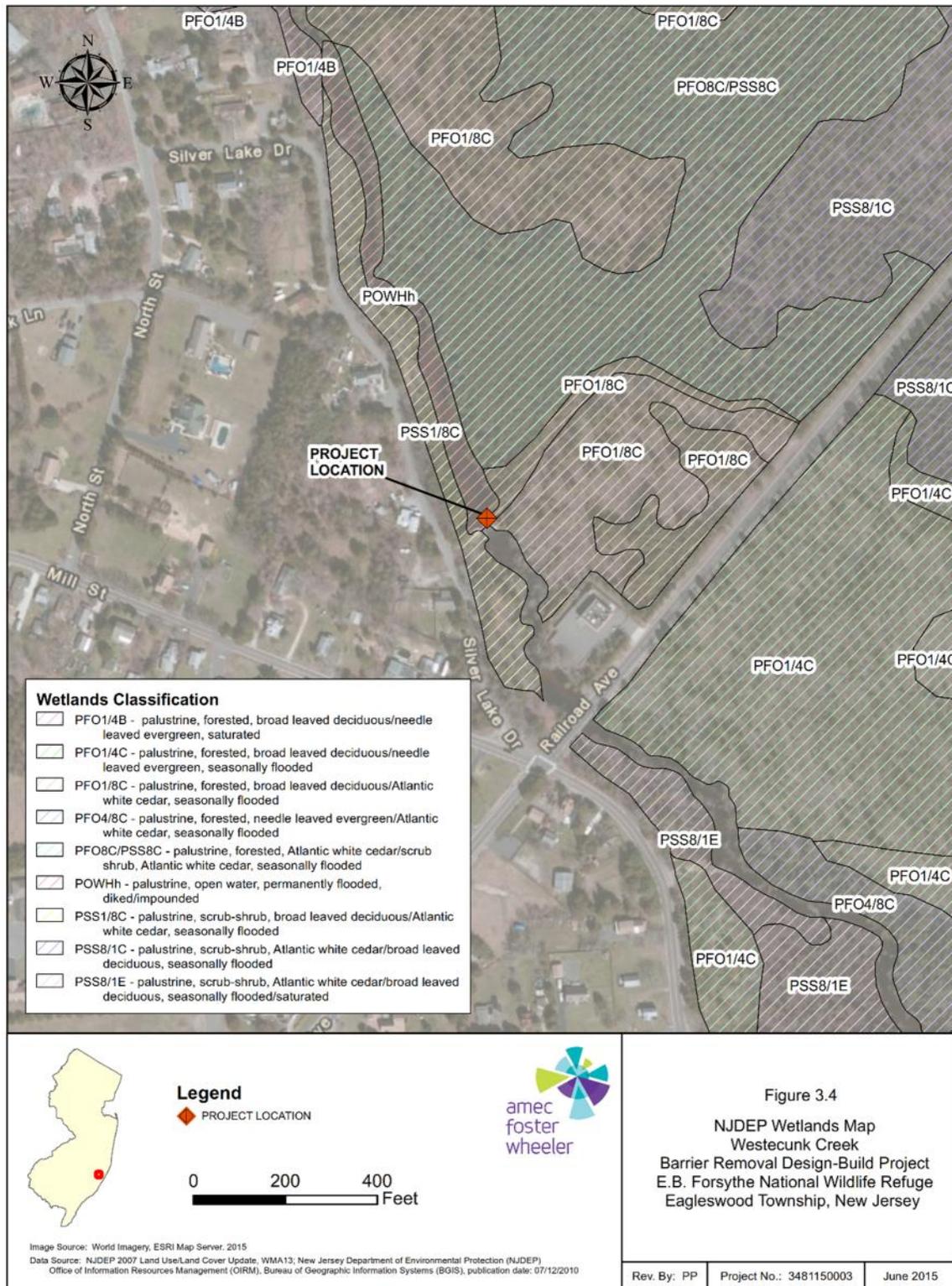


Figure 3.4 – NJDEP Wetlands Map



As previously discussed, a wetland delineation was performed to identify the outer boundaries of wetlands defined at N.J.A.C. 7:7A-1.4 as freshwater wetlands, freshwater wetland transition areas (i.e. wetland buffers), and State Open Waters. A freshwater wetland transition area is an area of upland adjacent to freshwater wetland which minimizes adverse impacts on the wetland or serves as an integral component of the wetlands ecosystem. State Open Waters are generally open water areas, but exclude ground water and freshwater wetlands.

Westecunk Creek was identified as State Open Water, and mixed forested freshwater wetlands were identified along both sides of the creek. **Appendix B** presents the results of the delineation. The NJDEP assigns “*wetland resource values*” that range from ordinary to intermediate to exceptional value. Ordinary resource value wetlands do not have any buffer, intermediate resource value wetlands have a 50-foot buffer, and exceptional resource value wetlands have a 150-foot buffer. Since there is a potential for threatened or endangered species to be present within this wetland, this project assumes that these wetlands will be classified as exceptional resource value wetlands, thus possessing a 150-foot buffer.

### 3.3 Biological Environment

#### 3.3.1 Vegetation

The vegetation community along both sides of Westecunk Creek is a mixed, forested wetland dominated by Atlantic white cedar (*Chamaecyparis thyoides*), black gum (*Nyssa sylvatica*), and red maple (*Acer rubrum*). This is a somewhat typical forested wetland community in this region of the state and the underlying Manahawkin soils (USDA 2015). Other characteristic plant species within this community include coast pepperbush (*Clethra alnifolia*), American holly (*Ilex opaca*), highbush blueberry (*Vaccinium corymbosum*), and common greenbrier (*Smilax rotundifolia*). The vegetation community immediately adjacent to the barrier exhibits characteristics typical of those within disturbed land areas. This community is a mix of native and non-native species such as field garlic (*Allium vineale*), English ivy (*Hedera helix*), eastern red cedar (*Juniperus virginiana*), Japanese honeysuckle (*Lonicera japonica*), switchgrass (*Panicum virgatum*), and multiflora rose (*Rosa multiflora*). **Appendix C** presents a list of plant species observed during the wetland delineation activities.

#### 3.3.2 Fish

The DFW reports that the Westecunk Creek system is a typical coastal drainage of the pinelands region. Low pH limits the fish species present to acid-tolerant species. The location around the project area has been sampled for river herring by the DFW (in approximately 2003/2004). During high flow conditions the structure did not appear to prevent upstream migration. There were no river herring collected or observed during the sampling period. Fish species collected included chain pickerel (*Esox niger*), creek chubsucker (*Erimyzon oblongus*), yellow bullhead (*Ameiurus natalis*), and brown bullhead (*Ameiurus nebulosus*). Additional sampling below the Stafford Forge impoundments, which are several km upstream of the barrier, resulted in similar findings. Additional species found in these impoundments include largemouth bass (*Micropterus salmoides*), bluespotted sunfish (*Enneacanthus gloriosus*), blackbanded sunfish (*Enneacanthus*

*chaetodon*), mud sunfish (*Acantharchus pomotis*), swamp darter (*Etheostoma fusiforme*), and American eel (Christopher Smith, DFW, personal communication, April 8, 2015).

Pre- and post-restoration biological monitoring by Ocean County College, in cooperation with the Service, will target two species of river herring; alewife and blueback herring.

### 3.3.3 Wildlife

**Birds:** Wildlife or wildlife signs that were observed during the January and April 2015 site visits included common woodland bird species such as the Carolina wren (*Thryothorus ludovicianus*), downy woodpecker (*Picoides pubescens*), white-throated sparrow (*Zonotrichia albicollis*) and black vulture (*Coragyps atratus*). The Refuge, however, provides stopover, breeding and/or wintering habitat for a wide variety and, in some cases very large portions, of migratory bird species. The wetlands of the Refuge are one of only seventeen sites designated in the United States as Wetlands of International Importance under the Ramsar Convention. The most common migratory species to use the Refuge that would potentially be found near the project site include the great blue heron (*Ardea herodias*), great egret (*Casmerodius albus*), snowy egret (*Egretta thula*), black-crowned night heron (*Nycticorax nycticorax*), glossy ibis (*Plegadis falcinellus*) and cattle egret (*Bubulcus ibis*). These herons and egrets nest on or near the Refuge, frequently foraging in water bodies similar to Westecunk Creek (USFWS 2004).

