
Regional Sediment Management - Beneficial Uses of Dredged Material Along Lake Erie and Tributaries

Section 204 of the 1992 Water Resources Development Act

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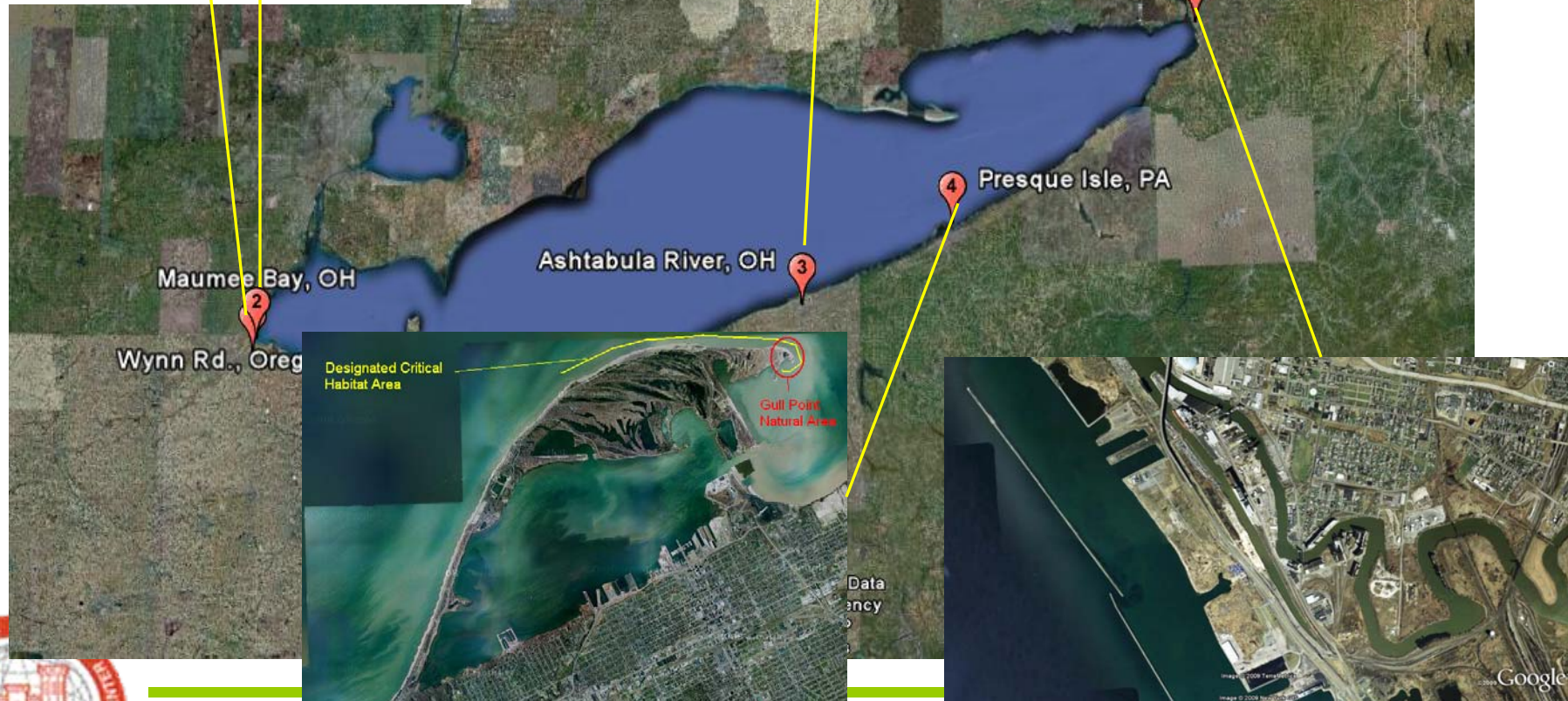


Acknowledgements

U.S. Army Engineer District, Buffalo

- Craig Forgette – Regional Sediment Management, Program Manager
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- Andrew Hannes





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Authority

- Section 204 of the Water Resources Development Act of 1992 established a program for the Corps to use of dredged material for ecosystem restoration.
- This provision authorizes projects for the protection, restoration, and creation of aquatic and ecologically related habitats, including wetlands, in connection with dredging in new project construction, and maintenance of existing Federal navigation projects, including harbors and inland waterways.
- Cost Sharing:
 - **Feasibility: 100% Federal as of April 2008**
 - **Implementation: 65% Federal, 35% non-Federal**
 - **\$5 million max Federal Share**



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Historical Context – Great Lakes Region

Migratory birds are of great ecological and economic value to the area. Healthy ecosystems are necessary to provide places where birds can nest and raise their young, spend their winters, and rest and rejuvenate during migration.

Since 1850, Lake Erie marshland from Vermilion, OH to the Detroit River has been reduced from over 1,500 square miles to less than 58 square miles.

Loss of wetlands and open-sandy beaches along Great Lakes shorelines, and riparian habitat along tributaries to the Great Lakes, have resulted in regional population reductions of many species of birds.

Spawning, nursery, and feeding habitat for a wide variety of game fish and forage fish species contributes to healthy sport fisheries essential to economic vitality of the region.

Great Lakes Regional Habitats

Wetland and riparian habitats important to regional bird communities:

- 1. Wet meadows, often dominated by sedges, whose soils tend to remain saturated or are very shallowly flooded.**
 - 2. Emergent wetlands, characterized by perennial rooted herbaceous vegetation. The term hemi-marsh is used to describe emergent wetlands with approximately 50% of the area in open water and 50% wetland vegetation. Dominant vegetation in emergent wetlands includes cattails (*Typha*), bulrushes (*Scirpus*), and sedges (*Carex*).**
 - 3. Shrub wetlands, dominated by woody vegetation < 6 m in height, including bogs, early-successional forested wetlands, and shrub-swamps (Cowardin et al. 1979).**
 - 4. Bottomland hardwood forests and riparian areas along tributaries**
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Great Lakes Regional Habitats

Wetland-associated priority species: American Black Duck, American Bittern, Black Tern, Yellow-crowned Night Heron, Marsh Wren, Least Bittern, Virginia Rail, Bald Eagle, Common Snipe, Osprey, Pied-billed Grebe, Common Moorhen, Sora.



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Great Lakes Regional Habitats

Riparian priority species: Associated priority species:
Cerulean Warbler, Worm-eating Warbler, Wood Thrush, Louisiana Waterthrush, Black-billed Cuckoo, Scarlet Tanager, Eastern Wood-pewee, Red-headed Woodpecker, Kentucky Warbler, Red-shouldered Hawk, Long-eared Owl, Cooper's Hawk.



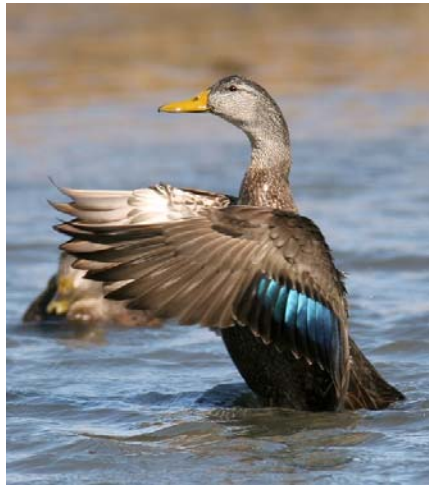
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Regional Significance – Shorebirds

- Most shorebirds using the region are long-distance migrants that require suitable wetlands where they can periodically stop to replenish their fat reserves.
- These staging areas must have shallow water (<20 cm or 8 in deep) and/or mud flat habitats with sparse vegetation (<25 % cover), undisturbed resting areas, and abundant invertebrate food resources to meet the high energetic demands of migration.
- The region has a wide variety of habitats that provide, or have the potential to provide, these requirements, including natural and managed wetlands, lake shorelines, river floodplains

