DUCKS UNLIMITED

Draft
Long Island In Lieu Fee Prospectus

July 11, 2024
NAN-2024-267

Submitted to:

U.S. Army Corps of Engineers
NY Regulatory District
Jacob K. Javits Federal Building
Attn: Mitigation
26 Federal Plaza,
New York, NY 10278-0090

Table of Contents

List of Tables

List of Figures

List of Appendices

EXECUTIVE SUMMARY

Ducks Unlimited, Inc. proposes to develop the Long Island In-Lieu Fee Program to provide compensatory mitigation for wetland impacts. As the world's leader in wetland conservation, Ducks Unlimited will harness our extensive wetland restoration, and mitigation experience to provide an innovative, cost-effective, watershed-scale mitigation option for Long Island. The Ducks Unlimited Long Island ILF Program (Program) will develop and implement projects of ecological significance, in close coordination with the goals, objectives, and recommendations identified in regional conservation plans, including the Peconic Estuary Partnership, Long Island Sound Study, New York-New Jersey Harbor Estuary, and South Shore Estuary Reserve comprehensive management plans.

The Program will provide a third-party compensatory mitigation option for unavoidable impacts to waters of the United States (tidally-influenced Estuarine settings) permitted by the U.S. Army Corps of Engineers New York Department of Environmental Conservation and may serve as an option for environmental damages, as defined by the 2008 Compensatory Mitigation for Losses of Aquatic Resources-Final Rule (33 CFR Part 332).

Increasing development pressures including renewable energy development, transmission, infrastructure maintenance, and sea level rise adaptation all indicate the need to advance the pace and scale of wetland conservation on Long Island. Compensatory mitigation projects can and should, contribute to recovery of coastal estuaries by being in alignment with regional conservation planning efforts. This Program provides the link between efforts to meet regional conservation goals and efforts to compensate for permitted impacts to tidal wetlands in a way that provides for a net increase in aquatic resource area and condition.

This draft Prospectus presents information guiding development and establishment of the Program. The Program will be operated with input, collaboration, and approval from the Interagency Review Team with additional guidance from other federal, state, local, and private stakeholders on Program development and implementation.

1 INTRODUCTION

1.1 Program Sponsor

Ducks Unlimited, Inc. (DU) proposes to establish the Ducks Unlimited Long Island In-Lieu Fee Program (Program) to provide a mitigation option at a watershed-scale, prioritizing implementation of ecologically significant tidal wetland projects. This Program will advance tidal wetland conservation by linking together the goals of the conservation community, private industry, and regulatory community.

DU is the largest and oldest wetland conservation organization in the world working to conserve, restore, and manage wetlands and associated habitats for North America's waterfowl. In the past two decades DU's practical, interdisciplinary, on-the-ground approach to designing and implementing wetland restoration has resulted in the restoration or protection of 59,367 acres in New York State. DU has partnered on over two-dozen projects on Long-Island, and dozens more coastal projects on New England's Atlantic coast. DU's experience in the Northeast also extends to Sponsorship of In-Lieu-Fee (ILF) programs. Through DU's first 20 secured New York and Vermont ILF projects, DU has directly conserved 2,584 acres and restored hundreds of wetland acres, satisfying hundreds of permits. This experience executing on all aspects of ILF Program and project delivery makes DU the largest provider of mitigation credits in both of those states. DU is experienced completing all phases of wetland mitigation from site-identification, planning, construction, monitoring, adaptive management to long-term protection & stewardship, and is experienced at administering ILF programs. DU will leverage its experience in land protection, coastal restoration, and its unparalleled public and private partnerships to operate the Program.

DU's partnership-based conservation model relies on close collaboration with federal, state, local, and private partners to make successful and ecologically significant wetland projects possible. DU's expertise and experience in wetland conservation plays an import role in the direct development and practical implementation of wetland conservation on Long Island. This Program aligns with DU's increasing focus on restoring coastal wetlands along the eastern seaboard and will take advantage of our growing partnerships throughout the region.

1.2 Status of Wetland Conservation on Long Island

Long Island is a diverse landscape with low and high salt marshes, mudflats, coastal grasslands, freshwater wetlands, shallow bays, eelgrass beds, and other unique habitats (NYNHP 2024). These wetlands provide flood and storm protection, water filtration, carbon sequestration, recreation, economic opportunities, and a suite of other ecosystem services to the local community. Long Island is one of the most densely populated areas in the United States (5,661 people / mi^2). The health of Long Islands' unique habitats is directly impacted by the local economy and population density pressures (USCB 2022).

Long Island's Southern and Northern watersheds face several challenges including historic legacies of coastal wetland drainage and impairment, population growth, stormwater surges, pollution, nutrient loading, aging infrastructure, and rising sea levels – all fueling tidal wetland degradation and loss. Since 1974, tidal salt marshes have declined at a rate of 85 acres annually, resulting in nearly 3,000 acres lost through 2008 (Cameron Engineering and Associates 2015).

This rapid loss of tidal wetlands, and associated ecosystem services, substantiates the need for increased tidal wetland restoration and conservation. Moreover, salt marsh dependent species such as salt marsh sparrow (*Ammospiza caudactus*), and black duck (*Anas rubripes*) also continue to decline, underscoring the need to accelerate tidal wetland restoration efforts (Hartley and Weldon 2020, Ringelman and Williams 2018).

1.3 Regional Wetland Conservation Planning Overview

Long Island has four existing Estuary Management Programs (EMPs) including that serve the basis for conservation planning in the focal region.

- The Peconic Estuary Partnership (PEP),
- Long Island Sound Study (LISS),
- New York – New Jersey Harbor Estuary Program (HEP), and
- South Shore Estuary Reserve (SSER).

These EMPs represent partnerships between state, local, and federal government, conservation organizations, the scientific community, and private citizens with the unified mission of protecting estuary natural resources and ecological communities.

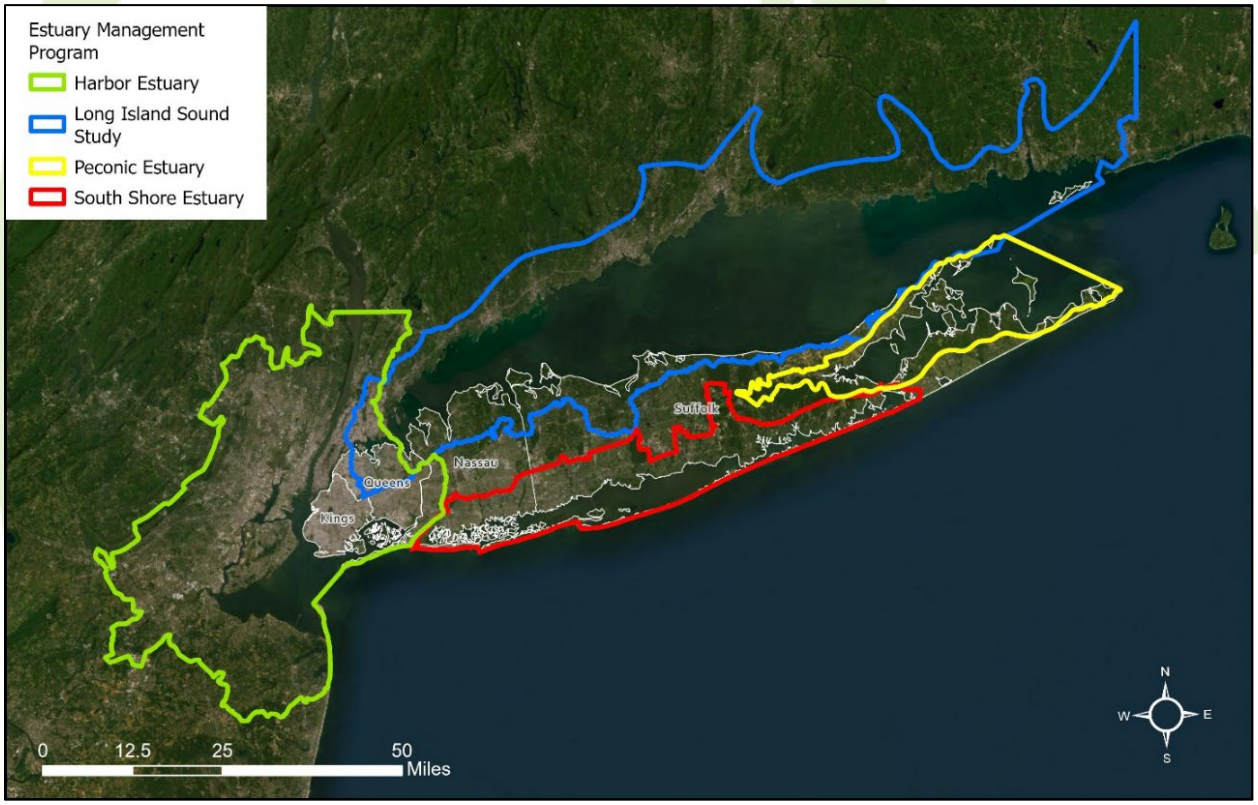

Figure 1. Long Island Estuary Management Program Boundaries

The Long Island Sound Study (LISS) EMP is situated along the Northern coast of Long Island and Southern coast of Connecticut covering 1,320 square miles and 600 miles of coastline. In

1985 the U.S. Environmental Protection Agency (EPA) identified LISS as an estuary of national significance for inclusion in the EPA's National Estuary Program (NEP). HEP followed suit and joined the NEP in 1988, including Long Island' Queens and Kings counties. In 1992, PEP was incorporated into the NEP covering 442 square miles of Long Island's eastern coast. SSER covers the southern coast of Long Island with an area of 326 square miles and 75 miles of coastline. While SSER is not a part of the NEP, the New York State Legislature adopted the SSER Act of 1993 recognizing the need to manage the estuaries' unique resources. Each program has developed management plans that identify critical issues and associated action plans guiding conservation efforts. Compensatory wetland mitigation could provide important complementary financing to achieve wetland protection, enhancement, and restoration goals of identified in these plans.

The PEP, LISS, HEP and SSER have all developed strategic frameworks for protecting and restoring Long Island's estuary protected areas through the creation of Comprehensive Conservation Management Plans (CCMP). These plans were created through government and non-government partnerships with public input and provide actionable guidance for long-term conservation goals.

The PEP-CCMP (2020a) identifies four goals, eight objectives, and 35 actions to find and implement solutions to key environmental challenges affecting tidal wetlands. Actions include identifying and prioritizing wetland restoration projects, identifying sites where eelgrass restoration is feasible, and reviewing existing wetland and shoreline protection regulations to draft laws that strengthen protections and increase resilience to climate change.

The LISS most recent CCMP (2015) provides summaries of the program's annual progress. LISS identified four overall themes including clean waters and healthy watersheds, thriving habitats and abundant wildlife, sustainable and resilient communities, and sound science and inclusive management with 139 specific implementation actions to help achieve program goals. Within these themes, ecosystem targets include restoring 2,000 acres of eelgrass habitat, restoring 515 acres of tidal wetland habitat, conserving 3,000 acres of open space in New York, and increasing connectivity of coastal habitats by 2035.

