Addendum

HABITAT RESTORATION PLAN

Niagara River Area of Concern

Following NYSDEC's submission of the Habitat Restoration Plan to USEPA, the two parties updated the tables on pages 4 and 5 to correct certain project cost information. The tables on the following page should replace those on pages 4 and 5 of the document.

Six Habitat Restoration Plan Funded Projects

Project Title	Description	Goals	Implementor	Acreage	Timeline	Status	GLRI Funding
Spicer Creek	Installation of woody structure and shallow rock berms	Encourage SAV/EV growth with protection of shallows and shoreline from ice, waves, and other physical disturbances; added fish, amphibian, turtle and bird structure with partially submerged woody debris	NYSDEC	17	Design initiate in 2017	80% design, permitting underway	Design - $235,000 Construction - $1.9 million
East River Marsh Extension	Installation of shallow rock berms	Encourage SAV/EV growth with protection of shallows and shoreline from ice, waves, and other physical disturbance	NYSOPRHP	7	Completed summer 2019	Complete	Design - $1.24 million Construction - $9,966,200
Burnt Ship Creek	Excavation of cattail and sediment	Enhanced access and use of wetland by fish and wildlife; increase native plant diversity and resilience	NYSOPRHP	9	Construction starting fall or winter 2019	Design complete	
Grass Island	Installation of shallow rock berms, woody debris, and floating woody debris	Encourage SAV/EV growth and resilience with protection of shallows and shoreline from ice, waves, and other physical disturbance	NYSOPRHP	8	Construction starting fall or winter 2020	Design complete	
Buckhorn Island State Park	Installation of shallow rock berms	Encourage SAV/EV growth and resilience with protection of shallows and shoreline from ice, waves, and other physical disturbance	NYSOPRHP	28	Construction starting fall or winter 2020	Design near completion	
Unity Island Wetland	Wetland enhancement open wetland to river	Restore, enhance and hydrologically connect the wetland to the river	USACE	12	Project installed in 2014, construction started 2018	Near completion	~$2 million GLRI funds ~ $1 million cost share NY Power Authority
Total approximated cost							GLRI: $15,341,200 Cost Share: $1,000,000

Six Habitat Restoration Plan Projects Requiring Funding

Project Title	Description	Goals	Implementor	Acreage	Timeline	Status	GLRI Funding
West River Parkway	Shoreline softening	Connect river to upland using soft shoreline methods, increase resilience by protection of shallows and shoreline from ice, waves, and other physical disturbances	NYSOPRHP	.25	Implementor is ready to begin project as soon as possible	FS complete	$983,373
Unity Island Velocity Break	Install water velocity breaks to allow small fish movement up the Niagara River where alterations have increased velocity	Allow small fish the ability to move through the high flow velocity areas between varying habitat locations, especially the emerald shiner – a critical prey fish	USACE	1	Construction planned for CY 2020	FS Complete, Phase 1 with repair of wall	Construction - $500,000
Outer Harbor Slip 3 (adjacent to Wilkeson Point)	Fill with clean sediments to create structure for fish and wildlife, and add features to retain and protect the installation	Bring depth up to a level that allows for SAV/EV growth, increase structure with plantings and or physical features like rock and wood, protect features from erosive forces	USACE	8	Design funding needed by end of FFY 2020	Under evaluation	Design - $400,000 Construction - $5 million
Ralph Wilson Centennial Park Lagoon	Install berms and fish structures, plantings, and shoreline softening	Enhanced access and use of lagoon by fish and wildlife; increase plant diversity, enhance land-water connection	City of Buffalo with Buffalo Niagara Waterkeeper	5	Initial funding needed by 2nd quarter of FFY 2020	Under evaluation	$2.2 million (initial GLRI request)
Cherry Farm Shoreline	Installation of shallow rock berms	Encourage SAV/EV growth and resilience with protection of shallows and shoreline from ice, waves, and other physical disturbances	TBD	5	Design funding needed end of FFY 2020	Under evaluation	Design - $400,000 Construction - $3 million
Juvenile Sturgeon Habitat	Placeholder awaiting determination by proposed USFWS study	If determined an AOC specific detriment is found due to water level regulation or alterations	TBD	TBD	Design funding needed end of FFY 2022	Awaiting study	Design - $400,000 Construction – $2 million
Total approximated cost							$14,883,373

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HABITAT RESTORATION PLAN

Niagara River Area of Concern

October 2019

www.dec.ny.gov

Cover photo: foreground – shoreline protection berms at the north end of Motor Island in the upper Niagara River; background – berms of the original East River Marsh project near the south end of Grand Island. NYSDEC photo.

Introduction

The binational Niagara River Area of Concern (AOC) encompasses the entire River on both sides of the international border. Along New York's coast, the AOC extends from the mouth of Smoke Creek near the southern end of Buffalo Harbor north to the mouth of the Niagara River at Lake Ontario. The Province of Ontario and New York State independently developed Remedial Action Plans (RAPs) for their respective portions of the River.

In the Great Lakes Water Quality Agreement, the United States and Canada defined 14 potential Beneficial Use Impairments (BUIs) for AOCs that could result from changes in the chemical, physical, or biological integrity of the Great Lakes System. One of the 14 potential impairments that is present in the Niagara River is the Loss of Fish and Wildlife Habitat. Habitat loss has occurred to a lesser degree in the lower River (below Niagara Falls) than in the upper River, where the loss has been dramatic due to physical disturbances associated with industrial and residential development. The diversion of varying amounts of water for power generation has also impacted habitat in the upper River.