Red-tailed hawks (*Buteo jamaicensis*), turkey vulture (*Cathartes aura*), sharp-shinned hawks (*Accipiter striatus*), broad-winged hawks (*Buteo platypterus*), red-shouldered hawks (*Buteo lineatus*), northern harriers (*Circus cyaneus*), great horned owls (*Bubo virginianus*), common barn owls (*Tyto alba*), barred owls (*Strix varia*), and short-eared owls (*Asio flammeus*) are just some of the many raptors that also breed on the Refuge. Songbirds species such as the seaside sparrow (*Ammodramus maritimus*), marsh wren (*Cistothorus palustris*), and sedge wren (*Cistothorus platensis*) use the Refuge for nesting and to rest or feed during migration (USFWS 2004).

**Mammals:** There are over 30 species of mammals that occur on the Refuge, characteristic of assemblages within MidAtlantic coastal communities. According to the Service's Comprehensive Conservation Plan for the Refuge (2004), the following mammals can be found within the refuge:

*“Forest species include red fox (Vulpes vulpes), grey fox (Urocyon cinereoargenteus), coyote (Canis latrans), raccoon (Procyon lotor), long-tailed weasel (Mustela frenata), short-tailed weasel (Mustela erminea), striped skunk (Mephitis mephitis), opossum (Didelphis virginiana), white-tailed deer (Odocoileus virginianus), grey squirrel (Sciurus carolinensis), red squirrel (Tamiasciurus hudsonicus), chipmunk (Tamias striatus), white-footed mouse (Peromyscus leucopus), redbacked vole (Clethrionomys gapperi), pine vole (Microtus pinetorum), masked shrew (Sorex cinereus), short-tailed shrew (Blarina brevicauda), eastern mole (Scalopus aquaticus), and a variety of bat species.*

*Shrubland and grassland species of mammals include the meadow vole (Microtis pennsylvanicus), meadow jumping mouse (Zapus hudsonius), woodchuck (Marmota*

*monax*), eastern cottontail (*Sylvilagus floridanus*), and several of the forest and wetland species. Mammals associated with wetlands include mink (*Mustela vison*), river otter (*Lutra canadensis*), muskrat (*Ondatra zibethicus*), meadow vole, southern bog lemming (*Synaptomys cooperi*), and least shrew (*Cryptotis parva*).”

**Reptiles and Amphibians:** There are a total of nineteen species of reptiles and amphibians that have been documented to occur on the Refuge which fall into two major groups; Pine Barrens environment and coastal estuarine environment. The Proposed Action site would fall into the Pine Barrens community type assemblage which includes habitat for important species such as wood turtles (*Glyptemys insculpta*), Cope's gray and pine barrens treefrog (*Hyla chrysoscelis* and *H. andersonii*), and ambystomid salamanders (*Ambystoma spp.*) (USFWS 2004).

### 3.3.4 Threatened and Endangered (T&E) Species

The Service’s online Information, Planning, and Conservation (IPaC) system indicated the presence of the following federally listed species on or near the project site (**Appendix D**):

<b>Table 3.1</b>		
<b>Service’s IPaC Findings for Potential Federally Listed T&amp;E Species On or Near the Project Site</b>		
<b>Common Name</b>	<b>Scientific Name</b>	<b>Federal Status</b>
Knieskern's Beaked-Rush	<i>Rhynchospora knieskernii</i>	Threatened
Swamp Pink	<i>Helonias bullata</i>	Threatened
Northern Long-Eared Bat	<i>Myotis septentrionalis</i>	Threatened

In addition, the Service’s IPaC system indicated the presence of 26 migratory birds protected under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) that could potentially be moving through the project area, including the following:

<b>Table 3.2</b>	
<b>Service’s IPaC Findings for Potential Migratory Bird Species On or Near the Project Site</b>	
<b>Common Name</b>	<b>Scientific Name</b>
American Oystercatcher	<i>Haematopus palliatus</i>
American Bittern	<i>Botaurus lentiginosus</i>
Bald eagle	<i>Haliaeetus leucocephalus</i>
Black Skimmer	<i>Rynchops niger</i>
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>
Blue-winged Warbler	<i>Vermivora pinus</i>
Fox Sparrow	<i>Passerella iliaca</i>
Gull-billed Tern	<i>Gelochelidon nilotica</i>
Hudsonian Godwit	<i>Limosa haemastica</i>

<b>Common Name</b>	<b>Scientific Name</b>
Least Bittern	<i>Ixobrychus exilis</i>
Least tern	<i>Sterna antillarum</i>
Lesser Yellowlegs	<i>Tringa flavipes</i>
Peregrine Falcon	<i>Falco peregrinus</i>
Pied-billed Grebe	<i>Podilymbus podiceps</i>
Prairie Warbler	<i>Dendroica discolor</i>
Prothonotary Warbler	<i>Protonotaria citrea</i>
Purple Sandpiper	<i>Calidris maritima</i>
Red Knot	<i>Calidris canutus rufa</i>
Rusty Blackbird	<i>Euphagus carolinus</i>
Saltmarsh Sparrow	<i>Ammodramus caudacutus</i>
Seaside Sparrow	<i>Ammodramus maritimus</i>
Short-eared Owl	<i>Asio flammeus</i>
Snowy Egret	<i>Egretta thula</i>
Upland Sandpiper	<i>Bartramia longicauda</i>
Wood Thrush	<i>Hylocichla mustelina</i>
Worm eating Warbler	<i>Helmitheros vermivorum</i>

The NJDEP NJ-GeoWeb website (NJDEP 2014) Landscape Project indicated the presence of the following state-listed T&E species on or near the project site:

<b>Common Name</b>	<b>Scientific Name</b>	<b>Federal Status</b>	<b>State Status</b>
Black-crowned Night-heron	<i>Nycticorax nycticorax</i>	Not listed	Threatened
Black Skimmer	<i>Rynchops niger</i>	Not listed	Endangered
Common Tern	<i>Sterna hirundo</i>	Not listed	Special concern
Glossy Ibis	<i>Plegadis falcinellus</i>	Not listed	Special concern
Caspian Tern	<i>Hydroprogne caspia</i>	Not listed	Special concern
Little Blue Heron	<i>Egretta caerulea</i>	Not listed	Special concern
Snowy Egret	<i>Egretta thula</i>	Not listed	Special concern
Tricolored Heron	<i>Egretta tricolor</i>	Not listed	Special concern
Northern Pine Snake	<i>Pituophis m. melanoleucus</i>	Not listed	Threatened
Timber Rattlesnake	<i>Crotalus horridus</i>	Not listed	Endangered

Since the NJDEP GeoWeb is a preliminary screening tool, a formal written request was submitted to the NJDEP Natural Heritage Program in order to confirm the possible presence of these species. The February 19, 2015 findings of the Natural Heritage Program are presented in **Appendix D**. These results indicate the following additional plant species to have the potential to occur in or near the project site:

<b>Table 3.4</b>					
<b>NJDEP Natural Heritage Program Additional Findings for Potential State-Listed T&amp;E Species On or Near the Project Site</b>					
<b>Common Name</b>	<b>Scientific Name</b>	<b>Federal Status</b>	<b>State Status</b>	<b>Last Observed</b>	<b>Location</b>
Pine Barren Bellwort	<i>Uvularia puberula</i> var. <i>nitida</i>	Not Listed	Endangered	May 29, 1907	West Creek, northeast edge of town, near Westecunk Creek

### 3.4 Cultural Resources

To assist the U.S. Fish and Wildlife Service in compliance with the National Historic Preservation Act (Section 106), Amec Foster Wheeler performed a file review at the offices of the NJDEP State Historic Preservation Office (SHPO) and the NJ State Museum. The objective of the file review was to assess the potential for the Proposed Action to impact archaeological, cultural, and historical resources, collectively termed here as historic properties. The search indicated no inventoried historic properties on or within the vicinity of the project area.

A review of historical aerial photographs indicates that the area surrounding the barrier was cleared of vegetation from 1930 to 1972, indicating potential agricultural use. The berm leading to the dike on the eastern side of the river (river left) is visible in aerial photographs from 1930 and was likely constructed in the 1920s. Historically, the dike and barrier impounded the creek, creating a cranberry bog. While the barrier is more than fifty years old, the structure lacks integrity and historical significance, and consequently it is not considered eligible for listing in the National Register of Historic Places.

The archaeological sensitivity of the Area of Potential Effects (APE) of the project is low because of previous disturbances associated with the construction of the barrier and dike. The project will not incur any visual impacts on significant historic structures or historic districts.

The project will have no effect on historic properties that are eligible for listing in the National Register of Historic Places.

### 3.5 Socio-Economic Resources and Environmental Justice

Ocean County (the County) began as a rural, agricultural and fishing center. It wasn't until the latter part of the 1800's and through the 1900's, when the resort industry of the New Jersey Shore

was developed, that commercial activities associated with seasonal resorts became the County's economic mainstay. Ocean County's economic base has become increasingly diverse and a variety of industries now supplement traditional tourist-related businesses with growing year-round populations. The health care industry is the top employer in the county and is the fastest growing employment sector. Ocean County is projected to continue leading employment growth in the state through the next decade (OCDP 2014).

