

Erie Marsh Preserve

Environmental Assessment (EA)

Erie Marsh Preserve Coastal Wetland
Restoration Project

Draft

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Prepared for

The Nature Conservancy

Lead Agency

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TABLE OF CONTENTS

Summaryiv

1.0 Site Location..... 1

2.0 Purpose & Need for Action2

2.1 Decision Framework3

2.2 Description of the Proposed Action3

2.3 Authority, Legal Compliance, and Compatibility3

2.4 Scoping of the Issues.....3

2.5 Issues & Concerns.....4

2.6 The Nature Conservancy Vision Statement.....4

2.7 The Nature Conservancy Goals5

3.0 Description of Alternatives6

3.1 Formulation of Alternatives6

3.1.1 Alternative 1 – No Action 6

3.1.2 Alternative 2 – Proposed Action (preferred)..... 6

4.0 Affected Environment 10

4.1 Physical Environment 10

4.1.1 Physiographic & Geologic Characteristics10

4.1.2 Water Resources.....10

4.2 Biological Environment.....10

4.2.1 Priority Habitat Types10

4.2.2 Priority Wildlife Species11

4.2.3 Threatened & Endangered Species.....13

4.2.4 Invasive Species16

4.3 Cultural Resources17

5.0 Environmental Consequences 18

5.1 Effects on the Physical Environment 18

5.2 Effects on the Biological Environment 18

5.2.1	Priority Habitat Types & Priority Wildlife Species	18
5.2.2	T&E Species and Special Status Species.....	19
5.3	Indirect Impacts	21
5.3.1	Air Quality.....	21
5.3.2	Climate Change Impacts	21
5.3.3	Invasive Species	22
5.3.4	Short term Disruptions to Recreation.....	22
5.4	Environmental Justice.....	22
5.5	Archeological & Cultural Values	23
5.6	Cumulative Impact Analysis	23
6.0	List of Preparers & reviewers	24
7.0	Consultation & Coordination with the Public and Others.....	25
8.0	Preliminary finding of no significant impact (fonsi).....	26
9.0	Acronyms and Abbreviations	27
10.0	References & Literature Cited	28

FIGURES

Figure 1.	Erie Marsh Preserve - Site Location Map	1
Figure 2.	Erie Marsh Restoration Project – Phases and Units	7
Figure 3.	Erie Marsh Restoration Project Activities.....	9

TABLES

Table 1.	TES Species Occurring at the Erie Marsh Preserve (TNC 1998, 2012)	13
Table 2.	MNFI Database Search for Species Occurrence in Legal Sections Overlapping Erie Marsh Preserve (MNFI 2017).....	14
Table 3.	USFWS County List from IPaC.....	15

APPENDICES

Appendix A – Cooperative Management Agreement TNC & USFWS (2006)

Appendix B – Final USACE Permit (File No. LRE-2005-10110-N09)

Appendix C – NEPA Compliance Checklist (Grant 0501.15.048926)

Appendix D – SHPO 2011 Section 106 Review (File ER10-677)

**Appendix E – Region 3 WSFR Section 7 Evaluation for Phase III and IV & Bald Eagle
Guidance (2013)**

SUMMARY

The Nature Conservancy (TNC) proposes the implementation of a Phase III and Phase IV of the Erie Marsh Coastal Restoration Project within the Erie Marsh Preserve located in Monroe County, Michigan. The Erie Marsh Preserve is a privately-owned component of a cooperatively managed unit of the Detroit River International Wildlife Refuge (DRIWR).

This Environmental Assessment (EA) considers biological, environmental, and socioeconomic effects that implementing the last two phases of the restoration project will have on the most significant issues and concerns identified during the planning process.

The completed Erie Marsh Coastal Restoration Project will:

- Allow the exchange of water, energy, and animals between targeted wetlands and Lake Erie
- Provide access to key spawning areas for ecologically important fish species
- Improve function and quality of wetlands for migratory birds
- Increase capacity for wetland management and access for recreation
- Facilitate effective control of invasive species

Phase I of the restoration project was completed in 2014, Phase II will be completed by 2018, Phase III will be completed by 2019, and Phase IV is planned to be completed by 2020. When complete, this four-phase restoration project will allow continued management of a mosaic of wetland types, including emergent marsh, lakeplain wet prairie, seasonally flooded moist soil wetlands, and deep water marsh, while providing effective control of invasive species.

Restoration activities conducted and/or proposed during each phase of the project include:

Phase I Installation of a bi-directional pump station, fish passage structure, and water distribution canal to reconnect 946-acres of wetland located within the perimeter levee to Lake Erie and connect the pump station to ten independently managed wetland units.

Phase II Construct levees to restore and enhance four independently managed wetlands units.

Phase III Construct the levees, extend the water distribution canal, and install water control structures to restore and enhance three independently managed wetland units.

Phase IV Construct the levees, extend the water distribution canal, and install water control structures to restore and enhance two independently managed wetland units.

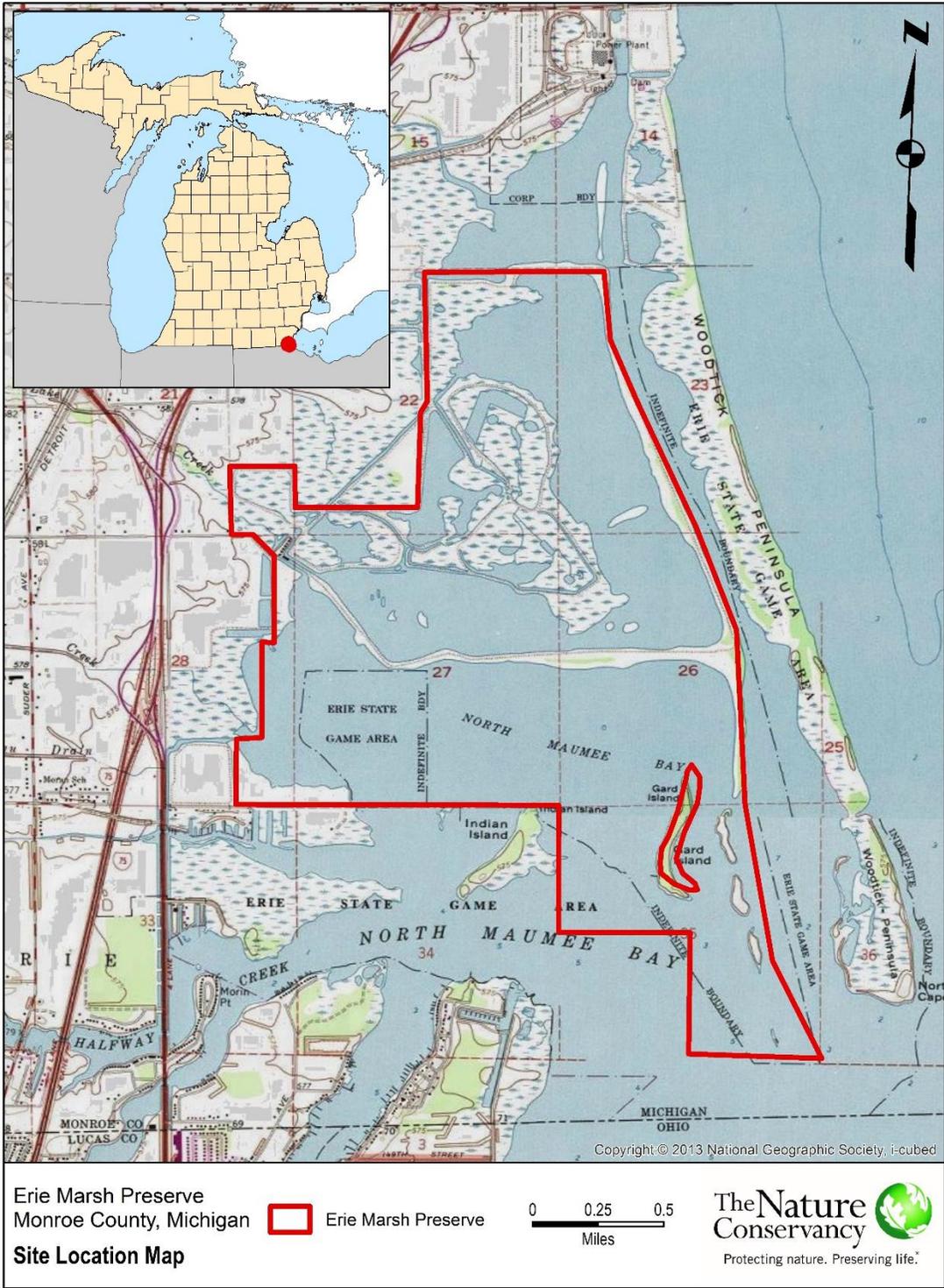
This EA indicates that implementation of the Proposed Action would not result in significant adverse environmental effects nor is anticipated to result in any significant cumulative or long-term adverse environmental effects. Implementation of the Proposed Action may result in minor short-term impacts related to construction activities; limited and localized air emissions from occasional use of mechanized equipment; short term restrictions to existing recreation (e.g. walking, birdwatching) at the Erie Marsh Preserve; and potential introduction/spread of invasive species. However, these minor environmental effects will be short-term and localized and will be mitigated through Best management Practices (BMPs) as appropriate.

The Proposed Action expected to result in beneficial outcomes, including the completion of a restoration project that will facilitate management of the preserve and enhance coastal natural communities and wildlife habitat. In addition, the Proposed Action will advance TNC's mission, increase user experience, and promote educational opportunities.

1.0 SITE LOCATION

The Erie Marsh Preserve is located along the shoreline of the western basin of Lake Erie, just north of the Michigan-Ohio state line, approximately 2.8 miles southwest of Luna Pier, Monroe County, Michigan (Figure 1).

Figure 1. Erie Marsh Preserve - Site Location Map



2.0 PURPOSE & NEED FOR ACTION

Purpose

The purpose of Erie Marsh Preserve Coastal Restoration Project is to restore hydrologic and ecological connectivity between Lake Erie and approximately 946-acres of coastal wetlands of the Erie Marsh Preserve. When fully completed, the project will improve wetland management by allowing controlled flooding and drawdown of 10 independent wetland units to benefit the coastal wetland complex and wildlife it supports.

The Phase III and Phase IV of the restoration project (Proposed Action) will complete the four-phase restoration project allowing continued management and/or restoration of a mosaic of wetland types, including emergent marsh, lakeplain wet prairie, seasonally flooded moist soil wetlands, and deep water marsh, while providing effective control of invasive species.

The specific goals of the Erie Marsh Coastal Restoration Projects are (TNC 2017):

1. Restore the hydrologic and physical connection to Lake Erie allowing access to fish spawning and rearing habitat and facilitating passage for fish and other aquatic organisms, such as freshwater mussels, and nutrient exchange between the restored wetlands and Lake Erie.
2. Increase the quality and diversity of wetland habitat types through the independent water level management of ten wetland units ranging in size from 24 to 250 acres.
3. Provide independent wetland management infrastructure to promote sustainable populations of wetland-dependent wildlife and fish, and increased native biodiversity.
4. Improve the ability to control invasive plant species within the preserve and implement management to control invasive species such as common reed (*Phragmites australis*).
5. Increase access for wetland management and recreation throughout the preserve.
6. Monitor changes in wetland vegetation communities as well as fish and wildlife use of the restored wetlands following hydrologic reconnection with Lake Erie.

Need

Wetlands found in the Erie Marsh Preserve are a Great Lakes coastal wetland type that occurs along the shoreline of western Lake Erie. Along the most exposed shorelines, wetland habitat is rare, but wetlands frequently form in barrier protected lacustrine environments (Albert 2003). The Great Lakes marsh natural community is classified as S3 (Vulnerable), due to its restricted relatively few occurrences, recent and widespread declines, or other factors making it vulnerable (Albert 2001, MNFI 2007).

Most of the coastal wetlands in western Lake Erie have been drained for agriculture, altered by shoreline development, or have been hydrologically isolated from Lake Erie by dikes (Kowalski and Wilcox 1999). Gottgens (1998) estimates that 5% of the original western Lake Erie marshes remain, most of which are protected and maintained behind dikes.

The coastal wetlands of Lake Erie support the largest diversity of plant and animal wildlife species in the Great Lakes (Maynard and Wilcox 1997). The Erie Marsh Nature Preserve contains 11% of the remaining coastal wetlands in southeast Michigan, making it critically important to migrating waterfowl, raptors, and shorebirds, and serving as breeding and nursery grounds of fish, plants, insects, reptiles, and amphibians (USFWS 2006, TNC 2017).

Proper management of the remaining coastal wetlands in western Lake Erie, including those found in the Erie Marsh Preserve, is necessary to maintain and renew their natural functions and values. Specifically, completion of the four-phased restoration project is needed to improve management capabilities of the preserve, which in turn will:

- Allow the exchange of water, energy, and animals between targeted wetlands and Lake Erie.
- Provide access to key spawning areas for ecologically important fish species.
- Improve function and quality of wetlands for migratory birds.
- Increase capacity for wetland management and access for recreation.
- Facilitate effective control of invasive species.

2.1 Decision Framework

This Environmental Assessment (EA) has been developed in accordance with National Environmental Protection Act (NEPA) and regulations found in 40 CFR Part 1500 through Part 1508 (CEQ 1978). This EA will inform decision makers and the public of the potential environmental effects of the Proposed Action and of the alternatives considered.

The Erie Marsh Preserve is a privately-owned component of a cooperatively managed unit of the Detroit River International Wildlife Refuge (DRIWR). The Regional Director of the Great Lakes-Big Rivers Region of the U.S. Fish and Wildlife Service (USFWS) will use this EA to evaluate the project prior to final approval through the Wildlife & Sport Fish Restoration Program (WSFR).

2.2 Description of the Proposed Action

The Proposed Action involves implementing Phase III and Phase IV of the Erie Marsh Coastal Restoration Project in Monroe County, Michigan. The Proposed Action will finalize construction activities associated with a restoration project that began in 2012.

2.3 Authority, Legal Compliance, and Compatibility

TNC received the donation of Erie Marsh from the Ottawa Bay Development company in 1978 and manages the preserve jointly with the Erie Shooting & Fishing Club. The Erie Shooting & Fishing Club cooperates with TNC for management of the preserve under the terms of an existing lease and license, which expires in 2053. Under this lease, the Erie Shooting & Fishing Club retains rights to restrict public access to the preserve during waterfowl hunting season.

In 2006, TNC signed a cooperative management agreement with the USFWS to enroll the 2,217-acre Erie Marsh Preserve into the DRIWR, which is managed by the USFWS (**Appendix A**). The agreement was established under the authorities granted in Section 7 of the Fish & Wildlife Act of 1956 (16 U.S.C. 742f (a)(4)) and the DRIWR Establishment Act of 2001 (Pub. L. 107-91)(115 Stat. 897). Under this agreement, TNC and USFWS cooperatively manage the preserve while TNC retains the rights and responsibilities of ownership with respect to public entry.

2.4 Scoping of the Issues

The NEPA process is designed to inform decision makers and the public of the potential environmental consequences of a proposed action; thus, scoping is the process of identifying opportunities and issues related to a proposed action.

Phase I of the Erie Marsh Coastal Restoration Project was funded by the National Oceanic and Atmospheric Administration (NOAA) through the Great Lakes Restoration Initiative. Phase II was funded by the National

Fish & Wildlife Foundation's (NFWF) Sustain Our Great Lakes Program. Phases I and II fell within the scope of the Programmatic Environmental Assessment (PEA) for the 2002 Community-based Restoration Program (CRP) Implementation Plan and the 2006 Supplement (SPEA). The NEPA analysis for Phase I and II was undertaken by NOAA and completed on June 10, 2010. The project's NEPA analysis documented on the CRPs NEPA checklist concluded that the project would have no significant individual or cumulative effects on the environment and was covered under the associated Findings of No Significant Impact (FONSI).

Coordination with the Michigan Department of Environmental Quality (MDEQ) and U.S. Army Corps of Engineers (USACE) was initiated during scoping of the Erie Marsh Restoration Project, and permits were secured from both agencies for Phases I through IV of the project.

A final permit from the MDEQ was issued 10 January 2013 (Permit No. 09-58-0010-P) and is valid until 10 January 2018. The MDEQ authorized construction activities under Part 301, Inland Lakes and Streams and Part 303, Wetlands Protection of the Natural Resources and Environmental Protection Act (NREPA) of 1994, as amended. As a condition for permitting the project, TNC placed approximately 1,113-acres of the Erie Marsh Preserve under a permanent conservation easement/stewardship agreement held by the MDEQ. TNC will submit a new MDEQ permit application for project activities spanning from 2018-2023.

A final permit from the USACE was issued on 13 February 2013 (File Number LRE-2005-10110-N09). The proposed construction activities were authorized by *Nationwide Permit (NWP) #27 Aquatic Habitat Restoration, Establishment, and Enhancement Activities (Appendix B)*.

The Proposed Action is partially funded by NFWF's Sustain Our Great Lakes Program (specifically, Phase III of the restoration project). Therefore, further scoping was necessary and required preparation of an EA. The project's NEPA analysis documented on the USFWS - WSFR NEPA Compliance Checklist for Grant 0501.15.048926 determined that an EA was required (**Appendix C**).

A Notice of Availability of the Final Draft EA will be published on the USFWS's official website and if necessary, additional outlets in accordance with the NEPA. A 30-day comment period will be held as part of the scoping process of the Proposed Action.

2.5 Issues & Concerns

Public concerns were not identified during initial scoping of the Erie Marsh Coastal Restoration Project. However, two issues/concerns were raised by agencies during this initial scoping, including engineering design recommendations and MDEQ permit conditions. Both issues/concerns were addressed as described below.

- 1) **Engineering Design Recommendations:** Phase I of the restoration project included installation of a bi-directional water pump system and fish passage structure. The final engineering design incorporated recommendations from the U.S. Geological Survey (USGS) and the Michigan Department of Natural Resources (MDNR) Fisheries Division. Construction of the fish passage structure began in June 2013 and has been operational since September 2013.
- 2) **MDEQ Permit Conditions:** To obtain a permit from the MDEQ, TNC placed approximately 1,113-acres of the Erie Marsh Preserve under a permanent conservation easement/stewardship agreement held by the MDEQ. The agreement for conservation easement was recorded on 8 March 2013.

2.6 The Nature Conservancy Vision Statement

The mission of TNC is to “*conserve the lands and waters on which all life depends. The vision of TNC is a world where the diversity of life thrives, and people act to conserve nature for its own sake and its ability to fulfill our needs and enrich our lives.*”

2.7 The Nature Conservancy Goals

TNC's goal is to improve coastal management of the western Lake Erie basin through a landscape-scale restoration and management plan for North Maumee Bay, which encompasses 6,700-acres in Monroe County, Michigan. The plan focuses on natural coastal wetlands and diked wetlands, using scientifically-based management prescriptions (TNC 2012a).

Restoration of the Erie Marsh Preserve is part of TNC's restoration plan for North Maumee Bay. The Erie Marsh Preserve Management Plan (TNC 2012b) lists overall management goals, short-term goals, and long-term management goals formulated to achieve restoration objectives within the property.

Overall Management Goals

- Provide a productive, sustainable wetland complex of native plant communities and open water for a diversity of native plants, wildlife, and fish.
- Integrate the best available science and management experience to develop a model of diked wetland management for the Great Lakes.
- Provide research and educational opportunities compatible with conservation goals.
- Contribute to a restored, functional landscape of wetlands across North Maumee Bay.

Short-term Management Goals (1-5 Years)

- Rehabilitate and replace the existing water management infrastructure to provide better opportunities for independent management of wetland units within the dike system.
- Establish a functional hydrologic and ecological connection to Maumee Bay.
- Create a Scientific Advisory Council with representatives from TNC, Erie Shooting & Fishing Club, USFWS, MDNR, Ducks Unlimited, and other partners to advise on effective management strategies to enhance wetland habitats for native species and control invasive plant species. The Scientific Advisory Council will exist to provide advice and serve as a resource for TNC and Erie Shooting & Fishing Club.
- Collect monitoring data to inform adaptive management decisions.

Long-term Management Goals (Beyond 5 Years)

- Manipulate water levels in management units to support a diversity of native plants, wildlife, and fish.
- Alleviate or mitigate threats and stresses (including invasive plants) that may degrade the condition of the site and conservation targets.
- Support research into restoration techniques and Best Management Practices (BMPs) by providing a study site that allows for manipulation of independent management units.

3.0 DESCRIPTION OF ALTERNATIVES

Under NEPA, the EA shall study, develop, and describe alternatives to recommend a course of action in any proposal, which involves unresolved conflicts concerning alternative uses of available resources. This EA has identified two (2) alternatives, the No Action Alternative and the Proposed Action (preferred).

3.1 Formulation of Alternatives

3.1.1 Alternative 1 – No Action

The No Action Alternative is included in the range of alternatives because it allows decision makers to compare the magnitude of environmental effects of the action alternatives. NEPA regulations require inclusion of a non-action alternative.

Under the No Action alternative, Phase III and Phase IV of the Erie Marsh Restoration Project would not be implemented and the vision and goals of the four-phase restoration project as a whole will not be achieved.

Construction goals of Phase I and II of the project were achieved, or will be achieved, by re-establishing the hydrologic connection between a 258-acre portion of diked wetland and Lake Erie that was lost for over 60 years and dike construction and rehabilitation to provide water management to four wetland units. Since completion of the Phase I of the project, post-construction monitoring of target performance measures (i.e. water quality, larval fish, vegetation, avifauna, *Phragmites* coverage, herpetofauna, and outreach) has shown positive results and achievement of goals (TNC 2014). The No Action alternative will not build upon this critical first phase of the planned four-phase project, which will truncate goals intended to restore 946-acres of coastal wetland.

3.1.2 Alternative 2 – Proposed Action (preferred)

The Proposed Action consists of implementation of Phase III and Phase IV of the Erie Marsh Restoration Project, which will facilitate dike construction/rehabilitation, habitat restoration, and invasive species control within the Canvasback Cabana, Secor's, Widgeon Hole, Godwall Gateway, Wolverine Wallow, and Redhead Retreat units of the Erie Marsh Preserve (Figure 2).

Figure 2. Erie Marsh Restoration Project – Phases and Units



The Proposed Action includes the following construction activities (Figure 3):

Phase III – Secor’s Unit, Canvasback Cabana, Wolverine Wallow-Gadwall Splitter

- Dike Rehabilitation (repair/rebuild):
 1. Dredging of existing canal between Secor’s Unit and Widgeon Hole Unit for the rehabilitation of two (2) existing dikes 59 feet wide and 57 feet wide and 2,162 feet long.
 2. Rehabilitation of one (1) existing dike by dredging a borrow area of 33 feet wide by 7,155 feet long around Secor’s Unit and adjoining the Wolverine Wallow Unit.
 3. Rehabilitation of one (1) existing dike by dredging a borrow area of a maximum width of 28 feet wide by 1,017 feet long around Canvasback Cabana Unit.
- New Dike Construction:
 1. 58 feet and 1,799 linear feet long between Wolverine Wallow Unit and Gadwall Gateway Unit (i.e. Wolverine Wallow-Gadwall Splitter).
 2. 77 feet and 2,477 linear feet long along portions of Canvasback Cabana Unit.
 3. 61 feet and 995 linear feet long along portions of Canvasback Cabana Unit.
- Dredge a total of 116,470 cubic yards of material from approximately 18.96 acres of open water/wetland or existing ditches to construct water distribution canals and to obtain borrow material to repair/rebuild existing dikes and to construct new dikes.
- Discharge (fill) a total of 65,842 cubic yards of dredged fill material within approximately 9.66 acres of open water/wetlands to construct and/or repair dikes.
- Installation of a 30” diameter Water Control Structure (STR-5). Place approximately 3.3 cubic yards of clean rip-rap on filter fabric on about 90 square feet of lakebed.
- Extend/Install a 60” diameter Distribution Channel (STR-11) at Secor’s Unit. Place approximately 7.2 cubic yards of clean rip-rap on filter fabric on about 193.5 square feet of lakebed.
- Restore and enhance approximately 219.8-acres of emergent, open water, forested, and scrub-shrub wetland.