The Niagara River Remedial Advisory Committee's Loss of Habitat Working Group spent considerable time evaluating potential habitat improvement projects. The Working Group ultimately recommended, the full Advisory Committee accepted, and NYSDEC strongly endorses a set of projects that, in conjunction with past projects, will bring about cumulative restoration sufficient to substantially achieve the Loss of Fish and Wildlife Habitat BUI targets. Implementation of this plan is a critical management action for the Niagara River AOC.

Since publication of the U.S. RAP in 1994, over 30 habitat protection and improvement efforts of varying scale have occurred using various available sources of funds. Most of those projects are complete (see Appendix C for a list of projects). As a result of these state and local community efforts, the Niagara River's ecology is slowly improving. It has been designated an Important Bird Area and recently designated as a Ramsar Wetland of International Significance.

Habitat Restoration Plan

The Habitat Restoration Plan ("Habitat Plan") consists of the design and implementation of the projects listed below. This Plan will solely guide work prescribed under the Remedial Action Plan and will neither limit nor require any other projects within the Niagara River or its tributaries and upland ecosystems that may become possible through other governmental or non-governmental restoration programs.

The Habitat Plan projects will cumulatively restore approximately 100 acres of primarily shallow water/coastal wetland habitat. The Loss of Habitat Working Group identified this

type of habitat as the most significant loss to the Niagara River due to AOC-related causes. In addition, this type of habitat directly supports several of the River-dependent species of concern for the Degradation of Fish and Wildlife Populations BUI. NYSDEC has made every effort to coordinate the Habitat Plan projects with the Canadian RAP for the binational AOC to optimize river-wide fish and wildlife habitat restoration.

While the Loss of Habitat Working Group has carefully considered all the projects listed below, it recognizes that design and implementation of habitat restoration projects is especially challenging due to the multitude of environmental variables impacting each project's success. Therefore, if any Habitat Plan project still requiring funding is found to be infeasible or to have a low probability of success, NYSDEC and the Remedial Advisory Committee intend to select a replacement project of similar scope if possible.

NYSDEC and the Remedial Advisory Committee consider the projects listed below to be sufficient to substantially achieve the Loss of Fish and Wildlife Habitat BUI targets. Furthermore, with respect to coastal wetland habitat restoration, the projects in this Plan take advantage of every remaining reasonable opportunity adjacent to public property. Appendix B presents a supporting analysis.

General Recommendations

Parties implementing habitat improvement projects in the Niagara River should consider the following recommendations.

- Habitat projects, as well as sediment remediation projects, may disturb native mussel populations. Implementors should conduct mussel surveys before any such action and, if appropriate, should reseed impacted areas with native mussels following construction or remediation.

- When excavation is required for wetland enhancement or connectivity projects, implementors should make every effort to reuse the valuable wetland sediment.

- To ensure that habitat improvements are sustained in the long term, habitat projects must incorporate plans for site monitoring and maintenance following completion of project implementation.

- Implementors should seek to create ecological connectivity to upland habitat types wherever possible to increase the value of projects.

- Project opportunities that have the potential to leverage multiple funding sources should be implementation priorities.

Project List

The project list is divided into those that USEPA has already funded and those still requiring funding. Figure 1 shows the approximate project locations.

Of the unfunded projects, NYSDEC's highest priority for funding is the Ralph Wilson Centennial Park Lagoon project. Up to $2.5 million in matching funds is available from a private source if public funding is committed by spring of 2020. The fact sheet in Appendix A provides additional information. A preliminary estimate of the total cost of the project is $6 – 8 million.

The following acronyms appear in the project list:

EV	Emergent vegetation
FS	Feasibility study
NYSDEC	New York State Department of Environmental Conservation
NYSOPRHP	New York State Office of Parks, Recreation and Historic Preservation
SAV	Submerged aquatic vegetation
TBD	To be determined
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

Funded Projects

Project Title	Description	Goals	Implementor	Acreage	Timeline	Status	GLRI Funding
Spicer Creek	Installation of woody structure and shallow rock berms	Encourage SAV/EV growth with protection of shallows and shoreline from ice, waves, and other physical disturbances; added fish, amphibian, turtle and bird structure with partially submerged woody debris	NYSDEC	17	Design initiated in 2017	80% design, permitting under way	Design - $235,000 Construction - $1.9 million
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Unity Island Wetland	Wetland enhancement; open wetland to river	Restore, enhance and hydrologically connect the wetland to the river	USACE	12	Project initiated in 2014, construction started 2018	Near completion	$2,232,752