### 3.6 Recreation

The Refuge receives over 300,000 visitors per year who use the land for various recreational purposes such as hunting, fishing, clamming, crabbing, wildlife observation, environmental education, and boating. The commercial fishing industry in southern New Jersey is substantial. Important species for this industry include: finned fish (including bait fish), eel, clams, mussels, and crabs (including horseshoe crabs). In addition, there has been an increase in shellfish aquaculture, especially oysters. The New Jersey shore has long been a major tourist destination so the wildlife-dependent public use at the Refuge is consistent with the tourism industry for the region. (USFWS 2004).

Westecunk Creek is likely used for fishing and boating (kayaks or canoes) by visitors to the Refuge during the peak summer tourism months. Recreational use in spring and fall may occur also, but to a much lesser degree, and is unlikely to occur at all in the winter.

### 3.7 Transportation

The regional and state roads that convey traffic directly into and from Eagleswood are as follows:

- The Garden State Parkway is a major arterial toll road running a northeast to southwest direction.
- U.S. Highway 9 also runs in a general northeast to southwest direction, and is the principal arterial road that runs the length of New Jersey from Bergen County to Cape May County.

Average daily traffic volume for the section of the Garden State Parkway nearest the project site was estimated to be between 32,169 and 40,634 cars per day for 2015 during the fall season (October). These values represent approximately 97% of the maximum daily load on this stretch of roadway which occurs during summer months (T&M 2000).

Traffic volumes on a stretch of U.S. Highway nine just southeast of the Proposed Action indicate that roadway's average annual daily traffic volume at 14,756 cars per day in July of 2012 (NJDOT 2015).

## Chapter 4 Environmental Consequences and Cumulative Impacts

### 4.1 Physical Environment

#### 4.1.1 Topography, Geology and Soils, and Air Quality

This project is not unlike other short-term construction projects, involving only a few standard pieces of equipment for barrier demolition, waste hauling, and bank restoration. There will be unavoidable impacts to the local topography from the Preferred Alternative as the Proposed Action involves changing the contours and elevation of the shoreline in order to provide a stable system following barrier removal and to ensure bank stability and to prevent bank erosion. These changes will have no impact to the topography surrounding the project area. The Proposed Action will not have adverse impacts to the local or regional geology and soils.

The project is expected to have no significant effect on air quality as temporary impacts are predicted to be below SILs for all pollutants and averaging times for which a NAAQS or NJAAQS have been established. The Proposed Action will involve the use of emission-producing vehicles and machinery. All on-road and non-road vehicles and machinery will be up-to-date in their registration and inspections, and thus compliant with current USEPA emission standards. The Proposed Action will not have adverse impacts to air quality.

The No-Action Alternative would result in continued erosion around the base of the upstream side of the barrier. These prolonged erosional effects could have the potential to alter the local physical environment to the point where it could have an impact on Silver Lake Drive in the future. However, the No-Action Alternative would not result in the use of any construction equipment; therefore, there would be no impacts to air quality.

#### 4.1.2 Water Quality, Wetlands and Streams

The Proposed Action will result in unavoidable disturbances to freshwater wetlands and State Open Waters. These disturbances are necessary to implement barrier removal as the activities occur directly within these regulated areas. The wetlands on the west side of the channel (river right) downstream of the barrier will be impacted by the Proposed Action as a result of the restoration of the hydraulics of the stream channel. However the hydrology of the surface water and ground water system in the area will continue to support this wetland community, so the impacts of the Proposed Action are not considered significant. In fact, the equilibration of water volume downstream of the barrier will restore the previous hydraulic function of the stream and restore the historical hydrology for the adjacent shoreline wetland communities. Approval for the Proposed Action is currently being applied for by Amec Foster Wheeler from the NJDEP DLUR, and such approval is anticipated since the action is considered to be compliant with the appropriate state regulations and rules for freshwater wetlands and State Open Waters.

The removal of the stream barrier will result in localized movement of bottom sediments. The short-term impact on water quality in the area immediately surrounding the site activities will be minimal and temporary, as natural sediment accretion will allow the creek to maintain the ecosystems it supports. Water quality parameters such as temperature, salinity, pH, dissolved

oxygen, total dissolved solids and turbidity will be collected before and after construction in order to determine if these parameters have returned to pre-construction levels and meet the NJDEP surface water quality standards for FW2-NT waters as shown in table 4.1 below. The results will be compared to these freshwater standards unless salinity is measured to be greater than 3.5 parts per thousand at mean high tide. If that is the case, then results will be compared to SE1 standards. However, this is not anticipated to occur.

<b>Table 4.1 NJDEP Surface Water Quality Standards for FW2-NT Waters</b>	
<b>Water Quality Parameter</b>	<b>NJDEP Surface Water Quality Standards</b>
Dissolved Oxygen (mg/L)	24 hour average not less than 5.0, but not less than 4.0 at any time
pH (standard units)	4.5 – 7.5
Total Dissolved Solids (mg/L)	No increase in background which would interfere with the designated or existing uses, or 500 mg/L, whichever is more stringent.
Temperature (°C)	Temperatures shall not exceed a daily maximum of 31 degrees Celsius or rolling seven-day average of the daily maximum of 28 degrees Celsius, unless due to natural conditions
Turbidity (Nephelometric Turbidity Unit-NTU)	Maximum 30-day average of 15 NTU, a maximum of 50 NTU at any time.

Turbidity barriers are not effective across streams and flow cannot be blocked by other means such as a silt curtain; however, the site soils are primarily sand in texture, so the limited in-stream work should not result in any significant turbidity of the water. It is anticipated that increases in turbidity during decommissioning activities will be equivalent to that experienced during storm events.

The No-Action Alternative would not result in any physical impacts to wetlands, streams, and water quality as there would be no work performed in Westecunk Creek; however, the No-Action Alternative would have a negative impact to the overall ecological health of the water resources in that the barrier would continue to serve as an impediment to aquatic organisms (see Section 4.2.1).

## 4.2 Biological Environment

### 4.2.1 Vegetation, Fish, Wildlife and Threatened and Endangered Species

The Proposed Action will have unavoidable, but temporary impacts to some species. The removal of the barrier will require felling approximately 30 trees in the immediate vicinity of the barrier, as well as the removal of vegetation occurring atop and abutting the barrier. Neighbors immediately adjacent to the project area were notified of the proposed removal of these trees and vegetation by the Service in January 2015. These unavoidable impacts are temporary, as new vegetation will sprout and existing vegetation will grow into cleared areas post-construction.

Additionally, trees will be felled in the fall, after the breeding season for birds and bats is finished, so impacts to these species will be minimized.

To ascertain the potential impacts of the Proposed Action on federal and state-listed plant species, Amec Foster Wheeler performed a field survey of the project area's Limits of Disturbance for the presence of swamp pink, Pine Barren bellwort, and Knieskern's beaked rush, or their habitats. This field survey was performed on April 9, 2015, during the flowering period for Pine Barren bellwort (April to May) and swamp pink (March to May). The field survey was performed by personnel experienced in the identification and habitat assessment of these species. The fruiting period for Knieskern's beaked rush in New Jersey occurs from July to September, thus the field survey was limited to assessing the project site for potential habitat for this species.

The results of the April field survey did not indicate the presence of any of these species. Although the project area is dominated by forested wetlands, which are generally suitable for swamp pink, the characteristic hummock-hollow topography and low-flow surficial hydrology were not present for this species. Pine Barren bellwort occupies the edges of bogs and swamps in the Pine Barren areas of the state and relatively drier habitats elsewhere, thus all habitats were carefully examined for the presence of this species. No specimens of any bellworts (*Uvularia* spp.) were observed. The presence or absence of Knieskern's beaked rush could not be verified due to the time of year of the survey, but no specimens of monocotyledonous plants (such as grasses or rushes), or remnants of previous year's plants, similar to the culms of beak-rush or beak-sedge (*Rhynchospora* spp.) were observed. Limited suitable habitat for this species was only found in small patches around the base of the barrier where the combination of a wet substrate and open canopy were present.

The Proposed Action will not have adverse impacts to federally listed, state-listed, or other fish or wildlife species. In fact, the Proposed Action is a typical restoration-type project that will result in the overall enhancement and naturalization of the local environment and upstream fish habitat. There may be some avoidance of the construction area by wildlife as a result of increased noise and human activity; however, these impacts are not considered significant. The Proposed Action may result in minor changes to the shoreline water elevation both upstream and downstream of the barrier location. These minor changes may in turn result in either the expansion or reduction of habitat for wetland plant species, such as Knieskern's beaked rush. The Proposed Action may create new habitat for this species from the proposed earthwork along the dikes. Changes, beneficial or adverse, to the available habitat for Knieskern's beaked rush resulting from the Proposed Action would be minor and not significant.