HEP completed a CCMP in 1996 that was updated with the publication of the NY-NJ Harbor & Estuary Program Action Agenda 2017-2025 (Pirani et al. 2018). The plan describes five long-term goals, and outlines specific objectives and actions needed to advance progress towards cleaner water, restored fish and wildlife habitat, improved public access, more efficient maritime activities, and robust community engagement.

SSER completed a CCMP in 2001 resulting in more than $650 million in funding for 450 projects. This plan was updated in 2022 to address emerging issues including Superstorm Sandy, sea level rise, and the increasing effects of climate change. Actions within this plan include improving the ecological function and productivity of the estuary by increasing the quality and quantity of its wetlands, and improving coordination of wetland evaluation, restoration, and protection efforts (SSER 2022).

The enhancement, restoration, creation, and permanent protection of tidal wetlands is a common

goal among these management plans; however, progress is often stalled due to a lack of resources. Introducing a compensatory wetland mitigation option that facilitates protection and restoration (including reestablishment, establishment, rehabilitation, enhancement) of large wetland complexes, while addressing regional conservation priorities, would provide complementary financing to achieve these long-standing goals.

1.4 Program Summary

The Program will provide compensatory mitigation for activities permitted by Sections 404 and 401 of the Clean Water Act, and/or Section 10 or the Rivers and Harbors Act within a subset of the U.S. Army Corps of Engineers (USACE) New York District's (NY District) regulatory boundary. Additionally, the Program will service activities permitted under New York State Environmental Conservation Law (ECL) Article 15 Title 5 (Protection of Waters/Stream Disturbance) and Article 25 (Tidal Wetlands) within region 1 (Nassau and Suffolk counties) of the New York State Department of Environmental Conservation (NYS-DEC) regulatory boundary. The Program may serve as an option for environmental damages cases or other regulatory requirements as directed by regulatory agencies.

The Compensation Planning Framework (see Chapter 5) is designed to articulate the alignment of the Program's goals and objectives with existing conservation planning frameworks. Implementing large, ecologically significant wetland restoration projects are the Program's main priority, yet these can be expensive and time-consuming undertakings. Land acquisition costs, extensive planning and project development timelines, challenging construction conditions, and sensitive ecosystem resources all ensure a meaningful project is a multi-year, financially demanding undertaking. To overcome this challenge and meet requirements for Program success, as established in the 2008 Compensatory Mitigation for Losses of Aquatic Resources-Final Rule (2008 Final Rule), the Program must secure enough credit sales within the required window to generate sufficient funds to cover all project costs from development to endowment. This is only possible within a regional watershed-based approach utilizing the proposed Service Areas (See Chapter 3).

The Program's Service Areas include the Southern Long Island (HUC 8-02030202) and Northern Long Island (HUC 8-02030201) watersheds (Figure 2). Within these Service Areas, mitigation options are lacking (see Section 2.1). The Program proposes to establish for sale Tidal (Estuarine) Credits encompassing the tidally influenced ecosystems as defined in section 3.1 to provide broad applicability for a range of permitting statutes while aligning with regional conservation plans. The Program will provide the opportunity to bridge compensatory mitigation needs while advancing the pace and scale of regional tidal wetland conservation through a net increase a range of tidal marsh ecosystems.

The Program will prioritize developing and implementing large, ecologically significant tidal wetland conservation projects. Larger projects are known to support greater wildlife diversity, reduced deleterious edge effects, increased ecological stability. Permittee responsible mitigation (PRM) projects tend to be smaller and have higher failure rates (Race and Fonseca 1996). Thus, larger-scale mitigation projects associated with an ILF program are preferred alternatives to small, isolated PRM projects (2008 Final Rule). With each project, the Program will seek to maximize conservation outcomes, not only to compensate for permitted impacts but to increase

the watershed's overall tidal wetland area and resiliency.

The Program will seek feedback from USACE, the Interagency Review Team (IRT) and Long Island's voluntary conservation community leaders to help prioritize prospective wetland mitigation projects under the Program. DU consulted with the U.S. Fish and Wildlife Service, NYS-DEC, NYS Parks, and will continue to engage non-profit conservation partners in development of this Prospectus. To the extent practicable, these and other partners will be consulted with as advisors in the prioritization, planning, and development of Program projects. In addition to pursuing projects in alignment with the Compensation Planning Framework, potential projects will be assessed based on feasibility, and conservation benefits using metrics identified in Appendix 1 Project Development Process and Project Prioritization.

1.5 Program Purpose, Goals, and Objectives

The purpose of the Program is to provide a watershed-scale mitigation option that advances the pace at which regional conservation goals and objectives are achieved.

The Program's goals are:

1. Establish an ILF mitigation option within the Long Island's Southern and Northern watersheds.
2. Develop and implement successful projects that effectively replace Estuarine wetland functions and services lost through permitted impacts.
3. Improve resilience of Estuarine ecosystems to anthropogenic and natural stressors.
4. Advance the pace and scale of Estuarine ecosystem conservation.

The Program's objectives are:

1. Utilize regional conservation plans to guide project identification, and implementation.
2. Provide sufficient financial resources for ecologically significant projects.
3. Accelerate development and implementation of priority Tidal conservation projects.
4. Produce a net gain of Estuarine ecosystems area and quality.

Implicit to the Program's technical and financial feasibility is a watershed-scale approach considering landscape-level opportunities funded by the sale of mitigation credits. This will allow impacted watershed functions and services to be offset through ecologically significant projects.

2 PROGRAM NEED AND FEASIBILITY

2.1 Need

The long-term goals of all four estuary management programs clearly convey the need to increase the pace and scale of Estuarine restoration throughout Long Island. Drainage and impairment legacies, together with reduced connectivity to historic sediment supplies, and rising sea level means that many vegetated marshes are vulnerable to loss irrespective of development efforts. Establishing a program that consolidates financing to enable larger projects means stressors affecting an entire tidal marsh ecosystem or marshes can be addressed. Projects addressing sediment balance and inward migration potential have better prospects for sustainability into the future than localized smaller projects that do not address these meaningful factors. That is what will set this Program apart from smaller isolated permitee responsible projects that have insufficient financial resources to address the scale of the challenges facing salt-marsh conservation.

The EMPs report the need for a net-gain of 765 acres of salt marsh by 2035 and identify deficient mitigation options as a primary limiting factor in achieving recovery targets. The Program creates the mechanism to direct financial resources from compensatory mitigation to established conservation and restoration targets, offering a mechanism to expedite the recovery of lost tidal wetland functions. Given their small size on the landscape, and cost to implement, individual permittee responsible mitigation projects are unlikely to improve tidal wetland resilience to sea-level rise, nor provide for long-term habitat improvements for species of greatest conservation need. However, multi-user mitigation approaches, such as ILF, provide a means to pool financial resources providing sufficient capital to address stressors at the scale of entire tidal ecosystems. Currently PRM, with its limited ability to address tidal ecosystem stressors is the only mitigation option available on Long Island, highlighting the need for such a Program.

2.1.1 Service Areas Market Analysis Summary

An analysis of USACE-issued permits indicates annual demand for wetland mitigation credits is moderate in Southern and Northern Long Island Service Areas. While the Northern Service Area has had a limited number of projects requiring mitigation, the lack of mitigation options and the relatively small size of individual permits may have contributed to limited requirements to mitigate. Overall population growth, renewable energy development and transition, sea-level rise, and the maintenance of aging infrastructure are expected to increase demand in both Service Areas (Figure 2). In addition to base demand for mitigation credits, sea level rise is expected to drive the need for infrastructure maintenance and adaptation that is not accounted for in historic impact data. With no established mitigation banks, existing mitigation needs are not being met through mitigation options preferred by the 2008 Final Rule. The existing and foreseeable credit demand in the Service Areas presents a suitable situation whereby mitigation needs can be consolidated into large ecologically significant Program projects within each Service Area. DU intends to provide mitigation offsets in the same service area of impact.

2.1.2 Mitigation Demand

Analysis of USACE-issued permits show moderate demand for mitigation (Table 1, Figure 2, USACE 2022, USACE 2023a). Additional development, large infrastructure repairs, renewable

energy development and transmission, and sea level rise response and resiliency projects will all generate additional wetland mitigation demand beyond the historic background rates identified in Table 1. For instance, through the passage of the Accelerated Renewable Energy Growth and Community Benefit Act in 2020, and the Climate Leadership and Community Protection Act in 2021, New York committed to obtain 70% of the state's electricity from renewable sources by 2030 and reach carbon neutrality by 2050. Implementing these laws will result increasing rates of energy infrastructure development on Long Island (AREGCBA 2020, CLCPA 2021).

Between 2010 and 2023, a total of 12.51 acres of Estuarine wetlands were unavoidably impacted, requiring mitigation in the Service Areas for an annual average of 0.96 acres (Table 1) (USACE 2022, USACE 2023a). Most of these impacts were in the Southern Long Island watershed where 12.38 acres of tidal wetlands were impacted from 13 projects including bridge repair, stormwater treatment, road construction, and bulkhead construction. Required mitigation ratios ranged from 1:1 to 6:1 resulting in 20.94 acres of PRM offsets. Many additional permitted projects did not require mitigation, presumably due to a lack of available options. With options like this Program available, it is likely that many of the additional impacts shown in Figure 2 would have required mitigation. The widely distributed nature and variable size of permitted impacts within the Service Areas underscores the need for a regional mitigation approach to fund ecologically significant mitigation projects. Small, isolated PRM projects are unlikely to address processes such as declining marsh sediment accretion and rising sea-levels threatening the future viability of marshes whereas a multi-user ILF Program does possess the ability to address sediment accretion and restoration of an entire wetland complex.