Projects Requiring Funding

Project Title	Description	Goals	Implementor	Acreage	Timeline	Status	Approx. GLRI Cost
West River Parkway	Shoreline softening	Connect river to upland using soft shoreline methods, increase resilience by protection of shallows and shoreline from ice, waves, and other physical disturbance	NYSOPRHP	.25	Implementor is ready to begin project as soon as possible	FS complete	$983,373
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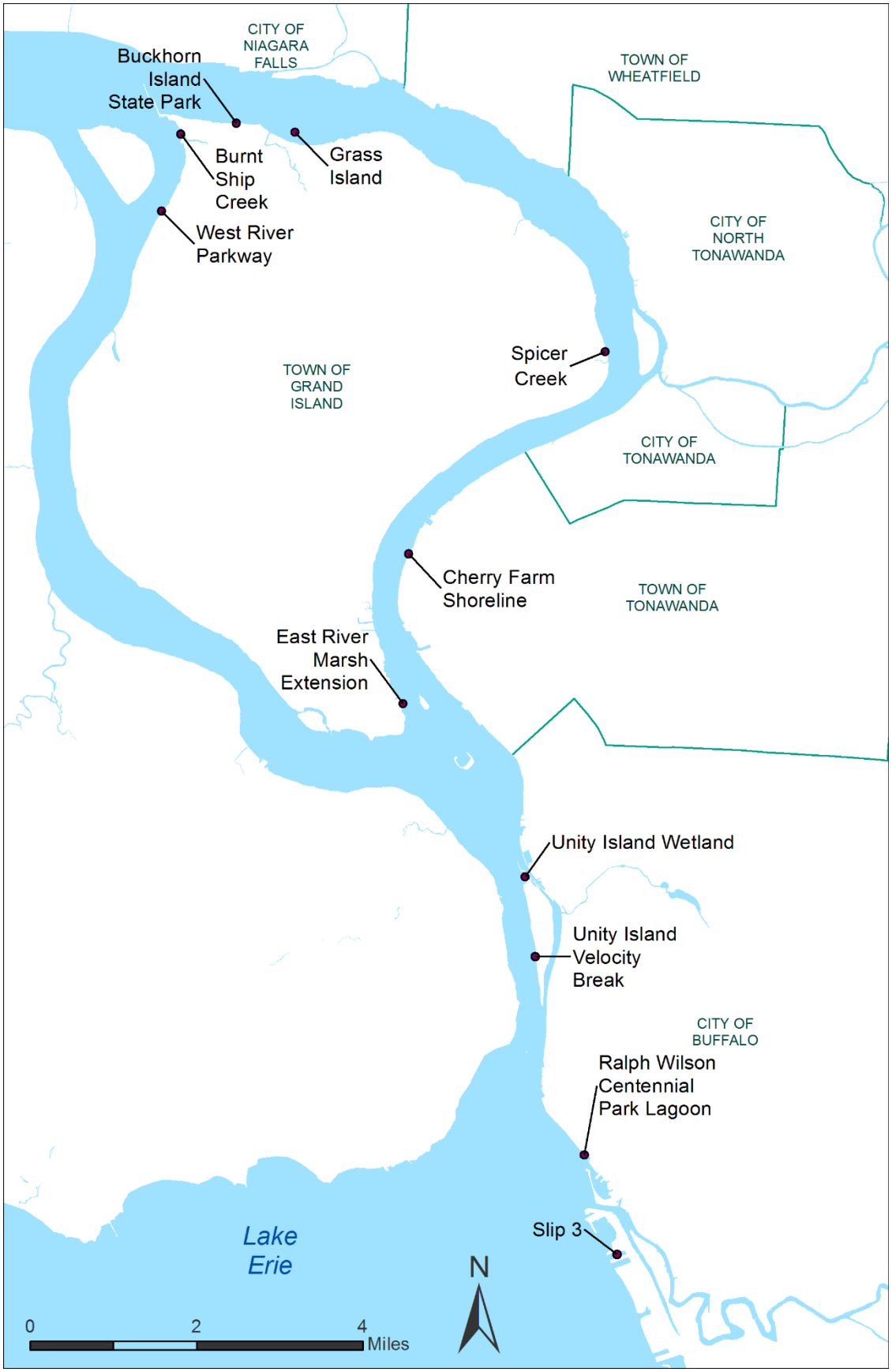

Figure 1 - Approximate Project Locations

Appendix A

Ralph Wilson Centennial Park Lagoon Project Fact Sheet

Geographic Context

LaSalle Park, located along Lake Erie and the Niagara River, and is adjacent to the Niagara River Area of Concern. It contains approximately 4,800 linear feet of shoreline, constructed predominantly of concrete seawall.

Ecological Context

The Niagara River near LaSalle Park is designated by the NYSDEC as Lake Sturgeon Habitat, and portions of the park's seawall and lagoon area are registered as USFWS Federal Wetlands. Additionally, the NYSDOS has designated the waters offshore of the park as Significant Coastal Habitat for Fish and Wildlife, to protect waterfowl such as loons, grebes, gulls, and terns, and fish species such as rock bass, white bass, smallmouth bass, yellow perch, walleye, northern pike, muskellunge, brown trout, rainbow trout, and coho salmon.

Priority for Restoration of Aquatic Habitat

In 1994, the Niagara River Remedial Action Committee designated LaSalle Park as a priority habitat site to be protected as restored. The park's upland habitat is categorized as shrub and grassland habitat, and was designated to be preserved in as natural a condition as possible. This upland coastal habitat is conducive to pelagic birds and gull species. The seawall comprising the waterfront edge of the park offers little to no aquatic habitat for nearshore aquatic wildlife, although some shallow areas outside of the main navigation channel exist, especially near the southern extent of the park, referred to as the "lagoon."

Due to LaSalle Park's recreational uses, very limited opportunities for ecological restoration exist on the upland portion. The waterfront edge and the lagoon have been identified as priority areas for aquatic habitat and ecological restoration. Implementation of naturalized "living" shorelines could restore aquatic habitat, and upland flooding and erosion from storm surges and wave action.

Submerged aquatic vegetation mapping performed in 2015 by O'Brien & Gere Engineers, Inc. And Quantum Spatial, Inc. found continuous Submerged Aquatic Vegetation (SAV) beds from the northern half of LaSalle Park, and nearly the entire lagoon. This expanse of SAV is also nearby the larger expanse of both patchy and continuous SAV coverage found in large amount in the channel behind the breakwall and river mouth, indicating extensive aquatic habitat in this region.

The lagoon area represents the best-bet opportunity for naturalization and enhancement. This area is a 4-acre "indent" into the seawall, and creates a protective cove that would support and protect aquatic habitat in an area with little to no wetland systems. Coupling this improvement project with a companion shoreline restoration along the park's remaining seawall would provide for at least 12 acres of enhanced wetland and riparian ecosystems.