The No-Action Alternative would not result in any direct impacts to vegetation, threatened and endangered species, or other fish and wildlife as no activities would be performed in the project area; however, indirect negative impacts would continue to be present. The barrier currently imposes a negative impact to aquatic resources that cannot move freely upstream and downstream. The No-Action Alternative would perpetuate this condition and its negative effects could become additive over time, worsening the ecological health of the stream and surrounding environs. The No-Action Alternative would perpetuate the altered hydrology and hydraulics of the stream, thus not allowing for a natural equilibrium to be reached between upstream and downstream reaches. The lack of a natural equilibrium is detrimental to the normal functioning

of this system and its resident wildlife since the present condition is one resulting from a disturbed environment.

#### 4.3 Cultural Resources, Socio-Economic Resources and Environmental Justice, Recreation and Transportation

The Proposed Action will have no effect on historic properties that are eligible for listing in the National Register of Historic Places. The Proposed Action is not expected to have any effect, adverse or beneficial, on race, gender, age class, or the area schools. It will also not affect the County's major employment sectors, tourism and health care. It does not include long-term construction of any facility that would increase the number of permanent jobs in Eagleswood Township or Ocean County, nor will it have any effect on State or local tax revenue. Only minor, temporary, economic benefits may occur locally through personnel working on site increasing spending at nearby restaurants, hardware supply stores, etc.

Although Westecunk Creek is likely used by visitors to the Refuge for fishing and boating activities, these activities would presumably peak during the summer months and would tend to decline into the fall season when the Proposed Action would occur. Therefore, there would be minimal impacts to the recreational use value of the creek during project activities. However, long-term boating and fishing benefits would occur after project completion, with the hydraulic connection between upstream and downstream opening up safe boating passage and increasing spawning and rearing habitat upstream that could increase finfish productivity.

The project does not involve the building, removal, or repair of any transportation infrastructure. In addition, the project's scale is small, with minimal personnel required to complete the tasks (approximately five workers at one time). Therefore, the resulting increase in traffic on local infrastructure, capable of handling over 14,000 cars per day, would be only very minor and temporary.

The solid wastes produced from the demolition of the in-stream barrier and subsequent restoration of the banks of Westecunk Creek would be typical of a restoration project. The Proposed Action would require personnel and vehicles to travel along local roads such as Silver Lake Drive and County Route 35, also known as Railroad Avenue. The use of these local roads by project crew would also be only very minor and temporary.

The No-Action Alternative would not have any impacts to cultural resources, socioeconomic, recreation or infrastructure as no work would be performed in the project area.

#### 4.4 Cumulative Impacts

A cumulative impact analysis must consider the potential impact on the environment that may result from the incremental impact of the project when added to other past, present, and reasonably foreseeable future actions (40 CFR 1508.7). The methodology for performing such analyses is set forth in "*Considering Cumulative Effects under the NEPA*" (CEQ 1997), and includes the following:

1. Identification of the geographic area in which effects of the project may be felt
2. Assessment of the impacts that are expected in that area from the project
3. Identification of other actions (past, present, and reasonably foreseeable) that have had or are expected to have impacts in the same geographic area
4. Assessment of the impacts or expected impacts from these other actions
5. Assessment of the overall impact that can be expected if the individual impacts are allowed to accumulate

The geographic area for the assessment of cumulative impacts from the Proposed Action was largely identified as the Westecunk Creek watershed. The watershed includes the municipalities of Eagleswood Township, Little Egg Harbor Township, Stafford Township, and Bass River Township. All of these municipalities are located in Ocean County with the exception of Bass River Township, which is located in Burlington County. Bass River Township was not included in the geographic area of this cumulative impacts assessment as only a very small portion of the Westecunk Creek headwaters occurs within this municipality.

Significant changes were made to the aquatic environment by the construction of the Westecunk Creek barrier. Additionally, other land use changes to the watershed have increased impervious surface area resulting in an increase in stormwater quantity and a subsequent decrease in stormwater quality. The Proposed Action is intended to provide long-term improvement to the environment through restored biological connectivity. The Proposed Action will not induce development, land use change, or other external pressure to the project area.

A review of the *Eagleswood Township Master Plan* (Bay Pointe Engineering 2002), the *Township of Eagleswood Master Plan Housing Element and Fair Share Plan* (Schoor DePalma 2006), the *Township of Eagleswood Master Plan and Development Regulation Reexamination Report/Master Plan Amendment* (JDM 2008), and a telephone discussion with the Mr. Frank Little, Township Engineer (Owen, Little & Associates, Inc., personal communication, April 10, 2015) revealed that there are no known present or future projects which are anticipated to impact or be impacted by the Proposed Action.

A review of the *Ocean County Planning Board Comprehensive Master Plan* (OCPB 2011) did not reveal any potential conflicts between the Proposed Action and future planned activities for the County. The Master Plan presents a number of transportation improvements, past and planned, to the Garden State Parkway, U.S. Route 9, and other major roadways, none of which are anticipated to have or will adversely affect or be affected by the Proposed Action. A recent example is the deck replacement of the Route 9 Bridge over Westecunk Creek (located downstream of the project area), completed in May 2013.

A review of the *Little Egg Harbor Township Master Plan* (Bay Pointe Engineering 1999) did not reveal any potential conflicts between the Proposed Action and future planned activities for the Township. A review of the online *Stafford Township Master Plan* also did not reveal any potential conflicts between the Proposed Action and future planned activities for the Township.

In summary, there will not be any significant cumulative adverse environmental impact from the Westecunk Creek Barrier Removal Project when considered together with other past, present, and reasonably foreseeable future projects in the area. A Draft Findings of No Significant Impact (FONSI) has been included as Appendix E to this EA.

## Chapter 5 References

Bay Pointe Engineering. 2002. Eagleswood Township Master Plan, Ocean County, New Jersey. Prepared by Bay Pointe Engineering Associates, Inc. for the Eagleswood Township Planning Board.

Bay Pointe Engineering. 1999. 1999 Master Plan, Little Egg Harbor Township, Ocean County, New Jersey. Prepared by Bay Pointe Engineering Associates, Inc. for the Little Egg Harbor Township Planning Board.  
<[http://www.leht.com/admin/data/img/uploads/1999\\_master\\_plan.pdf](http://www.leht.com/admin/data/img/uploads/1999_master_plan.pdf)>. Accessed 11 June 2015.

Dalton, R. 2003. Physiographic Provinces of New Jersey. New Jersey Geological Survey Information Circular. <<http://www.nj.gov/dep/njgs/enviroed/infocirc/provinces.pdf>>. Accessed 11 June 2015.

Ernst, Ernst, and Lissenden. 1977. Facility Plan for the Township of Eagleswood, Ocean County, NJ. Prepared by Ernst, Ernst, and Lissenden (Toms River, NJ) for USEPA Step I Grant C 340589-01-0.

JDM. 2008. Township of Eagleswood Master Plan and Development Regulation Reexamination Report/Master Plan Amendment. Prepared by JDM Planning Associates, LLC for the Township of Eagleswood Land Use Board.

Mounier, A. 1977. A Stage I Archaeological Survey of Portions of Eagleswood Township, Ocean County, New Jersey. August 5, 1977.

NJDEP (New Jersey Department of Environmental Protection). 1999. The Geology of New Jersey. Division of Science, Research and Technology. Geological Survey.

NJDEP (New Jersey Department of Environmental Protection). 2008. New Jersey Surface Water Quality Standards Fact Sheet.  
<<http://www.state.nj.us/dep/wms/bwqsa/factsheet1.pdf>>. Accessed 11 June 2015.

NJDEP (New Jersey Department of Environmental Protection). 2011. New Jersey Surface Water Quality Standards. <[http://www.nj.gov/dep/rules/rules/njac7\\_9b.pdf](http://www.nj.gov/dep/rules/rules/njac7_9b.pdf)>. Accessed 11 June 2015.

NJDEP (New Jersey Department of Environmental Protection). 2014. NJ-GeoWeb website <<http://www.state.nj.us/dep/gis/newmapping.htm>>. Accessed 11 June 2015.

NJDEP (New Jersey Department of Environmental Protection). 2015. Bureau of Air Quality Planning. Attainment Area Status <<http://www.nj.gov/dep/baqp/aas.html>>. Accessed 11 June 2015.