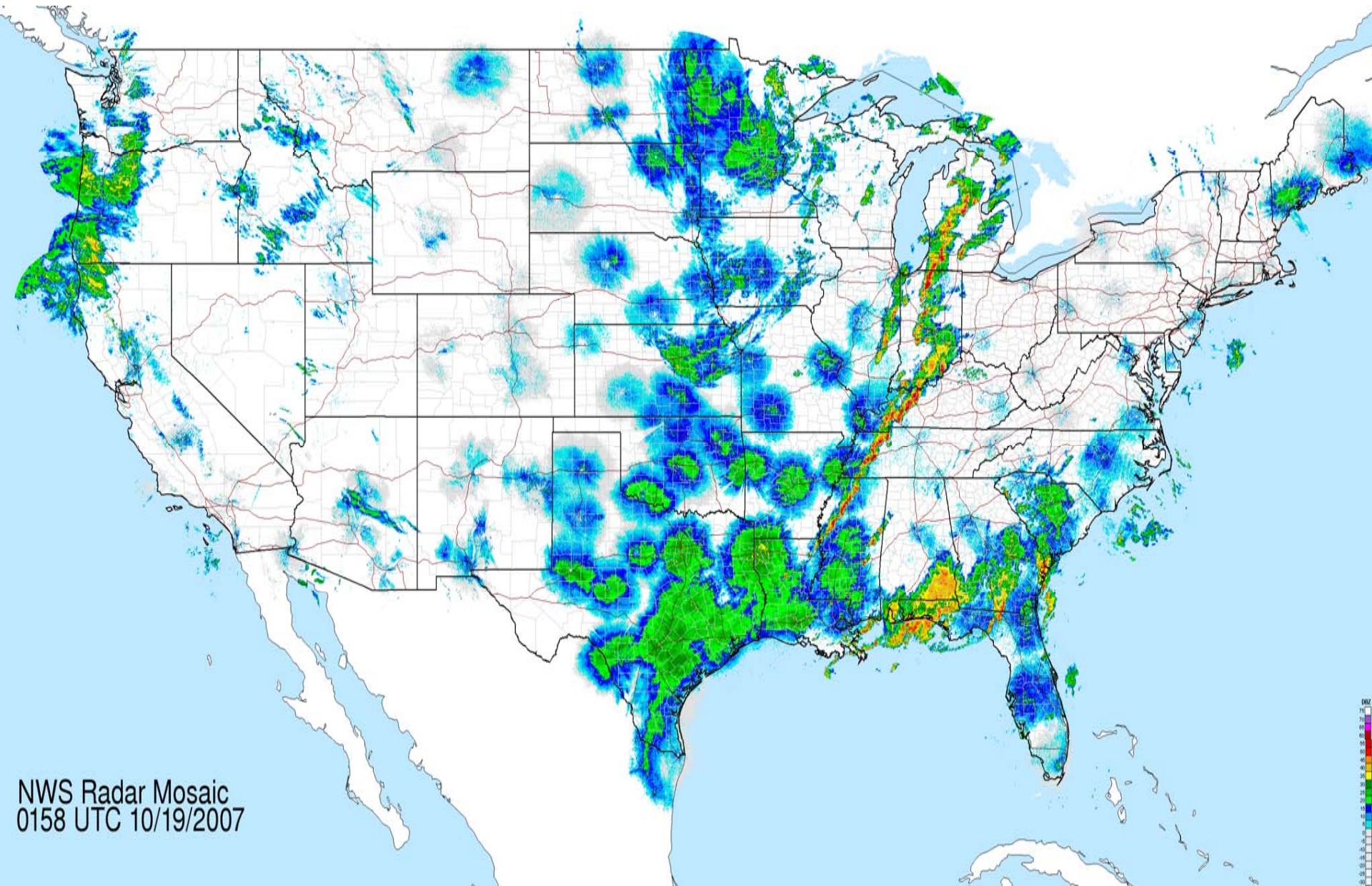
Regional Significance - Waterfowl

- In winter, large numbers of waterfowl are supported along the Lake Erie shoreline portions of Ohio and Pennsylvania.
- Included are significant wintering populations of American Black Duck, as well as large numbers of Canvasback and Redhead.

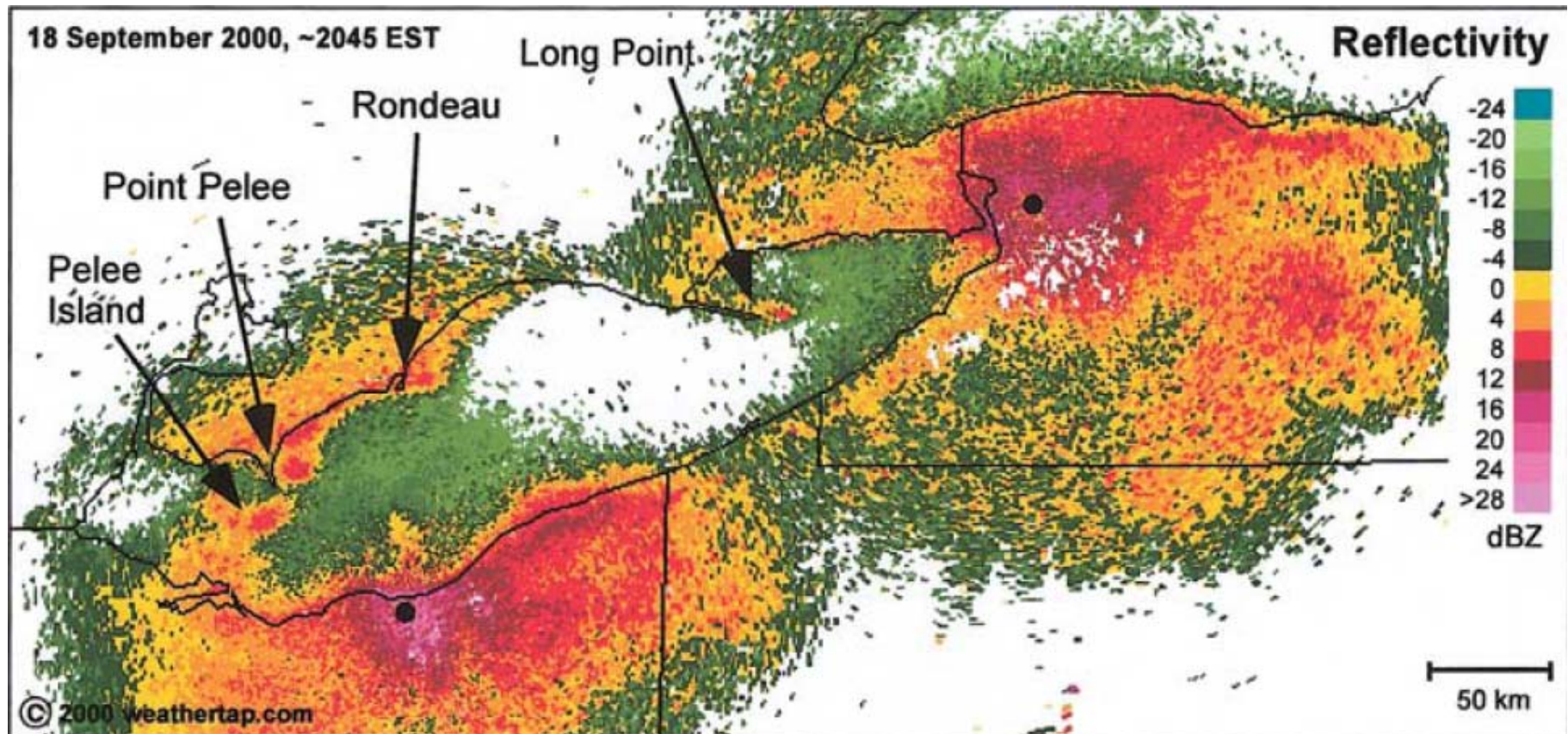


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Regional Significance – Landbirds



Regional Significance – Landbirds



From Diehl et al., 2003



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Regional Significance – T&E Species

- Piping Plover
- Federally-listed as Endangered in 1985 (Great Lakes Popn.)
- Occurs in the western Great Lakes region, but not along Lake Erie. By 1973 nesting Piping Plovers had been extirpated from their former breeding range along the great lakes coastlines of Ohio, Pennsylvania and New York.



Charadrius melodus



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Regional Significance – Piping Plover

- Preservation of existing beaches along the Great Lakes is important for this species.
- Protecting large areas of sandy, undisturbed habitat is required if the plover is to return as a nester. Limiting factor appears to be lack of suitable undisturbed breeding habitat.
- Mudflats are needed as migration feeding areas during April–May and August–September.
- Recovery efforts are attempting to expand the range of the Great Lakes populations; portions of region where the species formally bred have been designated as critical habitat by the USFWS.