The installation of berms and fish structures, Emergent Aquatic Vegetation (EAV)/Submerged Aquatic Vegetation (SAV) plantings, and shoreline softening techniques would conceptually enhance access and use of the lagoon by fish and wildlife, improve aquatic and riparian habitat, and support fish, amphibians, and benthic macroinvertebrates in the Niagara River AOC. Assessments of the lagoon and shoreline areas are currently planned to provide detailed technical data on bathymetry, wave and ice energy, erosive forces, etc., which will provide additional insights into the potential for and exact acreage of potential wetland restoration.

Time Sensitivity

The Buffalo Niagara region has a unique, yet finite, window of opportunity to implement habitat restoration at LaSalle Park. Specifically, a private foundation has allocated $40 million to park improvements and up to $2.5 million in additional funding to support coastal and shoreline habitat restoration if a 1:1 match is committed by the spring of 2020. Further, a $10 million long-term stewardship and maintenance fund has been allocated separately and specifically to maintain future restoration investments within the park. The City of Buffalo (landowner) has elevated LaSalle Park as a restoration priority and is a willing participant in the restoration planning process. This once in a lifetime opportunity would restore a significant area of coastal wetlands which will contribute to delisting the Niagara River as an Area of Concern.

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LaSalle Park Ecological Context

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Appendix B

Analysis of Opportunities for Coastal Wetland Restoration Adjacent to Public Property

NYSDEC conducted an analysis of opportunities for coastal wetland restoration adjacent to public property using ArcMap GIS software. For convenience, the analysis addresses Erie County and Niagara County separately.

Erie County

Using real property tax parcel data, the analysis began with the following steps to select public properties with potential for wetland restoration in the adjacent water:

- Eliminated any parcels with private owners and any with acreage less than 1 acre
- Selected parcels within 1 meter of the AOC Impact Area
- Using orthoimagery, eliminated any parcels completely underwater (mostly in the Black Rock Canal)
- Inspected orthoimagery for the parcels that were missing property class and owner information, removing those that were clearly residential, a marina, railroad property on Unity Island, plus the former Bethlehem Steel property and parcels in the confined disposal facility (CDF)
- Eliminated a remaining parcel in the CDF, parcels with limited frontage on the river, the Erie Basin Marina, and the Bird Island Pier
- Eliminated the Navy Operations Center, the Buffalo State College property, the County property at the foot of Hertel Avenue, and Black Rock Canal Park due to their location near the federal navigation channel
- Eliminated Times Beach because it is a former CDF and already has habitat value

After these steps, 32 parcels remained. Some properties consist of more than one parcel as shown in the table below. The table also indicates whether each property has a completed or planned wetland habitat project and, for those that do not, the reason that a project would not be feasible.

Property	**Habitat Project?**	**Reason for Infeasibility**
Buffalo Harbor State Park	--	Parcel is the public beach, not an appropriate habitat project location
LaSalle Park	Planned	
Unity Island (4 parcels)	Complete	

Property	Habitat Project?	Reason for Infeasibility
Motor Island	Complete	
Strawberry Island	Complete	
Beaver Island State Park	Complete	
Property (unidentified owner) with GM plant water facility	--	Minimal shallow water
Tonawanda Water Plant (2 parcels)	--	Minimal shallow water
Erie County Water Authority Property near Tonawanda Coke	--	Minimal shallow water
Park property along Tonawandas (15 parcels)	--	Minimal shallow water
Spicer Creek (3 parcels)	Planned	
Buckhorn Island State Park	Planned	

Niagara County

Using real property tax parcel data, the analysis began with the following steps to select public properties with potential for wetland restoration in the adjacent water:

- Eliminated any parcels with private owners and any with acreage less than 1 acre
- Selected parcels within 1 meter of the AOC Impact Area
- Eliminated lower river areas and Goat Island/Niagara Falls State Park (located near the brink of the falls)
- Eliminated several parcels with limited frontage on the river and one marina property

After these steps, seven parcels remained. Two of the properties consist of two parcels each as shown in the table below. The table also indicates whether each property has a completed or planned wetland habitat project and, for those that do not, the reason that a project would not be feasible.

Property	Habitat Project?	Reason for Infeasibility
Fishermans Park (2 parcels)	--	Minimal shallow water
North Tonawanda WWTP	--	Minimal shallow water
Gratwick Riverside Park	Complete	
“Picnic site” just east of Grand Island bridges (2 parcels)	--	Good SAV coverage already existing near shore
NYPA property extending from bridges along Niagara Scenic Parkway	--	No shallow water along most of this parcel. The east end (adjacent to the property above) has good SAV coverage near shore.

Appendix C

Additional Niagara River AOC Habitat Improvement Projects

Niagara River Habitat Enhancement

Projects Implemented 1994 - Present

(Not Including Habitat Plan Projects)

Single Location Projects

Union Ship Canal 2011

(Complete)

Lead Agency:

A brownfield remediation project at this location included restoration of ecological areas and features, such as reef groupings, benthic substrates, submerged and emergent wetland plantings, and an inland embayment area.

Tifft Marsh Preserve 1999

(Complete)

Lead Agency: Buffalo Museum of Science and NYSDEC

This project included implementation of beaver control, increasing open water and riparian habitat, and planting of emergent vegetation. Over 9,000 feet of channel was dredged to restore open water. Also planted giant bur-reed which is utilized by birds.

Tifft Marsh Restoration Project 2006

(Complete)

Lead Agency: Buffalo Museum of Science and NYSDEC

To restore open water habitat to this monotypic coastal cattail marsh, crews excavated five open water areas totaling 7.2 acres with the removal and storage of approximately 24, 000 cubic yards of wetland soil for future use. Planted 1.3 acres of islands to buttonbush.

Targeted Species: Pied billed Grebe, Least Bittern, Black Tern, Common Moorhen, marshbirds, wading birds, muskrats and reptiles.