- NJDOT (New Jersey Department of Transportation). 2015. Roadway Information and Traffic Monitoring System Program. Interactive Traffic Count Reports. <[http://www.state.nj.us/transportation/refdata/roadway/traffic\\_counts/](http://www.state.nj.us/transportation/refdata/roadway/traffic_counts/)>. Accessed 11 June 2015.
- NOAA (National Oceanic and Atmospheric Administration). 2010. Through a Fish's Eye: The Status of Fish Habitats in the United States, 2010. <<http://www.habitat.noaa.gov/pdf/fishhabitatreport.pdf>>. Accessed 11 June 2015.
- OCDP (Ocean County Department of Planning). 2014. About Ocean County. <<http://www.planning.co.ocean.nj.us/about.htm>>. Accessed 11 June 2015.
- OCPB (Ocean County Planning Board). 2011. Ocean County Planning Board Comprehensive Master Plan. <[http://www.planning.co.ocean.nj.us/master\\_plan\\_2011.htm](http://www.planning.co.ocean.nj.us/master_plan_2011.htm)>. Accessed 11 June 2015.
- Schoor DePalma. 2006. Township of Eagleswood Master Plan Housing Element and Fair Share Plan. Prepared by Schoor DePalma, Inc. for the Township of Eagleswood Land Use Board and the Township of Eagleswood Township Committee.
- T&M Associates. 2000. Technical Memorandum No. 7 Traffic Report. Widening of the Graden State Parkway Interchange 30 to Interchange 80. <<http://www.state.nj.us/turnpike/documents/GSP-MP30-MP80-Widening-Project-Technical-Memorandum-no-7-Traffic%20Report-Oct-31-2006-%20Revised-J.pdf>>. Accessed 11 June 2015.
- Titus, J.G. 1990. Greenhouse Effect, Sea Level Rise, and Land Use. Land Use Policy, April 1990. Vol. 7(2):138-153. <<http://papers.risingsea.net/downloads/landuse.pdf>>. Accessed 11 June 2015.
- USDA. 2015. Official Soil Series Description for Manahawkin Muck. <[https://soilseries.sc.egov.usda.gov/OSD\\_Docs/M/MANAHAWKIN.html](https://soilseries.sc.egov.usda.gov/OSD_Docs/M/MANAHAWKIN.html)>. Accessed 11 June 2015.
- USFWS. 2013. Edwin B. Forsythe National Wildlife Refuge Draft Habitat Management Plan. December 2013.
- USFWS. 2004. Edwin B. Forsythe National Wildlife Refuge Comprehensive Conservation Plan. June 2004.
- USFWS. 1997. Significant Habitat and Habitat Complexes of the New York Bight Watershed. <[http://nctc.fws.gov/resources/knowledge-resources/pubs5/web\\_link/text/int\\_fish.htm](http://nctc.fws.gov/resources/knowledge-resources/pubs5/web_link/text/int_fish.htm)>. Accessed 11 June 2015.

## **Chapter 6 List of Preparers**

This Environmental Assessment was prepared by Virginia Rettig and Rebecca Reeves from the Service, Edwin B. Forsythe National Wildlife Refuge, Oceanville, New Jersey. Assistance was

provided by Charles Harman, P.W.S., Phil Perhamus, P.W.S., and Pamela Kaneta from Amec Foster Wheeler (Somerset, New Jersey), and Chris Adams, P.E. from Civil Dynamics (Stockholm, New Jersey).

**APPENDIX A**  
**PHOTOGRAPHS**



**Photo 1**

**Westecunk Creek Barrier, viewed from the west (River Right), facing east. Silver Lake Drive is behind the camera.**



**Photo 2**

**Westecunk Creek Barrier, viewed from the east (River Left), facing west towards Silver Lake Drive.**

**PHOTOGRAPHIC LOG**

Westecunk Creek Barrier Removal Site  
Eagleswood Twp, Ocean Co, New Jersey

Amec Foster Wheeler Environment &  
Infrastructure, Inc.  
285 Davidson Avenue, Suite 405  
Somerset, NJ 08873





**Photo 3**

**Westecunk Creek, viewed from atop the barrier, facing upstream.**



**Photo 4**

**Westecunk Creek, viewed from atop the barrier, facing downstream.**

**PHOTOGRAPHIC LOG**

Westecunk Creek Barrier Removal Site  
Eagleswood Twp, Ocean Co, New Jersey

Amec Foster Wheeler Environment &  
Infrastructure, Inc.  
285 Davidson Avenue, Suite 405  
Somerset, NJ 08873





**Photo 5**

**General view of forested wetland community on the west side of Westecunk Creek (River Right), situated between the stream and Silver Lake Drive.**



**Photo 6**

**General view of the pool area located immediately upstream of the barrier (River Right).**

**PHOTOGRAPHIC LOG**

Westecunk Creek Barrier Removal Site  
Eagleswood Twp, Ocean Co, New Jersey

Amec Foster Wheeler Environment &  
Infrastructure, Inc.  
285 Davidson Avenue, Suite 405  
Somerset, NJ 08873





**Photo 7**

**General view of forested wetland community on the east side of Westecunk Creek (River Left).**



**Photo 8**

**Channel leading into Westecunk Creek from east side (River Left).**

**PHOTOGRAPHIC LOG**

Westecunk Creek Barrier Removal Site  
Eagleswood Twp, Ocean Co, New Jersey

Amec Foster Wheeler Environment &  
Infrastructure, Inc.  
285 Davidson Avenue, Suite 405  
Somerset, NJ 08873





**Photo 9**

**General view of sluiceway to be filled in.**



**Photo 10**

**General view of the pool area located immediately upstream of the sluiceway.**

**PHOTOGRAPHIC LOG**

Westecunk Creek Barrier Removal Site  
Eagleswood Twp, Ocean Co, New Jersey

Amec Foster Wheeler Environment &  
Infrastructure, Inc.  
285 Davidson Avenue, Suite 405  
Somerset, NJ 08873



**APPENDIX B**

**EXISTING CONDITIONS PLAN AND PROPOSED CONCEPT  
PLAN**



## **APPENDIX C**

### **LIST OF PLANT SPECIES OBSERVED ON THE SITE**

**Plant Species Observed at the Westecunk Creek Barrier Removal Site  
on January 20, 2015  
Township of Eagleswood, Ocean County, New Jersey**

<b>Species</b>	<b>AGCP</b>	<b>Common Name</b>
<i>Acer rubrum</i>	FAC	Red Maple
<i>Allium vineale</i>	FACU	Crow Garlic
<i>Andropogon virginicus</i>	FAC	Broom-Sedge
<i>Chamaecyparis thyoides</i>	OBL	Atlantic White-Cedar
<i>Clethra alnifolia</i>	FACW	Coastal Sweet-Pepperbush
<i>Dulichium arundinaceum</i>	OBL	Three-Way Sedge
<i>Hedera helix</i>	FACU	English Ivy
<i>Ilex opaca</i>	FAC	American Holly
<i>Juncus effusus</i>	OBL	Lamp Rush
<i>Juniperus virginiana</i>	FACU	Eastern Red-Cedar
<i>Lonicera japonica</i>	FAC	Japanese Honeysuckle
<i>Nyssa sylvatica</i>	FAC	Black Tupelo
<i>Osmunda spectabilis</i>	OBL	Royal Fern
<i>Panicum virgatum</i>	FAC	Wand Panic Grass
<i>Pinus resinosa</i>	FACU	Red Pine
<i>Quercus alba</i>	FACU	Northern White Oak
<i>Rosa multiflora</i>	FACU	Rambler Rose
<i>Rubus hispidus</i>	FACW	Bristly Dewberry
<i>Scirpus cyperinus</i>	OBL	Cottongrass Bulrush
<i>Smilax rotundifolia</i>	FAC	Horsebrier
<i>Vaccinium corymbosum</i>	FACW	Highbush Blueberry

Atlantic and Gulf Coastal Plain (AGCP) Wetland Indicators:

OBL = Almost always is a hydrophyte, rarely in uplands (Occurs in wetlands 99% of the time).

FACW = Usually is a hydrophyte but occasionally found in uplands (Occurs in wetlands 67-99% of the time).

FAC = Commonly occurs as either a hydrophyte or nonhydrophyte (Occurs in wetlands 34-66% of the time).

FACU = Occasionally is a hydrophyte, but usually occurs in uplands (Occurs in wetlands 1-33% of the time).

UPL = Rarely is a hydrophyte, almost always in uplands (Occurs in wetlands 1% of the time).

The above are based on indicators reported in:

Lichvar, R.W., M. Butterwick, N.C. Melvin, and W.N. Kirchner. 2014. The National Wetland Plant List: 2014 Update of Wetland Ratings. Phytoneuron 2014-41: 1-42.