Phase IV – Wolverine Wallow Unit

- New Dike Construction:
 1. Maximum width of 237 feet and 2,732 linear feet long adjoining the main distribution channel between the Wolverine Wallow Unit and the Redhead Retreat Unit.
- Dredge a total of 79,137 cubic yards of material from approximately 14.86 acres of open water/wetland to construct water distribution canals and to obtain borrow material to repair/rebuild existing dikes and to construct new dikes.
- Discharge (fill) a total of 102,602 cubic yards of dredged fill material within approximately 7.40 acres of open water/wetlands to construct and/or repair dikes.
- Installation of a 30” diameter Water Control Structure (STR-6). Discharge approximately 3.3 cubic yards of clean rip-rap on filter fabric on about 90 square feet of lakebed.
- Extend/Install a 60” diameter Distribution Channel (STR-13) at the intersection of Wolverine Wallow Unit and Redhead Retreat Unit. Place approximately 7.2 cubic yards of clean rip-rap on filter fabric on about 193.5 square feet of lakebed.
- Restore and enhance approximately 139-acres of emergent, open water, forested and scrub-shrub wetland.

4.0 AFFECTED ENVIRONMENT

This section describes the physical, biological, and cultural resources most likely to be affected by the Proposed Action.

4.1 Physical Environment

4.1.1 Physiographic & Geologic Characteristics

The Erie Marsh Preserve is located in the Maumee Lake Plain physiographic region of Michigan, which is characterized by low wet plains associated with Glacial Lake Maumee, deltas, and numerous beach ridges with surface textures ranging from sandy (on beach ridges and near deltas) to clayey (deep water lake beds) (Michigan Geological Survey 2009). This region of Monroe County is characterized by relatively flat topography and elevations in the Erie Marsh Preserve are approximately 575 feet above sea level.

The majority of the soils mapped in the Erie Marsh Preserve consist of clay loams, specifically Lenawee silty clay loam (10, 21) and Del Rey silt loam (14A). Dumps are also mapped, these are areas of smoothed or uneven accumulations of piles or waste rock and general refuse (Soil Survey Division Staff 1993).

4.1.2 Water Resources

The Erie Marsh Preserve is located in the Ottawa-Stony Watershed (HUC 04100001), at the west end of Lake Erie in North Maumee Bay. Multiple streams drain into the North Maumee Bay in Lake Erie, including Little Lake Creek, Bay Creek, Ripideau Drain, and Flat Creek (USGS 1979, 2016).

The hydrology of the Erie Marsh Preserve has been altered over the past century by construction of dikes for water level control initiated by waterfowl hunting clubs in the 1900s (Johnston et al. 2007). As in many of Great Lake coastal wetlands, construction of dikes isolated these wetlands from normal water level fluctuations. As a result, there is no contributing watershed beyond the boundary of the perimeter dike and the dike area is enclosed and self-contained (TNC 2012b). Phase I of the restoration project re-established the hydrological connection between a portion of the preserve and the open waters of North Maumee Bay and Lake Erie.

4.2 Biological Environment

The Erie Marsh Preserve is located in the Maumee Lake Plain section of the Huron/Erie Lake Plains ecoregion (EPA 2010). The Maumee Lake Plain ecoregion is a priority conservation area for TNC due to its support to Great Lakes biodiversity (TNC 2000).

4.2.1 Priority Habitat Types

Coastal Wetlands

The primary habitat type in the Erie Marsh Preserve are coastal wetlands, which are the primary target for future management. This priority habitat type includes exposed mudflats, emergent marsh, and submergent marsh. Coastal wetlands / Great Lakes marsh natural community are classified as S3 (Vulnerable), due to its relatively few occurrences, recent and widespread declines, or other factors making them vulnerable (Albert 2001, MNFI 2007).

Lakeplain Wet Prairie

Lakeplain wet prairies contain diverse plant communities and occur on the glacial lakeplains of the Great Lakes. This natural community is classified as S1 (critically imperiled) due to the drastic decline of the original extent of the community (Albert and Kost 1998). Development and maintenance of lakeplain wet prairie communities involve processes such as seasonal flooding, varying lake levels, and periodic wildfires. The Erie Marsh Preserve does not contain extant lakeplain wet prairie remnants; however, it is a priority habitat type because they are

known to have occurred in the region (Comer and Albert 1997). TNC believes that improved water management may allow restoration of lakeplain wet prairies within the Erie Marsh Preserve (TNC 2012b).

4.2.2 Priority Wildlife Species

TNC's management plan for the Erie Marsh Preserve (TNC 2012b) identifies several priority wildlife species that are the focus (i.e. conservation targets) of current management.

Migratory Birds

Coastal regions of the Great Lakes have been documented to concentrate migratory birds, as some birds avoid crossing large expanses of open water in their migratory journeys (Ewert et al. 2005, Bonter et al. 2008, Goodrich and Smith 2008, Ewert et al. 2011, Shieldcastle 2013). Thus, the Great Lakes coastal areas are important in shaping patterns of landbird migration (Ewert et al. 2015). The western Lake Erie basin provides important stopover sites for all groups migratory birds (i.e. waterfowl, shorebirds, raptors, landbirds, waterbirds) (Ewert et al. 2005).

Waterfowl

The Lower Great Lakes is recognized as an area of greatest continental significance to North American ducks, geese, and swans (USFWS 2012). The western Lake Erie basin specifically, is also designated as an Important Bird Area (IBA) because it supports a globally significant assemblage of wintering waterfowl (National Audubon Society 2016). The Proposed Action will enhance existing habitat that supports waterfowl species and populations.

Shorebirds

The western Lake Erie basin concentrates shorebirds in large numbers and the lakes' coastal marshes in Michigan are recognized as a regionally important stopover site by the Western Hemisphere Shorebird Region Network (WHSRN) because they support more than 20,000 shorebirds annually or at least 1% of the biogeographic population for a species (WHSRN 2017). For most species, stopover sites or staging areas must have shallow water (< 8 inches deep) and/or mudflat habitats with sparse vegetation (< 25% cover), undisturbed resting areas, and abundant invertebrate food sources (Russell et al. 2016).

Although shorebird use in the preserve is variable and dependent on water levels, rainfall, management practices, and foraging behavior of specific species, the preserve provides shorebird habitat during spring and summer drawdown (TNC 2012b). The Proposed Action will enhance existing habitat that supports shorebird species and populations.

Landbirds

Landbirds are a diverse group of species that use a wide range of cover types, but most appear to exhibit selective use of locally available habitats during migration (Petit 2000). According to Ewert et al. (2005) the western Lake Erie basin is particularly important to landbird species that consistently migrate through the region.

The Erie Marsh Preserve's shrubs and trees along the dikes provide foraging habitat and shelter to many landbird species during spring and fall migration as well as breeding populations. TNC (2012b) indicates that rehabilitation of the dikes will present challenges for management of migrating landbirds because the effective lifespan of the dikes will be reduced if they are allowed to become overgrown with woody vegetation.

Bald Eagle

Bald eagles (*Haliaeetus leucocephalus*) typically breed in forested areas adjacent to large bodies of water; nesting occurs in mature and old-growth forest with some habitat edge, usually close to water with suitable foraging

opportunities (Gehring 2006). This species has been confirmed breeding in southeast Michigan including coastal areas of Monroe County (Postupalsky 2011). Bald eagles are year-round residents in Monroe County and currently nest in the Erie Marsh Preserve, which provides suitable habitat and foraging grounds (TNC 2012b).

The bald eagle is a species of concern in the State of Michigan and is protected federally by the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) of 1940 (16 U.S.C. 668-668c). In 2007 the USFWS announced the delisting of bald eagle and it is no longer protected under the Endangered Species Act (ESA) (USFWS 2007). The Proposed Action will be carried out in accordance with USFWS guidelines for the protection of eagles and USACE permit requirements.

Eastern fox Snake

The eastern fox snake (*Pantherophis gloydi*) is a state threatened species endemic to the Great Lakes basin that has been documented along the shoreline of lakes Huron, Erie, and St. Clair, as well as along the Raisin, Detroit, Clinton, and Shiawassee rivers and their tributaries (Lee 2000). This species readily uses emergent wetlands along Great Lakes shorelines and associated large rivers and impoundments containing herbaceous vegetation. Eastern fox snake also occupies drier habitats such as vegetated dunes, beaches, rocky areas, open woodlands, and may wander along ditches, farm fields, pastures, and woodlots (Lee 2000). Winter hibernation sites include underground dens and tunnels below the frost line, abandoned mammal burrows, muskrat lodges or other suitable shelters (MNFI 2007, Tekiela 2014). In Michigan, this species is active from the third week of April to the fourth week of October (MNFI 2007).

A mark/recapture and telemetry study conducted in 2006 and 2007 confirmed presence of eastern fox snakes in the Erie Marsh Preserve and adjoining lands west of the preserve (Putman 2008). TNC seeks to further understand habitat preferences to improve habitat within the preserve and possibly protect additional habitat outside of the preserve (TNC 2012b).

Unionid Mussels

Native mussels have been found in near-shore and open areas of the western Lake Erie basin despite abundant dreissenid population (Crail et al. 2011).

A limited survey designed to locate refuge populations of native unionids within the Erie Marsh Preserve was conducted in 2010 (Sherman 2011). Unionids, including three fragile papershell (*Leptodea fragilis*) and one giant floater (*Pyganodon grandis*), were found at two of the three sites surveyed and densities were calculated at 0.015 m⁻². However, Unionids were not detected in the diked wetland. Dreissenid colonization of Maumee Bay was noted to be high during the study; however, fouling (i.e. attachment of dreissenids to native mussels) appeared to be low compared to other regions containing unionids (Sherman 2011).

Crail et al. (2011) documented several Ohio and Michigan state-listed Unionid species in the western Lake Erie basin, including six species at the two sites closest to the Erie Marsh Preserve. In addition, the Michigan Natural Features Inventory (MNFI) reports three element occurrences of native mussel species in sections overlapping open waters of the Erie Marsh Preserve (MNFI 2017). The restored hydrological connection to Lake Erie and open waters of North Maumee Bay achieved in 2013 coupled with the enhancement and restoration of important coastal marshes is likely to benefit native Unionid mussels.

Spawning Fish

Fish community objectives for Lake Erie include maintaining nearshore habitats that can support high quality fisheries for walleye, smallmouth bass, northern pike, muskellunge, and yellow perch (GLFC 2003, Lake Erie Committee 2005). In Lake Erie, the nearshore zone (0-15 meters in depth) includes the coastal waters as well as the entire western basin, where mean depths are 7.4 meters /24.1 feet (GLFC 2003).

The restored hydrological connection to Lake Erie and open waters of North Maumee Bay achieved in 2013 coupled with the enhancement and restoration of important coastal marshes in the Erie Marsh Preserve will support fish community objectives, as new areas of emergent marsh will provide spawning, nursery, and foraging habitat for the western Lake Erie fish community.

4.2.3 Threatened & Endangered Species

A species inventory report for the Erie Marsh Preserve includes 16 species (Table 1) listed as threatened, endangered, and species of concern (TES) in the state of Michigan (TNC 1998, 2012b).

Table 1. TES Species Occurring at the Erie Marsh Preserve (TNC 1998, 2012)

Common Name	Scientific Name	State Status ‡
Red mulberry	<i>Morus rubra</i>	ST
American lotus	<i>Nelumbo lutea</i>	SC
Northern Harrier	<i>Circus cyaneus</i>	SC
Cerulean Warbler	<i>Setophaga cerulea</i>	ST
Prairie Warbler	<i>Setophaga discolor</i>	SE
Common gallinule	<i>Gallinula galeata</i>	ST
Bald Eagle	<i>Haliaeetus leucocephalus</i>	SC
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	SC
Osprey	<i>Pandion haliaetus</i>	SC
Wilson's Phalarope	<i>Phalaropus tricolor</i>	SC
Prothonotary Warbler	<i>Protonotaria citrea</i>	SC
Louisiana Waterthrush	<i>Seiurus motacilla</i>	ST
Caspian Tern	<i>Sterna caspia</i>	ST
Common Tern	<i>Sterna hirundo</i>	ST
Eastern Box Turtle	<i>Terrapene Carolina Carolina</i>	SC
Eastern fox snake	<i>Pantherophis gloydi</i>	ST

‡ Status Key: ST=state threatened; SE=state endangered; SC=State Special Concern

The MNFI natural heritage database, which maintains the state's TES element occurrences in the State, includes additional TES records occurring in Sections 21-23, 26-28, and 35 of Erie Township (T8S, R8E), which overlap the preserve (Table 2).

Species occurrence and distribution information provided by MNFI is often based on documented occurrences where surveys have taken place, so a lack of records does not necessarily indicate that species are absent from a particular area. Species listed from sections overlapping the preserve range from historic records to more recent documentations or records based on unpublished data (MNFI 2017). It should be noted that the MNFI search includes entire sections and does not constitute an inventory within the preserve's boundaries.

Table 2. MNFI Database Search for Species Occurrence in Legal Sections Overlapping Erie Marsh Preserve (MNFI 2017)

Common Name	Scientific Name	State Status †	Last Observed Date	Element Category	Habitat Requirements **
Bald eagle	<i>Haliaeetus leucocephalus</i>	SC	2012	Animal	Varied habitats that provide suitable nest sites close to open water; nests may be placed in snags or large trees.
Marsh Wren	<i>Cistothorus palustris</i>	SC	2012	Animal	Emergent marshes, but typically prefers deeper-water marshes. In Michigan, nests over water in cattail and bulrush stands.
King Rail	<i>Rallus elegans</i>	E	1986	Animal	Coastal wetlands; permanent marsh habitats along upland-wetland edges dominated by tussock-forming sedges.
Eastern fox snake	<i>Pantherophis gloydi</i>	T	2014	Animal	Emergent wetlands along Great Lakes shorelines and associated large rivers and impoundments that provide herbaceous vegetation (e.g. cattails). Also drier uplands.
Queen snake	<i>Regina septemvittata</i>	SC	2006	Animal	Warm, shallow streams with shrubs and trees nearby; requires moving water. Also edges of ponds, lakes, marshes, ditches, and canals.
Lilliput	<i>Toxolasma parvum</i>	E	2011	Animal	Creeks with mud or clay substrates; also in rivers, lakes, and impoundments.
Threehorn wartyback	<i>Obliquaria reflexa</i>	E	2011	Animal	Medium to large rivers; blackwater conditions to swift currents; substrates of gravel to muddy sand. Tolerant of river impoundments.
Fawnsfoot	<i>Truncilla donaciformis</i>	T	2011	Animal	Small to large rivers and lakes on firm gravel or sand substrates.
Round hickorynut	<i>Obovaria subrotunda</i>	E	1977	Animal	Medium to large rivers and along the shores of Lake Erie and Lake St. Clair, near river mouths. Generally, sand and gravel substrates in areas with moderate flow.
Proud globe	<i>Mesodon elevatus</i>	T	1941	Animal	Calcareous river bluffs, ravines with oak, maple, hickory, and sycamore.
Sullivant's milkweed	<i>Asclepias sullivantii</i>	T	1923	Plant	Remnant lakeplain prairies on moist sandy clay or sandy loam soils; occasionally in disturbed habitats such as old fields.
Trailing wild Bean	<i>Strophostyles behula</i>	SC	1961	Plant	Found in sandy soil, thickets on disturbed ground, ditch banks, beaches, and dunes.
American lotus	<i>Nelumbo lutea</i>	SC	1996	Plant	Marshes, quiet backwaters and near-shore areas, and in large rivers near the Great Lakes.
Water Willow	<i>Justicia americana</i>	T	1958	Plant	Mostly in large river systems and less commonly in lakes. Found along muddy banks at the edge of the shore.

† Status Key: ST=state threatened; SE=state endangered; SC=State Special Concern

** MNFI Rare Species Explorer (MNFI 2007)

Part 365, Endangered Species Protection, of the NREPA confers legal protection to state endangered and threatened species, including plants and animals. NREPA does not provide legal protection for species listed as special concern, but their status is typically a reflection of declining populations, and they have the potential to be listed under Part 365 in the future. Additionally, although not protected under NREPA, seven reptiles and amphibians in Michigan are protected by State law under the MDNR Director's Order FO-224.13, which prohibits take except as authorized under a permit for scientific research, conservation, or education purposes.

Federally listed species are protected under federal law by the ESA of 1973 (16 U.S.C §1531-1544). The USFWS Information, Planning, and Conservation System (IPaC) provides information regarding federally threatened, endangered, proposed, and candidate species on a county-by-county basis. The unofficial county list obtained

from IPaC indicates that Monroe County is within the range (i.e. contains documented records and/or has the potential to harbor critical habitat) of three (3) endangered and (4) threatened species (USFWS 2017) (Table 3).

Table 3. USFWS County List from IPaC

Common Name	Scientific Name	Federal Status ‡	State Status ‡
Red Knot	<i>Calidris canutus rufa</i>	LT	
Northern riffleshell	<i>Epioblasma torulosa rangiana</i>	LE	
Eastern Prairie-Fringed Orchid	<i>Platanthera leucophaea</i>	LT	
Karner blue butterfly	<i>Lyciaides melissa samuelis</i>	LE	T
Indiana bat	<i>Myotis sodalis</i>	LE	E
Northern long-eared bat	<i>Myotis septentrionalis</i>	LT	SC
Eastern massasauga	<i>Sistrurus catenatus catenatus</i>	LT	SC

‡ Status Key: LT=federally listed; LE=federally endangered; ST=state threatened; SE=state endangered; SC=State Special Concern

Based on the USFWS county list for Monroe County (Table 3), the potential exists for TES species to utilize habitats present within the Erie Marsh Preserve. However, areas of the preserve proposed for construction activities do not contain the specific habitat characteristics (e.g. type and structural/species composition, etc.) or lacks specific conditions required for some of the federally listed species, including: northern riffleshell, Karner blue butterfly, Indiana bat, and Northern long-eared bat.

Further discussion on the potential presence/absence of the red knot, the eastern massasauga, and the eastern prairie-fringed orchid is provided below, because habitat characteristics in Erie Marsh Preserve are potentially suitable to harbor these species.

Red Knot

The ‘rufa’ subspecies of the red knot is a federally threatened shorebird species that migrates through the Great Lakes region during spring and fall. Along the shores of the Great Lakes in Michigan, it is considered a low-density spring migrant and more frequently recorded in fall on Lake Erie and Lake Michigan; the only specific site where the species is recorded annually is at the Point Mouillee State Game Area (USFWS 2014a). eBird reports sightings along the western Lake Erie including observations in the Erie Marsh Preserve / Erie Gun Club dating to the 1980s-1990s and nearby coastal areas in Michigan and Ohio, which include sightings from 1980s-1990s as well as contemporary observations (e.g. 2010, 2014) (eBird 2017).

During migration, red knots use sandy coastal habitats at or near tidal inlets or at the mouths of bays and estuaries, as well as other habitats such as brackish lagoons, tidal mudflats, etc. (Baker et al. 2013). In Michigan, this species can be expected to be present during migration along the Great Lakes shoreline as well as inland on mudflats of low reservoirs in late summer and fall or flooded fields in spring (USFWS 2014a).

The Erie Marsh Preserve provides shorebird habitat during spring and summer drawdown (TNC 2012b). Thus, it is possible that red knots could utilize the Erie Marsh Preserve during migration.

Avifauna was one of the target performance measures of Phase I and Phase II of the Erie Marsh Restoration Project. Avifauna richness and abundance was surveyed through pre-construction surveys conducted from June 2011 through May 2012 and post-construction surveys conducted from October 2013 through September 2014. Red knot was not documented during these surveys (TNC 2014), suggesting that the species does not regularly occur in the Erie Marsh Preserve.

Eastern Massasauga

The eastern massasauga is found in a variety of wetland habitats including wet prairies, marshes, and low areas along rivers and lakes (USFWS 2015). Populations in southern Michigan are typically found in open, shallow wetlands, particularly prairie fens, characterized by open, sunny areas intermixed with shaded areas, presence of the water table near the surface for hibernation, and variable elevations between adjoining lowland and upland habitats (Lee and Legge 2000). The species also utilizes adjacent uplands including grasslands, old fields, and forest openings (USFWS 2015). Regardless of whether individuals stay in wetlands throughout the year or disperse to uplands during summer, the association with wetlands is consistent and eastern massasaugas are rarely found more than 500 meters (1,640-feet or 0.31-miles) from a wetland (USFWS 2016a).

The IPaC system indicates that Monroe County is within the range of the eastern massasauga, but does not indicate that the county contains Tier 1 or Tier 2 habitat (i.e. areas known to be occupied or highly likely to be occupied and areas with high potential habitat that may be occupied by eastern massasauga). Areas within the known range but outside of Tier 1 and Tier 2 habitat are considered less likely to be occupied by eastern massasaugas.

The USFWS has confirmed that occurrence records of the eastern massasauga and projected modeled habitat (Tier 1 and Tier 2 EMR Habitat Model) do not overlap the Erie Marsh Preserve. Thus, it is unlikely that the eastern massasauga occurs within the Erie Marsh Preserve.

Eastern Prairie-Fringed Orchid

Eastern prairie-fringed orchid is primarily found in moist prairie remnants, particularly those associated with lakeplains, but it can also occur in bogs and peaty lakeshores (MNFI 2007). Though rare, this orchid can readily colonize highly disturbed sites like ditches, unmowed old fields, and even the edges of golf courses as long as competition is not overly intense and proper soil fungi are present (Penskar and Higman 2000). This species requires full sunlight for optimum growth and flowering, which restricts it to grassy habitats with little or no woody encroachment, and requires soil fungi/mycorrhizae for seedlings to become established (USFWS 2005).

The recovery plan for this species indicates that six populations are extant in the Lake Erie basin of Michigan and Ohio and lists one specific population in Monroe County (USFWS 1999). The latest element occurrence of eastern prairie-fringed orchid in Monroe County reported by MNFI dates to 2016 and appears to be associated with Pointe Mouillee State Game Area (MNFI 2007), which is located approximately 20 miles north of the Erie Marsh Preserve.

The Erie Marsh Preserve does not contain extant lakeplain wet prairie remnants. Although this is a priority habitat type and water management in the preserve may allow future restoration of this community, current conditions and habitat types currently present in the preserve indicate that the Eastern prairie-fringed orchid is unlikely to occur in the Erie Marsh Preserve.

4.2.4 Invasive Species

Degraded hydrologic conditions in the past promoted the introduction of invasive species into the Erie Marsh Preserve. Common reed (*Phragmites australis* var. *australis*) and narrow-leaf cattail (*Thypha angustifolia*) are the two dominant invasive species at the site (TNC 2012b) and purple loosestrife (*Lythrum salicaria*) has also occurred in portions of the preserve (Albert et al. 1988).

TNC is a partner of the Detroit River-Western Lake Erie CWMA and cooperates on invasive species management at a landscape scale to control *Phragmites* along the western Lake Erie basin. Thus, TNC manages invasive species using a combination of chemical treatments, mechanical treatments, prescribed fire, and water management pursuant to the Erie Marsh Management Plan (TNC 2012b) and MDEQ guidelines (MDEQ 2014).