Cost: $85,000+

Tree Regeneration at Tifft Nature Preserve 2010 - 2012

(Complete)

Lead Agency: Buffalo Museum of Science

This project includes planting of tree seedlings to maintain the tree canopy in the approximately 100 acres of woodlands on the 265 acre preserve. It will provide valuable habitat for migrating songbirds and other wildlife. Other habitat enhancements include the planting of small trees and shrubs, protecting trees and seedlings from wildlife damage, enhancing soils with clean onsite wetland spoils, and controlling invasive species.

Trees currently grow on much of the preserve, but the long-term presence of forest habitat is uncertain. Most trees on the preserve are cottonwoods, which naturally established themselves following commercial and industrial abandonment of the site. As colonizers of disturbed areas, cottonwoods are adapted to grow quickly, but they have a short life. Many of the trees on the preserve will be reaching the end of their life in the coming years and most are already showing signs of aging and decline. Young trees need many years to mature and the process of regeneration normally begins decades in advance. However, this is not naturally occurring at the Preserve for a number of reasons, including a large deer population, invasive plant species, a shallow soil profile over rocky fill, and limited natural seed sources. This project is designed to mitigate all of these deterrents.

$300,000 over three years

Vernal Pool Enhancement at Tifft Nature Preserve 2017 - 2018

Lead Agency: Buffalo Museum of Science

Vernal pools are critical breeding environments for some amphibians, including the Blue-spotted salamander. This salamander, which is listed as a species of “Special Concern” and a “High Priority Species of Greatest Conservation Need” in New York, occurs within and adjacent to the project area at Tifft Nature Preserve. Vernal pools also can support large populations of invertebrates, which are major food sources for many species of migratory songbirds that are also of significant conservation value. This project will directly benefit amphibians, birds, and invertebrates, and will promote the ongoing restoration of an urban brownfield into quality wildlife habitat.

The project has two major components:

Upland habitat enhancement – Amphibians require both aquatic breeding sites and upland habitat to complete their life cycle. A buffer of upland forest habitat surrounding wetland depressions will be enhanced by controlling invasive species and planting native trees to maintain a forest ecosystem. The planting of native trees will also enhance stop-over habitat for many species of migratory songbirds.

Wetland depression enhancement – Seasonally flooded wetlands are critical for obligate vernal pool species of amphibians and invertebrates. It is important that these depressions hold water long enough for the species’ life histories before they dry up. The hydroperiod of the wetland depressions at Tifft Nature Preserve is currently too short. This project will control invasive species within three depressions and add synthetic liners to areas within the depression basins to extend the hydroperiod.

The project also includes the installation of a deer exclosure fence.

Bell Slip 2006 - 2008

(Complete)

Lead Agency: Niagara Frontier Transportation Authority

Purpose: construct shallow-water fish habitat that is conducive to spawning for local fish species.

As part of a brownfield remediation project, the Niagara Frontier Transportation Authority constructed the shallow-water fish habitat within an Outer Harbor bay area known as the Bell Slip.

Times Beach Invasive Plant Removal Project Began in Fall 2012

(Complete)

Lead Agency: U.S. Army Corps of Engineers

Native species at Times Beach Nature Preserve have been overrun by a number of invasive alien species including phragmites, Japanese knotweed, mugwort and common buckthorn.

This project is a five-year effort to adaptively manage Phragmites on 31 acres through a combination of mechanical and chemical control coupled with active restoration of native plant species. The end goal of the project is to restore a healthy population of native plant species. As a demonstration project using proven techniques from around the country to control and manage invasive species, the project will also allow an evaluation of the efficacy of the methods employed and serve as a guide for similar projects around the Great Lakes.

Work at Times Beach began in Fall of 2012 with mechanical treatment, cutting and hauling of 145 tons of phragmites.

Funding source: Great Lakes Restoration Initiative Funding through the USACE Engineer Research and Development Center's Aquatic Plant Control Research Program.

Unity Island Invasive Species Management and Habitat Restoration Contract awarded September 2015

Lead Agency: U.S. Army Corps of Engineers

USACE Buffalo District awarded a $1.39 million contract, September 30, 2015 to Tidewater Inc. of Elkridge, Maryland in support of the Unity Island Aquatic and Riparian Invasive Species Management and Habitat Restoration Project for the removal of aquatic invasive species (AIS) from Unity Island.

As part of the Great Lakes Restoration Initiative (GLRI), the Unity Island project will be a demonstration project conducted in coordination with the city of Buffalo and the USACE Engineer Research and Development Center. Methods used to control AIS will be monitored for a period of three years, before potentially being employed throughout the Great Lakes in coastal wetland environments similar to Unity Island.

The goal of this demonstration is to evaluate the efficacy of a number of invasive species removal methodologies. In particular we aim to test a hydraulic control method that could assist in combating invasive species and promoting native species succession. The hydraulic control method would allow for a unique passive approach to aquatic plant control. Combined with both mechanical and chemical/herbicide, the hydraulic control method may lead to significantly more efficient application protocols. Lastly, the project aims to promote the natural succession processes by selectively creating space for native species in submerged and emergent habitats.

The project includes, implementing AIS control and management, introducing container-grown woody, shrub, and herbaceous native plant species, planting in-water submerged aquatic vegetation (SAV), installing in-water fish attraction structures, planting in-channel SAV and installing fish attraction structures, and expand riparian and wetland buffers. A pump station for water circulation will be installed between the North Pond to the South Pond and then downstream from the South Pond, through the watercourse, and into Middle Pond. Culverts will be replaced and redesigned between North and Middle ponds and within the watercourse for improved hydraulics and fish passage ultimately creating conditions for low-flow fish passage.