## **APPENDIX D**

# **THREATENED AND ENDANGERED SPECIES FINDINGS**



## State of New Jersey

CHRIS CHRISTIE  
*Governor*

DEPARTMENT OF ENVIRONMENTAL PROTECTION  
State Forestry Services  
Mail Code 501-04  
ONLM -Natural Heritage Program  
P.O. Box 420  
Trenton, NJ 08625-0420  
Tel. #609-984-1339  
Fax. #609-984-1427

BOB MARTIN  
*Commissioner*

KIM GUADAGNO  
*Lt. Governor*

February 19, 2015

Christy L. Benes  
AMEC Foster Wheeler Environment & Infrastructure, Inc.  
285 Davidson Avenue, Suite 405  
Somerset, NJ 08873

Re: Westecunk Creek Barrier Removal Project

Dear Ms. Benes:

Thank you for your data request regarding rare species information for the above referenced project site in Eagleswood Township, Ocean County.

Searches of the Natural Heritage Database and the Landscape Project (Version 3.1) are based on a representation of the boundaries of your project site in our Geographic Information System (GIS). We make every effort to accurately transfer your project bounds from the topographic map(s) submitted with the Request for Data into our Geographic Information System. We do not typically verify that your project bounds are accurate, or check them against other sources.

We have checked the Landscape Project habitat mapping and the Biotics Database for occurrences of any rare wildlife species or wildlife habitat on the referenced site. The Natural Heritage Database was searched for occurrences of rare plant species or ecological communities that may be on the project site. Please refer to Table 1 (attached) to determine if any rare plant species, ecological communities, or rare wildlife species or wildlife habitat are documented on site. A detailed report is provided for each category coded as 'Yes' in Table 1.

We have also checked the Landscape Project habitat mapping and Biotics Database for occurrences of rare wildlife species or wildlife habitat in the immediate vicinity (within ¼ mile) of the referenced site. Additionally, the Natural Heritage Database was checked for occurrences of rare plant species or ecological communities within ¼ mile of the site. Please refer to Table 2 (attached) to determine if any rare plant species, ecological communities, or rare wildlife species or wildlife habitat are documented within the immediate vicinity of the site. Detailed reports are provided for all categories coded as 'Yes' in Table 2. These reports may include species that have also been documented on the project site.

The Natural Heritage Program reviews its data periodically to identify priority sites for natural diversity in the State. Included as priority sites are some of the State's best habitats for rare and endangered species and ecological communities. Please refer to Tables 1 and 2 (attached) to determine if any priority sites are located on or in the vicinity of the site.

A list of rare plant species and ecological communities that have been documented from the project site, referenced above, can be downloaded from <http://www.state.nj.us/dep/parksandforests/natural/heritage/countylist.html>. If suitable habitat is present at the project site, the species in that list have potential to be present.

Status and rank codes used in the tables and lists are defined in EXPLANATION OF CODES USED IN NATURAL HERITAGE REPORTS, which can be downloaded from [http://www.state.nj.us/dep/parksandforests/natural/heritage/nhpcodes\\_2010.pdf](http://www.state.nj.us/dep/parksandforests/natural/heritage/nhpcodes_2010.pdf).

If you have questions concerning the wildlife records or wildlife species mentioned in this response, we recommend that you visit the interactive NJ-GeoWeb website at the following URL, <http://www.state.nj.us/dep/gis/geoweb splash.htm> or contact the Division of Fish and Wildlife, Endangered and Nongame Species Program at (609) 292-9400.

NHP File No. 15-3907463-7144

PLEASE SEE 'CAUTIONS AND RESTRICTIONS ON NHP DATA', which can be downloaded from <http://www.state.nj.us/dep/parksandforests/natural/heritage/newcaution2008.pdf>.

Thank you for consulting the Natural Heritage Program. The attached invoice details the payment due for processing this data request. Feel free to contact us again regarding any future data requests.

Sincerely,

A handwritten signature in black ink, appearing to read 'Robert J. Cartica', with a long horizontal flourish extending to the right.

Robert J. Cartica  
Administrator

c: NHP File No. 15-3907463-7144

**Table 1: On Site Data Request Search Results (7 Possible Reports)**

<b><u>Report Name</u></b>	<b><u>Included</u></b>	<b><u>Number of Pages</u></b>
1. Possibly on Project Site Based on Search of Natural Heritage Database: Rare Plant Species and Ecological Communities Currently Recorded in the New Jersey Natural Heritage Database	No	0 pages included
2. On or In the Immediate Vicinity of the Project Site Based on Search of the Natural Heritage Database: Rare Plant Species and Ecological Communities Currently Recorded in the New Jersey Natural Heritage Database	Yes	1 page(s) included
3. Natural Heritage Priority Sites On Site	No	0 pages included
4. Rare Wildlife Species or Wildlife Habitat on the Project Site Based on Search of Landscape Project 3.1 Species Based Patches	Yes	1 page(s) included
5. Vernal Pool Habitat on the Project Site Based on Search of Landscape Project 3.1	No	0 pages included
6. Rare Wildlife Species or Wildlife Habitat on the Project Site Based on Search of Landscape Project 3.1 Stream Habitat File	No	0 pages included
7. Other Animal Species On the Project Site Based on Additional Species Tracked by Endangered and Nongame Species Program	No	0 pages included

**On or In the Immediate Vicinity of the  
Project Site Based on Search of the  
Natural Heritage Database: Rare Plant Species and  
Ecological Communities Currently Recorded in the New  
Jersey Natural Heritage Database**

Scientific Name	Common Name	Federal Protection Status	State Protection Status	Regional Status	Grank	Srank	Identified	Last Observed	Location
<b><i>Vascular Plants</i></b>									
Uvularia puberula var. nitida	Pine Barren Bellwort		E	LP, HL	G5T2T3	S2	Y - Yes	1907-05-29	WEST CREEK, NORTHEAST EDGE OF TOWN, NEAR WESTECUNK CREEK.

Total number of records: 1

<p><b>Rare Wildlife Species or Wildlife Habitat on the Project Site Based on Search of Landscape Project 3.1 Species Based Patches</b></p>
--

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
<i>Aves</i>								
	Black Skimmer	Rynchops niger	Foraging	4	NA	State Endangered	G5	S1B,S1N
	Black-crowned Night-heron	Nycticorax nycticorax	Foraging	3	NA	State Threatened	G5	S2B,S3N
	Caspian Tern	Hydroprogne caspia	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Common Tern	Sterna hirundo	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Glossy Ibis	Plegadis falcinellus	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Little Blue Heron	Egretta caerulea	Foraging	2	NA	Special Concern	G5	S3B,S3N
	Snowy Egret	Egretta thula	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Tricolored Heron	Egretta tricolor	Foraging	2	NA	Special Concern	G5	S3B,S3N
<i>Reptilia</i>								
	Northern Pine Snake	Pituophis melanoleucus melanoleucus	Occupied Habitat	3	NA	State Threatened	G4T4	S2
	Timber Rattlesnake	Crotalus horridus horridus	Occupied Habitat	4	NA	State Endangered	G4T4	S1

**Table 2: Vicinity Data Request Search Results (6 possible reports)**

<b><u>Report Name</u></b>	<b><u>Included</u></b>	<b><u>Number of Pages</u></b>
1. Immediate Vicinity of the Project Site Based on Search of Natural Heritage Database Rare Plant Species and Ecological Communities Currently Recorded in the New Jersey Natural Heritage Database	Yes	1 page(s) included
2. Natural Heritage Priority Sites within the Vicinity	No	0 pages included
3. Rare Wildlife Species or Wildlife Habitat Within the Immediate Vicinity of the Project Site Based on Search of Landscape Project 3.1 Species Based Patches	Yes	1 page(s) included
4. Vernal Pool Habitat In the Immediate Vicinity of Project Site Based on Search of Landscape Project 3.1	No	0 pages included
5. Rare Wildlife Species or Wildlife Habitat In the Immediate Vicinity of the Project Site Based on Search of Landscape Project 3.1 Stream Habitat File	No	0 pages included
6. Other Animal Species In the Immediate Vicinity of the Project Site Based on Additional Species Tracked by Endangered and Nongame Species Program	No	0 pages included

**Immediate Vicinity of the Project Site  
Based on Search of Natural Heritage Database  
Rare Plant Species and Ecological Communities Currently Recorded in  
the New Jersey Natural Heritage Database**

Scientific Name	Common Name	Federal Protection Status	State Protection Status	Regional Status	Grank	Srank	Identified	Last Observed	Location
<i>Vascular Plants</i>									
Uvularia puberula var. nitida	Pine Barren Bellwort		E	LP, HL	G5T2T3	S2	Y - Yes	1907-05-29	WEST CREEK, NORTHEAST EDGE OF TOWN, NEAR WESTECUNK CREEK.