All herbicide applications are permitted with the MDEQ under Part 33 Aquatic Nuisance Control of the NREPA.

The hydrologic connection to Lake Erie and waters of the North Maumee Bay presented a potential problem in terms of aquatic invasive species. Therefore, the water pump control structure contains grates to reduce the risk of carp entering the preserve. The infrastructure installed to manage water will allow dewatering of any of the 10 management units upon completion of the proposed four-phase project, which is an effective technique to remove carp and other invasive fish species from individual units. Lastly, the shallow water depths within the management units will cause relatively high water temperatures and result in a barrier to zebra mussel invasion (TNC 2012b).

4.3 Cultural Resources

Cultural resources are evidence of past human experience or places, such as prehistoric or historic districts, sites, buildings, structures, landscapes, or objects considered important to a culture, subculture, or community for scientific, traditional, religious, or other purposes. The NEPA process requires consideration of the effects of federal actions on any historic property under Section 106 of the National Historic Preservation Act (NHPA) of 1966 (16 U.S.C. 470 et seq., as amended). The Section 106 process, as well as guidance from the Michigan SHPO and Office of the State Archaeologist (OSA), typically involves archival research, tribal consultation, and field reconnaissance.

The Erie Shooting & Fishing Club was founded in 1870 and has actively managed the area since 1920s. In 1978 the Ottawa Bay Development Corporation transferred ownership of the land to TNC, when it became the Erie Marsh Preserve. There are no historic properties within the Erie Marsh Preserve.

The SHPO conducted a Section 106 review of the Erie Marsh Preserve in 2010 (File ER10-677) and determined that no historic properties were affected within the Area of Potential Effect (APE) of the restoration project. The APE reviewed by SHPO covered Phase I through IV of the restoration project. SHPO's determination provides evidence of compliance with 36 CFR § 800.4 "Identification of historic properties," and the required notification to SHPO under 36 CFR § 800.4(d)(1) "no historic properties affected" (**Appendix D**).

5.0 ENVIRONMENTAL CONSEQUENCES

This section examines potential environmental and social impacts that would be expected to occur from implementation of the Proposed Action. Environmental impacts of the Proposed Action are analyzed in the same order as they appear in Section 2.

The No Action Alternative is not included in the discussions below because this alternative will not change on-site conditions or result in environmental effects. Under the No Action Alternative, habitat will not be restored or enhanced beyond what TNC has already undertaken at the Erie Marsh Preserve or as part of ongoing cooperative management activities.

5.1 Effects on the Physical Environment

Implementation of the Proposed Action will not cause adverse environmental effects on the physical environment, including geology, soils, and/or water.

Minor impacts to soils and water associated with the implementation of the Proposed Action include soil erosion and sedimentation in the immediate work area from construction activities. However, these effects are expected to be short-term and localized. Soil Erosion & Control (SESC) measures will be implemented during construction activities to offset these environmental effects. Standard SESC control measures such as silt fencing, check dams, silt curtain, sediment traps, dust control, and re-vegetation of disturbed soils will be utilized to minimize soil erosion and sedimentation during active construction activities as needed. Implementation of the SESC measures and utilization of BMPs are expected to control soil erosion and sedimentation so that impacts to water quality are minimized to the maximum extent practicable.

Additionally, Monroe County will determine if a SESC permit under Part 91 of NREPA is necessary for the project. If required, a Part 91 permit will be secured for the project.

5.2 Effects on the Biological Environment

This section describes effects of the Proposed Action on priority habitat types, priority wildlife species, and T&E or special status species.

The Region 3 WSFR Section 7 Evaluation Documentation for Phase III and Phase IV of the project prepared by TNC and approved by WSFR on May 12, 2017 determined that the Proposed Action “*May Effect, but it is Not Likely to Adversely Affect*” Listed, Proposed, and Candidate species (**Appendix E**).

5.2.1 Priority Habitat Types & Priority Wildlife Species

The primary habitat type in the Erie Marsh Preserve are coastal wetlands, which are the primary target for future management. The Proposed Action will result in positive environmental effects and benefits to priority habitat. In addition, improved water management capabilities resulting from the Proposed Action will enable TNC to plan restoration activities targeted to the lakeplain wet prairie natural community that once occurred in this coastal area.

Priority wildlife species identified in TNC’s Erie Marsh Preserve Management Plan include: migratory birds, unionid mussels, and spawning fish. Bald eagle and eastern fox snake are also priority wildlife species and are discussed separately under *Section 5.2.2*.

The USFWS unofficial county list for Monroe County lists 27 species of birds protected under the MBTA and/or the BGEPA. Bird species protected under the MBTA and/or Part 365 of NREPA are known to occur in the Erie Marsh Preserve (Table 1); have element occurrences reported by MNFI (Table 2); or have been documented during target performance measures of Phase I (TNC 2014).

Construction of the project does not involve tree clearing activities and shrub removal will be minimal and limited to those shrubs that affect the integrity of the constructed dikes. To limit potential impacts to bird species protected by the MBTA, any shrub identified for removal will be inspected for the presence of breeding bird nests. Additionally, TNC staff and/or other biologists will complete an inspection of all proposed work areas for the presence of any active nests of ground nesting species prior to commencement of construction activities. Given the footprint and nature of the proposed activities, the Proposed Action is unlikely to result in significant adverse effects or impairment to migratory birds (e.g. raptors, neotropical migrants, waterfowl, shorebirds, waders).

The Proposed Action will rehabilitate dikes and restore a habitat type that is globally recognized for its importance to migratory as well as resident waterfowl, shorebirds, and landbirds. Thus, positive environmental effects and benefits to migratory and resident birds will occur as a result of the Proposed Action.

The Proposed Action will build upon and continue restoration activities that began in 2013 and reestablished the hydrological connection between Lake Erie and portions of the Erie Marsh Preserve. Thus, positive environmental effects and benefits to unionid mussels and spawning fish will occur as a result of the Proposed Action.

5.2.2 T&E Species and Special Status Species

Of particular relevance to this EA are special status species (T&E and other species of concern) and migratory birds. This EA followed the *Section 7 Consultation Assistance Step-by-Step Instruction Flow Chart* for listed species or special status species known to occur or with the potential to occur within Erie Marsh Preserve (see *Section 4.2.3*). Based on this review and WSFR's evaluation, the Proposed Action "*May Effect, but it is Not Likely to Adversely Affect*" Listed, Proposed, and Candidate species.

Bald Eagle

Bald eagles were delisted under the ESA in 2007 but remain a special status species because of the protections provided under the MBTA and BGEPA. Bald eagles are a year-round residents in Monroe County and currently nest in the Erie Marsh Preserve (TNC 2012b). The Proposed Action will not adversely affect bald eagle habitat. Potential disturbance by human activity in close proximity to existing nests was considered during scoping of Phase I and Phase II of the project.

The *USFWS Bald Eagle Permit: Non-Purposeful Take Step-by-Step Guidance* (USFWS 2016b) was used in 2013 to determine whether the Proposed Action may cause the non-purposeful take of bald eagles. Through this guidance, it was determined that the Proposed Action will have no effect on the bald eagle and that non-purposeful take permitting was not required (**Appendix E**).

The Proposed Action will be carried out in accordance with USFWS guidelines for the protection of eagles and USACE permit requirements. Specifically, the following guidelines, implemented for Phase I and II of the project, will be implemented during Phase III and Phase IV:

- **Distance buffers:** Maintain a minimum 660 feet between any activity and an active nest.
- **Landscape buffers:** Maintain preferable forested (or natural) areas between the activity and around nest trees.
- **Seasonal avoidance window:** The following activities should be avoided during the breeding season from January 1 through June 1 each year -- use of vehicles and power equipment and disturbance (defined as "agitate or bother a bald eagle or golden eagle to a degree that causes, or is likely to cause, based upon the best scientific information available: 1) injury to the eagle, 2) decrease in its productivity by substantially interfering with normal breeding, feeding, or sheltering behavior; or 3) nest abandonment by substantially interfering with normal breeding, feeding, or sheltering behavior").

Red Knot

The red knot was listed as federally threatened in 2014 (USFWS 2014b) after Phase I of the restoration project was initiated. Reported sightings of this species at the Erie Marsh Preserve / Erie Gun Club date to the 1980s-1990s while sightings in nearby coastal areas in Michigan and Ohio include historic as well as contemporary observations (i.e. 1970s, 1980s-1990s, 2010, 2014) (eBird 2017). Pre- and post-construction avian surveys conducted to support target performance measures of Phase I of the Erie Marsh Restoration Project did not document occurrence of red knot (TNC 2014), suggesting that the species does not regularly occur in the Erie Marsh Preserve.

Shorebird habitat is present at the Erie Marsh Preserve during spring and summer drawdown and red knots could potentially and sporadically utilize this habitat during migration only (i.e., red knots do not breed in the Great Lakes Region). Furthermore, if a red knot is present at the site, the species is likely to avoid disturbance from construction activities.

The *USFWS Section 7 Consultation Assistance Step-by-Step Instruction Flow Chart* was used to determine whether the Proposed Action may affect the red knot or its habitat. Through this guidance, it was determined that the Proposed Action is not likely to adversely affect the red knot. Further, the Proposed Action is not likely to jeopardize the continued existence of red knot nor will it adversely modify its habitat.

Eastern Massasauga

Monroe County is within the range of the eastern massasauga, but does not contain Tier 1 or Tier 2 EMR Habitat. Areas within the known range but outside of Tier 1 and Tier 2 habitat are considered less likely to be occupied by eastern massasaugas. Moreover, the MNFI database does not report element occurrences of eastern massasauga in Monroe County. Thus, it is unlikely that eastern massasaugas occur in Erie Marsh.

State Listed Species

Multiple state listed species are known to occur in the Erie Marsh Preserve including plants, birds, and reptiles (Table 1); have element occurrences reported by MNFI (Table 2); or have been documented during target performance measures of Phase I (TNC 2014).

TNC staff and/or other biologists will complete an inspection of all proposed work areas for the presence of state listed species including any active nests prior to commencement of construction activities. Given the footprint and nature of the proposed activities, the Proposed Action is unlikely to result in significant adverse effects or impairment to state listed species.

Eastern Fox Snake

Because of the known occurrence of the eastern fox snake (state threatened) BMPs will be implemented prior and during construction activities to minimize potential effects to this species.

- Time construction activities during the species' active period from 3rd week of April to the fourth week of October (Lee 2000, MNFI 2007) to allow the species to move out of the work area.
- Execute a walkthrough of the work area at the beginning of each work day to ensure no snakes occur within the work area and allow any individuals to move out of the work area before starting/resuming activities.
- Install silt fence around any stockpiles of rocks, wood, or other construction material to avoid inadvertent use by fox snakes. Remove all silt fences after construction.
- Contractors shall have contact information for a designated herpetologist or biologist with a state T&E permit for handling wildlife species available on-site, in case of a fox snake is encountered and/or has to be relocated outside of the work area.

The Erie Marsh Restoration Project will improve habitat within the preserve. The Proposed Action will not adversely affect federally listed species or their critical habitat. The Proposed Action will have “*no effect*” on the bald eagle, the red knot, the northern riffleshell, the eastern prairie fringed orchid, the Karner blue butterfly, the Indiana bat, the northern long-eared bat, or the eastern massasauga. In addition, the construction BMPs for breeding birds and reptiles will be implemented to ensure that the Proposed Action will not cause significant adverse impacts or impairment to state listed species or state species of concern.

5.3 Indirect Impacts

5.3.1 Air Quality

Implementation of the Proposed Action is not expected to result in adverse impacts to air quality. Minimal and localized adverse impacts to air quality may occur during dike construction/rehabilitation due to generation of minor amounts of air emissions comprised of negligible quantities of exhaust and/or fugitive dust from construction vehicles and equipment.

BMPs to minimize fugitive dust generation will be implemented to avoid or minimize effects on air quality. The MDEQ guidelines for managing fugitive dust during any debris/land clearing & earth moving activities will be implemented as applicable, when needed. These BMPs include (MDEQ 2016):

- Minimize agitation or disturbance activities where possible
- Conduct activity on less windy days
- Reduce wind effects with windbreaks where practicable
- Apply water, spray-on adhesives, or synthetic/organic treatments to potential dust area
- Provide an area of crushed stone or gravel at the entrance/exit of the property to assist in dislodging PM
- Clean up trackage and spillage on roads immediately
- Develop procedures & operating practices for timely review of housekeeping activities to exposed or active surfaces

Thus, impacts to air quality as a result of construction activities will be short-term, minor, and controlled through BMPs outlined above.

5.3.2 Climate Change Impacts

On August 5, 2016 the CEQ issued a Final Guidance for federal departments and agencies on considerations of greenhouse gas emissions and the effects of climate change in NEPA reviews (CEQ 2016). This guidance is not currently available for review. This EA considered effects of the Proposed Action on climate change because the USFWS recognizes that climate change threatens to exacerbate other existing pressures on the sustainability of fish and wildlife resources (USFWS 2010).

The Intergovernmental Panel on Climate Change (IPCC) states that multiple lines of evidence point to continued climate changes and that human activities, particularly those resulting from increasing levels of greenhouse gases, are a significant contributing factor to this change (IPCC 2014). The six key greenhouse gases are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆).

Wetland ecosystems provide an optimum natural environment for the sequestration and long-term storage of CO₂ from the atmosphere, yet they are natural sources of greenhouse gas emissions (especially CH₄), but have been shown to act as net sinks (Mitsch et al. 2013). Thus, the Proposed Action will not cause increases in greenhouse emissions or result in cumulative local or regional accumulations of greenhouse gases.

Use of gasoline or diesel-fueled construction vehicles and/or machinery during implementation of the Proposed Action will result in negligible emissions of pollutants and/or fugitive dust. Emissions originating from these construction activities will be insignificant and are not anticipated to aggravate the cumulative effects of climate change.

Once complete, the project is not expected to draw even 100 additional hunters, birders, or other recreational visitors in a year because of restrictions on public access to many portions of the preserve. The Proposed Action is not designed to increase visitor use, rather to restore habitat. Thus, the Proposed Action is expected to result in no or negligible increases in pollution from car traffic.

5.3.3 Invasive Species

Control and eradication of common reed is one of the primary drivers of the restoration project. The Proposed Action will improve the ability to control invasive plant species within the preserve and implement management to control of *Phragmites*. Thus, positive environmental effects and benefits to plant communities will occur as a result of the Proposed Action.

Construction activities (e.g. soil disturbance, movement of machinery/equipment) associated with implementation of the Proposed Action has the potential to contribute to potential introduction and spread of invasive species. BMPs to prevent the introduction and spread of invasive species will be implemented during the construction phase of the Proposed Action. BMPs that will be utilized by contractors and workers may include but not be limited to:

- Prior to installation of construction mats (e.g. timber mats) (if used), ensure that they are free of invasive species and clean
- Avoid spreading seeds and other propagules from infested areas to non-infested areas during construction activities and avoid unnecessary soil disturbance on non-work areas
- Stabilize disturbed soil in a timely manner to prevent the establishment of invasive species; utilize SESC measures according to Monroe County Part 91 permit.
- Instruct all construction personnel to remove any soil, seeds, plant fractions or other debris from shoes and clothing prior to entering or leaving the work area
- All equipment will be steam cleaned prior to arrival at the job site. The equipment will be clear of soil and plant matter and steam cleaned to ensure no viable seeds are on the equipment.

Thus, potential impacts from the introduction of invasive species during construction activities will be controlled and/or minimize through BMPs outlined above.

5.3.4 Short term Disruptions to Recreation

Implementation of the Proposed Action may result in short-term disruptions to recreation activities (e.g. walking, birdwatching) due to restricted access to portions of the preserve. These indirect effects from implementation of the Proposed Action will be short-term and conducted in such manner that disruptions to recreation activities are minimized to the maximum extent practicable. Notice to visitors will be posted as necessary. Construction activities are anticipated to begin in summer of 2017 and be completed by January 2023.

5.4 Environmental Justice

Executive Order 12989 (59 FR 7629, 1994), Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, is intended to ensure that each federal agency achieves environmental justice part of their mission by identifying and addressing disproportionately high and adverse

human health and environmental effects of its programs, policies, and activities on minority populations and low-income populations. The Environmental Justice and Title VI of the Civil Rights Act of 1964 analysis defines minority persons as Black, Hispanic, Asian American, American Indian, or Alaskan Native. Low income populations are those, regardless of ethnicity, who are in households with annual incomes at or below the US Department of Health and Human Services (HHS) poverty level, which in 2015 was of \$ 24,250 for a family of four (HHS 2015).

The Proposed Action does not disproportionately place adverse environmental, economic, social, or health impacts on minority or low-income populations. The Proposed Action is expected to have a positive effect and positively benefit surrounding communities.

Uses promoted at the Erie Marsh Preserve including environmental education and outdoor recreation opportunities (e.g. birdwatching, waterfowl hunting, hiking) will benefit all populations.

5.5 Archeological & Cultural Values

The Proposed Action will not adversely affect cultural resources. SHPO 106 review of the Erie Marsh Preserve in 2010 (File ER10-677) determined that historic properties would not be affected within the APE of the restoration project (**Appendix D**). This determination applied to Phase I through IV of the restoration project, which began in 2012.

5.6 Cumulative Impact Analysis

As defined by the CEQ regulations for implementing NEPA (40 CFR § 1508.7), a cumulative impact is the impact on the environment that results from the incremental impact of the action when added to other past, present, or reasonable foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The Proposed Action will contribute to past restoration actions undertaken during Phase I and Phase II of the Erie Marsh Restoration Project. The cumulative effects of the Proposed Action will be positive. Dike construction/rehabilitation and restoration of coastal wetlands in the Erie Marsh Preserve will improve habitat for migratory birds (i.e. waterfowl, shorebirds, landbirds) and other priority wildlife species; enhance habitat for the threatened eastern fox snake; improve conditions for colonization by native mussels; and support native fisheries' spawning, nursery, and foraging habitat.

6.0 LIST OF PREPARERS & REVIEWERS

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Chris May	Director of Restoration	The Nature Conservancy 101 E. Grand River Lansing, MI 48906 Phone: (517) 316-2274 Email: cmay@tnc.org

7.0 CONSULTATION & COORDINATION WITH THE PUBLIC AND OTHERS

The planning process for the Erie Marsh Restoration Project began in 2011 when TNC convened three workshops to develop a landscape-scale restoration and management plan for North Maumee Bay (TNC 2012a). One of these workshops focused on developing management prescriptions (e.g. seasonal flooding, rate and duration of flooding, desired water depth for different wetland types) for the diked wetland complex in the Erie Marsh Preserve to benefit a diverse array of species and ecological functions. Partners and stakeholders were able to share a common vision for landscape scale restoration to improve the coastal zone of Western Lake Erie basin. This process provided valuable information that was incorporated into the Erie Marsh Coastal Restoration Project.

Consultation and coordination with the public and others following these workshops included:

- March 2011 – January 2013: Negotiations between TNC, MDEQ, and Erie Shooting & Fishing Club to settle terms of the wetland impact permit, conservation easement, and long-term management plan.
- June 2011: Project engineering designs are finalized upon consultation with MDNR and USGS.
- January 2013: Final permits from MDEQ and USACE are issued. USACE Permit is included in **Appendix B**.
- March 2013: The permanent conservation easement/stewardship agreement was executed by MDEQ.
- January 2016: Funding from NFWF Sustain Our Great Lakes was awarded for Phase III of the restoration project.
- August 2016: Region 3 WSFR Section 7 Evaluation Documentation was completed and approved for planning work only.
- May 2017: Region 3 WSFR Section 7 Evaluation Documentation was updated and approved on May 12, 2017. Updated documentation is included in **Appendix E**.
- Fall 2017: Submit application for MDEQ permitting under Part 301 and 303 of NREPA for 2019-2023.

8.0 PRELIMINARY FINDING OF NO SIGNIFICANT IMPACT (FONSI)

In accordance with the NEPA of 1969, TNC has assessed the environmental impacts of implementing Phase III and IV of the Erie Marsh Coastal Restoration Project, which began in 2012. The Proposed Action involves construction and/or rehabilitation of dikes and installation of water control structures to facilitate habitat restoration and invasive species control.

This EA indicates that implementation of the Proposed Action would not result in significant adverse environmental effects nor is anticipated to result in any significant cumulative or long-term adverse environmental effects. Implementation of the Proposed Action may result in minor short-term impacts related to construction activities, including temporary soil erosion and sedimentation during construction/rehabilitation of dikes and installation of water control structures; limited and localized air emissions from occasional use of mechanized equipment; short term restrictions to existing recreation (e.g. walking, birdwatching) at the Erie Marsh Preserve; and potential introduction/spread of invasive species. However, these minor environmental effects will be short-term and localized and will be mitigated through BMPs as appropriate.

The Proposed Action expected to result in beneficial outcomes, including the completion of a restoration project that will facilitate management of the preserve and enhance coastal natural communities and wildlife habitat. In addition, the Proposed Action will advance TNC's mission, increase user experience, and promote educational opportunities.

9.0 ACRONYMS AND ABBREVIATIONS

BMPs	Best Management Practices
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CWMA	Cooperative Weed Management Area
DRIWR	Detroit River International Wildlife Refuge
EA	Environmental Assessment
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
GLFC	Great Lakes Fisheries Commission
HHS	Department of Health and Human Services
HUC	Hydrologic Unit Code
IBA	Important Bird Area
IPaC	Information, Planning, and Conservation System
MBTA	Migratory Bird Treaty Act
MDEQ	Michigan Department of Environmental Quality
MDNR	Michigan Department of Natural Resources
MNFI	Michigan Natural Features Inventory
MSL	Mean Sea Level
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOAA	National Oceanic and Atmospheric Administration
NREPA	Natural Resources and Environmental Protection Act
OSA	Office of the State Archeologist
RHPO	Regional Historic Preservation Officer
SESC	Soil Erosion and Sedimentation Control
SHPO	State Historic Preservation Office
TES	Threatened & Endangered Species
TNC	The Nature Conservancy
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WHSRN	Western Hemisphere Shorebird Region Network
WSFR	Wildlife & Sport Fish Restoration Program

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Appendix A

Cooperative Management Agreement TNC & USFWS (2006)

COOPERATIVE AGREEMENT
BETWEEN THE NATURE CONSERVANCY AND
THE U.S. FISH AND WILDLIFE SERVICE

This Cooperative Agreement (“Agreement”) is made by and between The Nature Conservancy, a nonprofit corporation of the District of Columbia, doing business through its Michigan Field Office, 101 East Grand River Avenue, Lansing, Michigan 48906 (herein referred to as the “Conservancy”) and the United States Department of the Interior, Fish and Wildlife Service, 1 Federal Drive, Ft. Snelling, Minnesota 55111 (herein referred to as the “Service”).

I. AUTHORITY:

This Cooperative Agreement between the Conservancy and the Service is hereby entered into under the authorities granted in Section 7 of the Fish and Wildlife Act of 1956, (16 U.S.C. 742f (a)(4)) and the Detroit River International Wildlife Refuge Establishment Act of 2001 (Pub. L. 107-91) (115 Stat. 897).