Invasive species targeted for removal include common reed (Phragmites australis), mugwort (Artemisia vulgaris), purple loosestrife (Lythrum salicaria), tree of heaven (Ailanthus altissima), common buckthorn (Rhamnus cathartica), and eurasian watermilfoil (Myriophyllum spicatum).

Strawberry Island - Phase 1 and 2 Completed 1997

(Complete)

Lead Agency:

Multiple projects have been completed to protect this island from erosion and restore aquatic habitat, which provides waterbird nesting, resting and feeding habitat, and fish spawning, nursery and foraging habitat.

Agencies Involved: NYSDEC, NYSOPRHP

Phase I: repair in 1994 of a 60 foot wide breach of the western arm of the island. The breach occurred in 1993 due to erosion caused by ice and wave action. Continued erosion would have jeopardized the physical integrity of the remainder of the Island and the lagoon between its east and west arms.

Phase II: in 1996 rip-rap protection was installed along 1,000 feet of eroding shoreline at the upstream end of the Island and an additional 400 feet of beach was stabilized. A large tree and shrub revegetation program was implemented in 1997.

Strawberry Island - Phase 3 Completed 2002

(Complete)

Lead Agency: NYSDEC

Purpose: erosion control and aquatic habitat restoration

Targeted Species: Pied billed Grebes, American Coots, shorebirds and wading birds.

Agencies Involved: NYSDEC (lead) and NYSOPRHP

Cost: $1,000,000

Habitat Work Completed: Three acres of riverine marsh habitat created. Nineteen hundred and fifty feet of breakwall installed for protection of the island and marsh habitats.

Strawberry Island Wetland Restoration Completed 2018

(Complete)

Lead Agency: New York Power Authority

Strawberry Island contains upland and emergent marsh habitats not typically found in the upper Niagara River. This project will extend previous NYSDEC shoreline protection and wetland enhancement measures. It will increase the long-term stability of Strawberry Island and create approximately 7 acres of new wetland habitat.

The planting phase of this project is expected to be completed in 2018.

Primary target species – waterfowl, wading birds, native fish, and wetland plant community
Secondary target species – passerines, muskrats, and herpetofauna

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Motor Island Acquisition 1998

(Complete)

Lead Agency: NYSDEC

Purpose: to protect colonial nesting birds.

With the assistance of the Nature Conservancy, New York State purchased Motor Island in 1998. The acquisition of this largely undeveloped 6.3 acre island by the Department of Environmental Conservation and its designation as a State Wildlife Management Area was an important step in the protection and restoration of biological diversity within the Niagara River Corridor. The Island is now managed to protect the unique heronry of great egrets, great blue herons and black-crowned night herons located there. The acquisition of Motor Island also enhanced efforts to protect underwater spawning and nursery weed beds crucial to the reproduction and survival of fish.

Motor Island Planning/design began in 2007; constructed 2012

(Complete)

Lead Agency: New York Power Authority

Purpose: improve habitat by the restoration of natural shoreline features such as wetland plants and shallow water areas that serve as habitat for young fish as well as Herons and Egrets, which nest on the island, to hunt for their prey.

Beaver Island Wetland Restoration Completed 2011

(Complete)

Lead Agency: New York Power Authority

Purpose: restore hemi-marsh and shallow pools to the Beaver Island shoreline.

Over eight acres of fill up to five feet deep that was placed in the former riverine wetland in the 1960's was removed. The project also included site grading and invasive species control. Diverse native vegetation was planted to provide food and cover for wildlife.

In a matter of months, the site was transformed into a diverse wetland environment with hundreds of thousands of native plants which provide food and cover for everything from frogs to fish to ducks.

Frog Island Restoration Construction began in 2013

(Complete)

Lead Agency: New York Power Authority

Historically, a small group of islands could be found between Motor Island and Strawberry Island. Anecdotal data indicate that these islands were mined for gravel many decades ago leaving only relatively homogenous shallow water habitat that lacks complexity and structure. This project will restore habitat complexity and create marsh and submerged coarse substrates for fish and wildlife in the area formerly occupied by the islands.

Beaver Island Shoreline and Coastal Wetland Habitat Improvement 2018 - 2019

(Complete)

Lead Agency: Buffalo Niagara Waterkeeper

The purpose of the project is to create and restore riparian and nearshore habitats along a portion of the shoreline within Beaver Island State Park. The goal of the Project is to utilize bioengineering and/or hybrid restoration techniques to establish riverine and coastal wetland habitats and restore degraded shoreline areas to create healthy ecological conditions that will benefit a diverse community of plant and animal species. Project components envisioned in the conceptual plan include the strategic installation of barrier rock reefs, the creation of new habitat in nearshore areas between the barrier rock reefs, invasive plant species removal, and planting of native species.

Waterkeeper received funding from the Habitat Enhancement and Restoration Fund.

East River Wetland at Beaver Island State Park 2004

(Complete)

Lead Agency: NYSOPRHP

Purpose: control erosion, restore vegetated aquatic and marsh habitat

Targeted Species: Pied billed Grebes, American Coots, Least Bitterns, shorebirds, wading birds and waterfowl.

Agencies Involved: NYSOPRHP (lead) and NYSDEC

Cost: $300,000

The East River Wetlands site is located along 2,500 feet of the eastern shore of Grand Island adjacent to the Beaver Island Golf Course. It consists of 29 acres of uplands, wetlands and a protected underwater zone and contains locally unique riverine and wetland habitat. This project protected 12 acres of riverine emergent marsh from wave erosion, protected vegetated aquatic habitat from erosion, and created 0.4 acres of riverine emergent habitat and 0.7 acres of open water habitat within the marsh.