Total number of records: 1

**Rare Wildlife Species or Wildlife Habitat Within the  
Immediate Vicinity of the Project Site Based on Search of  
Landscape Project 3.1 Species Based Patches**

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
<i>Aves</i>								
	Black Skimmer	Rynchops niger	Foraging	4	NA	State Endangered	G5	S1B,S1N
	Black-crowned Night-heron	Nycticorax nycticorax	Foraging	3	NA	State Threatened	G5	S2B,S3N
	Caspian Tern	Hydroprogne caspia	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Common Tern	Sterna hirundo	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Glossy Ibis	Plegadis falcinellus	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Little Blue Heron	Egretta caerulea	Foraging	2	NA	Special Concern	G5	S3B,S3N
	Snowy Egret	Egretta thula	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Tricolored Heron	Egretta tricolor	Foraging	2	NA	Special Concern	G5	S3B,S3N
<i>Reptilia</i>								
	Northern Pine Snake	Pituophis melanoleucus melanoleucus	Occupied Habitat	3	NA	State Threatened	G4T4	S2
	Timber Rattlesnake	Crotalus horridus horridus	Occupied Habitat	4	NA	State Endangered	G4T4	S1



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 Jersey Ecological Services Field Office**  
927 NORTH MAIN STREET, BUILDING D  
PLEASANTVILLE, NJ 8232  
(609) 646-9310  
<http://www.fws.gov/northeast/njfieldoffice/Endangered/consultation.html>

***Project Name:***

Westecunk Creek



U.S. Fish and Wildlife Service

## Trust Resources List

### *Project Location Map:*



### *Project Counties:*

Ocean, NJ

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

MULTIPOLYGON (((-74.3087326 39.6407574, -74.308068 39.6412284, -74.3076603 39.6405839, -74.3082718 39.6400634, -74.3087326 39.6407574)))

### *Project Type:*

Dam



## Trust Resources List

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

There are a total of 3 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:**

Flowering Plants	Status		Has Critical Habitat	Contact
Knieskern's Beaked-rush ( <i>Rhynchospora knieskernii</i> )	Threatened	<a href="#">species info</a>		New Jersey Ecological Services Field Office
Swamp pink ( <i>Helonias bullata</i> )	Threatened	<a href="#">species info</a>		New Jersey Ecological Services Field Office
<b>Mammals</b>				
northern long-eared Bat ( <i>Myotis septentrionalis</i> ) Population:	Proposed Endangered	<a href="#">species info</a>		New Jersey Ecological Services Field Office

#### **Critical habitats within your project area:**

*There are no critical habitats within your project area.*

### ***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>.



## Trust Resources List

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>.

To search and view summaries of year-round bird occurrence data within your project area, go to the Avian Knowledge Network Histogram Tool links in the Bird Conservation Tools section at: <http://www.fws.gov/migratorybirds/CCMB2.htm>.

For information about conservation measures that help avoid or minimize impacts to birds, please visit:

<http://www.fws.gov/migratorybirds/CCMB2.htm>.

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

There are **26** birds on your Migratory birds of concern list. The underlying data layers used to generate the migratory bird list of concern will continue to be updated regularly as new and better information is obtained. User feedback is one method of identifying any needed improvements. Therefore, users are encouraged to submit comments about any questions regarding species ranges (e.g., a bird on the USFWS BCC list you know does not occur in the specified location appears on the list, or a BCC species that you know does occur there is not appearing on the list). Comments should be sent to [the ECOS Help Desk](#).

Species Name	Bird of Conservation Concern (BCC)	Species Profile	Seasonal Occurrence in Project Area
American Oystercatcher ( <i>Haematopus palliatus</i> )	Yes	<a href="#">species info</a>	Year-round
American bittern ( <i>Botaurus lentiginosus</i> )	Yes	<a href="#">species info</a>	Wintering
Bald eagle ( <i>Haliaeetus leucocephalus</i> )	Yes	<a href="#">species info</a>	Year-round
Black Skimmer ( <i>Rynchops niger</i> )	Yes	<a href="#">species info</a>	Breeding
Black-billed Cuckoo ( <i>Coccyzus erythrophthalmus</i> )	Yes	<a href="#">species info</a>	Breeding



## Trust Resources List

Blue-winged Warbler ( <i>Vermivora pinus</i> )	Yes	<a href="#">species info</a>	Breeding
Fox Sparrow ( <i>Passerella iliaca</i> )	Yes	<a href="#">species info</a>	Wintering
Gull-billed Tern ( <i>Gelochelidon nilotica</i> )	Yes	<a href="#">species info</a>	Breeding
Hudsonian Godwit ( <i>Limosa haemastica</i> )	Yes	<a href="#">species info</a>	Migrating
Least Bittern ( <i>Ixobrychus exilis</i> )	Yes	<a href="#">species info</a>	Breeding
Least tern ( <i>Sterna antillarum</i> )	Yes	<a href="#">species info</a>	Breeding
Lesser Yellowlegs ( <i>Tringa flavipes</i> )	Yes	<a href="#">species info</a>	Wintering
Peregrine Falcon ( <i>Falco peregrinus</i> )	Yes	<a href="#">species info</a>	Wintering
Pied-billed Grebe ( <i>Podilymbus podiceps</i> )	Yes	<a href="#">species info</a>	Year-round
Prairie Warbler ( <i>Dendroica discolor</i> )	Yes	<a href="#">species info</a>	Breeding
Prothonotary Warbler ( <i>Protonotaria citrea</i> )	Yes	<a href="#">species info</a>	Breeding
Purple Sandpiper ( <i>Calidris maritima</i> )	Yes	<a href="#">species info</a>	Wintering
Red Knot ( <i>Calidris canutus rufa</i> )	Yes	<a href="#">species info</a>	Wintering
Rusty Blackbird ( <i>Euphagus carolinus</i> )	Yes	<a href="#">species info</a>	Wintering
Saltmarsh Sparrow ( <i>Ammodramus caudacutus</i> )	Yes	<a href="#">species info</a>	Year-round
Seaside Sparrow ( <i>Ammodramus maritimus</i> )	Yes	<a href="#">species info</a>	Year-round
Short-eared Owl ( <i>Asio flammeus</i> )	Yes	<a href="#">species info</a>	Wintering
Snowy Egret ( <i>Egretta thula</i> )	Yes	<a href="#">species info</a>	Breeding
Upland Sandpiper ( <i>Bartramia longicauda</i> )	Yes	<a href="#">species info</a>	Breeding



## Trust Resources List

Wood Thrush ( <i>Hylocichla mustelina</i> )	Yes	<a href="#">species info</a>	Breeding
Worm eating Warbler ( <i>Helmitheros vermivorum</i> )	Yes	<a href="#">species info</a>	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 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



## Trust Resources List

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 Forested/Shrub Wetland	<a href="#">PFO1/4Eg</a>	6.2519

## INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION

<b>Project Name:</b>	Westecunk Creek Barrier Removal (37a)	<b>Originating Person:</b>	Rebecca Reeves
<b>Townships:</b>	Eagleswood	<b>Telephone Number:</b>	609-748-1535
<b>County:</b>	Ocean	<b>Email Address:</b>	rebecca_reeves@fws.gov
<b>Date:</b>	June 1, 2015		

**Distance to nearest town:** Adjacent

- I. **Region:** 5
- II. **Service Activity (Program):** NWRS, Edwin B. Forsythe NWR (Refuge)
- III. **Pertinent Species and Habitat:**

**A. Listed species and/or their critical habitat within the action area:**

Swamp pink (*Helonias bullata*)  
Knieskern's beaked-rush (*Rhynchospora knieskernii*)  
Northern long-eared bat (*Myotis septentrionalis*)

**B. Proposed species and/or proposed critical habitat within the action area:**

None

**C. Candidate species within the action area:**

None

**D. Include species/habitat occurrences on a map.**

Swamp pink is not known to exist in this part of the refuge. Knieskern's beaked-rush is known to exist in wetlands upstream of the Westecunk Creek barrier, but its presence or absence within the proposed work area is unknown. Summer habitat for Northern long-eared bats may occur in the forested areas surrounding the creek, but the project area does not include any known Northern long-eared bat hibernacula.

**IV. Description of proposed action (attach additional pages as needed):**

The Westecunk Creek barrier (barrier) is located along Silver Lake Drive in Eagleswood Township, New Jersey. The barrier comprises a dilapidated low concrete sill (dam) that traverses the creek, a spillway, and appurtenant dikes on each bank. The dikes and original barrier structure were likely constructed in the 1920s to impound water from the creek to create a cranberry bog for farming. The Refuge is planning to remove the barrier to restore natural flow in Westecunk Creek. The barrier currently hinders fish passage during low flow conditions for both diadromous (anadromous and catadromous) fish and year-round resident fish. This project will restore connectivity to approximately 13km of spawning and rearing habitat for federal trust species such as alewife (*Alosa*

## INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION

*pseudoharengus*) and blueback herring (*Alosa aestivalis*), as well as nursery and maturation habitat for American Eel (*Anguilla rostrata*).