II. PURPOSE AND BACKGROUND:

WHEREAS, the Detroit River International Wildlife Refuge Establishment Act of December 21, 2001, authorizes the Secretary of the Interior or his authorized representative to enter into cooperative agreements with any other person or entity for management of lands located within the boundaries of the Detroit River International Wildlife Refuge for the purposes of protecting remaining high-quality fish and wildlife habitats, restoring and enhancing degraded wildlife habitats associated with the Detroit River, and promoting public awareness of the important resources of the Detroit River International Wildlife Refuge;

WHEREAS, the land and water described below as Erie Marsh Preserve is a high quality fish and wildlife habitat within the boundaries of the Detroit River International Wildlife Refuge;

WHEREAS, Erie Marsh Preserve is a 2,216.627-acre remnant coastal wetland area, according to survey Attachment #3, along the southern Michigan shoreline of the western basin of Lake Erie in Monroe County, Michigan. It is roughly equally divided between impounded and open water areas. Erie Marsh Preserve represents 11% of the remaining marshland in southeastern Michigan and is one of the largest marshes on Lake Erie. The most significant feature of this area is its role as a migratory and resting area for shorebirds, waterfowl, landbirds, and in the fall, raptors. It has been identified as a “unique habitat area” by the North American Waterfowl Management Plan;

WHEREAS, the Erie Marsh Preserve is owned by The Nature Conservancy which manages the preserve in cooperation with the Erie Shooting and Fishing Club under the terms of an existing lease and license;

NOW THEREFORE, the Service and the Conservancy agree to cooperatively manage Erie Marsh Preserve and its submerged bottomlands for the purposes set forth herein and subject to the conditions herein. The Erie Marsh Preserve is legally described in Attachment 1 incorporated herein and is also referred to as the "premises."

IT IS MUTUALLY AGREED AND UNDERSTOOD:

- A. The premises will be operated as part of the Detroit River International Wildlife Refuge and subject to National Wildlife Refuge System rules and regulations regarding public entry (50CFR §26.21) except as limited by prior rights described herein. The premises will be managed for wildlife and wildlife-compatible uses such as hunting, fishing, environmental education, research, wildlife observation and interpretation. The Service may not prohibit or otherwise limit the Conservancy from entering upon, or over, or otherwise using, the said premises to do any and all things in the conduct of the Conservancy's conservation mission.
- B. The rights of the Service under this agreement are subject to the prior rights of the Bay Creek Hunting Club under its existing lease¹ which is renewed on an annual basis. That lease provides certain rights on approximately one half acre of land owned by The Nature Conservancy and is attached hereto as Attachment 2 and incorporated herein.

The rights of the Service under this agreement are subject to the prior rights of the Erie Shooting and Fishing Club under its existing lease and license which expires on March 30, 2028. That Lease and License is attached hereto as Attachment 3 and incorporated herein. Accordingly, the preserve will be closed to the public during the waterfowl season. Erie Shooting and Fishing Club, Inc. is responsible for payment of taxes² and repair of interior and barrier dikes as needed³ during the term of the lease and license. Prior to entry onto the premises for education, scientific research and other purposes, the Service shall give ten days notice to The Nature Conservancy at 101 East Grand River, Lansing, MI 48906, and to the Manager of the Erie Shooting and Fishing Club, 3419 East Dean Road, Erie, MI 48133.

- C. The Service shall collaborate with the Conservancy and the Erie Shooting and Fishing Club to develop a Management Plan for the preserve that will identify the management roles and responsibilities of each party. The Conservancy and the Service shall jointly seek funding for implementation of the Management Plan and the Service may provide expertise, staff, equipment and other resources to assist in implementing the Plan. In accordance with the Management Plan, the Service shall be allowed to perform wildlife habitat management activities, including rehabilitation of shoreline habitat, control of exotic species, production

¹ Agreement of Lease and License, Ottawa Bay Development Company and Erie Shooting and Fishing Club, Inc., effective as of December 1, 1978.

² Paragraph 2. Compensation Payable, page 3

³ Paragraph 3. Obligations to Repair or Improve, page 3 and Paragraph 4, Obligation to Replace Barrier Dikes, pages 4 & 5

of wildlife food crops, and other activities deemed necessary for the protection and management of wildlife and fish populations and associated habitats.

- D. Upon the Conservancy's approval, the Service may erect and maintain boundary posting and identification and directional signs on the premises. The cost of erecting and maintaining said signs will be borne in whole by the Service.
- E. The premises shall be managed by the Service and the Conservancy as part of the National Wildlife Refuge System. The Conservancy shall retain the rights and responsibilities of ownership with respect to public entry onto the premises. However, the Service may be called upon to exercise its enforcement authority regarding public entry under the Code of Federal Regulations (CFR), 50 CFR Sections 26.21 – 26.33 and other law when deemed necessary and appropriate by the Conservancy and the Service. Title will not transfer to the Service under this Agreement.
- F. The use and occupation of said premises by the Service shall be without cost or expense, to the Conservancy.
- G. The Service shall not remove from the premises any merchantable timber, minerals, or other products, or things having commercial value.
- H. Fixtures, equipment, facilities or other property of the Service constructed or maintained on the said premises shall be and remains the property of the Service, and may be removed at any time prior to the termination of this agreement or within 180 days after the termination of this agreement.

III. PROJECT OFFICERS:

The principle contact for the Service concerning this agreement will be:

Dr. John H. Hartig, Refuge Manager
Detroit River International Wildlife Refuge
Large Lakes Research Station
9311 Groh Road
Grosse Ile, MI 48138
Voice: 734.692.7608
Fax: 734.692.7603
E-mail: john_hartig@fws.gov

The principle contact for the Conservancy concerning this agreement will be:

Ms. Helen Taylor, Director
The Nature Conservancy
Michigan Field Office
101 East Grand River Avenue

Lansing, Michigan 48906
Voice: 517.316.0300
Fax: 517.316.9886
E-mail: htaylor@tnc.org

IV. SPECIAL PROVISIONS:

- A. The Service does not assume any liability for any fines, claims, damages, losses, judgments, and expenses arising out of or resulting from the existence of hazardous materials on the property, or any act, omission, or activity by the Conservancy in connection with the activities undertaken on the described real property. The Service shall conduct a Level 1 Contaminant Survey of the property prior to accepting authority granted under this agreement. Each party agrees that it will be responsible for its own acts and the results therein to the extent authorized by law and shall not be responsible for the acts of the other party and the results thereof. The Service's liability shall be governed by the provisions of the Federal Tort Claim Act (28 U.S.C., Section 2671, et seq.). This provision shall survive the expiration or termination of this agreement.
- B. The Conservancy shall comply with all Federal statutes relating to non-discrimination. These include but are not limited to Title VI of the Civil Rights Act of 1964 which prohibits discrimination on the basis of race, color, handicap, or national origin.
- C. No member of or delegate to Congress or resident commissioner shall be admitted to any share or part of this Agreement, or to any benefit to arise there from, separate and apart from any benefit accruing to the general public.

V. MODIFICATIONS:

Amendments or changes to this agreement may be proposed by either party at any time, and will become effective upon written ratification by both. This agreement shall become effective upon ratification by both parties and shall remain in full force and effect until cancelled, revoked or terminated as provided herein.

VI. DISPUTES:

In the event of a dispute, the Regional Chief of Refuges and a designated representative of the Conservancy shall attempt to negotiate an amicable solution. If an issue cannot be resolved definitively, the Regional Chief of Refuges and a designated representative of the Conservancy can either mutually agree to third party mediation or individually elect to withdraw from the performance of this agreement.

VII. PERIOD OF PERFORMANCE:

This agreement shall become effective as of the date of the last signature and continue in effect for a 50-year period. This agreement may be terminated in whole or in part under the following circumstances;

- A. By written mutual agreement of the parties hereto.
- B. At the option of either party for any reason whatsoever upon 90 days written notice to the other.

IN WITNESS WHEREOF, the parties hereto have subscribed their names as of the date indicated.

WITNESSES:

Andrew Kelmie
Christie Hill
Date 8.1.09

THE NATURE CONSERVANCY

By: Helen Taylor
Ms. Helen Taylor, Michigan Director

WITNESSES:

Patricia Delencle
Quinda A. Kucera
Date July 24, 2006

UNITED STATES OF AMERICA

Acting by and through the
Secretary of the Interior

By: Charles M. Wooley
Charles M. Wooley
Acting Regional Director
Ms. Robyn Thorson, Regional Director
Region 3, U.S. Fish and Wildlife Service

Appendix B

Final USACE Permit (File No. LRE-2005-10110-N09)



DEPARTMENT OF THE ARMY
DETROIT DISTRICT, CORPS OF ENGINEERS
477 MICHIGAN AVENUE
DETROIT, MICHIGAN 48226-2550

February 13, 2013

REPLY TO
ATTENTION OF:

Engineering & Technical Services
 Regulatory Office
 File Number LRE-2005-10110-N09

The Nature Conservancy
 c/o Christopher May
 101 East Grand River Avenue
 Lansing, Michigan 48906-4348

Dear Mr. May:

Reference The Nature Conservancy's application for a Department of the Army (DA) permit to dredge, discharge fill, and construct water control structures to restore coastal wetlands in the Erie Marsh Preserve in the northern section of North Maumee Bay, in Lake Erie at 3149 East Dean Road, Erie, Michigan. We have verified that the project is authorized by Nationwide Permit(s) NWP 27 Aquatic Habitat Restoration, Establishment, and Enhancement Activities, as published in the Federal Register.

You may proceed with the work per the following project description, attached drawings, and attached general and special conditions:

Dredge approximately 401,419 cubic yards of material from a combined area of approximately 48,243 feet long (9.14 miles) by up to 95 feet wide in all channels, except for a maximum width of 237 feet in the main distribution channel (A-A), to a maximum depth of 564 feet (= - 5.2 ft LWD = 569.2 ft IGLD-1985) from approximately 56.56 acres of open water/wetland plus 15.85 acres in existing ditches to construct approximately 10, 800 feet (2 miles) of water distribution canals, and to obtain borrow material to repair/rebuild existing dikes and to construct new dikes.

Dike Cross Section	Wetland Dredging			
	Length (ft)	Max. Width (ft)	Acres	Dredge Volume (cu. yds.)
A-A	2732	237	14.86	79,137
C-C	6830	24	3.76	13,356
D-D	8154	22	4.12	13,228
E-E	2477	77	4.38	21,899
F-F	1017	28	0.65	3,059
G-G	995	61	1.39	6,519
H-H	2112	28	1.36	5,257
I-I	3936	88	7.95	38,485
J-J	1732	35	1.39	5,837
K-K	3019	72	4.99	22,542
L-L	1885	40	1.73	8,657
M-M	2238	42	2.16	10,444

N-N	7155	33	5.42	26,235
O-O	1799	58	2.40	11,594
SUB-TOTALS	46,081		56.56	266,249
Dredging in Existing Ditches				
B-B	2162	95	4.72	47,164
C-C	6830 ¹	71	11.13	88,006
SUB-TOTALS			15.85	135,170
TOTALS	48,243		72.41	401,419

¹ length included above.

Discharge approximately 286,972 cubic yards of dredged fill material within approximately 32.29 acres of open water/wetlands plus to construct and/or repair approximately 48,243 (9.14 miles) of dikes. All dredged materials not used for dike construction or dike repair shall be placed on uplands.

Dike Cross Section	Wetland Filling				
	Length (ft)	Max. Width (ft)	Existing Dike (ft)	Acres	Fill Volume (cu. yds.)
A-A	2732	118	0	7.40	102,602
B-B	2162	116	57	2.93	11,338
C-C	6830	90	77	2.04	13,812
D-D	8154	33	21	2.25	9,422
E-E	2477	45	0	2.56	25,733
F-F	1017	32	15	0.4	2,177
G-G	995	39	0	0.89	7,628
H-H	2112	44	31	0.63	1,220
I-I	3936	48	0	4.34	50,381
J-J	1732	55	42	0.52	2,335
K-K	3019	42	0	2.91	26,299
L-L	1885	43	26	0.74	4,035
M-M	2238	55	20	1.8	11,024
N-N	7155	31	23	1.31	6,360
O-O	1799	38	0	1.57	12,606
TOTALS	48,243			32.29	286,972

Install a new bi-directional pump system with fish passage structures and 14 new water control structures with the following components and measurements, and discharge approximately 62 cubic yards of clean riprap on filter fabric on about 1,674 sq.ft. of lakebed:

Management Unit	Symbol /Location	Water Control Structure	Dike Rehab	New Dike Construction	Pipe Diameter (inches)	Inlet & Outlet Invert Elevation (ft IGLD-1985)	Riprap Area on Lake Side of Pipes (sq. ft.)	Riprap Fill on Filter Fabric (cu.yds)
Canvasback Cabana	CC	14	Y	Y	30	566.0	90	3.3
Potter's Cove	PC	1	Y		30	566.0	90	3.3
Scaup Slough	SS	2	Y	Y	30	566.0	90	3.3
Mink Creek	MC	3	Y	Y	30	566.0	90	3.3
Gadwell Getaway	GG	4	Y	Y	30	566.0	90	3.3
Buckeye Basin	BB		Y	Y				
Secor's Unit	SU	5	Y	Y	30	566.0	90	3.3
Widgeon Hole	WH	7	Y		30	566.0	90	3.3
Wolverine Wallow	WW	6	Y	Y	30	566.0	90	3.3
Redhead Retreat	RR	12	Y	Y	30	566.0	90	3.3
Sulfur Springs	SuS	10 & 10A	Y		30	564.0	90	3.3
Distribution channel	@SU	11	Y		60	564.0	193.5	7.2
"	@PC/CC	8	Y	Y	60	564.0	193.5	7.2
"	@RR/WH	9	Y	Y	60	564.0	193.5	7.2
"	@RR/WW	13		Y	60	564.0	193.5	7.2
TOTALS							1,674	62

The purpose of the proposed work is to restore approximately 946 acres of coastal wetlands in ten distinct management units ranging in size from 24 acres to 250 acres, and provide water level management capability to the northern section of the Erie Marsh Preserve in the following manner in accordance with the Management Plan and MDNR input:

Management Unit	Acreege	Current Wetland Type		Proposed Initial Wetland Type	
Canvasback Cabana	23.8	Emergent	50%*	Emergent	15%
		Open Water	05%	Open Water	05%
		Forested	10%	Forested	10%
		Scrub	35%	Scrub	70%
Potter's Cove	44	Emergent	00%	Emergent	00%
		Open Water	01%	Open Water	01%
		Forested	01%	Forested	01%
		Scrub	01%	Scrub	01%
		Crop	97%	Crop	97%
Scaup Slough	60	Emergent	40%*	Emergent	00%
		Open Water	00%	Open Water	01%
		Forested	00%	Forested	00%
		Scrub	60%	Scrub	99% ⁺

Mink Creek	92	Emergent Open Water Forested Scrub Crop	20% 01% 01% 05% 73%	Emergent Open Water Forested Scrub Crop	00% 01% 01% 25% 73%
Gadwell Getaway	131	Emergent Open Water Forested Scrub	68%* 25% 03% 04%	Emergent Open Water Forested Scrub	89% 06% 03% 02%
Buckeye Basin	250	Emergent Open Water Forested Scrub	20%* 70% 05% 05%	Emergent Open Water Forested Scrub	15% 80% 05% 00%
Secor's Unit	65	Emergent Open Water Forested Scrub	08%* 04% 15% 73%	Emergent Open Water Forested Scrub	04% 08% 15% 73%
Widgeon Hole	62	Emergent Open Water Forested Scrub	73%* 25% 01% 01%	Emergent Open Water Forested Scrub	23% 75% 01% 01%
Wolverine Wallow	139	Emergent Open Water Forested Scrub	76%* 20% 01% 03%	Emergent Open Water Forested Scrub	89% 10% 01% 00%
Redhead Retreat	59	Emergent Open Water Forested Scrub	75%* 20% 02% 03%	Emergent Open Water Forested Scrub	13% 10% 02% 75% ⁺

* Majority of emergent wetland is invasive species (*Phragmites*, cattail). ⁺ Includes prairie.

Special Conditions:

1. If you discover any unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately stop work in that area and notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.
2. The Permittee acknowledges and agrees to manage the work efforts and the property usage in accordance with the U.S. Fish & Wildlife Guidelines (<http://www.fws.gov/midwest/eagle/guidelines/guidelines.html>) for the protection of eagles as provided for in the Bald and Golden Eagle Protection Act of 1940 (Eagle Act). The Permittee acknowledges that the proposed project is in close proximity to eight (currently)

active and inactive existing eagle nests as well as important winter roosting and foraging areas. The numbers, locations and usage of nests is subject to change from year to year.

The Permittee will ensure observance of the following:

- a) Distance buffers: a minimum of 660 feet must be maintained between any activity and an active nest.
 - b) Landscape buffers: maintain preferably forested (or natural) areas between the activity and around nest trees.
 - c) Seasonal avoidance windows: Avoid certain activities during the breeding season from January 1 through June 1 of each year. Certain activities include usage of vehicles and power equipment, and disturbance, which is defined by the Eagle Act "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based upon the best scientific information available: 1) injury to an eagle, 2) decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."
3. The Permittee acknowledges and agrees to ensure that no side casting of dredged materials occurs at any time.
 4. The Permittee acknowledges and agrees to ensure that any excess dredged materials will be disposed on uplands with no placement in the waterway or wetland, or return to the waterway.

The U.S. Army Corps of Engineers, Detroit District, supports the implementation of the Management Plan and the conservation easement document that are items of the MDEQ permit agreement.

Any construction activity other than that shown on the plans may not qualify for the authorization. If you contemplate any changes or additional activities from those depicted on the plans, please submit them to this office for authorization review prior to any construction. On completion of the work, you must fill in and return the enclosed COMPLETION REPORT.

The work subject to this permit verification will occur in a navigable water of the United States. The Detroit District, U.S. Army Corps of Engineers has previously made a determination of jurisdiction (JD) for the navigable waters within the geographic area under the Detroit District's regulatory authority and posted a copy of the approved JD for those waters online at: <http://www.lre.usace.army.mil/functions/rf/pdfs/GENSEC10.pdf>. If you are not in agreement with this approved JD, you can make an administrative appeal under 33 CFR 331. We have enclosed a form entitled Notification of Administrative Appeals Options and Process and Request for Appeal, describing all of your appeals options regarding this approved JD. If you accept the approved JD, you may start work; you do not need to sign and submit the appeals form. Starting work is considered your specific agreement to all terms and conditions of the permit. If you elect to return the appeals document, your response is required within 60 days from the date of this letter. Please contact us if you have questions on our appeals process and/or wish to have us provide you with a copy of our approved JD.

This verification is valid until the NWP is modified, reissued, or revoked. All of the existing NWPs are scheduled to be modified, reissued, or revoked prior to March 18, 2017. It is incumbent upon you to remain informed of changes to the NWPs. We will issue a public notice when the NWPs are reissued. Furthermore, if you commence or are under contract to commence this activity before the date that the relevant nationwide permit is modified or revoked, you will have twelve (12) months from the date of the modification or revocation of the NWP to complete the activity under the present terms and conditions of this nationwide permit.

As per 33 CFR 325, Appendix A, representatives from this office are allowed to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of the Nationwide Permit.

Should you have any questions, please contact me at the above address, by E-Mail at Henry.Rosenfield@usace.army.mil, or by telephone at 313-226-6706. In all communications, please refer to File Number LRE-2005-10110-N09.

We are interested in your thoughts and opinions concerning your experience with the Detroit District, Corps of Engineers Regulatory Program. If you are interested in letting us know how we are doing, you can complete an electronic Customer Service Survey from our web site at: <http://per2.nwp.usace.army.mil/survey.html>. Alternatively, you may contact us and request a paper copy of the survey that you may complete and return to us by mail or fax. Thank you for taking the time to complete the survey, we appreciate your feedback.

Sincerely,



Henry Rosenfield
Regulatory Project Manager
Permit Evaluation Eastern Branch

Enclosures

Copy Furnished:

MDEQ, Jacksonville District Office, 09-58-0010-P
Enforcement
NOAA

A. Nationwide Permit General Conditions:

To qualify for NWP authorization, the permittee must comply with the following general conditions, as appropriate. These conditions are selected from those published in the Federal Register that are particularly relevant to the construction and/or operation of this particular authorized activity. The complete text is available at our website, under "Nationwide Permits": <http://www.lre.usace.army.mil/who/regulatoryoffice/districtinformation/> or you may contact the Detroit District. We have done our best to verify that your project complies with the others, where applicable.

1. Navigation. (b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

13. Removal of Temporary Fills. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety.

19. Migratory Birds and Bald and Golden Eagle Permits. The permittee is responsible for obtaining any "take" permits required under the U.S. Fish and Wildlife Service's regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The permittee should contact the appropriate local office of the U.S. Fish and Wildlife Service to determine if such "take" permits are required for a particular activity.

20. Historic Properties. (e) Prospective permittees should be aware that section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, explaining the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

"When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the

property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.”

(Transferee)

(Date)

30. **Compliance Certification.** Each permittee who receives an NWP verification from the Corps must submit a signed certification regarding the completed work and any required mitigation. The certification form, forwarded by the Corps with this NWP verification letter, includes:

(a) A statement that the authorized work was done in accordance with the NWP authorization, including any general or specific conditions;

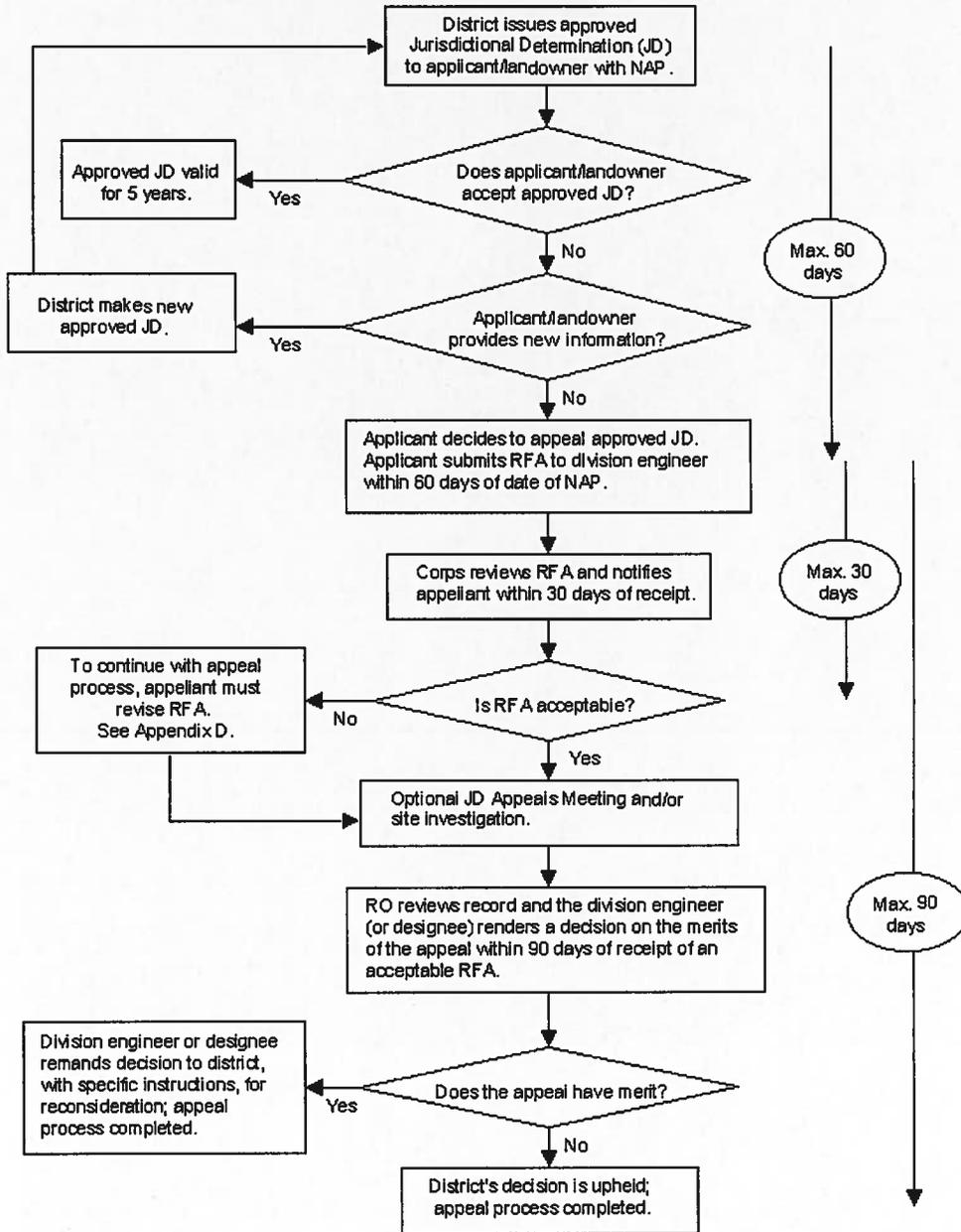
(b) A statement that any required mitigation was completed in accordance with the permit conditions; and

(c) A place for the signature of the permittee certifying the completion of the work and mitigation.

B. Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.
2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.
3. NWPs do not grant any property rights or exclusive privileges.
4. NWPs do not authorize any injury to the property or rights of others.
5. NWPs do not authorize interference with any existing or proposed Federal project

Administrative Appeal Process for Approved Jurisdictional Determinations



Appendix C

**NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND
REQUEST FOR APPEAL**

Applicant: The Nature Conservancy (c/o Christopher May)	File Number: LRE-2005-10110-N09	Date: February 12, 2013
Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
XX	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/cecw/pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **OBJECT:** If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit.

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **APPEAL:** If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- **ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- **APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

Henry Rosenfield
U.S. Army Corps of Engineers
Regulatory Office
477 Michigan Avenue
Detroit, Michigan 48226-2550

313-226-6706

If you only have questions regarding the appeal process you may also contact:

Appeal Review Officer
U.S. Army Corps of Engineers
Great Lakes and Ohio River Division
550 Main Street, Room 10-524
Cincinnati, Ohio 45202-3222

Tel. (513) 684-6212 Fax. (513) 684-2460

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or agent.

Date:

Telephone number:

NATIONWIDE PERMIT COMPLETION REPORT

February 13, 2013

Chief, Compliance and Enforcement Branch
Regulatory Office
U.S. Army Corps of Engineers
477 Michigan Avenue
Room 603
Detroit, MI 48226-2550

Dear Sir:

You are hereby notified that work under Department of the Army Permit No. LRE-2005-10110-N09 to perform mechanical dredging, discharge of fill and construction of water control management structures to restore approximately coastal wetlands, and provide water level management capability to the Erie Marsh Preserve in the northern section North Maumee Bay in Lake Erie, at 3149 East Dean Road, Erie, Monroe County Michigan, issued to The Nature Conservancy (c/o Christopher May) was completed in accordance with the permit on:

(Date work completed)

(Permittee's Signature)

IMPORTANT

1. This **COMPLETION REPORT MUST BE MAILED** to the above addressee within **10 days after completion of work** covered by the FEDERAL PERMIT to insure an accurate Government record of data affecting navigation.
2. Where dredging soundings are made of projects which include dredging, a copy of the soundings should accompany this report. If the soundings are measured from the water surface and have not been corrected to International Great Lakes Datum plane, the hour and date soundings was made should be noted on sounding reports.

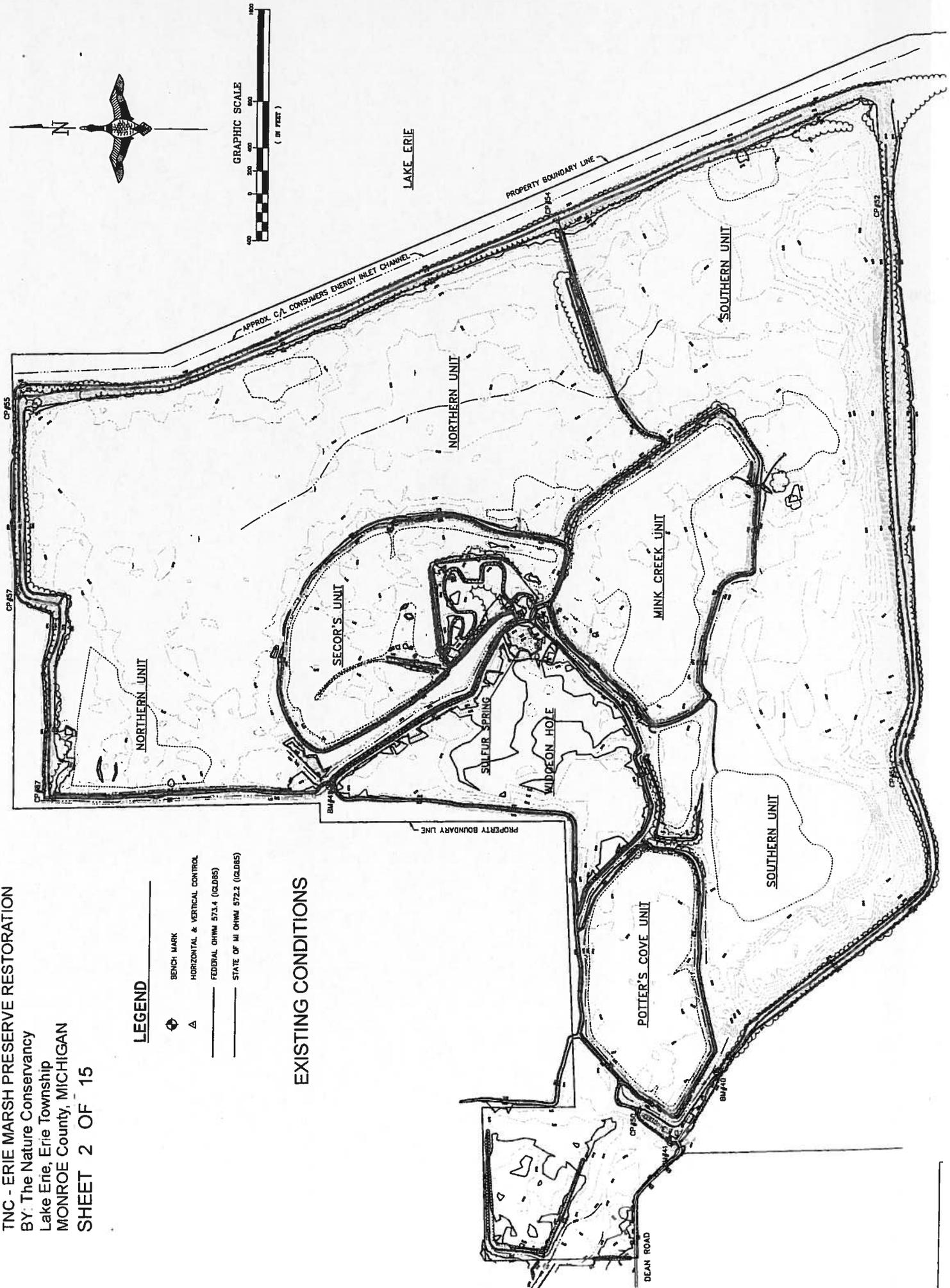
NOTE: Although permits authorizing structures carry an expiration date, REPAIRS that conform to the permit plans are also within the scope of the authorization. Therefore, it is recommended that expired permits NOT be destroyed, but retained as proof that the work to be repaired has received the Corps of Engineers' approval.

LRE-2005-10110-N09
 TNC - ERIE MARSH PRESERVE RESTORATION
 BY: The Nature Conservancy
 Lake Erie, Erie Township
 MONROE County, MICHIGAN
 SHEET 2 OF 15

LEGEND

- ◆ BENCH MARK
- ▲ HORIZONTAL & VERTICAL CONTROL
- FEDERAL OHWM 573.4 (IGLDBS)
- STATE OF MI OHWM 572.2 (GLDBS)

EXISTING CONDITIONS



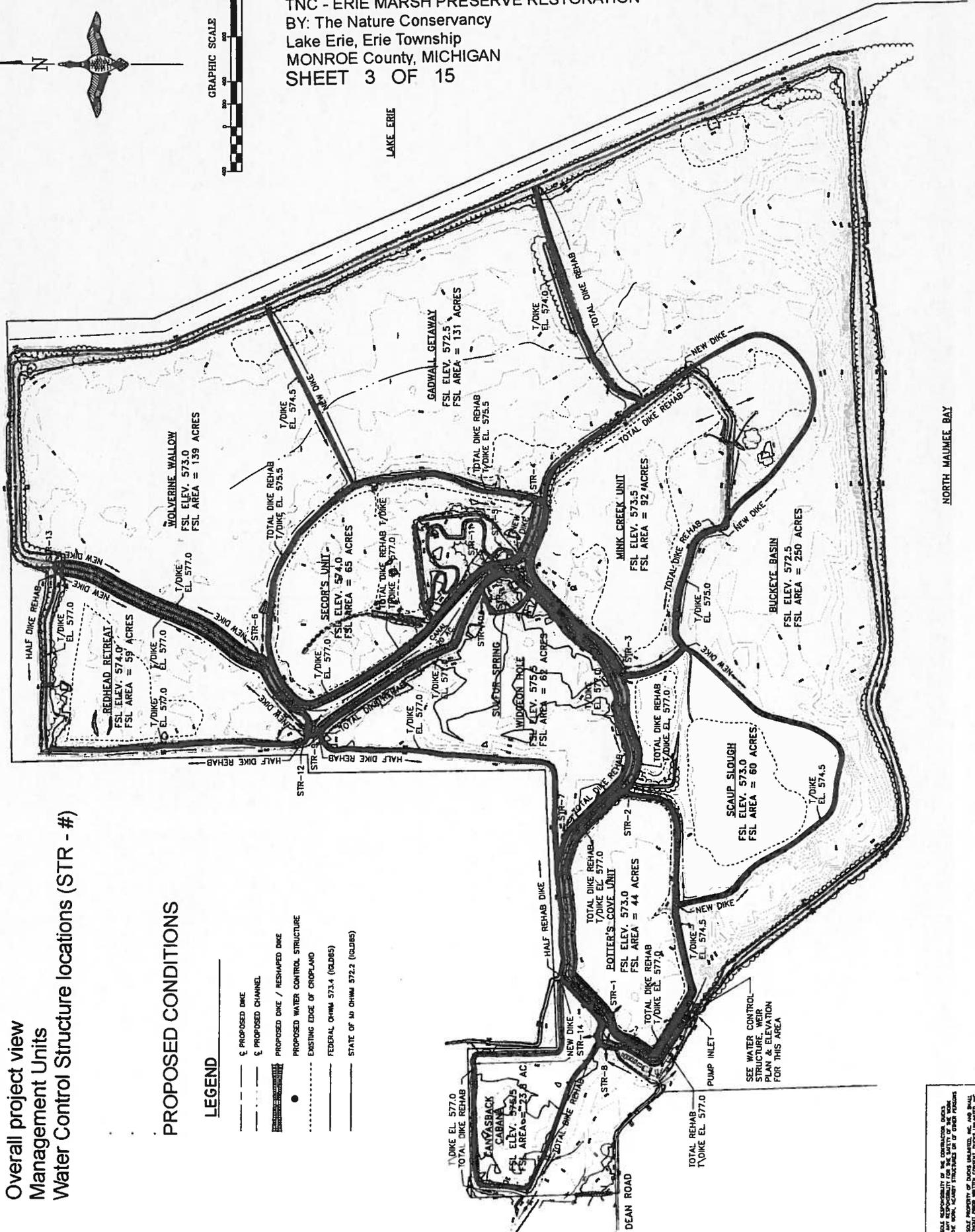
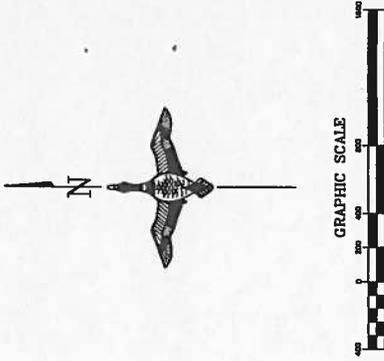
Overall project view
 Management Units
 Water Control Structure locations (STR - #)

PROPOSED CONDITIONS

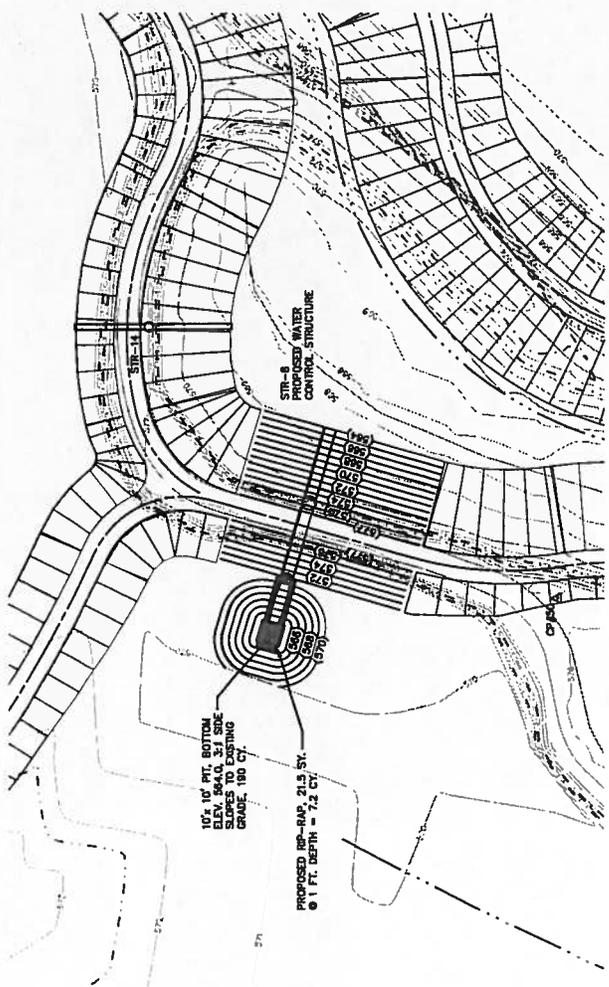
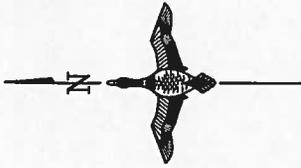
LEGEND

- PROPOSED DIKE
- PROPOSED CHANNEL
- PROPOSED DIKE / RESHAPED DIKE
- PROPOSED WATER CONTROL STRUCTURE
- EXISTING EDGE OF GROUNDO
- FEDERAL OHWM 573.4 (OLDIES)
- STATE OF MI OHWM 572.3 (OLDIES)

LRE-2005-10110-N09
 TNC - ERIE MARSH PRESERVE RESTORATION
 BY: The Nature Conservancy
 Lake Erie, Erie Township
 MONROE COUNTY, MICHIGAN
 SHEET 3 OF 15



THE SOLE RESPONSIBILITY OF THE CONTRACTOR UNDER THIS AGREEMENT IS TO CONSTRUCT THE PROJECT IN ACCORDANCE WITH THE DESIGN AND SPECIFICATIONS PROVIDED BY THE OWNER. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES.

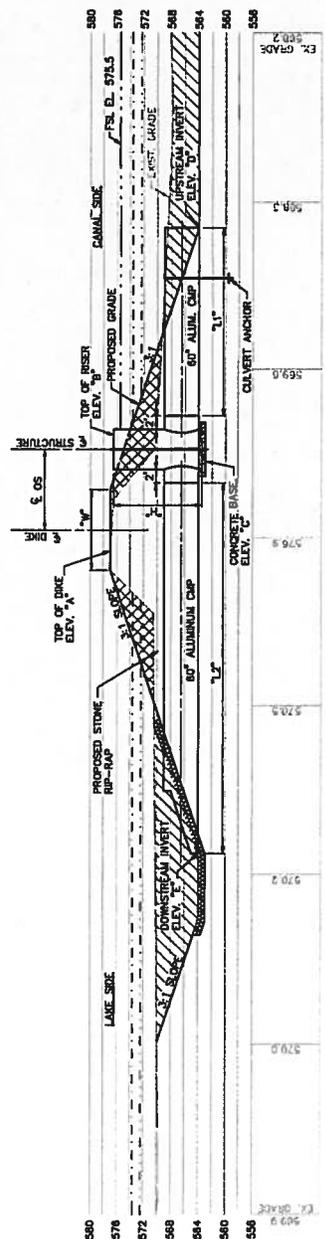


10' x 10' RPT. BOTTOM
 ELEV. 564.0 3'1 SIDE
 SLOPES TO EXISTING
 GRADE 1:10 CT.

PROPOSED BR-RAP 21.5 SY.
 @ 1 FT. DEPTH = 7.2 CT.

LEGEND

- EXISTING TREE LINE
- EXISTING CONTOUR
- BENCH MARK
- HORIZONTAL & VERTICAL CONTROL
- PROPOSED CONTOUR
- PROPOSED DIKE
- PROPOSED CHANNEL
- FEDERAL OHM 571.4 (OLDIES)
- STATE OF MI OHM 572.2 (OLDIES)
- PROPOSED WATER CONTROL STRUCTURE
- PROPOSED DIKE / RESHAPED DIKE
- PROPOSED EXCAVATION/DRENCH
- PROPOSED FILL



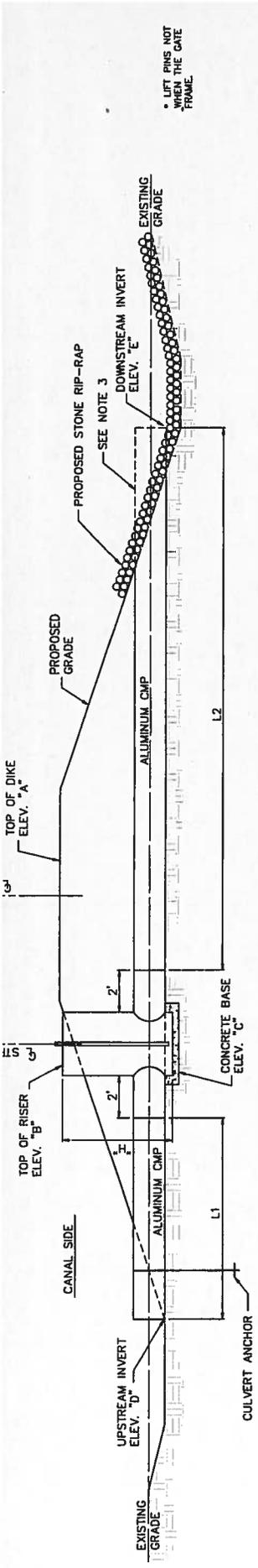
PROFILE OF ALUMINUM CMP WATER CONTROL STRUCTURE (STR-8)



STRUCTURE	PIPE SIZE	RISE RISER GA.	TOP OF DIKE ELEV. "A"	TOP OF RISER ELEV. "B"	FULL SERVICE LEVEL	CONCRETE BASE ELEV. "C"	INLET LE ELEV. "D"	OUTLET LE ELEV. "E"	TOP WIDTH "W"	INLET LENGTH "L1"	OUTLET LENGTH "L2"	Ø - Ø OFFSET	RISE RISER HEIGHT "H"	NO. OF STOPLOGS	GATE DIAMETER	SIDE WITH RIP RAP	LAKE SIDE
STR-8 GPC	60"	8	577.0	576.5	575.5	563.0	564.0	564.0	12'	28'	55'	12'	13'	14	48"		

- NOTES:
- "H" INCLUDES 0.5' OF RISER EMBEDDED IN CONCRETE
 - ALL METAL PIPE SHALL BE CONNECTED WITH FLANGE COUPLERS
 - DOWNSTREAM PIPE OUTLET SHALL CONFORM TO SLOPE FOR PIPE DIAMETERS 30" AND LARGER
 - INLET AND/OR OUTLET PIPES GREATER THAN 20 LF. SHALL BE FABRICATED USING MULTIPLE SECTIONS NOT TO EXCEED 20 LF. CONNECTED W/ FLANGE COUPLERS. A FULL 20' SECTION MUST BE UTILIZED AS THE END SECTION OF PIPE.

NOTICE: THE NATURE CONSERVANCY HAS THE SOLE RESPONSIBILITY FOR THE ACCURACY OF THE DATA AND INFORMATION PROVIDED HEREIN. THE NATURE CONSERVANCY SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OF ANY INFORMATION PROVIDED BY OTHER PERSONS OR AGENCIES. THE NATURE CONSERVANCY SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OF ANY INFORMATION PROVIDED BY OTHER PERSONS OR AGENCIES. THE NATURE CONSERVANCY SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OF ANY INFORMATION PROVIDED BY OTHER PERSONS OR AGENCIES.



PROFILE OF ALUMINUM CMP WATER CONTROL STRUCTURE
NOT TO SCALE

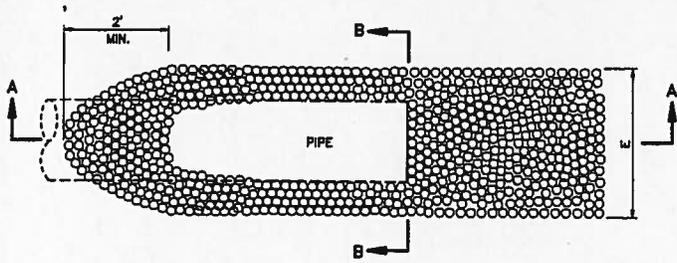
STRUCTURE	PIPE		RISE	TOP OF DIKE EL. "A"	TOP OF RISER EL. "B"	FULL SERVICE LEVEL	CONCRETE BASE EL. "C"	INLET I.E. EL. "D"	OUTLET I.E. EL. "E"	TOP WIDTH "W"	INLET LENGTH "U"	OUTLET LENGTH "L"	RISER HEIGHT "H"	NO. OF STOPLOGS	GATE DIAMETER	SIDE WITH RIP RAP
	SIZE	GA.														
STR-1 PC	30"	12	48"	10	577.0	576.5	573.0	566.0	566.0	12'	25.5'	44.5'	11'	13	30"	NA
STR-2 SS	30"	12	48"	10	577.0	576.5	573.0	566.0	566.0	12'	25.5'	44.5'	11'	13	30"	NA
STR-3 MC	30"	12	48"	10	577.0	576.5	573.5	566.0	566.0	12'	25.5'	44.5'	11'	13	30"	NA
STR-4 GG	30"	12	48"	10	577.0	576.5	572.5	566.0	566.0	12'	25.5'	44.5'	11'	13	30"	NA
STR-5 SU	30"	12	48"	10	577.0	576.5	574.0	566.0	566.0	12'	25.5'	44.5'	11'	13	30"	NA
STR-6 WW	30"	12	48"	10	577.0	576.5	573.0	566.0	566.0	12'	25.5'	44.5'	11'	13	30"	NA
STR-7 WH	30"	12	48"	10	577.0	576.5	575.5	566.0	566.0	12'	25.5'	44.5'	11'	13	30"	NA
STR-10 SuS	30"	12	48"	10	577.0	576.5	575.5	564.0	564.0	12'	31.5'	50.5'	13'	17	30"	NA
STR-10A SuS	30"	12	48"	10	577.0	576.5	575.5	564.0	564.0	12'	31.5'	50.5'	13'	17	30"	NA
STR-11 DIST.	60"	8	72"	8	577.0	576.5	575.5	564.0	564.0	12'	29.5'	50.5'	13'	14	48"	NA
STR-12 RR	30"	12	48"	10	577.0	576.5	574.0	566.0	566.0	12'	25.5'	44.5'	11'	13	30"	NA
STR-14 CC	30"	12	48"	10	577.0	576.5	575.5	566.0	566.0	12'	25.5'	44.5'	11'	13	30"	NA

- NOTES:
- "H" INCLUDES 0.5' OF RISER EMBEDDED IN CONCRETE
 - ALL METAL PIPE SHALL BE CONNECTED WITH FLANGE COUPLERS
 - DOWNSTREAM PIPE OUTLET SHALL CONFORM TO SLOPE FOR PIPE DIAMETERS 30" AND LARGER
 - INLET AND/OR OUTLET PIPES GREATER THAN 20 LF. SHALL BE FABRICATED USING MULTIPLE SECTIONS NOT TO EXCEED 20 LF., CONNECTED W/ FLANGE COUPLERS. A FULL 20' SECTION MUST BE UTILIZED AS THE END SECTION OF PIPE.