Cherry Farm Site Completed 1999

(Complete)

Lead Agency:

Wetland and vegetated shallow water areas were constructed along 1,700 feet of the Niagara River's shoreline at the Cherry Farm hazardous waste site. The work created three alternating sections of wooded shoreline and submergent habitat. Submergent vegetation including wild celery was planted on the river side of the gabion wall and woody shrub vegetation including black willows was planted on the upland side of the wall. Through the construction of rip-rap barrier islands parallel to the shoreline, 25 foot wide troughs were created to form an emergent marsh environment.

Pettit Cove Completed 1995

(Complete)

Lead Agency:

The Pettit Cove restoration project included the installation of erosion protection systems, regrading, placement of fill covered with 12 inches of topsoil and the planting of trees and wetland vegetation to restore the natural habitat of the area. The planted vegetation consisted of cattails, arrowhead, iris and bulrush. Above the water level, silver maple, silky dogwood and cottonwood trees were planted.

Spicer Creek Acquisition 2004

(Complete)

Lead Agency: NYSDEC

Purpose: to protect this wetland and its associated upland from residential development.

Targeted Species: Bald Eagle, freshwater mussels, wading birds and fish nursery.

Agencies Involved: NYSDEC (lead), USACOE

Cost: $365,000

Habitat Work Completed: New York State acquired 34.29 acres of forested, emergent and wet meadow wetland and associated upland as a new DEC Wildlife Management Area.

Spicer Creek Restoration Construction completed 2019

(Complete)

Lead Agency: Buffalo Niagara Waterkeeper

Spicer Creek runs through River Oaks Golf Club between Whitehaven Road and East River Road. Buffalo Niagara Waterkeeper will work with the Golf Club to implement a shoreline restoration project with EPA funding. The intent of the project is to reduce non-point source pollution of the waterway, improve water quality, and improve ecological conditions along the creek. Restoration will include bank reshaping, shoreline plantings, installation of bioswales, wetland creation, and invasive species removal.

Gratwick-Riverside Site Remediation 2000 - 2001

(Complete)

Lead Agency:

Purpose: provide shallow water wetlands for wildlife and fisheries habitat enhancement.

As part of a hazardous waste site remediation project, rock islets (rock-mound breakwaters) were constructed along the 2,400 foot length of the Gratwick-Riverside site at a distance of 50 to 75 feet from the edge of the water at the shore. Sediments between the shoreline and the rock islets were covered with 12 inches of hydric soils (saturated soils that support wetland vegetation) and/or rip-rap. Shoreline soil was stabilized with common soil, gabion mats and vegetation along the length of the site.

Buckhorn Island Marsh Habitat Restoration 1996 - 1999

(Complete)

Lead Agency:

Buckhorn is a 150-acre marsh bordering the Niagara River in the Town of Grand Island. It is the largest remaining emergent wetland on the River. The use of the Niagara for hydropower generation and other uses resulted in lower water levels within the Marsh compared to historic optimal conditions.

The former channel of Burnt Ship Creek, which flows through the Marsh, had become filled with debris and sediment so that there was no longer an effective water inlet from the Niagara River on the Marsh's east side. An inlet channel, 1,800 feet in length, was constructed to restore adequate inflow. A system of two sheetpile weirs and associated dikes was added to stabilize water levels within a major portion of the marsh. Open water habitat was restored through excavation of over 6,000 feet of channel, 30-45 feet in width, and removal of approximately 30,000 cubic feet of excavated material.

Invasive Species Removal in Forested Habitats of Buckhorn Island SP March 2017 - December 2018

Lead Agency: Buffalo Audubon Society

This project will remove woody invasive species from 100 acres of forested habitat at Buckhorn Island State Park. Cut biomass will be consolidated into piles across the project area and left to decompose.

This project is funded by Greenway funding ($185,000) and by a National Fish and Wildlife Foundation Sustain our Great Lakes grant ($235,000).

Burnt Ship Creek - Inland Construction anticipated in 2019

Lead Agency: Ducks Unlimited

Wetland enhancement work to complement the NYS OPRHP Burnt Ship Creek project.

102nd Street Embayment Completed 1999

(Complete)

Lead Agency:

After the removal of contaminated sediment, a total of 4.5 acres of the embayment were backfilled with sand to depths of one to two feet, graded and compacted. Wild celery (Vallisneria americana) was planted in the embayment sand backfill to provide restoration of valuable aquatic plant beds which existed prior to the remediation work.

Niagara Gorge and Rim Restoration and Enhancement January 2017 - December 2019

Lead Agency: WNY Land Conservancy

This project is the first phase of "Restore the Gorge," which is a multi-year effort in collaboration with many partners to maintain and enhance the ecological diversity of the Niagara Gorge. This phase is funded with $996,030 from the Niagara River Greenway Ecological Standing committee. It will restore and enhance wildlife habitat within 34 acres of New York Power Authority (NYPA) land in the Niagara River Gorge and Rim from the Niagara Falls Railroad Bridge to the Discovery Center. This includes riparian, grassland, and forest habitats critical to rare and declining plants and wildlife. The project site includes approximately 6,000 feet of shoreline along the Niagara River. The goals of this work are to increase the ecological health of the Niagara River Gorge and Rim, provide the conditions to allow native flora and fauna to flourish, and increase biological diversity of native flora and fauna, especially rare and declining species. Specifically, the project includes extensive non-native herbaceous, woody, and tree species removal. Native trees will be planted where significant non-native tree removal occurs. The project also includes a native grassland demonstration site along the rim of the gorge, plus community engagement and educational components.

Deveaux Woods Property 2000

(Complete)

Lead Agency:

New York State purchased 51 acres to create a new state park. Protects 5 acres of old growth forest.