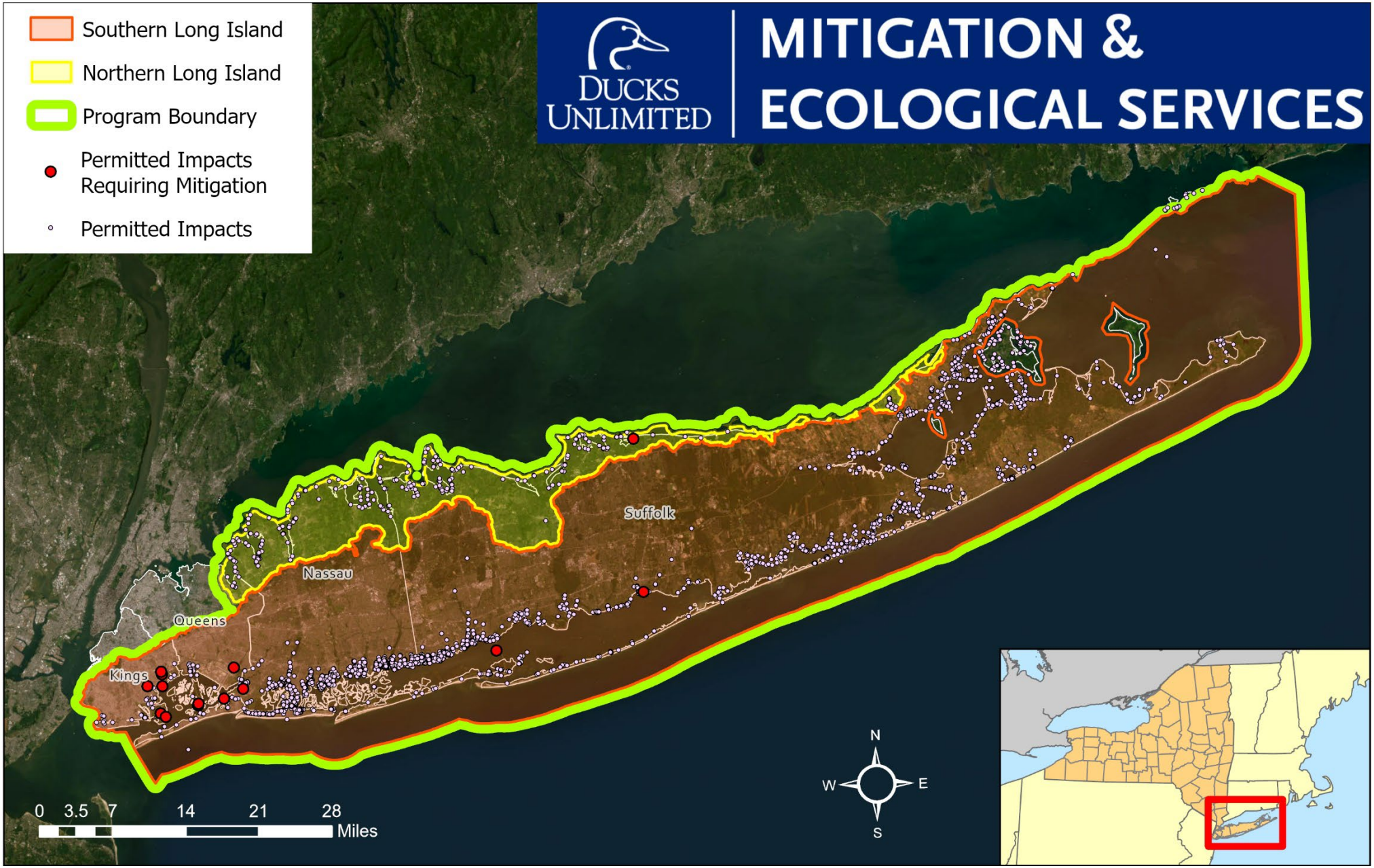

Figure 2. Proposed Service Areas and Permitted Impacts (2010-2023)

Table 1. Service Area Permitted Impacts and Mitigation Requirements in Acres (2010-2023).

Several additional permitted projects with impacts did not require mitigation – shown in Figure 2 above.

HUC Name	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total Impacts	Average Annual Impacts	Total Mitigation Required
Northern Long Island (02030201)	0	0	0	0	0	0	0	0	0	0	0	0.13	0	0	**0.13**	**0.01**	**0.80**
Southern Long Island (02030202)	2.33	1.46	0	5.04	0	0	0.50	0	0	0.95	1.13	0	0	0.97	**12.38**	**0.95**	**20.14**
GRAND TOTAL															**12.51**	**0.96**	**20.94**

The amount of Advance Credits approved (see Section 3.1) will be based upon credit demand forecasts, project costs, and rates of project turn-over (credit development and satisfaction). Based on input from the IRT, the Advance Credit pool for each Service Area will be issued at the establishment of the Program to enable the implementation of the first Program project(s).

2.1.3 Existing Mitigation Credit Supply

There are currently no established banks or ILF credits available within the Project Service Areas (USACE 2023b).

2.2 Feasibility

The overall feasibility of the Program is dependent upon utilizing a watershed-scale approach. The success of this approach includes both technical and financial requirements.

2.2.1 Technical Feasibility

Technical feasibility includes an evaluation of the Program Sponsor's capabilities to choose, develop, manage, implement, and monitor successful mitigation projects.

2.2.2 Program Sponsor Qualifications

DU is the largest wetland conservation organization in the world, and since its inception in 1937 has conserved over 16 million acres of wetlands and associated habitats throughout North America. DU's conservation model is based on partnerships with public natural resource agencies, non-profit organizations, and private landowners. DU utilizes these regional partnerships not only to implement voluntary wetland restoration projects, but also to create and manage several active ILF programs across the U.S.

The Program fits seamlessly into DU's *Completing the Cycle* Initiative, which focuses on restoring, enhancing, and protecting inland and coastal habitats throughout the Northeast and the Atlantic coast. DU's team of conservation professionals includes technicians, biologists, coastal ecologists, licensed civil engineers, real-estate, and environmental permitting specialists. This team is supported by project coordination, financial management and accounting, human resources, general counsel, and management staff located in remote, field-based locations, a subregional and regional support offices in Liverpool, New York, Dexter, Michigan, and DU's national headquarters in Memphis, Tennessee. DU's nationwide project management capabilities include the annual fiscal management and tracking of >$318 million benefitting over 1-million acres annually across the country. It is anticipated that dedicated Program support will be established on Long Island prior to Program approval.

The New York State based DU conservation team routinely manages multi-million-dollar wetland protection and restoration projects resulting in thousands of acres of conserved and restored every year. From 1986 to present DU has delivered > 29 conservation projects within the Program's Service Areas (Figure 3). Where specialized expertise is required, DU hires teams with reputable technical experts to provide the necessary project support. DU manages all aspects of project delivery including land protection, conceptual planning, engineering design, environmental permitting, and compliance, contracting, construction management, and

monitoring. DU is also a land trust accredited by the Land Trust Accreditation Commission. These qualifications enable DU to effectively deliver ILF projects and programs over the past 12 years.

2.2.3 ILF Programs Managed by Program Sponsor

On a national scale, DU is active in all forms of wetland mitigation from mitigation banks and ILF programs to PRM projects (Table 2). DU currently manages five active ILF programs nationwide, a pending ILF program in San Francisco, a banking program in Michigan, the Mt. Tena Creek Mitigation Bank in Tennessee, and holds multiple conservation easements on wetland mitigation banks in California and the Southeastern U.S.

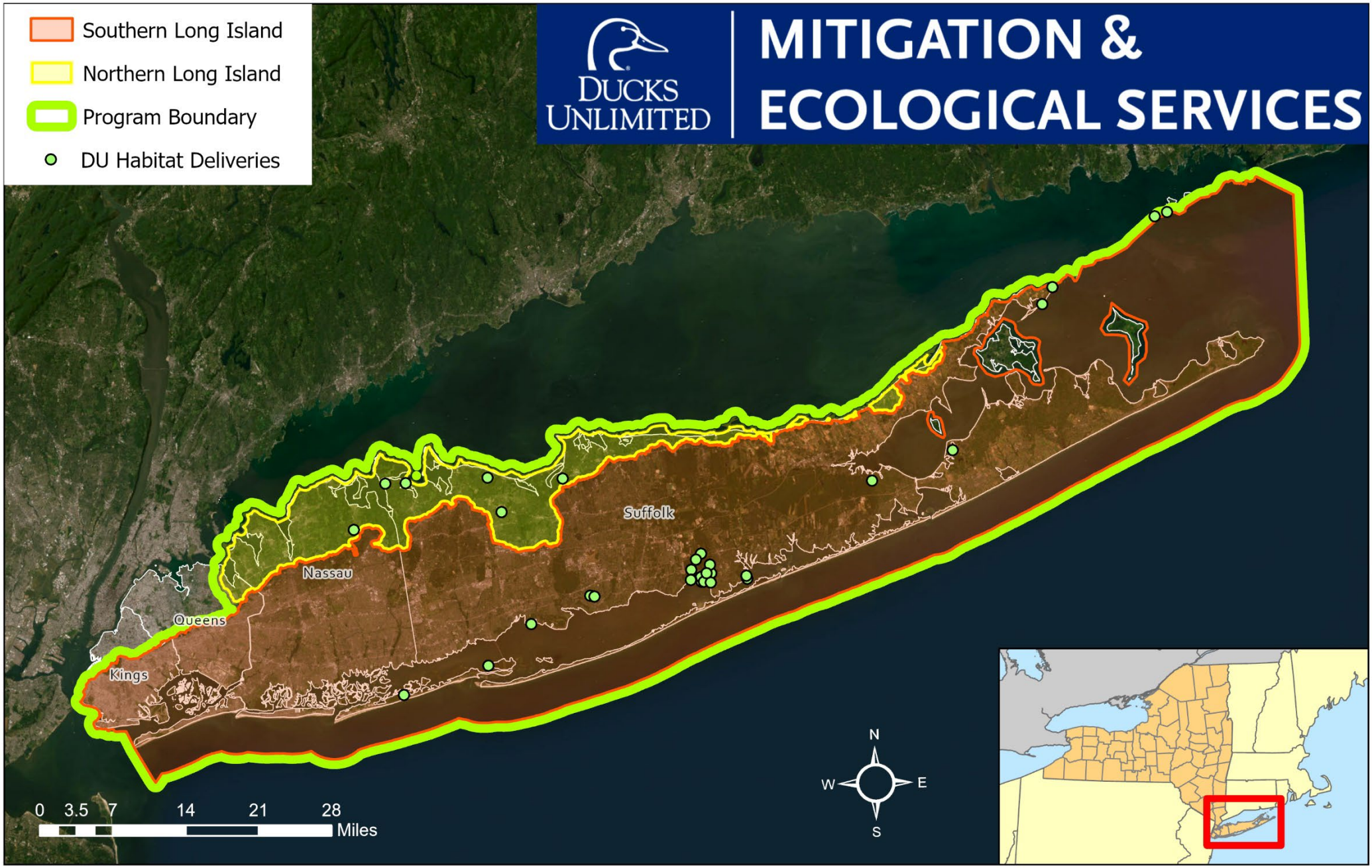

Figure 3. DU Habitat Deliveries (1986-2023)

Table 2. Existing DU ILF Programs Nationwide

State	Approval Year	Credits	Credit Availability	Contacts
Vermont Statewide ILF	2011	Wetland	229 wetland credits across four Service Areas. The four Service Areas span the entire state, and Northeastern portions of New York State.	USACE Office: New England, Buffalo, and New York Districts **DU Contact:** **Great Lakes/Atlantic Regional Office** Attn: Mary Beth Poli 802-855-4827 mpoli@ducks.org
New York ILF	2012	Wetland and Stream	Approx. 10,000 stream credits in 11 Service Areas, and about 450 wetland credits across 13 Service Areas	
North Dakota ILF	2014	Wetland and Stream	Released credits: 8.74 wetland credits from one Service Areas, and 5.62 credits released from another Service Areas. Advance credits are also available for stream and non-tidal wetlands across all Service Areas	USACE Office : Omaha District **DU Contact :** **Great Plains Regional Office** Attn: Trenton Hieb 701-355-3500 thieb@ducks.org
South Dakota ILF	2012	Wetland	Advance credits only: Approx. 100 credits in each of 9 Service Areas	Attn: Justin Williams 701-355-3500 juwilliams@ducks.org
Mississippi Delta ILF	2012	Wetland	Advance credits only: Approx. 50 credits across one Service Area	USACE Office: Vicksburg District **DU Contact:** **Southern Regional Office** Attn: Eric Held 601-206-5446 eheld@ducks.org

2.2.4 *Program Sponsor Contacts*

Program Sponsor:
Ducks Unlimited, Inc.
North Atlantic Field Office
1035 Seventh North Street
Suite H
Liverpool, New York, 13088

Attention:
Dr. Patrick A. Raney
Director of Conservation Programs - Mitigation
Email: praney@ducks.org
Phone: 315-708-9614

2.2.5 *Partnerships and Stakeholders*

Conservation partnerships are a fundamental aspect of DU's conservation model and will be a central tenet of the Program's Compensation Planning Framework (see Chapter 5). DU will utilize our extensive network of agency, non-profit, and private partners to help guide project development and implementation. The Program will utilize the IRT and Long Island's voluntary conservation community leaders in an advisory role to help prioritize and develop prospective wetland mitigation projects to meet watershed needs. DU will also work to ensure that projects align with regional conservation priorities.