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Beneficial Uses of Dredged Material Along Lake Erie and Tributaries

Design Guidelines for Avian Habitat on Islands Created with Dredged-material, Maumee Bay, Lake Erie



- Open-lake Disposal
- Native Vegetation Community Establishment
- Bird and Fisheries habitat creation

Wynn Road Section 204 Dredged-material Disposal Project, Oregon, Ohio



- Onshore Disposal - Riparian
- Create/restore native coastal wetlands
- Bird and Fisheries habitat creation



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Beneficial Uses of Dredged Material Along Lake Erie and Tributaries

Presque Isle, PA – Gull Point



- Onshore disposal/ Beach nourishment
- Open sandy beach habitat maintenance
- T&E Species considerations

Ashtabula River, OH



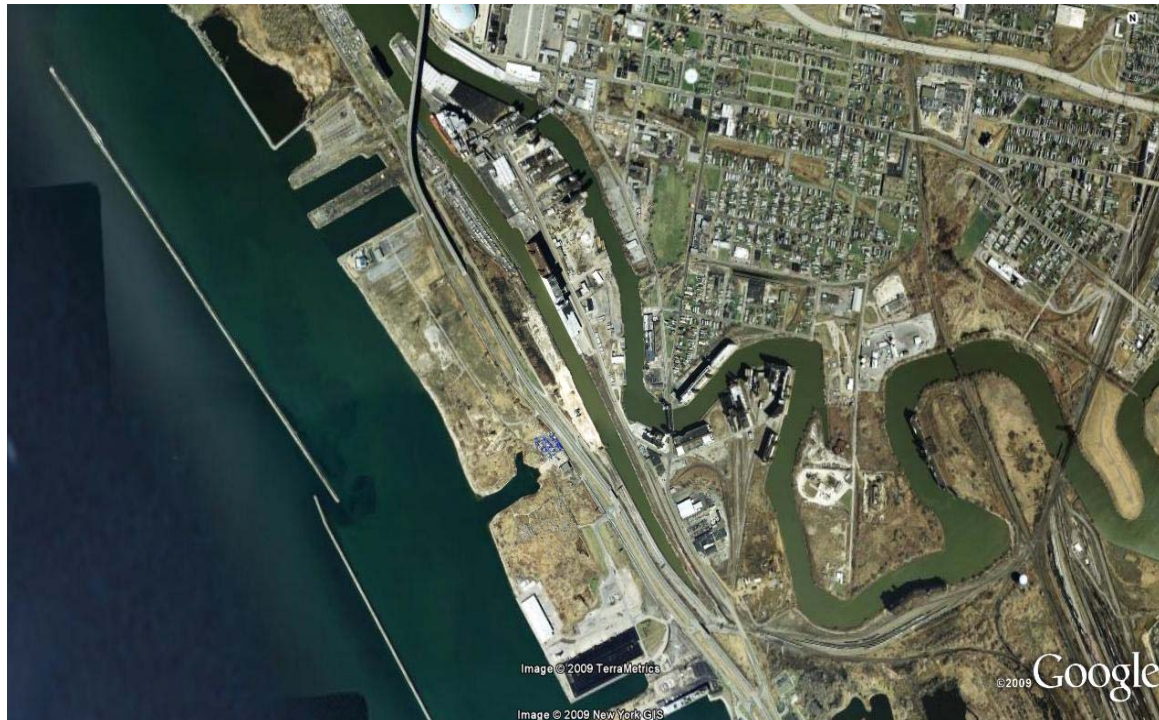
- Shoreline disposal
- Rehabilitate riparian and wetland habitats



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Beneficial Uses of Dredged Material Along Lake Erie and Tributaries

Buffalo/Niagara Rivers, NY



- Onshore and near-shore disposal
- Native vegetation community establishment
- Bird and fisheries habitat creation



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Design Guidelines for Avian Habitat on Islands Created with Dredged- material, Maumee Bay, Lake Erie

MAUMEE BAY

This project is essential to the regional sediment management strategy for Western Lake Erie and Toledo Harbor where over 1,000,000 cubic yards (CY) of material is scheduled to be dredged annually and placed in the open lake.

WYNN ROAD

TOBIAS DITCH



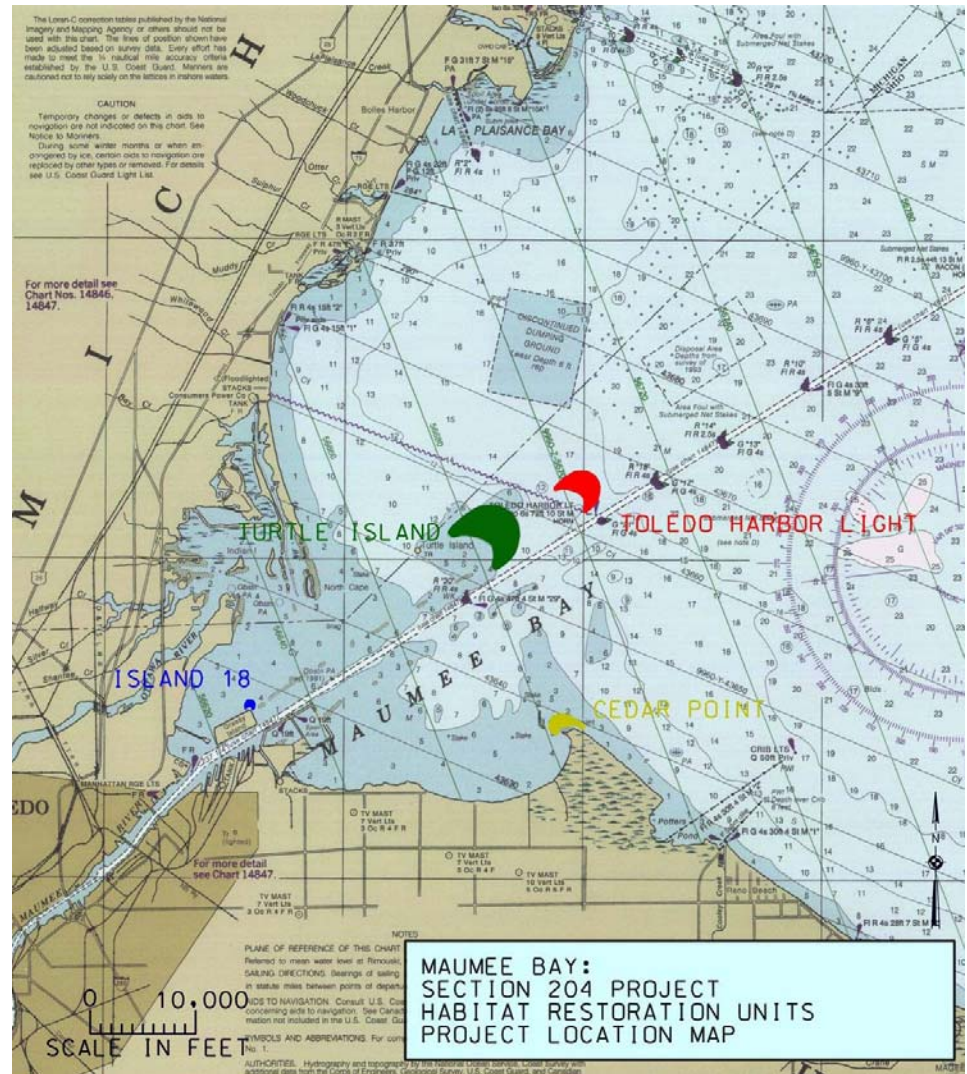
Maumee Bay

Challenges

- State of Ohio has expressed concerns about open lake placement of dredged materials from Toledo Harbor which may ultimately prevent dredging of Toledo Harbor unless beneficial use activities are expanded.

Opportunities

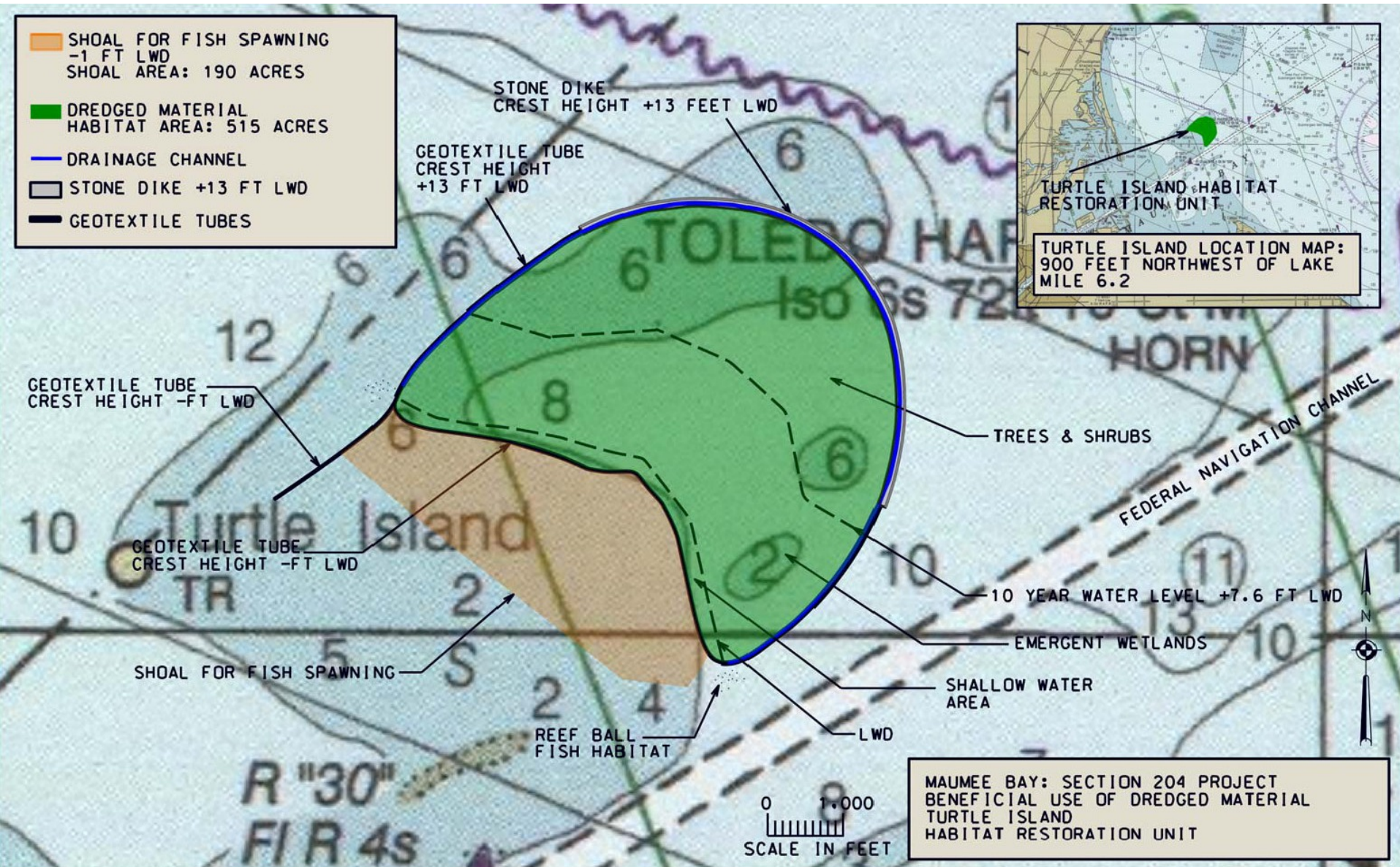
- Beneficial Use of Dredged Material for avian and fish habitat