Stella Niagara Preserve Acquisition June 2015

(Complete)

Lead Agency: Western New York Land Conservancy

Cost: $3.27 million

The Land Conservancy purchased this ecologically and historically important property from the Sisters of St. Francis to protect it from development. With 29 acres and over a quarter-mile of shoreline, it is the largest privately-owned, undeveloped tract of land along the entire length of the Niagara River.

The Land Conservancy has prepared a Vision Plan to help guide landscape restoration design and the ongoing stewardship and maintenance of the Preserve. It will inform decisions about public access, as well as activities, programming, and collaborations at the Preserve. It will also help guide the creation of interpretive elements and education components, from signage and displays on-site to education and outreach materials about the Preserve.

Sources of funding for the purchase included $1,853,487 from the Niagara Relicensing Habitat Enhancement and Restoration Fund, $500,000 from the Greenway Ecological Standing Committee, $300,000 from the U.S. Fish and Wildlife Service's Great Lakes Restoration Initiative through the Joint Venture Habitat Protection and Restoration Program, and $150,000 from the Greenway's Town of Lewiston/Host Communities Standing Committee.

Avian Restoration at Joseph Davis State Park 2011 - 2014 (Complete)

Lead Agency: Buffalo Audubon Society

SOGL grant to Buffalo Audubon Society - $200,000:

Buffalo Audubon Society and partners restored and enhanced a total of 5.5 acres across 85 acres of critical bird habitat at Joseph Davis State Park along the Niagara River. Through invasive species control and seeding and planting of native vegetation, the project benefited priority bird species by improving forested wetland, scrub-shrub wetland and shrub/scrub early successional habitats throughout the park. This work enhanced and perpetuated the site as an official Bird Conservation Area. In addition, it addressed habitat-related Beneficial Use Impairments and will contribute to the delisting of the Niagara River Area of Concern by helping to reverse the loss of bird habitat. Project partners included Audubon New York, the Town of Lewiston, NY, the New York State Office of Parks, Recreation and Historic Preservation, and Ecology & Environment, Inc.

Announced June 2011: Great Lakes Watershed Habitat and Species Restoration Initiative Grants Programs administered by the U.S. Fish and Wildlife Service - Buffalo Audubon Society will receive a $160,031 grant for habitat restoration at the Joseph Davis State Park (JDSP), along the Niagara River shoreline. The Buffalo Audubon Society will use the funds to restore at least 35 acres of habitat for breeding and migrating birds along the Niagara River corridor between Lakes Erie and Ontario. The 320 acre JDSP provides a large, relatively underdeveloped habitat for local wildlife, particularly important to many bird-species living along the Niagara River corridor.

Multiple Location Projects

Osprey Nesting Began in 2007

Lead Agency: New York Power Authority

Purpose: increase nest site availability for osprey by installing six pole-mounted nesting platforms.

Five platforms have been installed to date.

Upper Niagara Fish Attraction Structures Completed 2008 (Complete)

Lead Agency: New York Power Authority

Four structures placed in the upper River – One shallow-water structure used a stone-and-log groin design, while three deep-water structures used a boulder field, rock-wing saddleback, or rock slope design.

Monitoring shows that the structures are holding up well. Many fish were observed in the structures, mostly small mouth bass.

Control of Invasive Species – Buckhorn and Tifft Marshes Initiated in 2010

Lead Agency: New York Power Authority

Purpose: control exotic and invasive plant species and promote the growth of a diverse community of native wetland species to enhance and preserve wetland function. Targeted species are phragmites, Japanese knotweed and buckthorn.

Some work was also carried out at other NYPA Habitat Improvement Project sites (Motor Island and Little Beaver Island Wetland Restoration).

The project began with the mapping of Invasive species in Buckhorn and Tifft marshes and the identification of priority areas for control. Area-specific action plans were developed and a contractor procured to begin control activities in 2010. Aggressive treatment continued in 2011, with follow-up work in 2012.

Black Alder Removal at Buckhorn Island and Beaver Island State Parks 2014 - 2016

(Complete)

Lead Agency: Buffalo Audubon Society

The Buffalo Audubon Society removed invasive European Black Alder from sedge meadow and marsh habitats at Buckhorn Island and Beaver Island State Parks on Grand Island. This project helped to restore high-quality habitat for birds and other wildlife, and to protect native species and habitats in the Niagara River Important Bird Area.

The project, funded by the Niagara River Greenway Ecological Standing Committee, is a collaboration between the Buffalo Audubon Society and the New York State Office of Parks, Recreation and Historic Preservation. Additional project partners include the New York State Department of Environmental Conservation, Applied Ecological Services of Waterloo, NY and Ecology & Environment, Inc. of Lancaster, NY.

Common Tern Habitat Management and Improvement Ongoing since 1985

Lead Agency: NYSDEC

Purpose: Maintain and increase populations of the "threatened" Common Tern in the Niagara River AOC.

Agencies Involved: NYSDEC, Buffalo State College

Four Common Tern nesting sites in the AOC were improved through the use of barrier fencing, nest shelters and providing eight tons of gravel nest substrate each year. Efforts also included protection of nest sites from human disturbance (fireworks).

Common Tern Nesting Construction completed 2010

(Complete)

Lead Agency: New York Power Authority

Purpose: increase the local common tern population by creating or enhancing nesting sites and increasing tern breeding productivity.

NYPA placed pea gravel nesting substrate in four areas on three Buffalo Harbor breakwalls. Improved habitat totals 10,570 square feet. Improvements also included installation of plastic perimeter fencing and deployment of plywood chick shelters.

The project has been a success, with Buffalo Harbor now having the largest and most productive Tern colony in the Great Lakes.

Annual maintenance and monitoring is ongoing.

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