Construction on this project is anticipated to begin in October 2015 and last for approximately four weeks. The restoration plan is as follows:

- Clear trees that are within the limits of work, but only remove stumps that are within the areas to be excavated.
- Remove all concrete sills and walls, except the sluiceway walls at the right abutment (West side of the river, along Silver Lake Dr.). Properly dispose of the concrete and associated steel debris off-site.
- Remove or flush cut all in-stream timbers.
- Excavate and/or regrade the channel bottom within the limits of the barrier to yield an elevation of 0.3 feet (which is consistent with the upstream channel bottom) and connect the upstream and downstream thalweg at an elevation of -1.0 ft.
- Place excavated soil materials in the pool area immediately upstream of the barrier and sluiceway, on River Right (west shore), to restore the shoreline and yield a ground surface elevation of 3 feet (which is similar to the upstream channel cross section).
- Place excavated soil materials to fill the sluiceway.
- Remove the dock.
- Regrade the barrier area to the proposed slopes.
- Install and maintain temporary erosion controls (e.g., silt fence, staked straw bales, straw wattles), where necessary, at the end of each work day, during construction. Additional erosion control measures may be used based upon field conditions.
- Replant the area to mixed forested wetland or forested upland, depending on elevation.

Further details on the proposed restoration plan are included in the 30% design and the restoration plan, which are attached, along with several photos of the project area.

The dominant wetland community in the region is a mixed forested wetland, dominated by red maple (*Acer rubrum*), Atlantic white cedar (*Chamaecyparis thyoides*), and black gum (*Nyssa sylvatica*), with an understory of coastal sweet pepperbush (*Clethra alnifolia*) and highbush blueberry (*Vaccinium corymbosum*).

The proposed mixed forested wetland will be planted with a mix of these five species to replace the approximately 30 trees that will be removed. This wetland planting zone will then be over-seeded with Ernst Conservation Seeds' *Native Right-of-Way Woods Mix with Annual Ryegrass* (ERNMX-132-1) at a rate of 30 lbs. per acre.

The sparsely vegetated open uplands in the project area contain plants such as broom sedge (*Andropogon virginicus*) and switchgrass (*Panicum virgatum*), and a mix of non-native ruderal (early colonizing) species. To further increase the ecological health of the

## INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION

project area, disturbance of this open upland will be mitigated with the establishment of a forested upland. Thus, this area will be planted with a mix of Eastern red cedar (*Juniperus virginiana*), American holly (*Ilex opaca*), and red maple, then over-seeded with Ernst Conservation Seeds' *Eastern Ecotype Native Grass Mix* (ERNMX-177) at a rate of 15 lbs. per acre. Lastly, the open roadside strip will be seeded with annual rye (*Lolium multiflorum*) at a rate of 10 lbs. per acre.

Planting Scheme				
<b>Mixed Forested Wetland</b>				
Species	Wetland Indicator	Form	Spacing	No. Plants
Red maple ( <i>Acer rubrum</i> )	FAC	8" diam. pot	~12' OC	6
Atlantic white cedar ( <i>Chamaecyparis thyoides</i> )	OBL	8" diam. pot	~12' OC	6
Black gum ( <i>Nyssa sylvatica</i> )	FAC	8" diam. pot	~12' OC	6
Coastal sweet pepperbush ( <i>Clethra alnifolia</i> )	FACW	6" diam. pot	~12' OC	6
Highbush blueberry ( <i>Vaccinium corymbosum</i> )	FACW	6" diam. pot	~12' OC	6
Overseed with 2.5 pounds of Ernst Conservation Seeds' <i>Native Right-of-Way Woods Mix with Annual Ryegrass</i> (ERNMX-132-1).				
<b>Forested Uplands</b>				
Eastern red cedar ( <i>Juniperus virginiana</i> )	FACU	6" diam. pot	~12' OC	6
American holly ( <i>Ilex opaca</i> )	FAC	8" diam. pot	~12' OC	6
Red maple ( <i>Acer rubrum</i> )	FAC	8" diam. pot	~12' OC	6
Seed with 0.5 pounds of Ernst Conservation Seeds' <i>Eastern Ecotype Native Grass Mix</i> (ERNMX-177).				
<b>Open Roadside</b>				
Seed with 0.1 pounds of annual rye.				

## INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION

### V. Determination of effects:

#### A. Explanation of effects of the action on species and critical habitats in items III.

##### A, B, and C (attach additional pages as needed):

Changes in hydrology from the removal of the barrier, although expected to be minimal, may impact Knieskern's beaked-rush and swamp pink, if present. However, Amec Foster Wheeler (the contractor on this project) performed a field survey of the project area for the presence of swamp pink and Knieskern's beaked-rush, or their habitats. This field survey was performed on April 9, 2015, during the flowering period for swamp pink (March to May). The field survey was performed by personnel experienced in the identification and habitat assessment of these species. The results of the April field survey did not indicate the presence of either of these species. Although the project area is dominated by forested wetlands, which are generally suitable for swamp pink, the characteristic hummock-hollow topography and low-flow surficial hydrology were not present for this species.

The fruiting period for Knieskern's beaked-rush in New Jersey occurs from July to September, thus the April field survey was limited to assessing the project site for potential habitat for this species. The presence or absence of Knieskern's beaked-rush could not be verified due to the time of year of the survey, but no specimens of monocotyledonous plants (such as grasses or rushes), or remnants of previous year's plants, similar to the culms of beak-rush or beak-sedge (*Rhynchospora* spp.) were observed. Limited suitable habitat for this species was only found in small patches around the base of the barrier where the combination of a wet substrate and open canopy were present. The barrier removal and creek restoration may result in minor changes to the shoreline water elevation both upstream and downstream of the barrier location. These minor changes may in turn result in either the expansion or reduction of habitat for wetland plant species, such as Knieskern's beaked-rush. The restoration may create new habitat for this species from the proposed earthwork along the dikes. Changes, beneficial or adverse, to the available habitat for Knieskern's beaked-rush resulting from the restoration would be minor and not significant.

Removal of the barrier and the restoration of the creek will occur in October and November when Northern long-eared bats are entering into hibernation. Because Northern long-eared bats hibernate in caves and abandoned mines, these bats are not anticipated to be within the project area during construction, so the removal of trees during this time should not have an effect on this species.

#### B. Explanation of actions to be implemented to reduce adverse effects:

An additional field survey will be conducted prior to the start of construction to check the project area for Knieskern's beaked-rush. This survey will be completed during the

**INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION**

fruiting period for Knieskern's beaked-rush in New Jersey (July to September). Any Knieskern's beaked-rush encountered will be documented and avoided.

**VI. Effect determination and response requested: [\* = optional]**

**A. Listed species/designated critical habitat:**

**Determination**

**Response requested**

No effect/no adverse modification  
(Species: Swamp pink, Knieskern's beaked-rush, Northern long-eared bats)

Concurrence

May affect, but is not likely to adversely affect species/adversely modify critical habitat  
(Species: \_\_\_\_\_)

\*Concurrence

May affect, and is likely to adversely affect species/adversely modify critical habitat  
(Species: \_\_\_\_\_)

Formal Consultation

**B. Proposed species/proposed critical habitat:**

**Determination**

**Response requested**

No effect on proposed species/no adverse modification of proposed critical habitat  
(Species: \_\_\_\_\_)

\*Concurrence

Is likely to jeopardize proposed species/adversely modify proposed critical habitat  
(Species: \_\_\_\_\_)

Conference

**C. Candidate species:**

**Determination**

**Response requested**

No effect  
(Species: \_\_\_\_\_)

\*Concurrence

Is likely to jeopardize candidate species  
(Species: \_\_\_\_\_)

Conference

**INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION**

Rebecca A. Kew  
Project Biologist/Supervisor (Requestor)

6/1/2015  
Date

**VII. Reviewing ESFO Evaluation:**

- A. Concurrence X Nonconcurrency \_\_\_\_\_
- B. Formal consultation required \_\_\_\_\_
- C. Conference required \_\_\_\_\_
- D. Informal conference required \_\_\_\_\_
- E. Remarks (attach additional pages as needed):

Dan Hanlin  
Endangered Species Biologist (Reviewer),  
New Jersey Field Office

6/2/15  
Date

[Signature]  
Assistant Supervisor, New Jersey Field Office

4 June 15  
Date