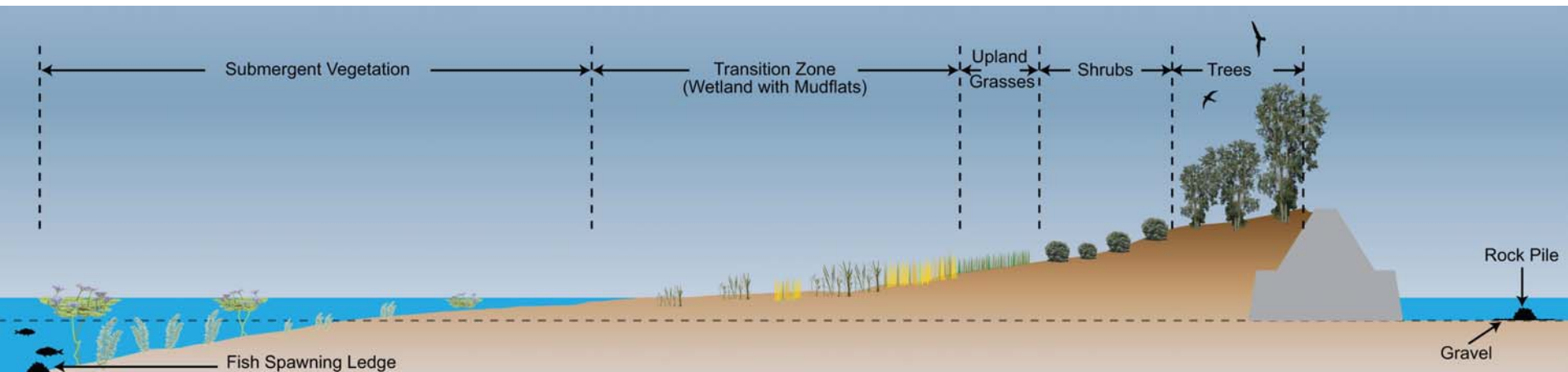
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Conceptual Habitat Restoration Unit Concept



Conceptual Habitat Restoration Unit Cross Section



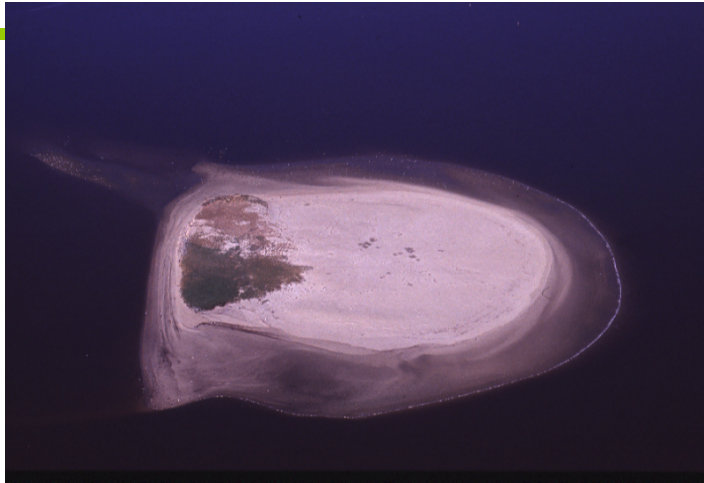
*** Scale exaggerated for visual effect**



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Succession on dredged material Islands



Year 0-1



Year 3-4



Year 4-5



Year 7-10



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Slide courtesy of Walker Golder, National Audubon

Maumee Bay Schedule

- Feasibility – FY08-FY10 (100% Federal)
- Detailed Project Report
- NEPA Coordination
- Design – FY11
(65% Federal, 35% non-Federal)
- Plans & Specifications
- Construction – FY12
(65% Federal, 35% non-Federal)



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Maumee Bay

Feasibility Study: Where are we now?

PROCESS

- ✓ Inventory existing conditions
- ✓ Problem identification
- ✓ Determine planning objectives and constraints
- ✓ Develop measures
 - Combine measures to formulate alternative plans
 - Evaluate alternative plans
 - Select a plan

DOCUMENTS

- Detailed Project Report
- Environmental Assessment or Environmental Impact Statement



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**Wynn Road
Beneficial Use of Dredged Material
Regional Sediment Management, Section 204 Project**



MAUMEE BAY

WYNN ROAD

TOBIAS DITCH



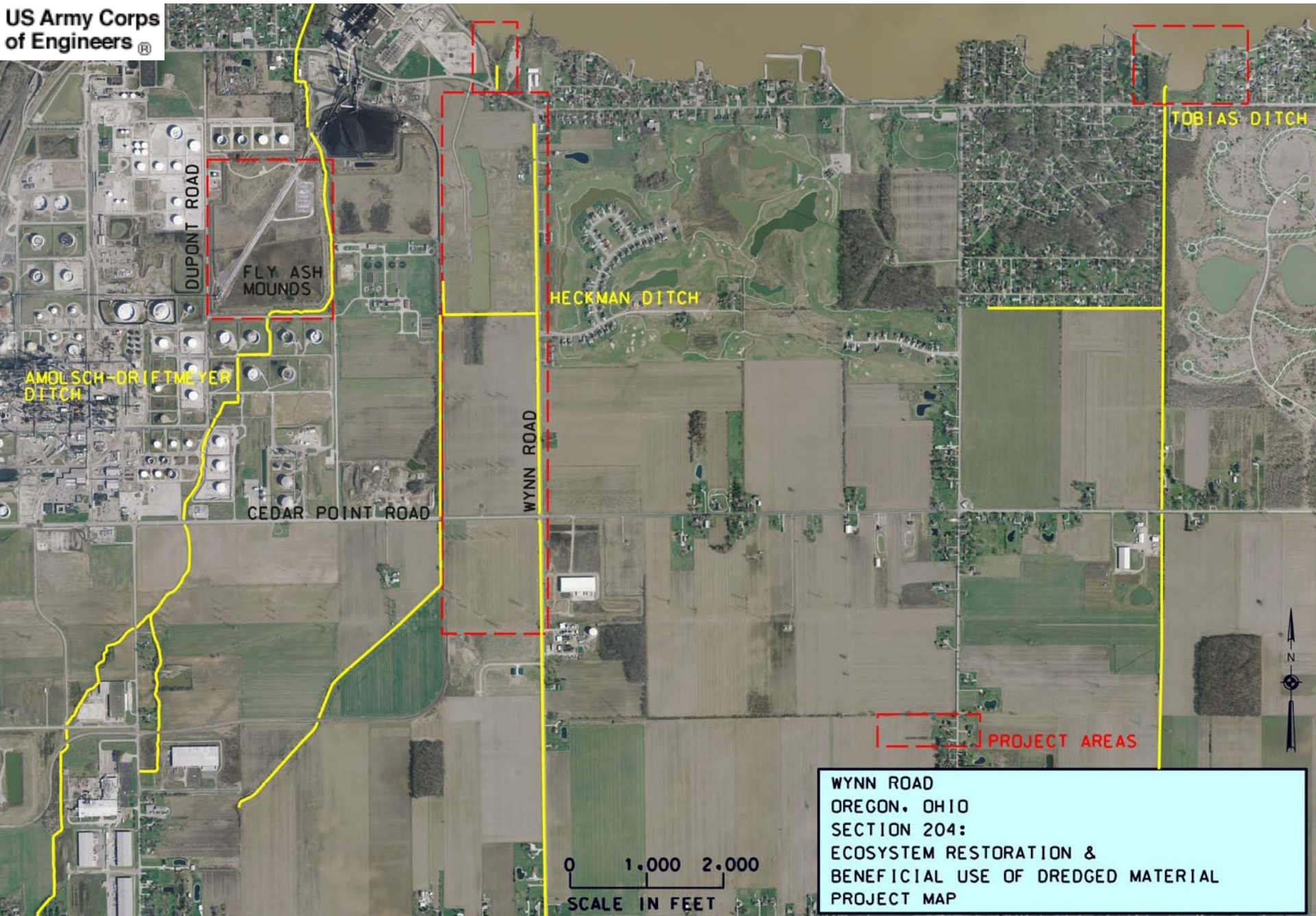
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Oregon, OH**