LRE-2005-10110-N09
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BY: The Nature Conservancy
Lake Erie, Erie Township
MONROE County, MICHIGAN
SHEET 8 OF 15

STRUCTURE	RISE	GATE #	GATE MOUNT		FRAME "H"	NO. OF STOP LOGS
			"A"	"B"		
STR-1	48"	30"	3.5'	46.5"	12'	13
STR-2	48"	30"	3.5'	46.5"	12'	13
STR-3	48"	30"	3.5'	46.5"	12'	13
STR-4	48"	30"	3.5'	46.5"	12'	13
STR-5	48"	30"	3.5'	46.5"	12'	13
STR-6	48"	30"	3.5'	46.5"	12'	13
STR-7	48"	30"	3.5'	46.5"	12'	13
STR-10	48"	30"	3.5'	46.5"	14'	17
STR-10A	48"	30"	3.5'	46.5"	14'	17
STR-11	72"	48"	5'	70.5"	13'	14
STR-12	48"	30"	3.5'	46.5"	12'	13
STR-14	48"	30"	3.5'	46.5"	12'	13

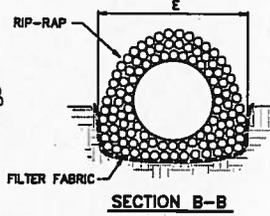
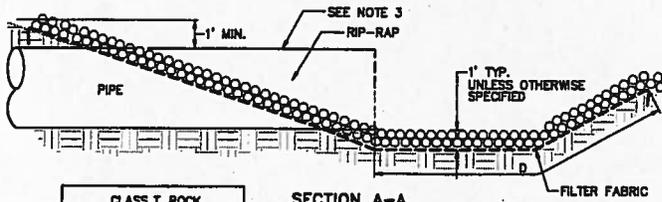
NOTICE: CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTRACTOR'S LOGS



1/4" S.S. CABLE

CABLE CLAMPS
2 REQ. MIN.

PLAN VIEW



3/4"

CLASS I ROCK			
PIPE DIA.	D	E	Sq. Yds.
12"	5'	4'	4.2
15"	5'	4.25'	4.6
18"	5'	4.5'	5.1
21"	5.5'	5.75'	7.3
24"	6'	6'	8.1
27"	6.5'	6.25'	9.1
30"	7'	6.5'	10
36"	8'	7'	12
42"	9'	7.5'	14.1
48"	10'	8'	16.3
54"	12'	8.5'	19.5
60"	12.5'	9'	21.5

SECTION A-A

SECTION B-B

NOTES:

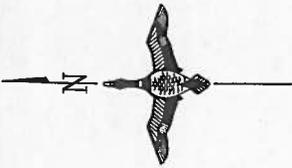
1. IF THE RIPRAP CLASS DESIGNATION IS NOT SPECIFIED ON THE CONSTRUCTION PLANS, CLASS 1 ROCK RIPRAP SHALL BE UTILIZED. THE ROCK SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
2. UNLESS OTHERWISE SPECIFIED, FILTER FABRIC SHALL BE UTILIZED IN THE INSTALLATION OF RIPRAP.
3. DOWNSTREAM CMP PIPE OUTLET SHALL CONFORM TO SLOPE FOR PIPE DIAMETERS 30" AND LARGER.

OUTLET AND RIP-RAP DETAIL

NOT TO SCALE

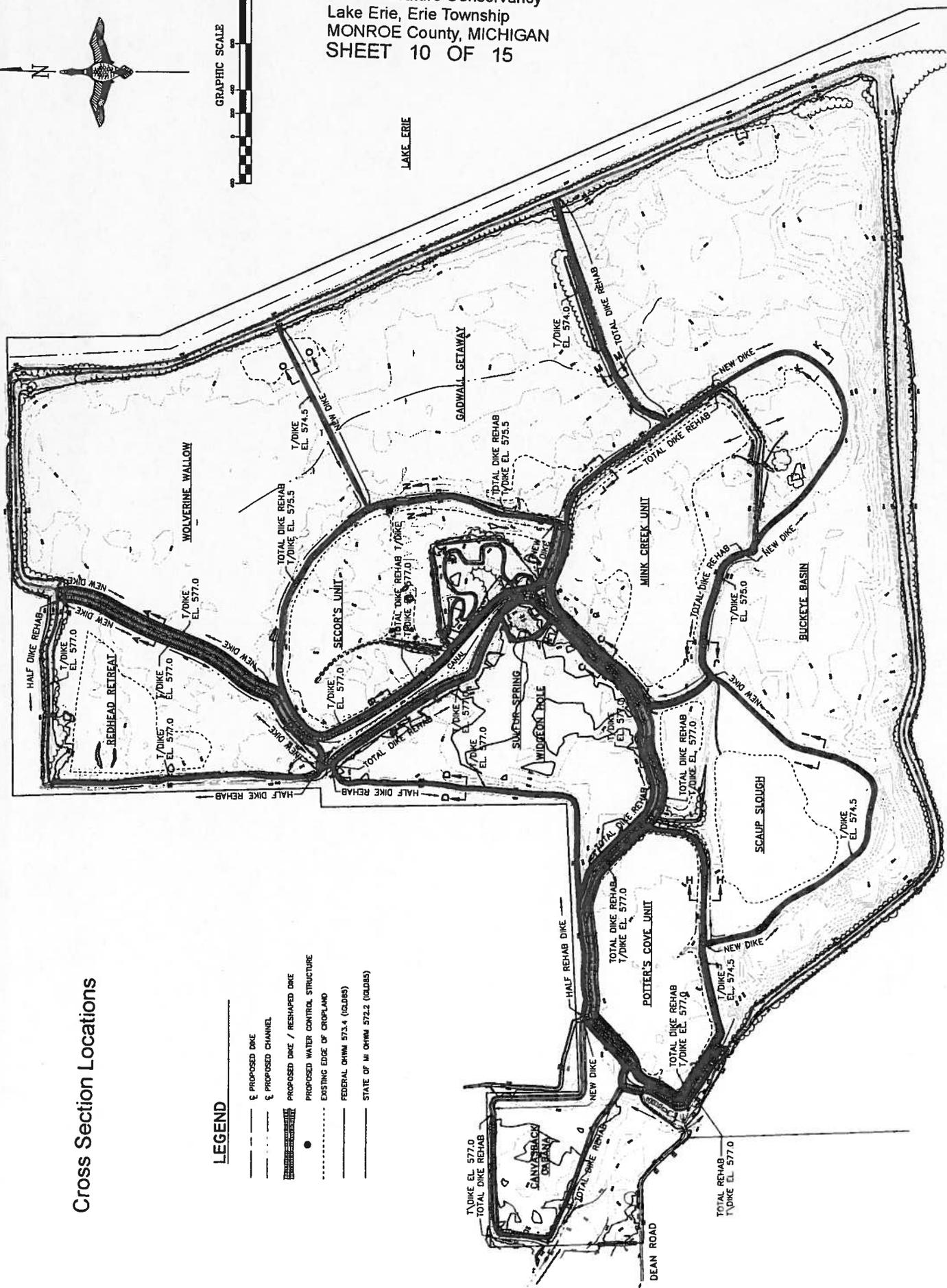
LRE-2005-10110-N09
 TNC - ERIE MARSH PRESERVE RESTORATION
 BY: The Nature Conservancy
 Lake Erie, Erie Township
 MONROE County, MICHIGAN
 SHEET 9 OF 15

LRE-2005-10110-N09
 TNC - ERIE MARSH PRESERVE RESTORATION
 BY: The Nature Conservancy
 Lake Erie, Erie Township
 MONROE County, MICHIGAN
 SHEET 10 OF 15



LAKE ERIE

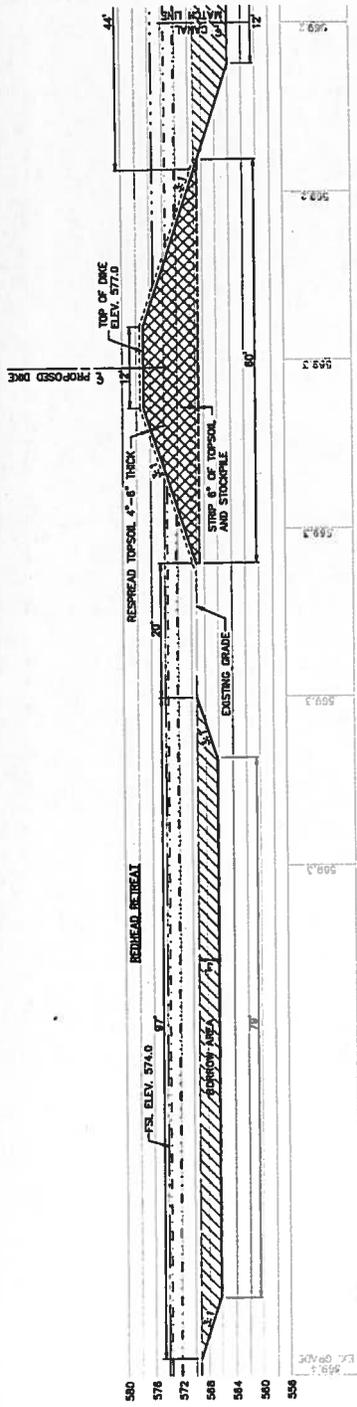
NORTH MAUMEE BAY



Cross Section Locations

- LEGEND**
- § PROPOSED DIKE
 - - - § PROPOSED CHANNEL
 - ▨ PROPOSED DIKE / RESHAPED DIKE
 - ▨ PROPOSED WATER CONTROL STRUCTURE
 - EXISTING EDGE OF CROPLAND
 - FEDERAL OHM 573.4 (COLDB)
 - STATE OF MI OHM 572.2 (COLDBS)

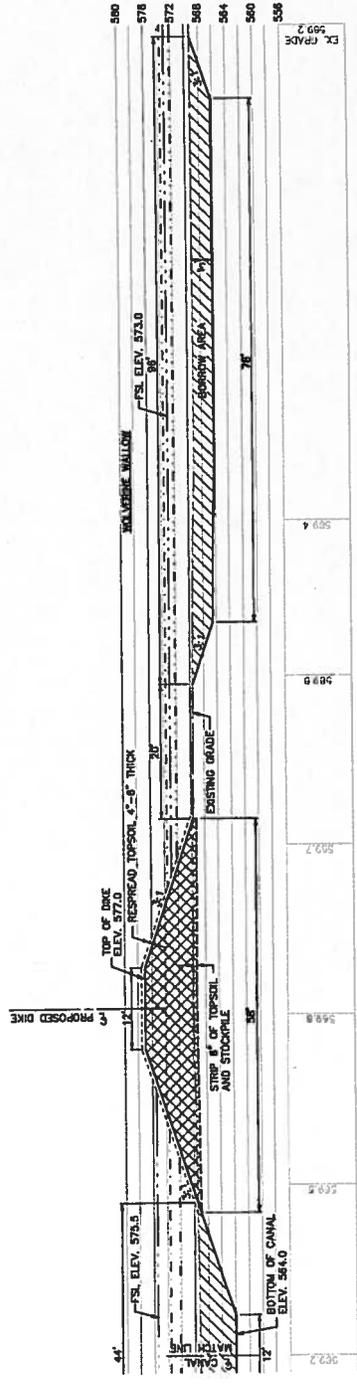
THE SOLE RESPONSIBILITY OF THE CONTRACTOR SHALL BE FOR THE ACCURACY OF THE DATA AND THE DESIGN OF THE WORK. THE NATURE CONSERVANCY, INC. AND SHALL BE THE USER OF THE INFORMATION IN ANY OTHER MANNER. THE NATURE CONSERVANCY, INC. IS NOT RESPONSIBLE FOR ANY DAMAGE TO THE PROPERTY OF ANY OTHER PARTY.



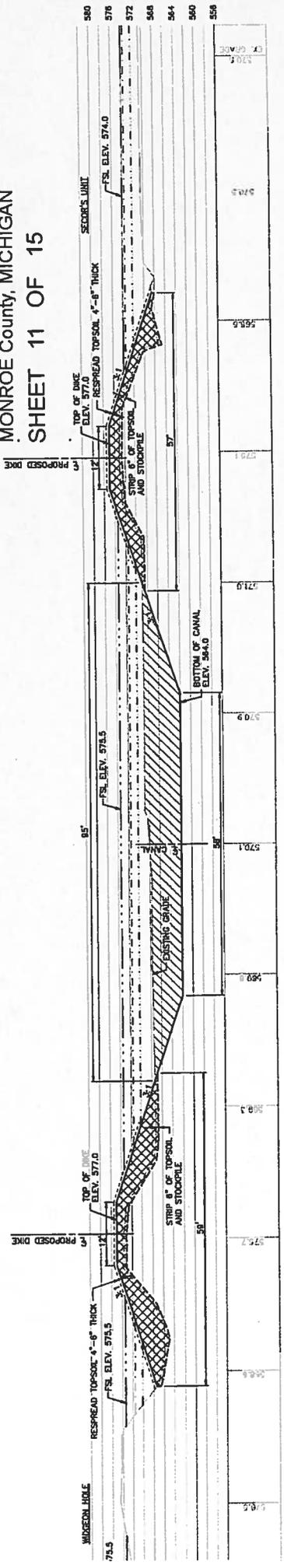
LEGEND

- · — · — · PROPOSED FULL SERVICE LEVEL (FSL)
- · — · — · FEDERAL OHMM 573.4 (OLDIES)
- · — · — · STATE OF MI OHMM 572.2 (OLDIES)
- ▨ PROPOSED EXCAVATION/RETREE
- ▩ PROPOSED FILL

DIKE/CANAL SECTION A-A



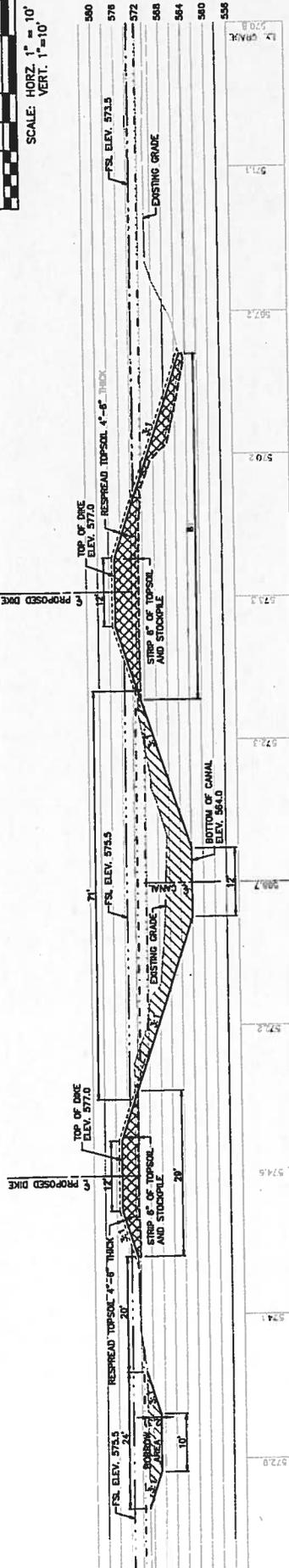
LRE-2005-10110-N09
 TNC - ERIE MARSH PRESERVE RESTORATION
 BY: The Nature Conservancy
 Lake Erie, Erie Township
 MONROE County, MICHIGAN
 SHEET 11 OF 15



DIKE/CANAL SECTION B-B

NOTE:
 BORROW AREA'S NOT TO EXCEED 3' IN
 DEPTH BELOW EXIST. GRADE AND MAINTAIN
 A MINIMUM BOTTOM WIDTH OF 10'.

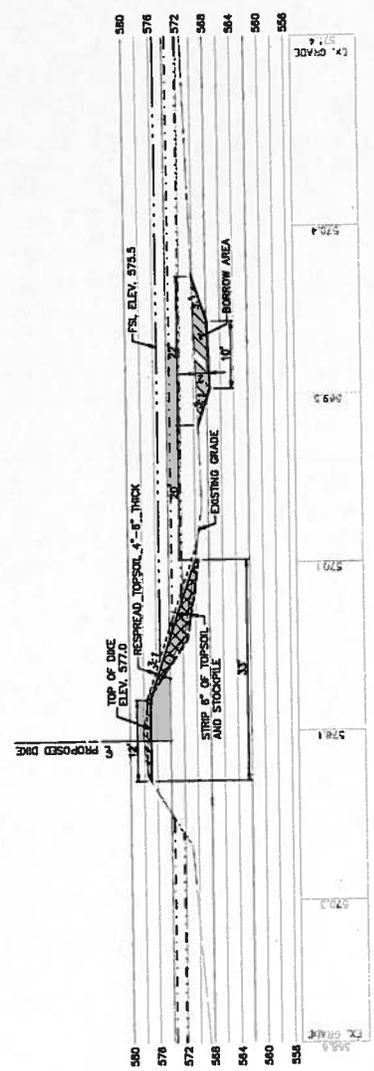
IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL, STATE, AND FEDERAL AGENCIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL, STATE, AND FEDERAL AGENCIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL, STATE, AND FEDERAL AGENCIES.



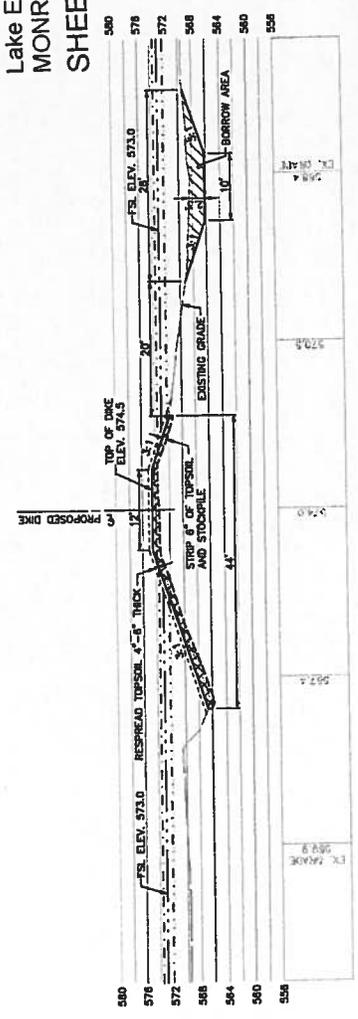
DIKE/CANAL SECTION C-C

LEGEND

- PROPOSED FULL SERVICE LEVEL (FSL)
- - - FEDERAL OTHM 573.4 (OLDDBS)
- STATE OF MI OTHM 572.2 (OLDDBS)
- [Hatched Box] PROPOSED EXCAVATION/REMOVE
- [Cross-hatched Box] PROPOSED FILL



DIKE SECTION D-D

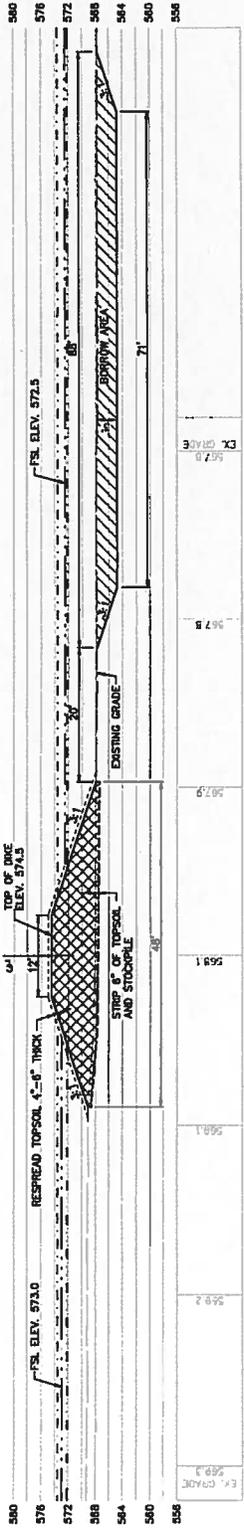


DIKE SECTION H-H

LRE-2005-10110-N09
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 BY: The Nature Conservancy
 Lake Erie, Erie Township
 MONROE County, MICHIGAN
 SHEET 12 OF 15

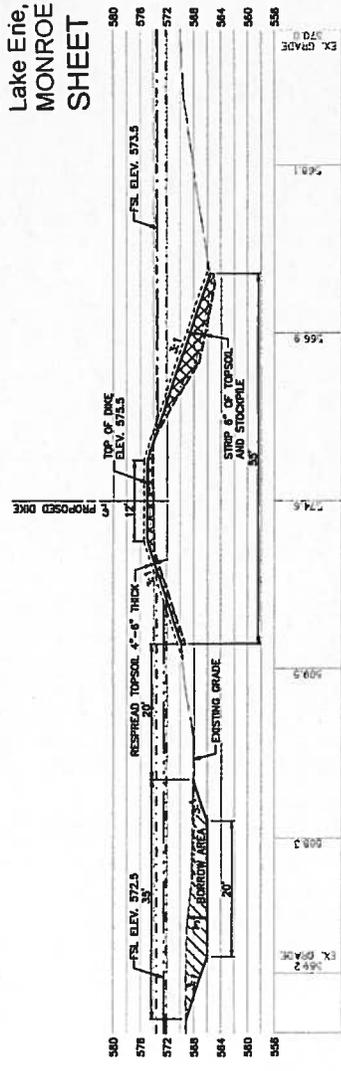
NOTE:
 BORROW AREA'S NOT TO EXCEED 3' IN
 DEPTH BELOW EXIST. GRADE AND MAINTAIN
 A MINIMUM BOTTOM WIDTH OF 10'.

PROPERTY OF THE CONTRACTOR. THIS
 DRAWING IS THE PROPERTY OF THE CONTRACTOR
 AND IS NOT TO BE REPRODUCED OR
 COPIED IN ANY MANNER WITHOUT THE
 WRITTEN PERMISSION OF THE CONTRACTOR.
 THE INFORMATION IS PROVIDED FOR THE
 CONSTRUCTION OF THE PROJECT ONLY.