2.2.6 *Financial Feasibility*

The financial feasibility of the Program is based on comprehensive, full-cost accounting of the Program's operation and administration expenses, credit sales rate, credit pricing, the number of advance credits, and the financial structure of the Program Account.

Developing and implementing wetland conservation projects in the Service Areas is an expensive undertaking; land values and service costs are high relative to other parts of the state, and project development and implementation costs are high due to site conditions, presence of infrastructure, and existing sensitive natural resources, among other due-diligence challenges. Most critical in addressing these challenges is the potential annual rate of credit sales. To follow the 2008 Final Rule, enough credit sales of sufficient price must occur within the Service Areas before a project can be funded for development or implementation. Further, the project must be initiated within three full growing seasons from the date of the first Advance Credit sale. Without sufficient funding through credit sales, no projects are feasible. Credit pricing that conforms to the current market rate substantiates this. Conservative financial modeling accounting for recent permitted impacts demonstrates that the Program's proposed structure – two Service Areas and a focus on Estuarine Credits – is required for its financial success. The model incorporates the expected credit demand based on permitted impacts, the Program structure, and market rate credit pricing. The model projects that the Program will accumulate sufficient, timely funding in accordance with the 2008 Final Rule.

3 PROGRAM OPERATION

3.1 Program Credits

3.1.1 Credit Type

The Program proposes the use of a universal Estuarine Tidal wetland credit (hereafter "Estuarine Credit") that encompasses the complete tidal wetland ecosystem. The Program advocates adopting NYS-DEC's tidal wetland definitions to establish a universal Estuarine Credit covering the entire tidally influenced wetland ecosystem. The Tidal Wetland Act (Article 25, Title 1, Section 3) defines tidal wetlands as:

(a) those areas which border on or lie beneath tidal waters, such as, but not limited to, banks, bogs, salt marsh, swamps, meadows, flats or other low-lands subject to tidal action, including those areas now or formerly connected to tidal waters;
(b) all banks, bogs, meadows, flats and tidal marsh subject to such tides, and upon which grow or may grow some or any of the following: salt hay (*Spartina patens* and *Distichlis spicata*), black grass (*Juncus Gerardi*), saltworts (*Salicornia* spp.), sea lavender (*Limonium carolinianum*), tall cordgrass (*Spartina pectinata and Spartina cynosuroides*), hightide bush (*Iva frutescens*), cattails (*Typha angustifolia* and *T. latifolia*), groundsel (*Baccharis halmilifolia*), marsh-mallow (*Hybiscus palustris*) and the intertidal zone including low marsh cordgrass (*Spartina alterniflora*).

Additionally, the Tidal Wetlands Land Use Regulations (6 CRR-NY 661.4) define tidal wetlands as:

Tidal wetlands or *wetland* shall mean any lands delineated as tidal wetlands on an inventory map and shall comprise the following classifications as delineated on such map:

(1) Coastal fresh marsh.
The tidal wetland zone, designated FM on an inventory map, found primarily in the upper tidal limits of riverine systems where significant freshwater inflow dominates the tidal zone. Species normally associated with this zone include narrow leaved cattail, *Typha angustifolia* the tall brackish water cordgrasses, *Spartina pectinata* and/or *S. cynosuroides;* and the more typically emergent freshwater species such as arrow arum, *Peltandra;* pickerel weed, *Pondederia;* and cutgrass, *Leersia.*

(2) Intertidal marsh.
The vegetated tidal wetland zone, designated IM on an inventory map, lying between average high and low tidal elevation. The predominant vegetation in this zone is low marsh cordgrass, *Spartina alterniflora.*

(3) Coastal shoals, bars and flats.
The tidal wetland zone, designated SM on an inventory map, that (i) at high tide is covered by water, (ii) at low tide is exposed or is covered by water to a maximum depth

of approximately one foot, and (iii) is not vegetated by low marsh cordgrass, *Spartina alterniflora,* except as otherwise determined in a specific case as provided in section 661.16 of this Part.

(4) Littoral zone.
The tidal wetlands zone, designated "LZ" on an inventory map, that includes all lands under tidal waters which are not included in any other category, except as otherwise determined in a specific case as provided in section 661.16 of this Part. Provided, there shall be no littoral zone under waters deeper than six feet at mean low water. Pending determination by the commissioner in a particular case, the most recent, as of the effective date of this Part, national ocean survey maps published by the national ocean survey, national oceanic and atmospheric administration shall be rebuttable presumptive evidence of such six-foot depth.

(5) High marsh or salt meadow.
The normal uppermost tidal wetland zone, designated HM on an inventory map, usually dominated by salt meadow grass, *Spartina patens;* and spike grass, *Distichlis spicata.* This zone is periodically flooded by spring and storm tides and is often vegetated by low vigor, *Spartina alterniflora* and Seaside lavender, *Limonium carolinianum*. Upper limits of this zone often include black grass, *Juncus gerardii;* chairmaker's rush, *Scirpus* sp.*;* marsh elder, *Iva frutescens;* and groundsel bush, *Baccharis halimifolia.*

(6) Formerly connected tidal wetlands.
The tidal wetlands zone, designated FC on an inventory map, in which normal tidal flow is restricted by man-made causes. Typical tidal wetland plant species may exist in such areas although they may be infiltrated with common reed, *Phragmites sp.*

A universal Estuarine Credit as defined above, allows the Program to provide economies of scale and overcome the financial, performance, and logistical challenges typical of small, isolated wetland mitigation projects by creating a vehicle to restore entire marshes and associated ecological communities. Estuarine Credits that encompass the complete tidal wetland ecosystem (Figure 4) facilitate the funding and implementation of larger, more ecologically significant mitigation projects, and the ability to serve the greatest wetland resource needs of the watershed. At the entire marsh scale, processes such as sediment balance and accretion processes can be addressed – factors that together with inland migration potential address marsh viability under rising sea-levels.

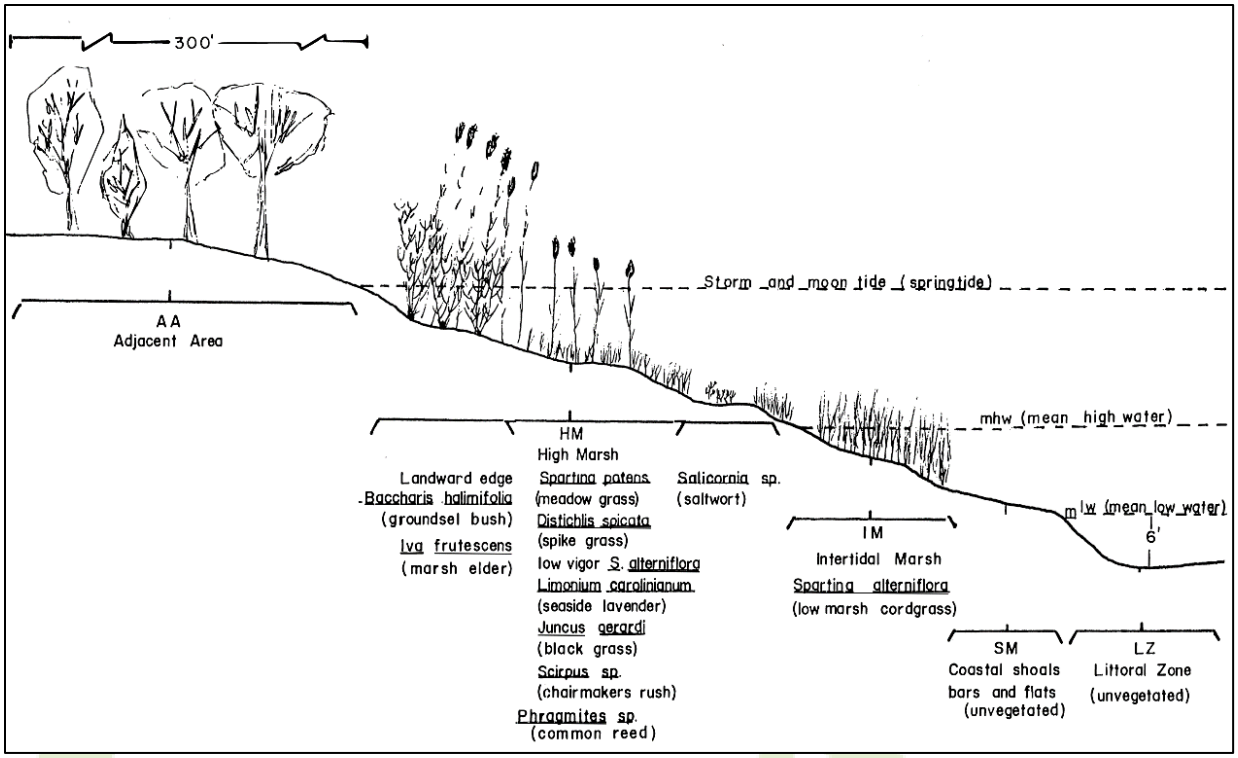

Figure 4. Article 25 - Typical Tidal Wetland Profile (NYS-DEC 2024)

3.1.2 Credit Pricing

Appropriately priced credit fees are fundamental to the success of the Program. Credit fees will be determined using full cost accounting for the life span of a project, as dictated by the prevailing mitigation market and Program requirements. The credit fees will cover all project expenses such as site identification, travel, land acquisition, due-diligence and protection, engineering and related investigations, permitting, construction, land management and long-term protection endowment, adaptive management, contingency measures, protection endowment, performance monitoring, long-term habitat management endowment, financial assurances, legal fees, administrative fees, and any other factors as deemed necessary by DU or the IRT to ensure the financial success of the Program. The credit fees will account for contingency costs appropriate to the stage of project planning, including uncertainties in construction and real estate expenses. DU will evaluate credit fees on an annual basis (by end of fiscal year). Fees may be adjusted as deemed necessary to maintain the full cost accounting of operating the Program.