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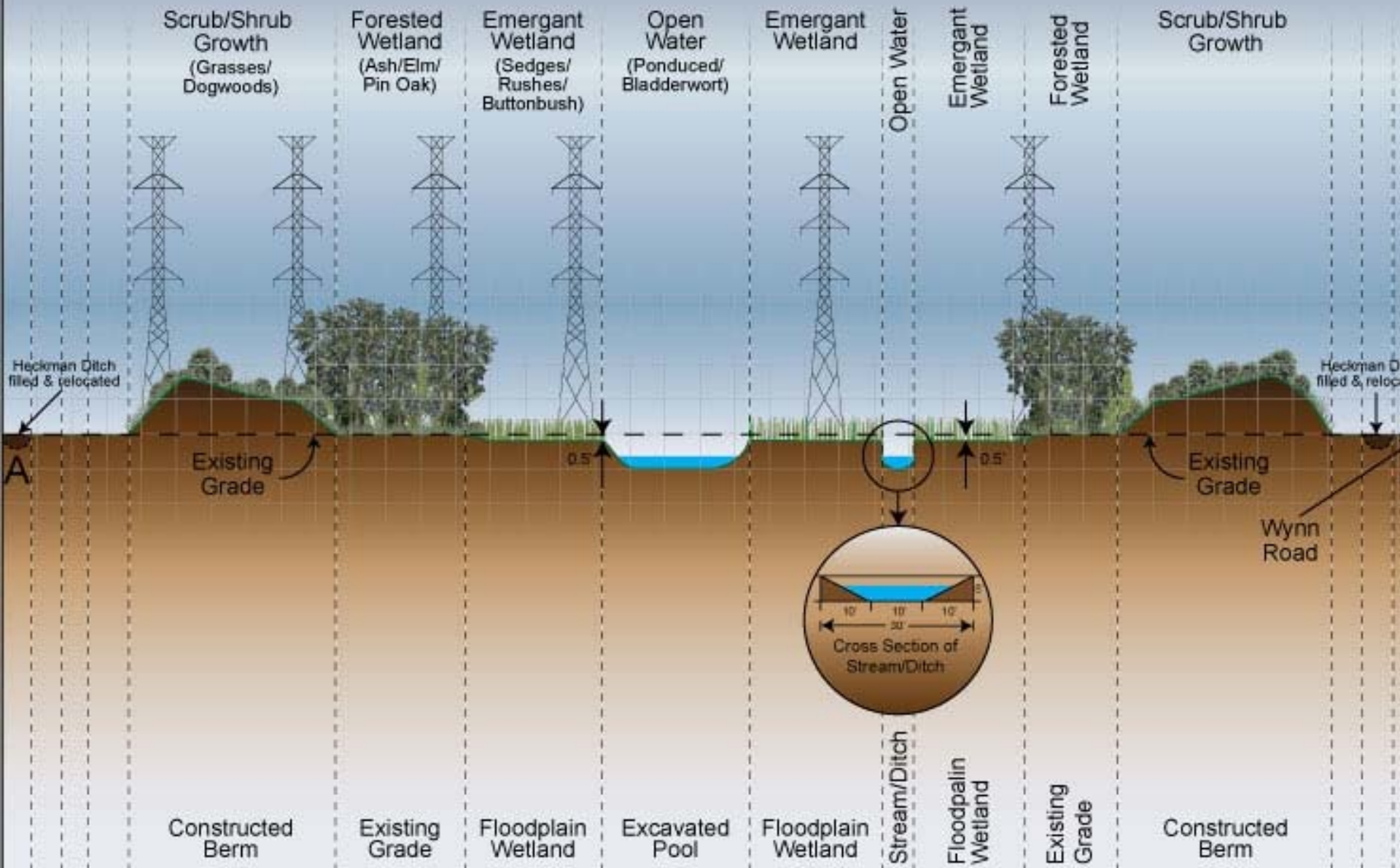
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Wynn Road - Project Alternatives Map