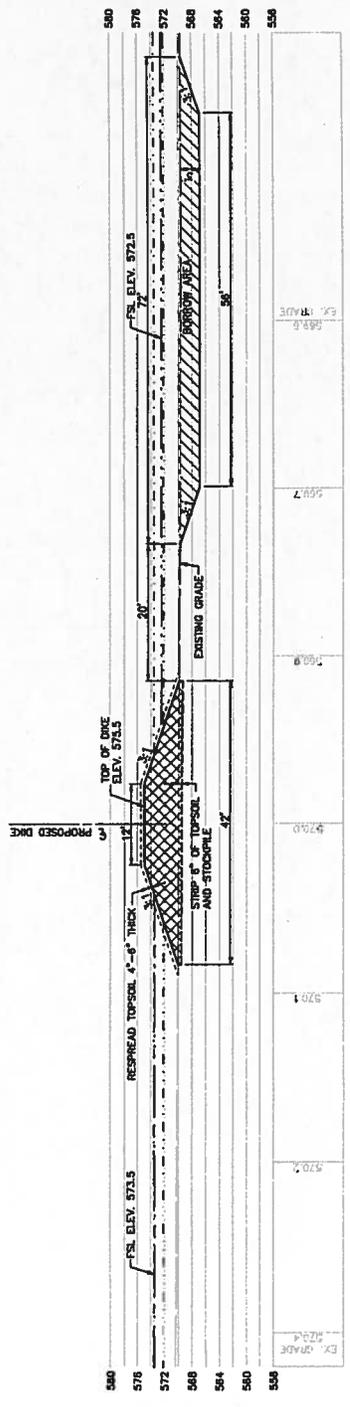


DIKE SECTION I-I

LRE-2005-10110-N09
 TNC - ERIE MARSH PRESERVE RESTORATION
 BY: The Nature Conservancy
 Lake Erie, Erie Township
 MONROE County, MICHIGAN
 SHEET 13 OF 15



DIKE SECTION J-J

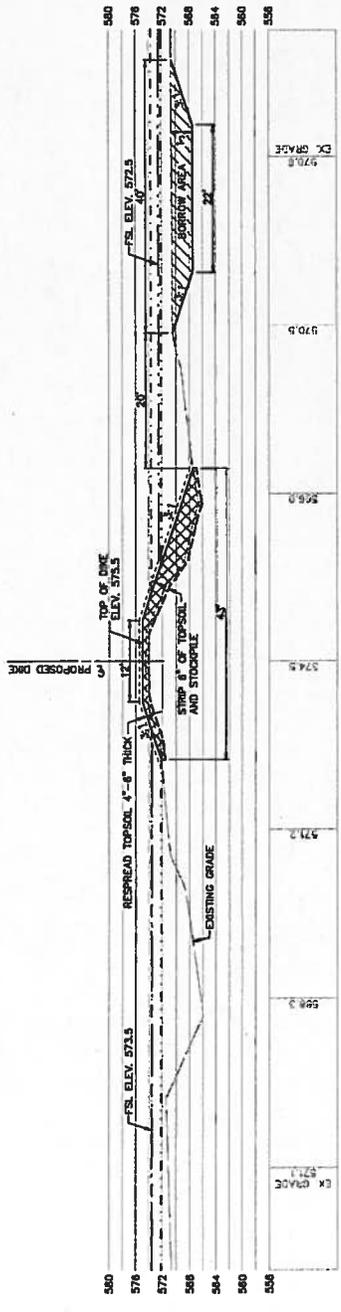


DIKE SECTION K-K

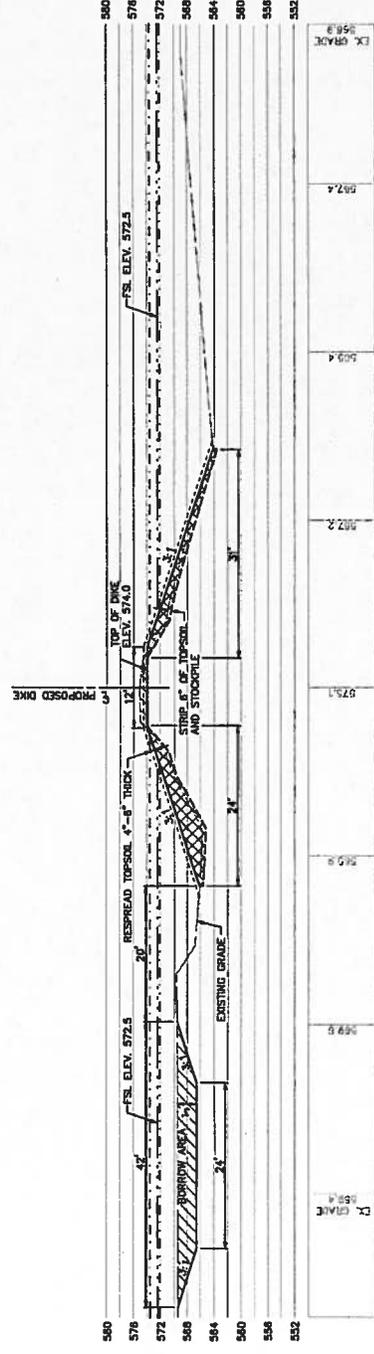
- LEGEND**
- PROPOSED FULL SERVICE LEVEL (FSL)
 - - - FEDERAL OHWM 573.4 (GLDAS)
 - STATE OF MI OHWM 572.2 (GLDAS)
 - [Hatched Box] PROPOSED EXCAVATION/PREDE
 - [Cross-hatched Box] PROPOSED FILL

NOTE:
 BORROW AREA'S NOT TO EXCEED 3' IN
 DEPTH BELOW EXIST. GRADE AND MAINTAIN
 A MINIMUM BOTTOM WIDTH OF 10'.

THE SOLE RESPONSIBILITY OF THE CONTRACTOR DURING
 THE CONSTRUCTION OF THE DIKE SHALL BE TO
 MAINTAIN THE STABILITY OF THE DIKE AND TO
 PROTECT THE ADJACENT PROPERTY FROM DAMAGE
 BY THE DIKE. THE CONTRACTOR SHALL BE RESPONSIBLE
 FOR THE PROTECTION OF THE DIKE FROM DAMAGE
 BY THE ADJACENT PROPERTY. THE CONTRACTOR
 SHALL BE RESPONSIBLE FOR THE PROTECTION OF
 THE DIKE FROM DAMAGE BY THE ADJACENT
 PROPERTY. THE CONTRACTOR SHALL BE RESPONSIBLE
 FOR THE PROTECTION OF THE DIKE FROM DAMAGE
 BY THE ADJACENT PROPERTY.

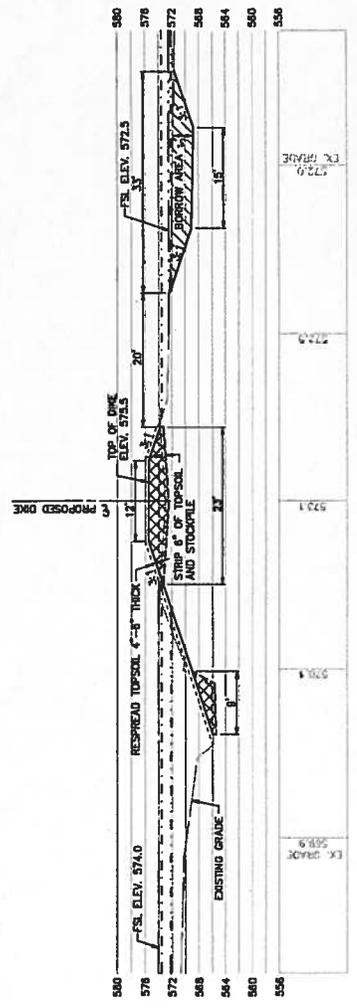
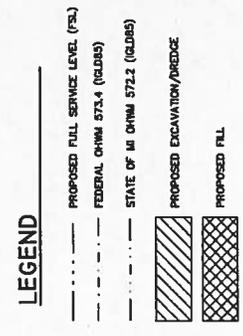


DIKE SECTION L-L



DIKE SECTION M-M

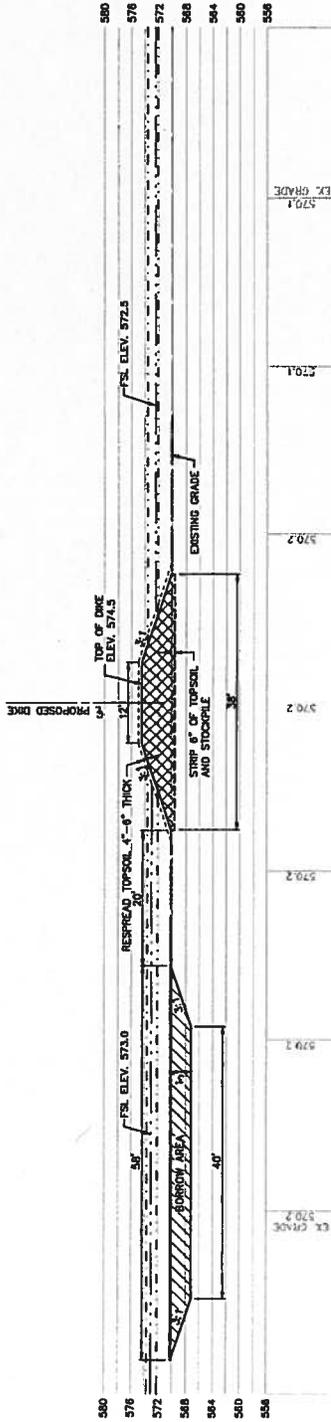
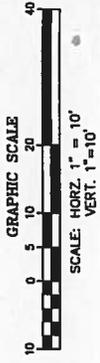
LRE-2005-10110-N09
 TNC - ERIE MARSH PRESERVE RESTORATION
 BY: The Nature Conservancy
 Lake Erie, Erie Township
 MONROE County, MICHIGAN
 SHEET 14 OF 15



DIKE SECTION N-N

NOTE: BORROW AREA'S NOT TO EXCEED 3' IN DEPTH BELOW EXIST. GRADE AND MAINTAIN A MINIMUM BOTTOM WIDTH OF 10'.

IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM THE STATE OF MICHIGAN AND THE LOCAL AGENCIES IN THE COUNTY AND TO MAINTAIN ALL PERMITS AND APPROVALS IN FULL FORCE AND EFFECT THROUGHOUT THE TERM OF THE CONTRACT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE STATE OF MICHIGAN AND THE LOCAL AGENCIES IN THE COUNTY AND TO MAINTAIN ALL PERMITS AND APPROVALS IN FULL FORCE AND EFFECT THROUGHOUT THE TERM OF THE CONTRACT.



DIKE SECTION 0-0

LRE-2005-10110-ND09
 TNC - ERIE MARSH PRESERVE RESTORATION
 BY: The Nature Conservancy
 Lake Erie, Erie Township
 MONROE County, MICHIGAN
 SHEET 15 OF 15

LEGEND

- PROPOSED FULL SERVICE LEVEL (FSL)
- - - FEDERAL OHWM 573.5 (ICLDAS)
- · - · - STATE OF MI OHWM 572.2 (ICLDAS)
- [Hatched Box] PROPOSED EXCAVATION/DREDGE
- [Cross-hatched Box] PROPOSED FILL

NOTE:
 BORROW AREA'S NOT TO EXCEED 3' IN
 DEPTH BELOW EXIST. GRADE AND MAINTAIN
 A MINIMUM BOTTOM WIDTH OF 10'.

THE RESPONSIBILITY OF THE CONTRACTOR UNDER THIS AGREEMENT IS TO VERIFY THE ACCURACY OF ALL DATA AND INFORMATION PROVIDED BY OTHER PERSONS AND TO BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES AND AUTHORITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES AND AUTHORITIES.

Appendix C

NEPA Compliance Checklist (Grant 0501.15.048926)

NEPA COMPLIANCE CHECKLIST

State: MI

Federal Financial Assistance Grant/Amendment: 0501.15.048926

Grant/Project Name: Erie Marsh Preserve Coastal Wetlands Restoration - All remaining work on the dike reconstruction and marsh restoration

This proposal [] is; [x] is not completely covered by categorical exclusion(s) in 516 DM 8.5 (Service); and/or in 43 CFR 46.210 (DOI).

(check (✓) one) (Review proposed activities. An appropriate categorical exclusion must be identified before completing the remainder of the Checklist. If one or more categorical exclusions do not apply to the entire proposal, or the proposal cannot meet the qualifying criteria in the categorical exclusion(s), or an extraordinary circumstance applies (see below), an EA may be required. E.g. an existing EA may address the proposal.)

Extraordinary Circumstances (43 CFR 46.215):

Will This Proposal (check (✓) yes or no for each item below):

- Yes No
a. Have significant impacts on public health or safety.
b. Have significant impacts on such natural resources and unique geographic characteristics as historic or cultural resources; park, recreation or refuge lands; wilderness areas; wild or scenic rivers; national natural landmarks; sole or principal drinking water aquifers; prime farmlands; wetlands (Executive Order 11990); floodplains (Executive Order 11988); national monuments; migratory birds; and other ecologically significant or critical areas.
c. Have highly controversial environmental effects or involve unresolved conflicts concerning alternative uses of available resources [NEPA Section 102(2)(E)].
d. Have highly uncertain and potentially significant environmental effects or involve unique or unknown environmental risks.
e. Establish a precedent for future action or represent a decision in principle about future actions with potentially significant environmental effects.
f. Have a direct relationship to other actions with individually insignificant but cumulatively significant environmental effects.
g. Have significant impacts on properties listed, or eligible for listing, on the National Register of Historic Places as determined by the bureau.
h. Have significant impacts on species listed, or proposed to be listed, on the List of Endangered or Threatened Species, or have significant impacts on designated Critical Habitat for these species.
i. Violate a Federal law, or a State, local, or tribal law or requirement imposed for the protection of the environment.
j. Have a disproportionately high and adverse effect on low income or minority populations (Executive Order 12898).
k. Limit access to and ceremonial use of Indian sacred sites on Federal lands by Indian religious practitioners or significantly adversely affect the physical integrity of such sacred sites (Executive Order 13007).
l. Contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area or actions that may promote the introduction, growth, or expansion of the range of such species (Federal Noxious Weed Control Act and Executive Order 13112).

(If any of the above extraordinary circumstances receive a "Yes" check (✓), an EA may be required. Consult with WSFR grant specialist for determination.)

[x] Yes [] No This grant/project includes additional supporting information.

Concurrences/Approvals: Chris May

Digitally signed by Chris May Date: 2017.05.11 14:34:13 -04'00' Date: 5/11/2017

State Authority Concurrence: Date: (with financial assistance signature authority, if applicable)

Within the spirit and intent of the Council of Environmental Quality's regulations for implementing the National Environmental Policy Act (NEPA) and other statutes, orders, and policies that protect fish and wildlife resources, I have established the following administrative record and have determined that the grant/amendment:

- [] is a categorical exclusion as provided by 516 DM 8.5 (Service) and/or 43 CFR 46.210 (DOI), and/or is addressed by an existing EA or EIS. No further NEPA documentation will therefore be made.
[x] is not completely covered by the categorical exclusion as provided by 516 DM 8.5 (Service) and/or 43 CFR 46.210 (DOI), or addressed by an existing EA or EIS. An EA must be prepared. Corps permit on record, included in EA.
[] is covered by an existing EA. FONSI/EAS dated:

Service signature approval: Staff Specialist, WSFR: Chief, Division of WSFR: Donna Zanger, Acting Chief 5/12/17

Appendix D

SHPO 2011 Section 106 Review (File ER10-677)



JENNIFER GRANHOLM
GOVERNOR

STATE OF MICHIGAN
MICHIGAN STATE HOUSING DEVELOPMENT AUTHORITY
LANSING

GARY HEIDEL
INTERIM EXECUTIVE DIRECTOR

July 28, 2010

JULIE SIMS
NOAA FISHERIES
4840 SOUTH STSTE ROAD
ANN ARBOR MI 48108

RE: ER10-677 Erie Marsh Preserve, Sections 22 & 27, T8S, R8E, Erie Township,
Monroe County (NOAA)

Dear Ms. Sims:

Under the authority of Section 106 of the National Historic Preservation Act of 1966, as amended, we have reviewed the above-cited undertaking at the location noted above. Based on the information provided for our review, it is the opinion of the State Historic Preservation Officer (SHPO) that **no historic properties are affected** within the area of potential effects of this undertaking.

The views of the public are essential to informed decision making in the Section 106 process. Federal Agency Officials or their delegated authorities must plan to involve the public in a manner that reflects the nature and complexity of the undertaking, its effects on historic properties and other provisions per 36 CFR § 800.2(d). We remind you that Federal Agency Officials or their delegated authorities are required to consult with the appropriate Indian tribe and/or Tribal Historic Preservation Officer (THPO) when the undertaking may occur on or affect any historic properties on tribal lands. **In all cases**, whether the project occurs on tribal lands or not, Federal Agency Officials or their delegated authorities are also required to make a reasonable and good faith effort to identify any Indian tribes or Native Hawaiian organizations that might attach religious and cultural significance to historic properties in the area of potential effects and invite them to be consulting parties per 36 CFR § 800.2(c-f).

This letter evidences NOAA's compliance with 36 CFR § 800.4 "Identification of historic properties", and the fulfillment of NOAA's responsibility to notify the SHPO, as a consulting party in the Section 106 process, under 36 CFR § 800.4(d)(1) "No historic properties affected".

The State Historic Preservation Office is not the office of record for this undertaking. You are therefore asked to maintain a copy of this letter with your environmental review record for this undertaking. If the scope of work changes in any way, or if artifacts or bones are discovered, please notify this office immediately.

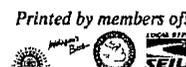
If you have any questions, please contact Brian Grennell, Cultural Resource Protection Specialist, at (517) 335-2721 or by email at ER@michigan.gov. **Please reference our project number in all communication with this office regarding this undertaking.** Thank you for this opportunity to review and comment, and for your cooperation.

Sincerely,

Martha MacFarlane Faes
Environmental Review Coordinator

for Brian D. Conway
State Historic Preservation Officer

MMF:JRH:BGG



Appendix E

Region 3 WSFR Section 7 Evaluation for Phase III and IV
&
Bald Eagle Guidance (2013)

REGION 3 WFSR SECTION 7 EVALUATION DOCUMENTATION

PHASE 1: COMPLETED BY GRANTEE

(See Phase 1 Instructions for Completion)

State: Michigan **Grantee:** The Nature Conservancy - Michigan

Grant Program(s): Sustain Our Great Lakes

Grant Title and Number (add amendment no): Erie Marsh Preserve Coastal Wetlands Restoration (MI) – II; 0501.15.048926

I. Location:

A. List counties where grant activities will occur.

Monroe (MI); Ingham (MI)

B. Describe the action area (see instructions).

This document covers all activities, including on-the-ground enhancement and restoration work, for phases III and IV of a larger four-phase project. The action area where the on-the-ground work will occur is located approx. 2.8 miles south southwest of Luna Pier, MI and approx. 1.8 miles north of the Michigan-Ohio state line (Fig. 1); the address is 3149 Dean Road, Erie, MI. It is east of I-75. It lies immediately north of North Maumee Bay and is separated from Lake Erie by Woodtick Peninsula.

Specifically, phases III and IV of the project include the central and northern portions of Erie Marsh Preserve, more specifically, 479.8 acres in the 6 wetland management units called Secor's (65 acres), Widgeon Hole (62 acres), Canvasback Cabana (23.8 acres), Gadwall Getaway (131 ac), Wolverine Wallow (139 ac), and Redhead Retreat (59 ac) (Fig. 2), as well as sections of water distribution canal, which encompasses approx. 10 acres along and outside the south dike of the Secor's unit and between the Wolverine Wallow and Redhead Retreat units.

The boundary of the action area is a series of interior and exterior dikes surrounding the wetland management units and water distribution canal mentioned above. The existing habitat is low to moderate quality coastal wetland and areas planted as row crops for waterfowl hunting. Current wetlands include moist soil and emergent marsh. Non-native *Phragmites* is present within the action area, along the existing dikes, as well as along the interior dikes within the action area. The action area is flooded generally from mid-September through April, but is actively drained May through mid-September to allow planting of row crops and management of invasive species. The area of the water distribution canal has standing water year-round.

The action area is the third and fourth phases of a four-phase plan to restore the 946-acre diked wetland at Erie Marsh Preserve. Once fully implemented, the four-phase restoration will consist of 10 wetland units that can be managed independently or in combination to create a diverse wetland complex for fish, wildlife, and plants.

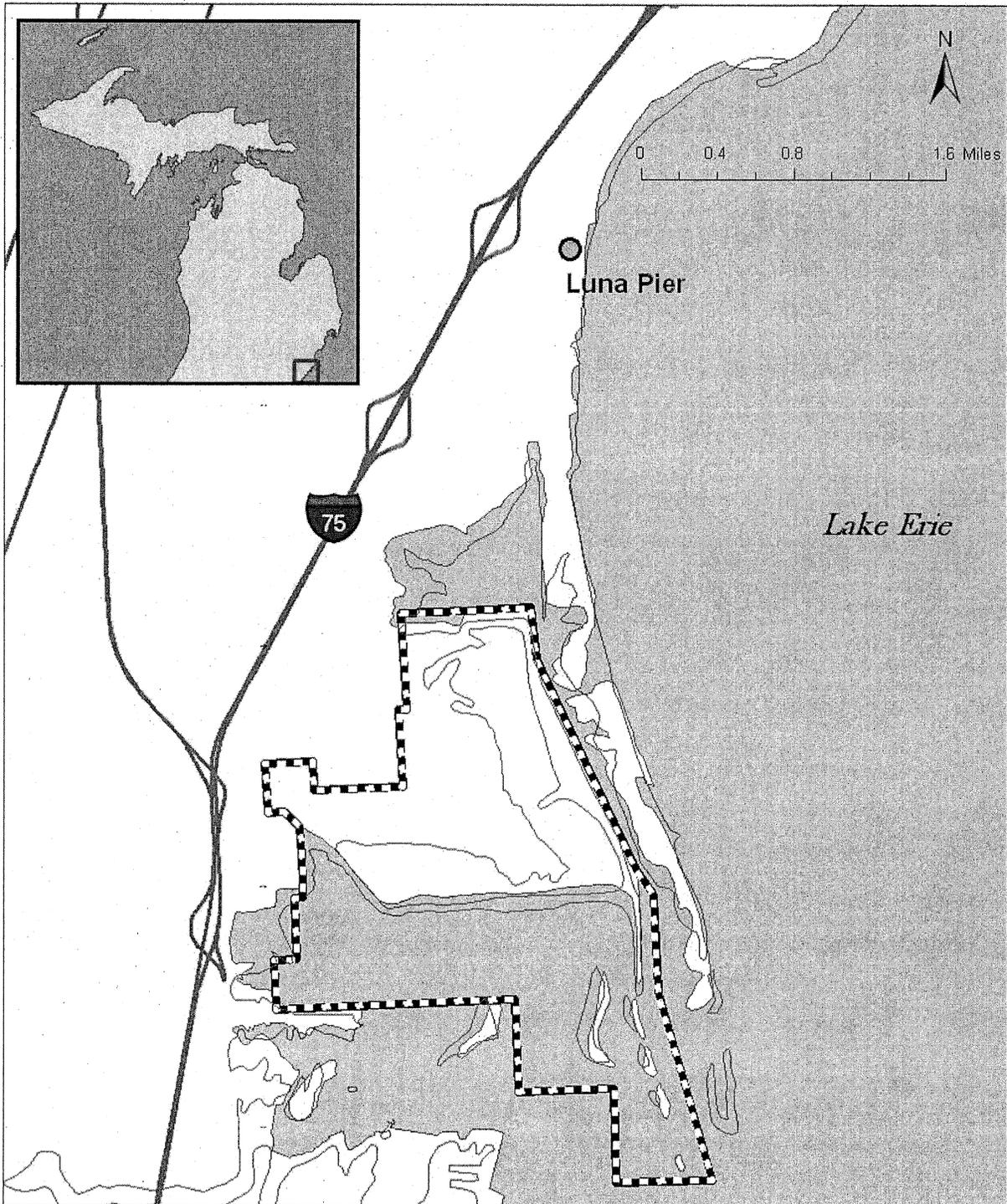


Figure 1: Location of Erie Marsh Preserve, along western Lake Erie, in Monroe County, Michigan, .