3.1.3 Credit Releases

Advance Credits are available for sale at the initiation of the Program. Credit releases occur when a project reaches certain success milestones. Credit release must be tied to performance-based milestones (permitting, site protection, construction, planting, and/or establishment of plant communities). When determining the credit release schedule, factors to be considered may include, but are not limited to the type of ILF project (e.g., reestablishment, establishment, enhancement, rehabilitation), the likelihood of success, the complexity of the project, and the

aquatic resource type(s) and function(s) to be provided by the ILF project. The terms of the credit release schedule will be proposed in each mitigation plan. The District Engineer in consultation with the IRT will determine the credit release schedule, including the percentage of credits released after full achievement of performance standards vs. intermediate milestones. Mitigation obligations assumed by the sale of advance credits will be fulfilled by the implementation of one or more projects within the Service Areas. Credit release requests by DU will be reviewed by USACE in consultation with the IRT in accordance with 33 CFR 332.8(o)(9) and the mitigation plan for the site. As advance credits obligations are fulfilled at a mitigation site, an equivalent number of advance credits are replenished. Credits generated in excess of advance credit obligations may be sold as released credits and are considered equivalent to bank credits under the 2008 Final Rule.

Per the 2008 Final Rule - within three full growing seasons after the first Advance Credit sale, the Program will have at minimum secured landowner commitments for a Program project and undertaken preliminary restoration/planning activities. Should DU be unable to meet these requirements, they will notify the IRT and work to evaluate and identify opportunities to fulfill any Advance Credit liability.

3.1.3.1 Advance Credits

Advance Credits are those credits specific to ILF programs that are sold in advance of a Program project fulfilling credit obligations. The number of Advance Credits made available is specified by service area and will be estimated by review of historical permitted impacts in consultation with the IRT. Sales of these credits fund the development and implementation of Program projects. Pools of Advance Credits will be made available to sell to permittees to satisfy their relevant mitigation requirements. The pools will have a number of credits available for sale, never exceeding the maximum set by the USACE in consultation with the IRT. This maximum is established at the outset of the Program following execution of the Program Instrument. Advance Credits will be sold from a credit pool and only replenished back into the pool upon being "released" by the USACE or the IRT because of ILF Project progress and accomplishments per the "Credit Release Schedule" below. If at any time all Advance Credits are sold or otherwise obligated (i.e., a pool is at zero), no further Advance Credits would be available for sale until credits are "released" back into the applicable Advance Credit pool.

The intent of the Program is to find and implement ecologically significant Program projects that improve as many wetland acres as possible in alignment with regional conservation plans. For this to be successful, sufficient Advance Credits must be available for sale to secure enough dollars to fully fund all aspects of a project. The number of Advance Credits will be finalized in the Program Instrument but are estimated to be between 20-30 per Service Area.

3.1.3.2 Released Credits

Released Credits are credits "released" back into the pool of Advance Credits for re-sale once certain project performance criteria are met in accordance with the 2008 Final Rule and the Credit Release Schedule. Released Credits replenish the original pool of Advance Credits. Credits are released upon meeting established project milestones and performance standards that may include securing long-term protection and management of a property, completion of construction, habitat re/establishment, habitat rehabilitation/enhancement success, and/or other

criteria.

3.1.3.3 Credit Release Schedule

Credits will be released from Program projects in accordance with project-specific milestones identified in project-specific mitigation plans such as:

Provided that preservation is documented by an acceptable site protection instrument (e.g., Conservation Easement is recorded) and financial assurances are in place the credit release schedule will include:

- Following approval of the Mitigation Plan by Instrument Amendment, all of the preservation credits will be released.
- 15% of the credits for enhancement will be released at as-built production and approval by the IRT.
- 15% of the credits will be released after meeting the first interim goal.
- 30% of the credits will be released after meeting the second interim goal.
- 15% of the credits will be released after meeting the third interim goal.
- 25% of the credits will be released after the final performance standards have been met, and the long-term stewardship is funded and approved.

3.1.3.4 Determining Credit Releases

Credit Releases are calculated for each specific project based on performance standards identified in a mitigation plan. The calculation for a project's total generated credits will be done in accordance with the prevailing NY-District regulatory guidance, or in the absence of established guidance, through a method deemed acceptable. In the Northeastern US, common methods to estimate credit generation include attaining minimum performance indices such as MarshRAM Index of Marsh Integrity (IMI) over a specified credit-producing area (Kutcher et al. 2022). The MarshRAM IMI, is one of few indices available that has been developed for assessing change in marsh integrity and composition above a baseline. For instance, the acreage of each habitat type benefiting from a specific type of activity (establishment, reestablishment, enhancement, rehabilitation, or preservation), will have defined credit ratios – thereby releasing credits on an area basis, provided specific performance standards are met for those credit producing areas.

Performances milestones for a credit producing area may include interim and final performance criteria for metrics such as: MarshRAM IMI, % cover of invasive species, % cover of native target hydrophytes, increases in marsh platform elevation, documented changes in hydrology and salinity in relation to on or offsite reference conditions, or improvement over a baseline (e.g., Kutcher et al. 2022). DU will work collaboratively with USACE and the IRT as necessary to develop and integrate credit determination assessment methodologies into mitigation plans on a

project-by-project basis. Past Sponsor experience developing mitigation plans for projects in several regulatory districts should aide in this process for Program projects.

3.1.3.5 Tracking Credits

The Program will annually track and report on the amount of tidal wetland impacts within the Service Areas, Advance Credits sold, and Released Credits generated. Any "out-of-kind" credits used to fund Program projects will also be tracked. The Program's intent is to ensure that the amount of Estuarine wetlands impacted is less than those reestablished/established by Program projects.

A Program credit ledger will be kept for tracking sales of Advanced Credits and/or Released Credits with a corresponding date, permit number, mitigation requirement, habitat classification of the impacted habitat acreage, impact latitude and longitude, funds collected, and all other information required by the 2008 Rule. As Program projects are certified as complete, the ledger will track allocation and assignment of Released Credits, the amount and availability of any Released Credits, and the amount of Advance Credits available for sale. At least annually, the IRT and DU will review and assess progress towards Program project selection priorities, the tracking and balancing of credits sold and generated, and how any imbalances therein would be addressed in future or subsequent Program projects (see Section 5.9).

3.2 Service Areas

The 2008 Final Rule emphasizes that a "watershed approach" should be used in making compensatory mitigation decisions. A watershed approach takes a landscape perspective on aquatic resource functions and services, past and projected losses, sources of impairments, potential for improvement, and connectivity. See Chapter 5 for further information on the watersheds and Service Areas.

The Service Areas are designed to capture geographically dispersed small impacts, as well as intermittent larger impacts, to fulfill the intent, meet the goals, achieve the objectives, and adequately fund implementation of Program projects at ecologically relevant scales. The proposed Service Areas includes the Southern Long Island (HUC 8-02030202) and Northern Long Island (HUC 8-02030201) watersheds (Figure 2). The proposed Service Areas adhere to the Regional Board's boundary, are contained within the USACE NY District's regulatory boundary, and were defined using a watershed-based process consistent with established guidelines for setting mitigation banks' Service Areas. To the extent practical, mitigation will occur in the same Service Area as the Impact, Appendix 1 describes the Project Development and Prioritization Process the Sponsor proposes to use.

3.2.1 Service Area Eclusions

Several islands at the eastern side Long Island represent unique and high-quality habitats that should be mitigated for in-kind, and are therefore excluded from the Program Service Areas. The islands excluded from the Program specifically include Robins Island, Shelter Island, Gardmer's Island, Plumb Island, Fisher's Island, and North and South Dumpling Islands. .

4 PROGRAM PROJECTS

4.1 Project Development Process

4.1.1 Ducks Unlimited led projects

DU will lead the development and implementation of Program projects, and be responsible for the development, implementation, monitoring, and long-term success of DU led projects. The process will include the coordination with the IRT and will be aligned with both the Prioritization Strategy (Appendix 1) and the Compensation Planning Framework (Chapter 5). DU Program Staff will utilize our extensive network of conservation and other partners to identify and implement Program projects.

Ducks Unlimited will present to the IRT a "technical proposal" that identifies the following information (at minimum) for a prospective Program project:

- Landownership and location
- Restoration concept plan consistent with Compensation Planning Framework
- Project budget and timeline
- Habitats conserved
- Number of Credits to be generated

Following IRT approval of the technical proposal, a full mitigation plan will be developed in accordance with the 2008 Final Rule.

The full mitigation plan will include:

- Objectives
- Project timeline
- Site selection
- Site protection provisions
- Site baseline information
- Mitigation action plan
- Monitoring plan
- Adaptive management plan
- Performance and performance standards
- Credit release schedule
- Long-term management approach
- Financial assurances

4.1.2 Partner Led Projects

While Ducks Unlimited intends to deliver and manage its Projects under the Program, DU *may* from time to time enter contractual arrangement or partnership with other entities to develop, implement, monitor, and manage specific aspects or entire Program projects. This process may involve a public Request For Proposals, be directly solicited, or utilize other mechanisms.

Projects led by others will be subject to the Prioritization Strategy and IRT approval process as described herein. Projects led by other entities will be required to meet all requirements of the Program.

4.2 Project Prioritization Strategy

The Project Prioritization Strategy (Appendix 1) will ensure DU is positioned to identify and prioritize Program projects in alignment with regional wetland conservation plans and the Compensation Planning Framework.

4.2.1 Priority Wetlands

The Program serves to satisfy compensatory mitigation for impacts to jurisdictional wetlands permitted by the USACE, NYS-DEC, the U.S. Environmental Protection Agency (USEPA), damages, violations and any other state or federal permitting agency and as defined by the 2008 Final Rule. Wetland types for the Program include those waters whose conservation serves the greatest watershed need in terms of functions, services, and values. Highest habitats for conservation include intertidal marsh and high marsh as defined by the Tidal Wetlands Land Use Regulations (6 CRR-NY 661.4) (see section 3.1.1)

4.2.2 Mitigation Approaches

The Program will utilize multiple approaches for generating mitigation credits recognized by the 2008 Final Rule; these include Establishment, Re-establishment, Rehabilitation, Enhancement, and Preservation. These mitigation approaches are defined by the 2008 Final Rule as:

- "Establishment" (creation) for aquatic resources means the manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area and functions. For covered species, "Establishment" means the construction of habitat of a type that did not previously exist on a mitigation site, but which will provide a benefit to the species and does not negatively affect other resources of concern.

- "Re-establishment" is a form of Restoration, which means the manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/ historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

- "Rehabilitation" is another form of Restoration, which means the manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/ historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function but does not result in a gain in aquatic resource area.

- "Enhancement" means the manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource

function(s) but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

- "Preservation" means the removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

4.2.3 Mitigation Project Site Selection Criteria

Development of prospective Program projects will be prioritized based on the following high-level considerations:

- Consistency with the location and activities prioritized in regional conservation plans
- Ecological significance
- Project technical and administrative feasibility including the lack of obstacles
- Project alignment with all 2008 Final Rule requirements

Candidate Program project sites will be identified and evaluated by DU for consistency with established conservation priorities, goals and objectives of the PEP, LISS, HEP, and SSER comprehensive management plans. For example, projects that achieve functioning ecosystems with a preference for self-maintaining systems, support of native species over non-natives, and focus on biological communities more than individual species, will be higher priorities as these are important elements of regional management plans. Accordingly, restoring complete wetland systems with their many interconnected habitat sub-types along with the physical processes that sustain them would be prioritized in evaluating candidate Program sites. DU and the IRT will then use the following criteria to select Program projects:

Technical Criteria:

- Feasibility and cost-effectiveness
- Lack of title and due-diligence concerns that would prohibit successful project development
- Demonstration of ecologically-sound concepts and approaches
- Furthers the geographic balancing of ILF project location(s) relative to impact locations

Project Selection Administrative Criteria:

- Potential for project to be incorporated into a public land management system or agency
- Technical capacity for long-term management by landowner or future landowner
- Financial efficiencies created to allow greater extension of Program funds

A process describing evaluation of technical feasibility and prioritization of potential Program Projects is provided in Appendix 1.