WYNN ROAD-HECKMAN DITCH RIPARIAN CORRIDOR CROSS SECTION - ALTERNATIVE 1

Horizontal Scale: 1 Square = 33.3' Vertical Scale Exaggerated For Effect



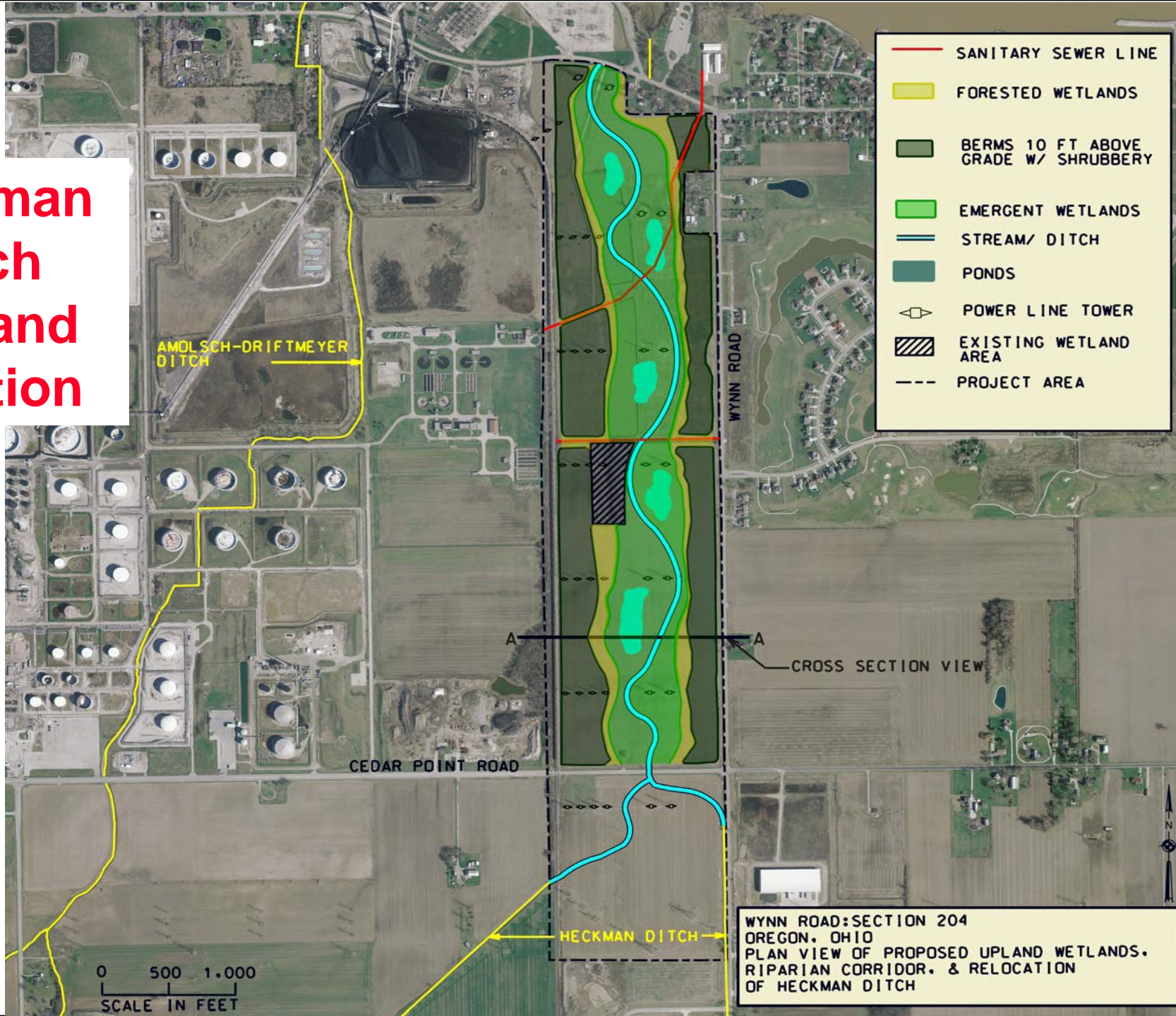


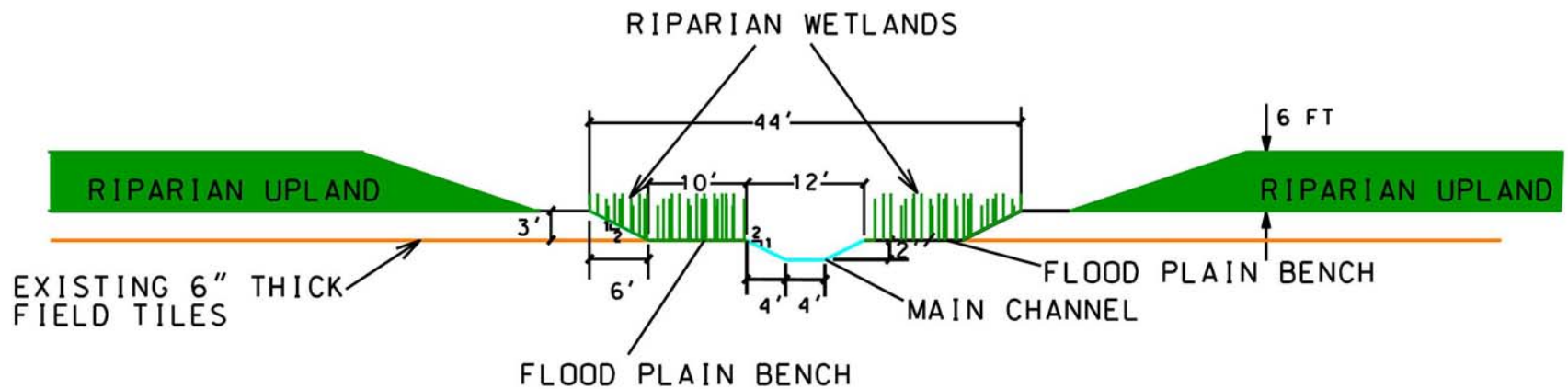
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Heckman Ditch Wetland Creation



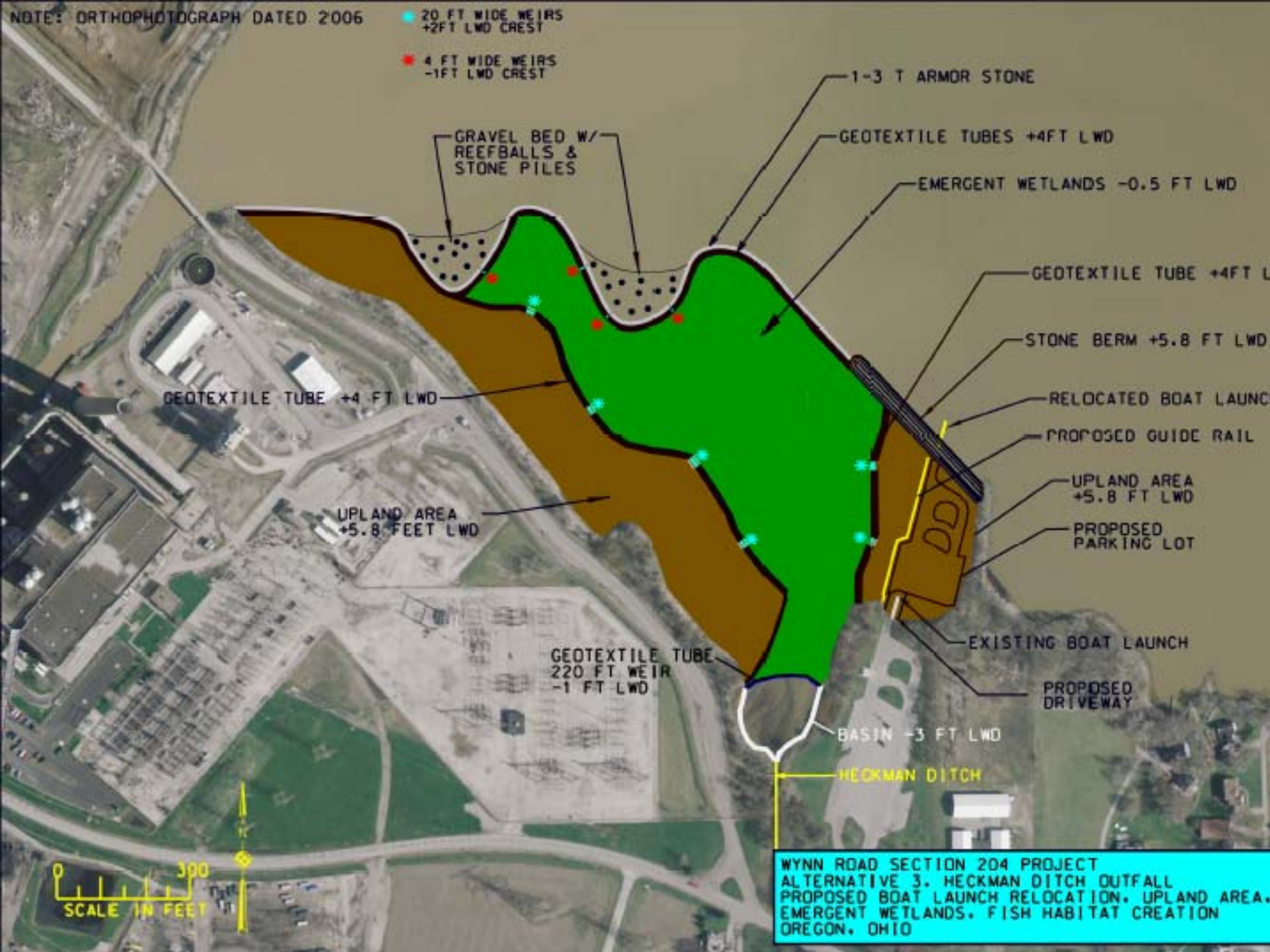


WYNN ROAD PROPOSED TWO-STAGE DITCH
UPSTREAM CHANNEL, TYPICAL SECTION
130 SQUARE FEET

NOTE: ORTHOPHOTOGRAPH DATED 2006

● 20 FT WIDE WEIRS
+2FT LWD CREST

● 4 FT WIDE WEIRS
-1FT LWD CREST



Project Partners

- City of Oregon
- Ohio Dept. of Natural Resources (ODNR)
- Toledo-Lucas County Port Authority
- Ohio Environmental Protection Agency
- US Fish & Wildlife Service
- Industry Interests
- Toledo University
- Lake Erie Waterkeeper
- Ducks Unlimited



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Ashtabula River, Ohio – Section 204 Regional Sediment Management



Image State of Ohio / OSIP
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Ashtabula River – Upstream of Project Area