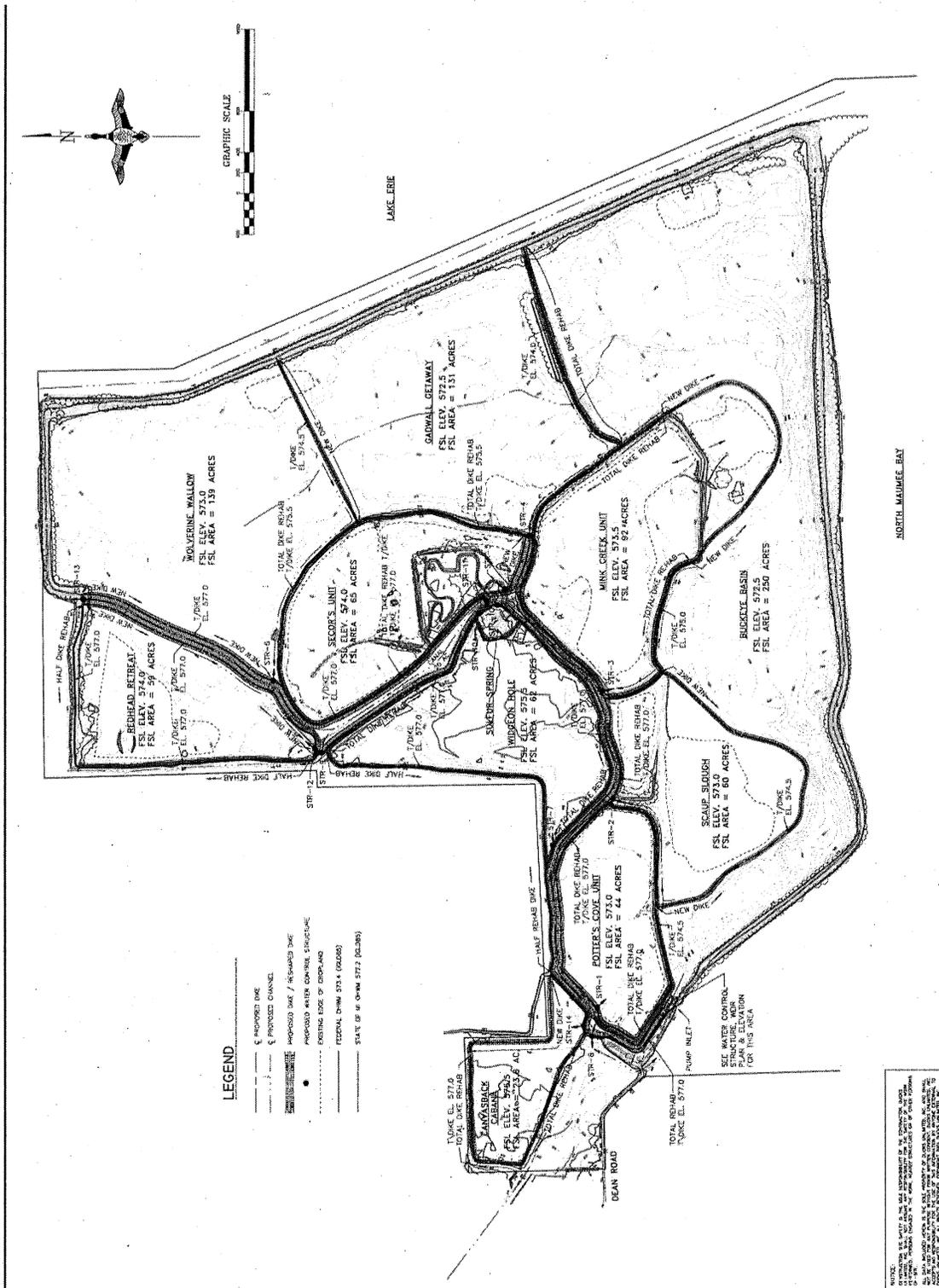


Figure 2. Names and locations of wetland management units at Erie Marsh Preserve.

II. Species/Critical Habitat:

A. Species information

1. Using the FWS web site (<http://www.fws.gov/midwest/Endangered/>), list species that are/or may be present in the county(ies):

Monroe County: Indiana bat (*Myotis sodalis*), Northern long-eared bat (*Myotis septentrionalis*), Rufa Red knot (*Calidris canutus rufa*), Karner blue butterfly (*Lycaeides melissa samuelis*), Northern riffleshell (*Epioblasma torulosa rangiana*), Eastern prairie fringed orchid (*Plantathera leucophaea*), Eastern massasauga (*Sistrurus catenatus*).

2. List species, from "1." above, that are not in the action area, and explain why:

Described below are the listed species in Monroe County, where the on-the-ground work will later occur.

Myotis sodalis - Indiana bat: Monroe County is within the summer range of the species; however, there are no historical records of the species occurring in the action area. Habitat within the action area is coastal wetlands; there are no suitable roost trees, and no woods, within the action area. A patch (approx. 5ac) of mature eastern cottonwood trees occurs adjacent to the action area, but this area will not be impacted by the project.

Myotis septentrionalis - Northern long-eared bat: Monroe County is within the range of the species; however, there are no historical records of the species occurring in the action area. Habitat within the action area is coastal wetlands; there are no suitable roost trees, and no woods, within the action area. A patch (approx. 5ac) of mature eastern cottonwood trees occurs adjacent to the action area, but this area will not be impacted by the project. The species may forage over emergent wetlands and the edges of agricultural fields (e.g., row crops planted for waterfowl hunting), both habitats being present in the action area. There are no caves or mines in the action area.

Calidris canutus rufa - Rufa Red knot: The action area is not along the primary migration corridor or breeding area for the red knot. The Nature Conservancy has been conducting bird point counts of the action area approximately monthly since June 2011 without any sighting of the species. There is one historical record of a sighting near the action area from August 1998 in Cornell University's eBird database, but no records since 1998. The species is recorded annually at the Pte Mouillee State Game Area (USFWS 2014).

Lycaeides melissa samuelis - Karner blue butterfly: The species does not occur in the action area. Karner blue butterfly habitat includes sandy soils supporting pine barren and oak savanna communities containing wild lupine (*Lupinus perennis*), the only known food plant of the larvae. Habitat in the action area is coastal wetlands on loam and clay soils. The nearest known

occurrences of Karner blue butterfly are in the vicinity of Petersburg State Game Area in the western portion of Monroe County.

Epioblasma torulosa rangiana - Northern riffleshell: Not expected to occur in the action area; no evidence of occurrence in action area. Habitat for the species is firm substrate in large streams and small rivers; the action area is soft muck and clay in coastal wetlands. The wetland management units within the action area has been subjected to annual drawdown for wetland management over the past 30+ years. In addition, in 2010, The Nature Conservancy contracted surveys for unionid mussels in and around Erie Marsh Preserve (i.e., the action area) (Sherman, J. 2011. Erie Marsh Preserve Unionid Surveys, Dreissenid Colonization, and Physicochemical Measurements. Unpubl. Report.). The surveys found no evidence of unionid mussels (live mussels or shell fragments) inside the diked wetland.

Plantathera leucophaea - Eastern prairie fringed orchid: Not expected to occur in the action area; no evidence of occurrence in action area. Habitat is mesic to wet prairies and meadows; the action area is coastal wetland. The wetland management units within the action area has been subjected to annual flooding from Sept-April for wetland management over the past 30+ years. The 1999 Recovery Plan notes one population in Monroe County, which occurs at Pte Mouillee, approximately 18 miles northeast of the action area.

Sistrurus catenatus – eastern massasauga: The species does not occur in the action area. Monroe County does not contain areas known to be occupied or areas with high potential habitat for the species. Michigan Natural Features Inventory abstract for the species does not show Monroe County in the range of the snake, and the MNFI biotics database does not show any historical records. Correspondence with USFWS has confirmed that occurrence records of the eastern massasauga and projected modeled habitat (Tier 1 and Tier 2 Habitat Model) do not overlap the Erie Marsh Preserve.

- B. Using the FWS web site, identify whether federally designated or proposed critical habitat is present within the action area:

No designated or proposed critical habitat for any of the above listed species occurs within the action area.

*Note: If II.A and II.B above have no species or critical habitat, skip sections III and IV and go to V.

III. Description of Proposed Action: In the space provided or on an attached sheet, describe the action(s) in sufficient detail so that the potential effects of the action can be identified and fully evaluated.

The following activities will occur within the Action Area:

Phase III – Secor's, Widgeon Hole, Canvasback Cabana, Wolverine Wallow-Gadwall Splitter

- Dike Rehabilitation (repair/rebuild):

1. Dredging of existing canal between Secor's Unit and Widgeon Hole Unit for the rehabilitation of two (2) existing dikes 59 feet wide and 57 feet wide and 2,162 feet long.
 2. Rehabilitation of one (1) existing dike by dredging a borrow area of 33 feet wide by 7,155 feet long around Secor's Unit and adjoining the Wolverine Wallow Unit.
 3. Rehabilitation of one (1) existing dike by dredging a borrow area of a maximum width of 28 feet wide by 1,017 feet long around Canvasback Cabana Unit.
- New Dike Construction:
 1. 58 feet and 1,799 linear feet long between Wolverine Wallow Unit and Gadwall Gateway Unit (i.e. Wolverine Wallow-Gadwall Splitter).
 2. 77 feet and 2,477 linear feet long along portions of Canvasback Cabana Unit.
 3. 61 feet and 995 linear feet long along portions of Canvasback Cabana Unit.
 - Dredge a total of 116,470 cubic yards of material from approximately 18.96 acres of open water/wetland or existing ditches to construct water distribution canals and to obtain borrow material to repair/rebuild existing dikes and to construct new dikes.
 - Discharge (fill) a total of 65,842 cubic yards of dredged fill material within approximately 9.66 acres of open water/wetlands to construct and/or repair dikes.
 - Installation of a 30" diameter Water Control Structure. Place approximately 3.3 cubic yards of clean rip-rap on filter fabric on about 90 square feet of lakebed.
 - Extend/Install a 60" diameter Distribution Channel at Secor's Unit. Place approximately 7.2 cubic yards of clean rip-rap on filter fabric on about 193.5 square feet of lakebed.
 - Restore and enhance approximately 219.8-acres of emergent, open water, forested, and scrub-shrub wetland.

Phase IV – Wolverine Wallow and Redhead Retreat

- New Dike Construction:
 1. Maximum width of 237 feet and 2,732 linear feet long adjoining the main distribution channel between the Wolverine Wallow Unit and the Redhead Retreat Unit.
- Dredge a total of 79,137 cubic yards of material from approximately 14.86 acres of open water/wetland to construct water distribution canals and to obtain borrow material to repair/rebuild existing dikes and to construct new dikes.
- Discharge (fill) a total of 102,602 cubic yards of dredged fill material within approximately 7.40 acres of open water/wetlands to construct and/or repair dikes.
- Installation of a 30" diameter Water Control Structure. Discharge approximately 3.3 cubic yards of clean rip-rap on filter fabric on about 90 square feet of lakebed.
- Extend/Install a 60" diameter Distribution Channel at the intersection of Wolverine Wallow Unit and Redhead Retreat Unit. Place approximately 7.2 cubic yards of clean rip-rap on filter fabric on about 193.5 square feet of lakebed.
- Restore and enhance approximately 139-acres of emergent, open water, forested and scrub-shrub wetland.

IV. Description of Effects: In the space provided or on an attached sheet, describe the effects, including beneficial, of the project actions on the identified species, species habitats and federal critical habitat (see II above).

Although none of the identified species currently use the site, the proposed restoration work will improve and enhance coastal wetland habitat, a declining natural resource. Implementation of the action is not expected to result in significant adverse effects or result in any significant cumulative or long-term adverse effects on the identified species. Implementation of the action may result in minor short-term impacts related to construction activities (e.g., soil disturbance, altered hydrology). The action has potential to introduce/spread invasive species. However, the minor effects will be short-term, localized, and mitigated through Best Management Practices as appropriate. The action is expected to result in beneficial outcomes, including the completion of a restoration project that will facilitate management of the preserve and enhance coastal natural communities and wildlife habitat, potentially providing habitat in the future to some of the identified species (i.e., northern long-eared bat, red knot, northern riffleshell, eastern prairie fringed orchid).

V. Recommended Determination(s) of Effect(s): For all species and critical habitat identified in the action area, mark (X) the appropriate determinations.

A. Listed, Proposed and Candidate Species

a) "No Effect"

List species for which this recommendation is applicable (or attach list):

b) "May Affect, but is Not Likely to Adversely Affect"

List species for which this recommendation is applicable (or attach list):

Indiana bat (*Myotis sodalis*), Northern long-eared bat (*Myotis septentrionalis*), Rufa Red knot (*Calidris canutus rufa*), Karner blue butterfly (*Lycaeides melissa samuelis*), Northern riffleshell (*Epioblasma torulosa rangiana*), Eastern prairie fringed orchid (*Plantathera leucophaea*), Eastern massasauga (*Sistrurus catenatus*).

c) "May Affect, and is Likely to Adversely Affect"

List species for which this recommendation is applicable (or attach list): _____

B. Federal Designated and Proposed Critical Habitat

a) "No Effect" to Critical Habitat

List critical habitat(s) for which the recommendation is applicable.

No critical habitat is present within the action area.

b) "May Affect, but is not likely to Adversely Affect"

List critical habitat(s) for which the recommendation is applied. _____

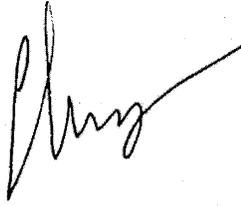
c) "May Affect, and is Likely to Adversely Affect"

List critical habitat(s) for which the recommendation is applied. _____

Grantee Signatures:

Prepared by:

Name/Title: Chris May, Director of Restoration, The Nature Conservancy

A handwritten signature in black ink, appearing to read 'Chris May', written in a cursive style.

Signature:

Telephone No. 517-316-2274

Date: 5/11/2017

email: cmay@tnc.org

REGION 3 WSFR SECTION 7 EVALUATION DOCUMENTATION
PHASE II: COMPLETED BY U.S. FISH AND WILDLIFE SERVICE

State:

MI

Grantee:

The Nature Conservancy

Grant Title
and Number

0501.15.048926 Erie Marsh Restoration - All remaining work

Check the box, if the information on the Phase I documentation is adequate:

List of Species

Description of Proposed Action

Description of Effects

I. WSFR Determination Determination of the effects of the proposed action on endangered, threatened, proposed, and candidate species and their proposed or designated critical habitat. When the determination(s) below is/are different than the State recommended determination(s) on the Phase I documentation, an explanation for the difference must be provided in Section II below.

A. Listed Species/ Critical Habitat (for each category, list species, attach list or reference Phase I documentation)

a) "No Effect" (see attached Phase I)

b) "May Affect, but is Not Likely to Adversely Affect" (see attached Phase I)

c) "May Affect, and is Likely to Adversely Affect" (see attached Phase I)

B. Proposed Species/ Proposed Critical Habitat (for each category, list species, attach list or reference Phase I documentation)

a) "No Effect" (see attached Phase I)

b) "May Affect, but is Not Likely to Adversely Affect" (see attached Phase I)

c) "May Affect, and is Likely to Adversely Affect" (Formal consultation/conference with ES FO is required)

d) "May Adversely Affect/Modify, but is not likely to Jeopardize" (Please see attached rationale in Phase I, also MOU in the permanent files - P:\Central subject matter\Endangered Species Act Compliance)

NOTE: This determination is a conference, not a consultation, in regards to species proposed for listing that only considers whether these activities jeopardize the species proposed. The conference determination was made with guidance from Ecological Services as documented in the centralized subject-matter file. This determination for any proposed species applies only during the period when it is proposed for listing and consultation will be required for any activities that may affect the species or its suitable habitat that are still in progress after the species is listed.

d) Continued

[Empty box for continuation]

C. Candidate Species (for each category, list species, attach list or reference Phase I documentation)

a) "No Effect" (see attached Phase I)

[Empty box for category a]

b) "May Affect, but is Not Likely to Adversely Affect" (see attached Phase I)

[Empty box for category b]

c) "May Affect, and is Likely to Adversely Affect" (Formal consultation/conference with ES FO is required)

[Empty box for category c]

d) "May Adversely Affect/Modify, but is not likely to Jeopardize" (Please see attached rationale in Phase I, also MOU in the permanent files - P:\Central subject matter\Endangered Species Act Compliance)

NOTE: This determination is a conference, not a consultation, in regards to species proposed for listing that only considers whether these activities jeopardize the species proposed. The conference determination was made with guidance from Ecological Services as documented in the centralized subject-matter file. This determination for any proposed species applies only during the period when it is proposed for listing and consultation will be required for any activities that may affect the species or its suitable habitat that are still in progress after the species is listed.

[Empty box for category d]

WSFR Specialist

[Signature] 5/12/17

WSFR Chief

Donna Zanquer, Acting Chief 5/12/17

II. Explanation of non-concurrence: For each determination that differs from the Phase I documentation, provide rationale for the non-concurrence.

[Empty box for explanation of non-concurrence]

III. Notes:

Eastern Massasauga Rattlesnake are not found in the action area. Michigan Field Office correspondence attached.



Kucera, Abbey <abbey_kucera@fws.gov>

RE: Endangered Species consultation/conferencing for eastern massasauga rattlesnake

Chris May <cmay@tnc.org>

Wed, Dec 7, 2016 at 11:15 AM

To: Abbey Kucera <abbey_kucera@fws.gov>

Cc: "Traci.Giefer@nfwf.org" <Traci.Giefer@nfwf.org>

Hi Abbey,

Just following up on this email from you about massasauga and our Erie Marsh project. The attached email is a response from USFWS East Lansing office regarding the rattlesnake in our project area. Short version: we don't need to consider massasauga impacts for this project.

I will be in touch soon to start working on the EA for the project. TNC is getting a contract in place to work with ECT in Ann Arbor to do the EA. We will plan to have a kick-off meeting of sorts with you and Traci at NFWF.

Traci – this is related to regulatory compliance for SOGL project #48926.

Thanks,

Chris

Christopher A. May

Director of Restoration

The Nature Conservancy

101 E. Grand River

Lansing, MI 48906

(517) 316-2274

(517) 316-9886 (Fax) cmay@tnc.org

From: Abbey Kucera [mailto:abbey_kucera@fws.gov]**Sent:** Tuesday, August 16, 2016 3:47 PM**To:** Chris May <cmay@TNC.ORG>**Cc:** Caroline Oswald <Caroline.Oswald@nfwf.org>**Subject:** Endangered Species consultation/conferencing for eastern massasauga rattlesnake

Chris,

One thing I did not emphasize in our talk yesterday was that section 7, ESA is something I would like to work with you as TNC on, not a contractor. I noticed potential for habitat for eastern massasauga and would like you to coordinate directly with the East Lansing Field Office on it as you prepare a Phase 1 for your Phase 3 work. I suspect they will say that this may have been an historic location, but is not now, so proceed. I, however, am unable to make that determination. If this project concerns them, they will say so, and it is better for you to know sooner, not wait for the contracting process and the EA prep.

I will be in the office tomorrow if you would like to discuss this more.

Thanks!

Abbey

----- Forwarded message -----

From: "Dingledine, Jack" <jack_dingledine@fws.gov>

To: Chris May <cmay@tnc.org>

Cc: "Kennedy, Daniel (DNR)" <KENNEDYD@michigan.gov>, "Tansy, Carrie" <carrie_tansy@fws.gov>

Bcc:

Date: Wed, 7 Dec 2016 16:50:59 +0000

Subject: Re: EMR in Monroe County?

Hi Chris,

Thanks for checking in with us regarding the potential for EMR in your project area. We do not have any records, nor areas of projected habitat based on our current models, of EMR in your project area. We currently list other federally listed species as present in Monroe county, and you should consider those in your assessment. Given the brief description of your project, the Eastern Prairie Fringed Orchid may be the most likely to be present, but that determination is for you to make.

Jack Dingledine

Deputy Field Supervisor
U.S. Fish and Wildlife Service
East Lansing Field Office
2651 Coolidge Road
East Lansing, MI 48823
(517) 351-6320 (office)
(517) 230-6669 (mobile)
jack_dingledine@fws.gov

On Tue, Dec 6, 2016 at 10:11 AM, Chris May <cmay@tnc.org> wrote:

Dan/Jack/Carrie,

I have a large coastal wetland restoration project on Lake Erie in Monroe County. USFWS (grant funder) wants an Environmental Assessment done for the project. They have asked me to work with USFWS East Lansing Field Office on impacts to EMR. The MNFI abstract does not show Monroe County in the range of the snake, and the MNFI biotics database does not show any historical records in the county. I also checked the EMR CCAA and saw Table 1 does not include any of the state lands in Monroe County. Can you confirm that my project does not require Section 7 or other consultation for EMR?

Thanks,

Chris

How can Great Lakes coastal wetlands help fish and waterfowl? Watch a video and learn more at <http://nature.org/eriemarsh>.

Please consider the environment before printing this email

Christopher A. May
Director of Restoration

cmay@tnc.org
(517) 316-2274
(517) 316-9886 (Fax)

nature.org

**The Nature Conservancy
in Michigan**

101 E. Grand River
Lansing, MI 48906

Description:
<http://nature.org/images/emailsig>

 **noname.eml**
27K



Eagle Permits

Midwest Region

EAGLE PERMITS HOME

PERMIT FOR NON-PURPOSEFUL TAKE

PERMIT TO REMOVE AN EAGLE NEST

PERMITS TO TAKE, POSSESS, OR TRANSPORT EAGLES

PERMIT APPLICATION FORMS

EAGLE NATURAL HISTORY & SENSITIVITY TO HUMAN ACTIVITY

DEFINITIONS

CONTACT US

U.S. Fish & Wildlife Service
5600 American Blvd. West,
Suite 990
Bloomington, MN 55437-1458
Phone:

Bald Eagle Permit: Non-Purposeful Take

Step-by-Step Guidance

Determining Whether Construction or Development Activities May Cause the Non-Purposeful Take of Bald Eagles

Step 5. Documentation

You may document that you are following the U.S. Fish and Wildlife Service's recommendations for avoiding the non-purposeful take of bald eagles by printing this page, then signing and dating it for your records.

Your activity is: (Check your selection to document your choice)

- Building construction, 1 or 2 story, with a project footprint of 1/2 acre or less.
- Construction of roads, trails, canals, power lines, and other linear utilities.
- Agriculture or aquaculture operations - new or expanded.
- Alteration of shoreline or wetlands.
- Installation of docks or moorings.
- Water impoundment.

The bald eagle nest (**active** or **inactive**) cannot be seen from your activity or project site.

You will adopt the following recommendations to avoid incidentally taking eagles or their young.

- (1) Maintain a **buffer** of at least 330 feet (100 meters) between your activities and the nest (including active and alternate nests), unless a **similar activity** is closer than 330 feet, then you may maintain a distance buffer as close to the nest as the existing tolerated activity.
- (2) Restrict all clearing, external construction, and landscaping activities within 660 feet of the nest to **outside the nesting season** (i.e., outside the nesting season is from August through mid-January in the Midwest).
- (3) Maintain established landscape buffers that screen the activity from the nest.

Therefore, incidental take of bald eagles is unlikely to occur.

Signature: _____

Date: 3/29/2013

These recommendations are valid only for the states of Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin.

[Back](#)

Last updated: November 8, 2012

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