4.3 Potential Project Types

To achieve the goal of no-net-loss of tidal wetlands, restoration and rehabilitation must play a major role in conservation planning. Both restoration and rehabilitation aim for an endpoint of self-sustaining ecosystems where long-term management costs are minimized, and environmental gains maximized. Tidal wetland restorations in particular present several unique challenges including addressing a dynamic ecosystem, complex hydraulic modeling, marsh migration, salinization, and rising sea-levels.

DU through our voluntary coastal focused conservation programs have engaged in a variety of tidal wetland restoration projects supported by state and federal grant funding, utilizing diverse partnerships that include municipalities, NGOs, and state and federal partners. These efforts have utilized a wide range of restoration techniques that are broadly summarized in Table 3.

Table 3. Potential Restoration Techniques

Category	Techniques	Benefits
Marsh (Re)-Establishment	• Installation of sediment accreting features • Beneficial use of spoils materials	• Establishment of additional habitat • Promote sediment accretion • May reduce erosion to existing marshes
Tidal Flow Reintroduction	• Removal/modification of manmade barriers including dikes and dams • Removal of tide gates or replacement with self-regulating tide gates • Removal/replacement of undersized culverts • Removal of fill from buried former tidal wetlands	• Restore natural hydrology • Promote sediment accretion • Reduce Phragmites populations through increased salinity • Flush nutrients and pollutants • Store carbon
Sediment Supplementation	• Beneficial use of sediment to raise elevation • Thin layer placement	• Increase soil stability consequently increasing plant growth • Mitigate risk of marsh drowning • Increase resiliency to flooding and storm surge
Living Shorelines & Edge Stabilization	• Removal of hardened shorelines • Installation of natural materials (coir logs, straw bales, brush bundles, rock) along eroding edges, expanding mudflats, or offshore	• Reduce fetch • Reduced erosion • Attenuate wave energy • Promote sediment accretion • Promote revegetation
Ditch Remediation	• Restoring natural drainage networks • Removal or reduction of ditch plugs • Mowing existing vegetation and installation of material in ditch	• Restore tidal flows • Reduce impounded water • Reduce peat oxidation by 'healing' ditches from bottom up
Runnels	• Strategic excavation of shallow channels (10") to reconnect hydrology	• Reduce expansion of pools and mudflats • Reduce peat saturation • Promote vegetation and recolonization

Program projects on Long Island will establish, re-establish, rehabilitate, enhance, and preserve habitats of sufficient size, function, and appropriate structure to:

- Promote restoration of native special-status plants and animals
- Maintain current migratory bird species that utilize existing wetlands
- Support increased abundance and diversity of native species in various aquatic and terrestrial ecosystem components including plants, invertebrates, fish, mammals, birds, reptiles, and amphibians

Research monitoring tidal wetland restoration projects has shown promising long-term results, and provides evidence-based documentation of successful restoration efforts in similar Estuarine settings to the ones the Program will focus on. Warren et al. (2002) compared nine tidal marsh sites degraded by tidal restrictions along Connecticut's Long Island Sound shoreline to reference sites five to 21 years post restoration. Restored sites showed reduced invasive species coverage and native vegetation recovery, return of typical fish assembles within five years, specialized bird occupancy in 15 years, and use by generalist bird species nearly doubled in comparison to reference areas. The authors concluded tidal action is the primary factor organizing marsh communities, and returning tides sets degraded marshes on trajectories that achieve full restoration of ecological functions. Other studies have showed that restored and reference salt marshes share similar habitat use by important fisheries species including Atlantic croaker (*Micropogonias undulatus*) (Miller and Able 2002) and mummichog (*Fundulus heteroclitus*) (Teo and Able 2003) and increased fisheries food sources (nekton species) compared to pre-restoration conditions (Rozaz et al. 2005). Such studies, together with DU's applied practical experience restoring Estuarine wetlands, provides optimism that this Program will be successful. Chapter 7 describes recent DU tidal wetland projects that the Program will use as models for developing and implementing future Program projects.

5 COMPENSATION PLANNING FRAMEWORK

Once approved, the Program will solicit, identify, design, implement, and monitor projects in accordance with the approved Compensation Planning Framework. The Framework describes watershed profiles and procedures that will be used to prioritize, select, secure, plan and implement Program projects in accordance with the 2008 Final Rule. Accordingly, the Framework will include watershed profiles that capture both estuarine wetland and tidally influenced estuarine-riverine complexes such that mitigation projects address habitats, ecosystem health, watershed wetland resource needs, and 2008 Final Rule obligations.

Achievement of regional conservation goals and objectives are constrained by funding and project delivery capacity. There are opportunities to conduct large-scale ecosystem restoration at individual sites that contribute to broader watershed needs. The Program is in a unique position to leverage DU's operations, partner collaborations, and successes in wetland restoration to provide effective compensatory mitigation projects for USACE and State permits that align with regional conservation planning.

5.1 Long Island Conservation Framework

DU is a leading entity in New York implementing priority wetland conservation projects that are science-based and supported by the public, conservation leaders, natural resource agencies, and regulatory agencies. DU has provided significant funding for the advancement of projects targeted by these efforts, and continually applies a solution-oriented approach to finding ways to advance and expedite regional wetland conservation goals. Through this approach, DU works collaboratively with stakeholders to find common ground and solutions where mutual goals and objectives overlap. Furthermore, DU's wetland conservation efforts are motivated by the number of acres conserved not dollars earned, which allows DU to reinvest project efficiencies back into the conservation community to achieve broad ecosystem goals. These collectively allow DU to work beyond conventional limits that may hinder private mitigation bankers and PRM providers.

The Program will apply a watershed approach to addressing current, past, and future wetland impacts with a focus on ecologically significant improvements in the Service Areas. The Program will align with the guiding principles, goals and objectives, and overarching recommendations within multiple regional conservation plans. These planning efforts included participation by and received financial support and official sign-off from, each of the agencies that serve on the IRT.

The PEP-CCMP was completed in 2020 over a two-year period with public input, providing four overarching goals, eight objectives, and 35 actions to guide conservation over a ten-year timeframe. Broad goals include strong partnerships, resilient communities, clean waters, and healthy ecosystems. Specific actions that mitigation projects could support include:

- Action 12 - Mitigate climate change impacts through coastal ecosystem management
- Action 28 - Protect critical natural resource areas and high-priority lands in the Peconic Estuary watershed
- Action 31 - Use available habitat quality assessment and climate change resiliency tools

to prioritize wetland restoration projects identified in the 2020 PEP Habitat Restoration Plan, and implement the top priority projects
- Restore 250 acres of tidal wetland habitat by 2035

The 2009 PEP Habitat Restoration Plan identified 71 potential restoration projects, however as of 2017, 40% of those projects had not been initiated and 22% were initiated but were no longer in progress. The largest barrier to completing habitat restoration projects has been a lack of funding and resources. Many municipalities do not have funds to undertake habitat restoration projects, and most grant programs require anywhere from 15-50% match. An ILF program could help overcome these barriers and aid the PEP in meeting their long-term goals.

The New York State Legislature passed the Long Island South Shore Estuary Reserve Act in 1993 thereby creating the SSER. SSER completed their initial CCMP in 2001 and updated it in 2022 to address incomplete priority actions and emerging issues including nitrogen pollution, climate change, and ecosystem resilience. The updated CCMP identifies six key focus areas, 47 outcomes that address issues identified for each focus area, and 184 action items. Actions of relevance include:

- Action 3.1.1 - Consistent with the NYS-DEC Tidal Wetlands Trends Analysis, restore and manage wetlands to improve the ecological function and productivity of the estuary by increasing the quality and quantity of its wetlands.
- Action 3.1.2 - Improve coordination of wetland evaluation, restoration and protection efforts.

LISS completed an initial CCMP in 1994 and an updated version in 2015 to guide the next 20 years of conservation efforts. This CCMP is organized around four themes with specific outcomes, objectives, strategies, and 139 implementation actions. Actions of relevance include:

- HW-1: Complete projects that result in restoration of coastal habitat.
- HW-3: Complete projects that result in restored habitat connectivity (i.e., river miles reconnected and/or contiguous acres of coastal habitat protected or restored). Generate supporting GIS data to help measure extent of connectivity enhanced.
- HW-5: Use remote sensing, mapping tools, modeling, and field verification to determine sites that are likely to be impacted by sea level rise, and which sites are ideal for habitat migration.
- HW-10: Protect high-priority conservation land from development through property acquisition and create a registry of protected conservation land in Connecticut and New York, which encompasses both existing protected properties and future acquisitions.
- HW-11: Develop and promote the use of living shoreline habitat protection methods (dunes, shorelines, coastal marshes) and living shoreline monitoring protocols.
- HW-26: Assess locations of tidal marsh loss and the parameters impacting tidal marshes through research and monitoring and use this information to create a suitability model to determine sites for restoration.

The LISS-CCMP also identifies ecosystem target including:

- Restore 515 additional acres of NEW York tidal wetlands by 2035 from a 2014 baseline
- Increase connectivity of coastal habitat by 2035 by restoring and/or protecting habitat patches that increase biodiversity and support migratory pathways.
- Conserve an additional 3,000 acres of New York land within the LIS coastal boundary by 2035, while maintaining the total area of protected lands.

The 2023 work plan indicates the program is 59.3% of the way to the goal of restoring 1,000 acres of habitat and 74.8% of the goal to protect 7,000 acres of land by 2035 (LISS 2023).

HEP completed an initial CCMP in 1996 and continued conservation efforts through the creation of the HEP Action Agenda 2017-2025 (Pirani et al. 2018). The plan outlines five long-term generational goals, and the specific 17 objectives and 40 actions that the program will address to continue progress towards cleaner water, restored fish and wildlife habitat, improved public access, more efficient maritime activities, and robust community engagement.

- H-A-1: Increase investment in conservation and restoration projects
    - Outcomes:
        - Identification and support for additional resources for restoration
        - Restoration projects will secure funding in a timelier manner
        - Implementation of additional restoration projects and progress toward the Estuary's goals for target ecosystem characteristics
- H-A-2: Evaluate ways to reduce costs of restoration
    - Outcomes:
        - Creation of a more streamlined approach towards cost-sharing with partners and access to volunteers.
        - A greater number or larger restorations will occur, making progress towards the restoration goals outlined in the HRE CRP and eventually leading to enhanced habitat and ecological health.

The Action Agenda's findings are supported by HEP's other core documents including the Hudson-Raritan Estuary Comprehensive Restoration Plan (2014). This plan quantified large-scale wetland restoration projects in the estuary and estimated that from 2002-2012 approximately 434 acres of wetlands were restored. Using this research as a baseline for future restoration HEP set a goal of restoring/creating 1,000 acres of freshwater and coastal wetlands by 2020 and 5,000 acres by 2050.