Ashtabula River – Project Area



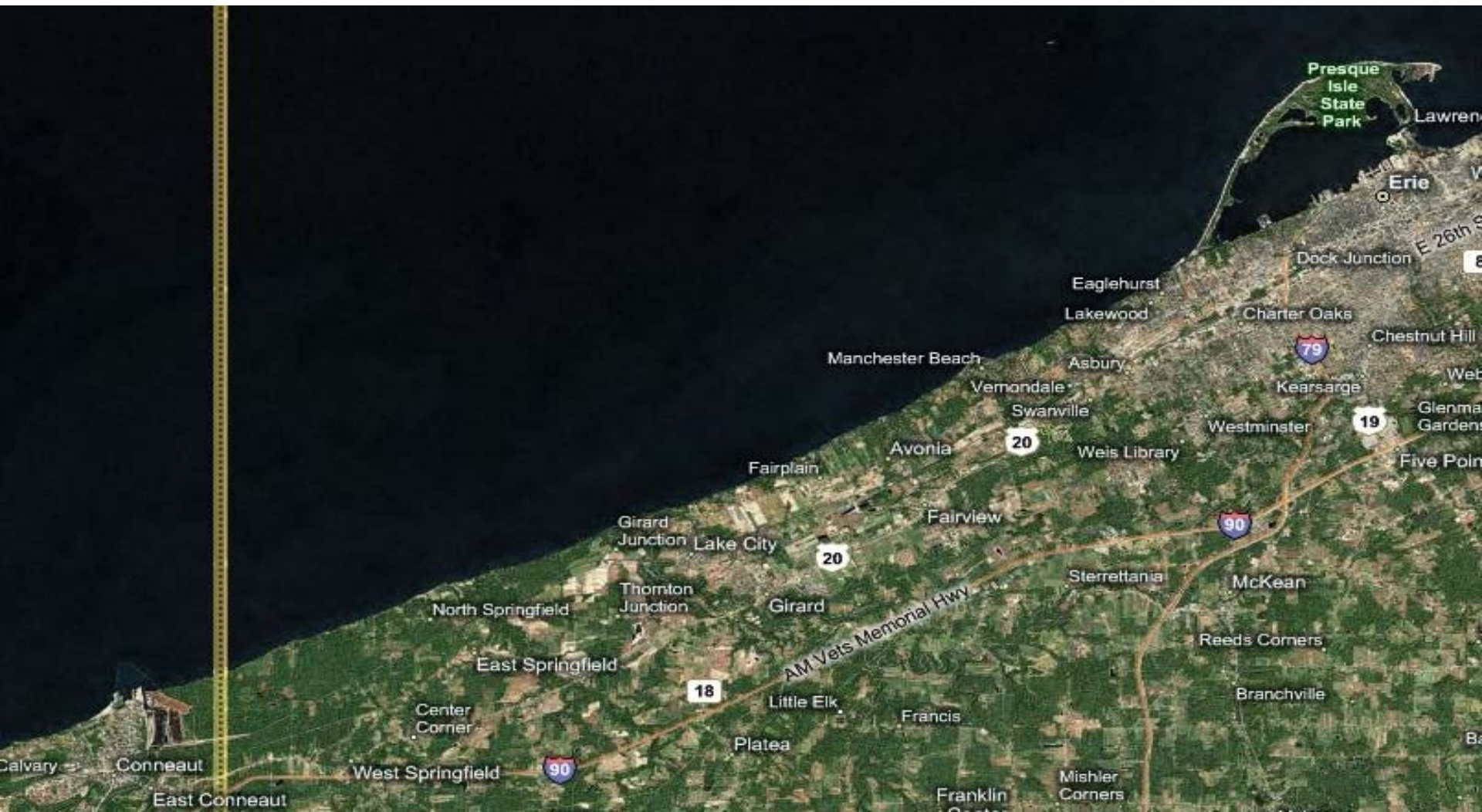


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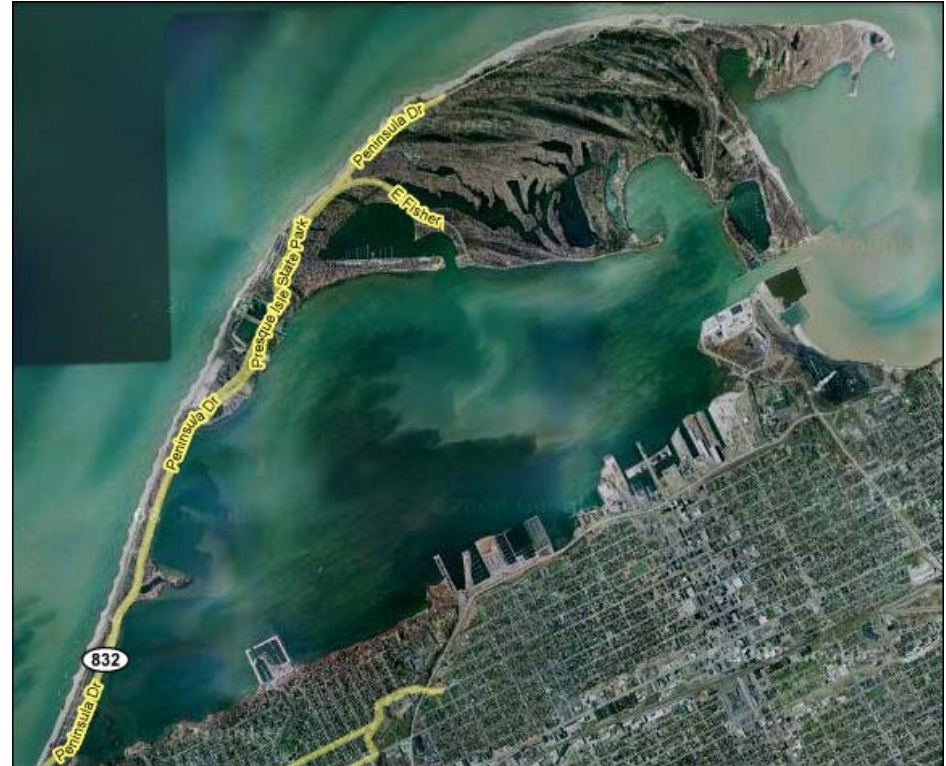
Presque Isle – Section 204 Regional Sediment Management Beneficial Use of Dredged Material for Ecosystem Restoration





204 – Presque Isle – Gull Point

- Erie, PA
- Atlantic Flyway – High use by migratory birds
- Piping Plover Habitat
- Accretion & Erosion
 - Lost 5 acres ('91-'06)
- Shore Protection
 - “to reduce storm damage to property”





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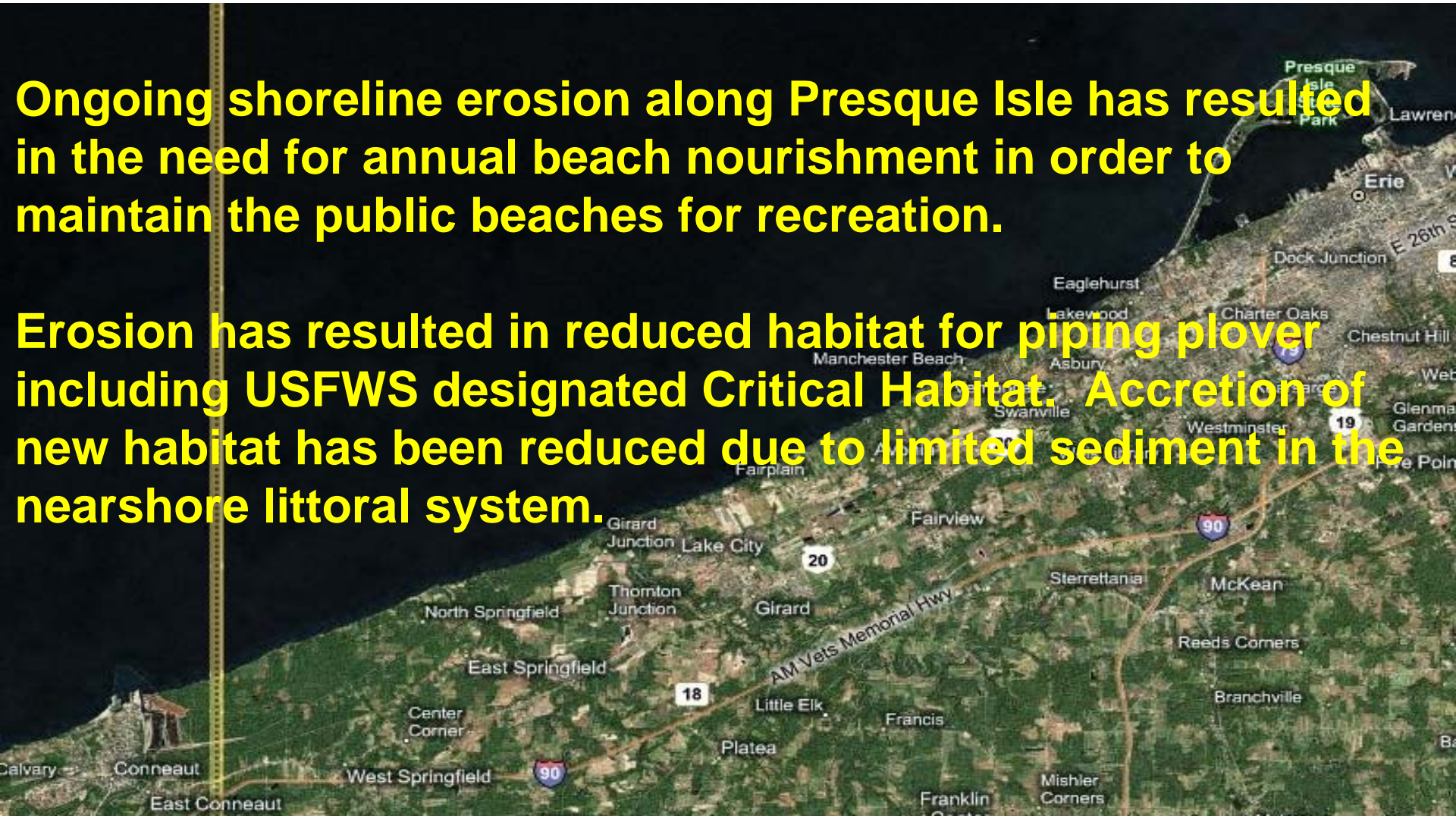
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Problems

Ongoing shoreline erosion along Presque Isle has resulted in the need for annual beach nourishment in order to maintain the public beaches for recreation.

Erosion has resulted in reduced habitat for piping plover including USFWS designated Critical Habitat. Accretion of new habitat has been reduced due to limited sediment in the nearshore littoral system.



Migratory Birds

Presque Isle listed as Important Bird Area (IBA)

- **Position on the landscape provides important resting stop for migrants:**
 - waterfowl
 - shorebirds
 - wading birds
 - neotropical migrants
- **More than 325 species of birds have been documented**
- **Supports State-threatened and endangered species, such as least bittern, American bittern, and Osprey**





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State and Federal Habitat Areas



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Gull Point – Example Current Conditions

Historically, Presque Isle served as a nesting site for the Federally endangered piping plover, having supported approximately 15 nesting pairs annually until the 1950s.