5.2 Service Areas Ecological Overview

The Service Areas lie within the Long Island-Cape Cod Coastal Lowland ecoregion, as defined by the USDA Major Land Resource Areas. This ecoregion is primarily level to rolling plains with elevations ranging from sea level to 80 feet. The area is made up of deep, unconsolidated glacial outwash deposits of sand and gravel with extensive sand dunes and tidal marshes along the coastline. Average annual temperature ranges from 49-55 degrees Fahrenheit and annual precipitation averages 40-52 inches. There are few perennial streams, rivers, and lakes in the area, so water usage is dependent on ground water sources. Evergreen forest, deciduous forest, mixed forest, and herbaceous wetlands are characteristic biological communities. Common

species include oaks (*Quercus* spp.), pines (*Pinus spp.*) American beech (*Fagus grandifolia*), sugar maple (*Acer saccharum*), and lowbush blueberry (*Vaccinium angustifolium*) in forested communities and American beachgrass (*Ammophila breviligulata*), sassafras (*Sassafras albidum*), and American holly (*Ilex opaca*) on dune communities. Common exotic species include honeysuckles (*Lonicera* spp.), Japanese barberry (*Berberis thunbergia*), and common reed (*Phragmites australis*) (USDA 2022).

High salt marsh communities are of particular concern throughout Long Island. These habitats have an S1S2 ranking (critically imperiled) with an estimated 25-50 occurrences statewide. High salt marshes are found in sheltered areas of the seacoast, in a zone extending from mean high tide up to the limit of spring tides. Throughout Long Island they are best developed in the Peconic Bay and along the south shore. The largest concentration occurs within the Hempstead Bay wetlands and one half of Long Island's high salt marshes are located west of Gilgo Beach to Jamaica Bay. The community is rare throughout the north shore (MacDonald and Edinger 2000).

High salt marsh is part of the larger coastal salt marsh ecosystem occurring alongside salt shrub, brackish meadow, sea level fen, low salt marsh, and salt pannes. Vegetation is dominated by either salt-meadow grass (*Spartina patens*) or a dwarf form (15 to 30 cm tall) of cordgrass (*Spartina alterniflora*). Large areas dominated by spikegrass (*Distichlis spicata*), black-grass (*Juncus gerardii*), and glassworts (*Salicornia* spp.), or a mixture of salt-meadow grass and cordgrass are also common. High salt marsh is important nesting habitat for several birds including marsh wren (*Cistothorus palustris*), red-winged blackbird (*Agelaius phoeniceus*), black-crowned night heron (*Nycticorax nycticorax*), Canada goose (*Branta canadensis*), clapper rail (*Rallus longirostris*) willet (*Catoptrophorus semipalmatus*), salt marsh sparrow, and American black duck. Many more birds depend on salt marshes for food including green heron (*Butorides striatus*), great egret (*Casmerodius albus*), snowy egret (*Egretta thula*), glossy ibis (*Plegadis falcinellus*), tree swallow (*Tachycineta bicolor*), and terns (*Sterna* spp.) (NYNHP 2013).

Intertidal salt marshes play a vital role in supporting fisheries by providing food and shelter to fish and invertebrates that are either fisheries targets, prey for targeted species, or contribute to the structural integrity of ecosystems crucial for fisheries. The most common fish species found in Long Island's salt marshes include striped killifishes and mummichogs of the genus *Fundulus*, sheepshead minnow (*Cyprinodon variegates*), and Atlantic silverside (*Menidia menidia*). These species are often food sources for larger sport fish including striped bass (*Morone saxatilis*), weakfish (*Cynoscion regalis*), and bluefish (*Pomatomus saltatrix*). Predators including Atlantic croaker (*Micropogonias undulatus*) also utilize salt marshes as nurseries due to their structurally diverse habitats that offer refuge and a rich food source (Kritzer and Hughes 2010).

5.3 Historic Aquatic Resource Loss

From 1928 to 2004 Long Island lost almost 39,000 acres or about 48% of its total historic wetlands: about 3,500 acres of beaches (27% loss), 11,798 acres of freshwater wetlands (54% loss), and nearly 24,000 acres of tidal marshland (50% loss) (Tiner 2012). Most of this loss occurred before passage of the Tidal Wetlands Act in 1973 and can be attributed to anthropogenic causes including conversions of floodplain to artificial lakes, damming of rivers, and dredge and fill operations. However, despite legislation and regulations, wetland losses have

continued, and Long Island's estuaries have lost approximately 2,700 acres of native intertidal, high marsh, and coastal fresh marsh communities from 1974 to 2008 (Cameron Engineering and Associates 2015). The South Shore Estuary experienced the largest loss of native marsh at 1,692 acres. The Long Island Sound lost 654 acres, and approximately 256 acres of native marsh were lost in the Peconic Estuary. Collectively these three estuaries lost, on average, 85 acres of native marsh annually from 1974 to 2008 (Cameron Engineering and Associates 2015). Recovering from this massive reduction to achieve a higher functioning ecosystem is one of the primary purposes of the Program.

5.4 Threats to Aquatic Resources

Threats and stressors of highly functioning aquatic resources are amplified by the historic changes in Long Island's watershed since colonization and industrialization. Permitted impacts to aquatic resources shown above in Table 1 and Figure 2 provide a good proxy for the current direct threats to the region's aquatic resources due to permitted encroachments, as these permits reflect both the formative estuarine settings and the socio-economic forces that put demands upon ecosystem function in the Service Areas.

Additional wetland stressors in the Service Areas, such as sea level rise, increased population growth and development, and changes in hydro- geologic factors and biological communities, are fundamentally less direct and present particularly unique challenges for successful wetland restoration. Similarly, flood management requirements and the need to incorporate community resilience elements along lands and riparian corridors will continue to play a large role in aquatic resource protection in the Service Areas. Addressing these unique challenges requires a regional approach to mitigation, and an increase in the pace of wetland restoration through implementation of the Program.

5.4.1 Increased Development

Long Island continues to face increased development pressure; beginning in the 1800s with agricultural development followed by industrialization and the continued sprawl of urban and suburban development. As of 2022, the four counties that make up Long Island (Suffolk, Nassau, Queens, and Brooklyn) have a combined population approaching eight million people comprising over one-third of New York State's total population. At 5,661 people per square mile Long Island is one of the most densely populated regions in the country (USCB 2022). By 2035 the population is predicted to increase by 500,000 people and 275,000 jobs are expected to be added to the region (LIRPC 2010). A growing population and economic base require improvements and maintenance of the port/maritime industry, and at a minimum maintenance of transportation infrastructure to move the goods and supplies that generate a healthy economy. Infrastructure maintenance and improvements to ensure communities are more resilient and can adapt to future changes in Long Island's ecosystems will also result in increased demand for wetland mitigation. This projected increase in population and development pressure is likely to either directly or indirectly impact wetlands.

5.4.2 Climate Change and Sea Level Rise

Effects from climate change, notably sea level rise, are already evident and increasing. Sea level

rise combined with increased flooding due to large storm events threatens to drown existing tidal wetlands if vertical accretion rates cannot keep pace. The 2012 Superstorm Sandy caused storm surge to increase as much as nine feet above mean sea level, resulting in flooding of industrial, commercial, and residential areas releasing chemicals and waste products detrimental to human and environmental health (LISS 2015). Current projections by the National Research Council estimate that global sea level will rise 8-23 centimeters by 2030, relative to the 2000 level, 18-48 centimeters by 2050, and 50-140 centimeters by 2100. According to multiple long-term studies Long Island's salt marshes, especially impaired examples are not accreting sediments at a rate to keep pace with sea level rise (Maher and Starke 2023, Roman et al. 2023). Such studies emphasize the need for adjacent migration corridors for retreat to upland areas to limit marsh loss in response to rising sea levels..

Climate predictions also forecast increased frequency and magnitude of storm events and droughts, which will further stress already vulnerable habitats and species. Exacerbating this effect on existing tidal wetlands are the looming responses by local and regional entities to responding to level rise by expanding hardened flood protection infrastructure. In the PEP hardened shorelines experienced a 3 to 4-fold increase from 2003 to 2020 (PEP 2020b). In Nassau County 67 miles (38%) of the mainland shoreline is hardened (SSER 2022). Hardening further decreases opportunities for landward migration of marshes, and underscores the need for mitigation approaches that address entire tidal marsh environments, prioritizing locations with migration potential.

5.4.3 Reduced Sediment Supply

Sediment decline has been identified as a major problem throughout coastal regions of the United States, and the most vulnerable areas include Mid-Atlantic states like New York where relative sea level rise is projected to be greater than other regions (Weston 2014). Tidal wetlands near urban areas, also face a loss of mineral sediment and increase in organic sediment, significantly enhancing the risk of marsh loss with sea level rise by making them structurally weak (Peteet et al. 2018). Sediment accretion has been hindered by disruption of sediment delivery from both upslope areas, many of which may have been developed, and by restriction of tidal flows into marshes. Inputs of tidal sediments have been reduced through restrictions of tidal inflows (e.g., culverts), disruption of tidal inflows by legacies of mosquito ditching networks, and removal of mineral sediment supply from estuarine systems via dredging (Chant et al. 2021). Without larger interventions, sediment accretion rates are projected to be insufficient to keep pace with sea-level rise, jeopardizing the resiliency of both existing and future restored tidal wetlands. The interacting effects of sea level rise and sediment deficits threaten to drown tidal wetlands and shoreline habitats, especially if they cannot migrate inland due to natural or man-made barriers.

5.4.4 Invasive Plant Species

Invasive plant species threaten the ecological function of all aquatic resources. The invasive common reed (*Phragmites australis*) has colonized expansive areas of high marsh and coastal fresh marshes throughout Long Island. Native American reed (*Phragmites americanus*) has been a part of the estuarine marsh community since the last ice age, and prior to 1974, was restricted to slightly brackish, tidal fresh marshes, and the edges of salt and brackish marshes (Tiner 2009).

However, the introduction of the non-native invasive *Phragmites australis* has increasingly colonized salt and brackish waters contributing to the drastic loss of native coastal marsh communities (Cameron Engineering and Associates 2015). *Phragmites australis,* hereafter "Phragmites" has substantial deleterious effects on tidal wetland communities including displacing native plant species, altering marsh hydrology, and transforming diverse habitats into monocultures that threaten local wildlife. Phragmites coverage has increased by 88.5% in the Peconic Estuary and 33.6% in the Long Island Sound from 1974 to 2008, totaling 375.9 acres (Cameron Engineering and Associates 2015).

Phragmites thrives in brackish waters and is often found in monocultures where tidal flows have been cut off from marshes. Thus, reconnecting tidal inflows has proven to reduce Phragmites cover where higher salinities can be restored. DU to the extent practicable will utilize ongoing restoration projects as a model for best management practices for this and other non-native plant species.

5.5 Current Aquatic Resource Condition

The Service Areas historically saw significant loss of wetland extent and quality. While wetlands in the Service Areas once accommodated a variety of climatic changes and stressors throughout their existence, natural processes that contribute to their resilience are altered. Furthermore, climate change effects will continue to exacerbate and accelerate degradation.