Despite Presque Isle's status as a historic nesting site for piping plover, vegetation encroachment and minimum sand replenishment has degraded habitat previously used by piping plovers and other migratory shorebirds, particularly on the eastern end of the peninsula, at an area known as Gull Point.



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Gull Point – Status and Habitat

- Listed as Designated Critical Habitat for the Piping Plover (USFWS 2001)
- Listed as “Natural Area” by PA-DCNR and is an Important Bird Area
- High use by many species of shorebirds, wading birds, gulls, and waterfowl. Important stop-over area during migration.
- Ranks as most suitable of plover habitat at PISP but additional enhancement/creation would increase habitat quality
- Current available habitat limited by reduced beach accretion and encroaching vegetation (mostly willows/cottonwoods)
- Invasive species also reducing available habitat (*Phragmites*)



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Presque Isle – Piping Plover

- Piping Plover
- Federally-listed as Endangered in 1985 (Great Lakes Popn.)
 - Critical Habitat designated in 2001



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USACE Piping Plover Habitat Creation – Cape May National Wildlife Refuge

During Construction





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USACE Piping Plover Habitat Creation – Cape May National Wildlife Refuge



New Habitat Area





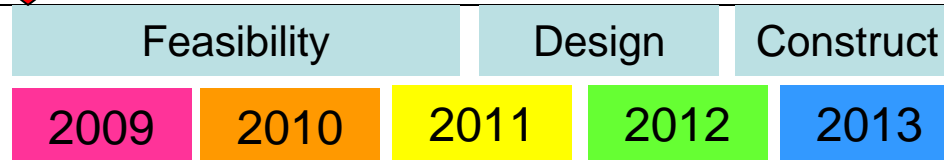
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Schedule & Budget

We are
here



- Feasibility – FY09-FY11
 - Determination of Federal Interest
 - Detailed Project Report
 - National Environmental Policy Act Coordination
 - 100% Federal
- Design – FY11 or FY 12
 - (65% Federal, 35% non-Federal)
 - Plans & Specifications
- Construction – FY12 or FY13
 - (65% Federal, 35% non-Federal)
 - \$7.5 million Total



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Buffalo River – Section 204

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Source: DEC, 2008
CUGIR, 2008

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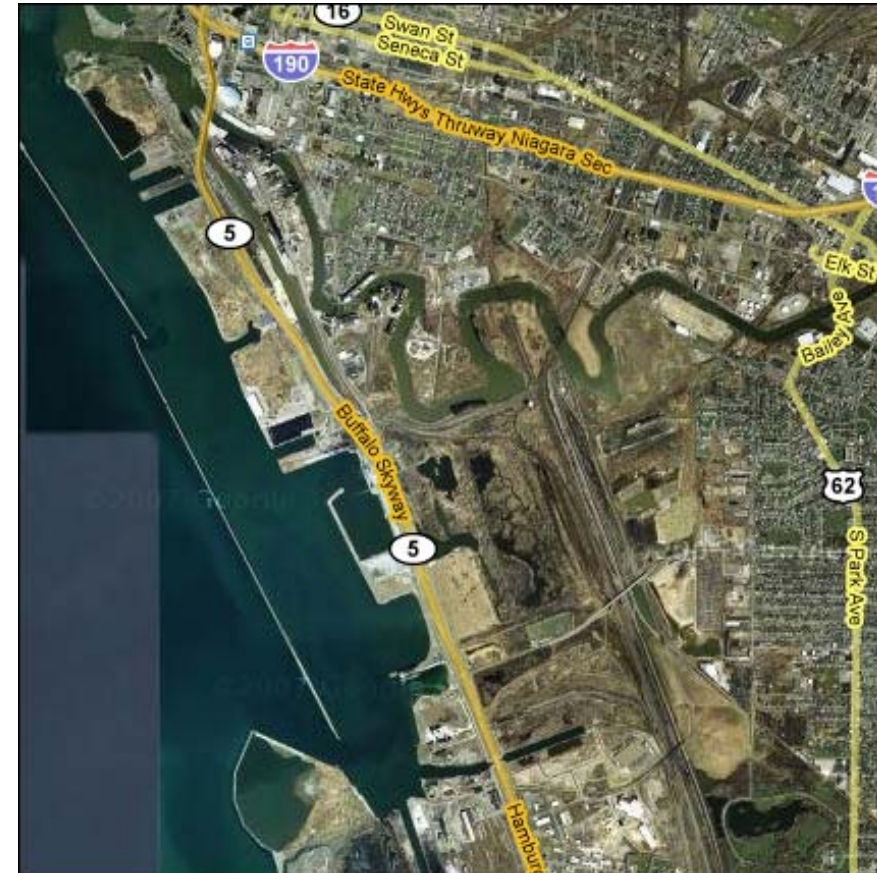


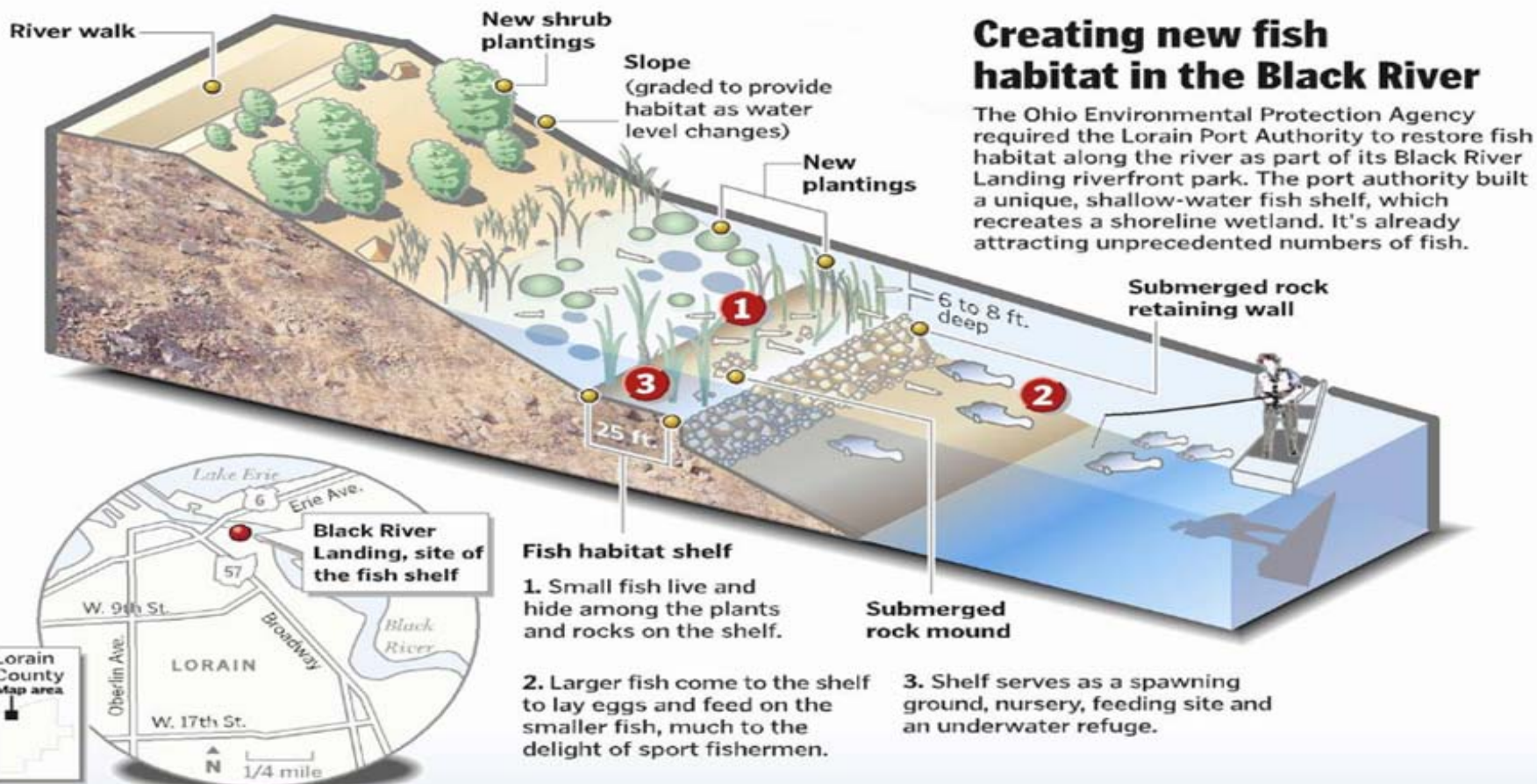
Figure 1-1
Buffalo River AOC



Section 204 – Buffalo River Overview

- Riverine ecosystem restoration
 - Buffalo River and possibly portions of the Niagara River near Buffalo
- Brownfield Restoration
 - Consider with Existing Conditions









**Disposal Area and
Emergent Wetland**





Questions?

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