Most of Long Islands wetlands (64%) are found along the island's many bays and coastal rivers. Freshwater wetlands are located along rivers and streams (10%) and in headwater locations or away from waterbodies (15%). Remaining wetlands are situated along the ocean (9%) or are lotic wetlands found along lake shores (2%) (Tiner et al. 2015). The Service Areas remaining wetlands (Figure 4) are significantly more fragmented than those existing in the 1880's (Basso et al. 2015). From 1974-2008 The Long Island Sound experienced a 22.6% reduction of marsh loss, and the Peconic and South Shore estuaries had a 10.4% and 11.6% loss respectively (Cameron Engineering and Associates 2015). Reduced tidal wetland patch size not only limits the overall wetland extent, but also reduces habitat connectivity and increases edge effects, such as increased predation, increased non-native species invasion, and reduced resiliency to stochastic events. With sea level rise, existing tidal wetland patches are predicted to become smaller and even more isolated as many areas of tidal wetland become submerged and the remaining are compressed in narrow bands against sea walls and levees.

Marsh drowning has resulted in extensive conversion of native high marsh habitat to either intertidal marshes or pannes. Marshes throughout Long Island exhibit indicators of marsh drowning with a general trend towards panne formation in the western end of the LISS and SSER, and high marsh to intertidal marsh conversion in the eastern end of all three estuaries. While overall rates of marsh loss range from -10.4 to -22.6%, the loss of native high marsh is accelerated with a range of -17.3 to -29.7% totaling -2,084 acres from 1974 – 2008. (Cameron Engineering and Associates 2015). Due to the reduced frequency and duration of flooding, native high marsh habitats exhibit greater plant diversity and are utilized by several avian species for nesting and foraging. Approximately 30 New York State endangered, threatened, or rare plant species are endemic to high marsh habitats (NYNHP 2013). The disproportionate loss of high marsh habitats through conversion to intertidal marsh or panne indicates that Long Island's

marshes are becoming less suitable for these protected or declining species.

Despite the substantial loss and degradation of tidal wetlands, a handful of historic complexes exist including the West Meadow Wetlands Reserve, Wading River Marsh Preserve, and Jerome A. Ambro Memorial Wetland along the northern shore and the Fire Island national seashore, Jamaica Bay Wildlife Refuge, and Wetheim National Wildlife Refuge along the southern shore (Figure 5). Tidal wetland decline and loss of associated ecosystem services and habitat will continue unless landscape level restoration efforts are successfully implemented. Existing complexes with substantial habitat loss should be prioritized to reverse decline, increase wetland area, and contribute to regional no net loss of wetlands. Notable candidate restoration sites include the west Sayville Marsh (113-acres), Suffolk County Gardiner Park West (71-acres), and Timber Point Marsh (51-acres).

5.6 Potential Risks and Constraints

5.6.1 Future Development

Proximity to future development or infrastructure enhancement can be a major risk factor for Program projects. The project development and eligibility criteria (see Appendix 1) will screen potential sites for any title, ownership, or development issues that would prevent long-term protection of projects. Subsequently all Program projects that are initiated will be permanently protected under a conservation easement, or equivalent protection mechanism, restricting development activities including utility, transportation, residential or infrastructure improvement construction (see section 5.9).

5.6.2 Sea Level Rise

Current and forecasted trends indicate significant marsh drowning and halting this loss will require landscape level restoration efforts. This Program can act as a vehicle to fund large scale tidal wetland restoration where resiliency to future climate conditions can be built into the design and performance metrics. While some studies predict that accretion rates are occurring at a deficit relative to forecasted seal level rise in degraded tidal wetlands (Crosby et al. 2016, Spencer et al. 2016), several promising restored sites have reported accretion levels exceeding future sea level rise (Yellen et al. 2023, Drexler et al. 2019). The Program brings DU's full capabilities stabilizing tidal marshes through comprehensive sediment management. DU and partners are already working to restore tidal-derived sediment delivery, remediating mosquito ditches, and removing barriers to sediment nourishment. Integrating such comprehensive techniques will be central to the Program (see chapter 7).

5.6.3 Future Costal Storm Risk Management Projects

In New York Costal Storm Risk Management (CSRM) projects are constructed through a three-way partnership between USACE, NYS-DEC, and local municipalities. These projects plan for resiliency to future storm events and climate preparedness for at-risk coastal communities. There are currently five CSRM projects on Long Island that involve activities including beach and dune re-nourishment, revetment restoration, installation of drainage structures and seawalls, elevation of homes, and restoration of natural areas and coastal process features.

Program projects can be well suited to positively contribute to CSRM goals by providing resiliency benefits including storm surge absorption, erosion protection, and decreased flooding for coastal communities. However, Program projects could also be negatively impacted by CSRM projects. Beach nourishment may disrupt sediment processes, dune nourishment may limit marsh migration, and installation of hardened infrastructure like seawalls could limit sediment deposition from landward sources. Proximity to existing or planned CSRM projects will be included in the project development and eligibility criteria process (see Appendix 1) to determine if Program projects can complement or be incompatible with CSRM projects.

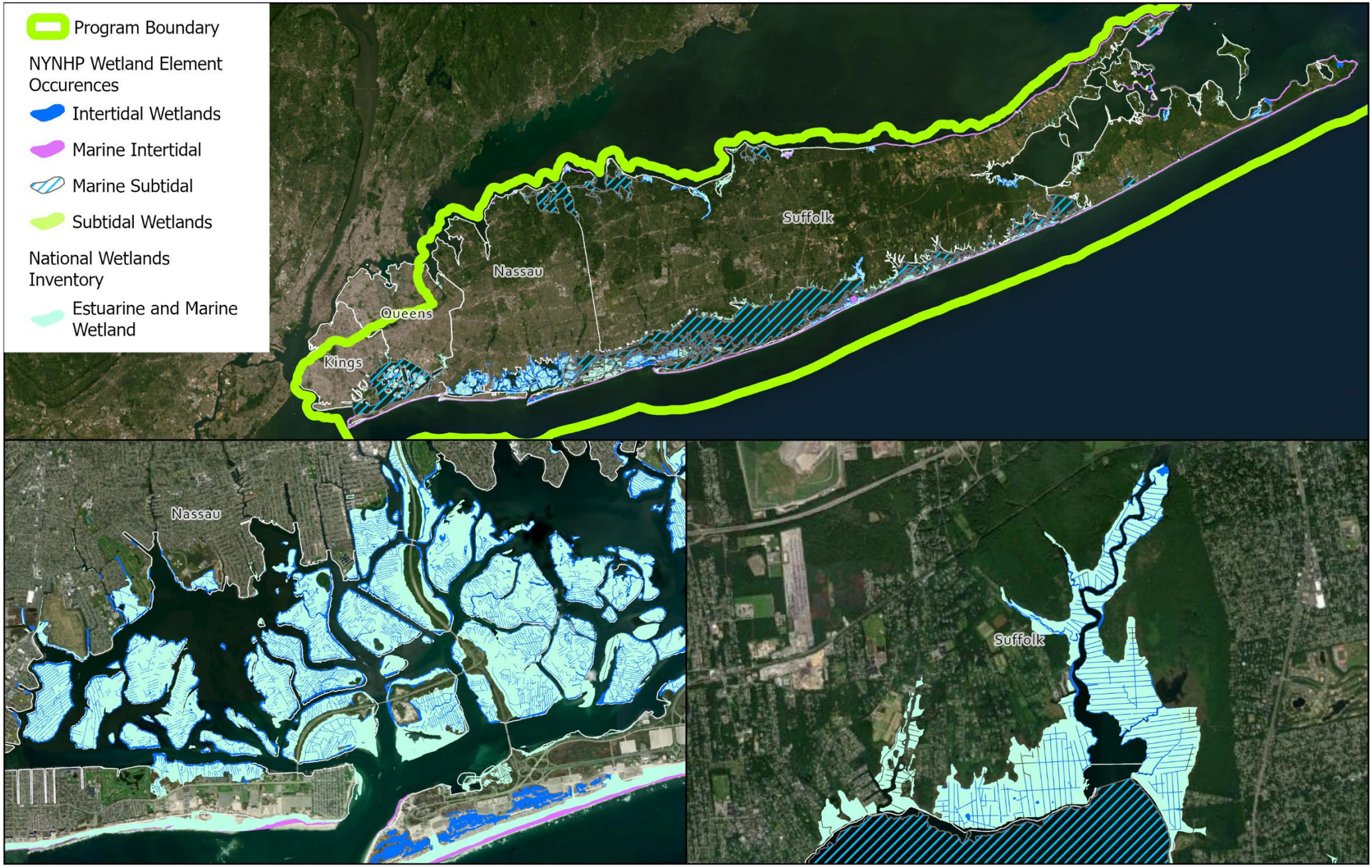

Figure 5. Estuarine and Marine Aquatic Resources, National Wetland Inventory for Long Island (Marine Deepwater and Freshwater Habitats are not shown)

5.7 Preservation Justification

The intent of the Program is to protect and restore vulnerable and degraded tidal wetland resources. The use of preservation as the sole means of mitigation is not a Program priority, thus it will not be actively pursued. Nevertheless, this tool may be utilized on a case-by-case basis. DU intends to utilize preservation of tidal wetlands and adjacent migration corridors in conjunction with restoration actions that result in a net increase in wetlands on the landscape. Specific criteria for use of preservation to compensate for aquatic resources are established by the 2008 Final Rule. Included is a requirement that preservation of aquatic resources, buffers, and uplands that comprise mitigation projects shall be done, to the extent practicable, in conjunction with aquatic resource restoration, establishment, and/or enhancement activities. In accordance with the 2008 Final Rule, the criteria outlined below will be discussed for any site-specific mitigation plan submitted to the IRT for funding approvals, including the following considerations for preserved resources:

- provide important physical, chemical, or biological functions for the watershed;
- contribute significantly to the ecological sustainability of the watershed, including use of quantitative tools to justify the contribution;
- determined by the IRT and USACE to be appropriate and practicable;
- are under threat of destruction by adverse modifications;
- will be permanently protected through an appropriate real estate instrument.

5.8 Stakeholder Involvement

DU's active participation in regional conservation planning and implementation efforts will continue. The Program Instrument will identify specific procedures for evaluating potential wetland recovery sites in the Service Areas, including, but not limited to, specific requests for proposals and qualifying project opportunities once sufficient Program funds become available.

DU will continue to work with qualified, reputable partners to ensure the protection and long-term stewardship of mitigation projects. Engagement with these partners – often accredited land trusts and public agencies – begins at the site identification stage, ensuring stakeholders are involved in the process. DU does not hold perpetually hold title to properties, and as such will identify an acceptable, qualified long-term property owner/stewards.

As identified in Section 2.2.5. Partnerships and Stakeholders, DU will coordinate with the IRT, the Advisory Team, and other relevant sub-regional stakeholders when planning and implementing Program projects to ensure Program goals and objectives are met.

5.9 Long-term Protection and Management Strategies

The Program may propose mitigation projects on public lands, private lands, or on land already held by DU. The type of ownership and long-term management strategy will vary by project site. Specific long-term ownership arrangements, monitoring programs, and management strategies will be included in each approved mitigation plan.

5.9.1 Site Protection

DU shall be responsible for developing and implementing a site protection instrument acceptable to USACE and the IRT for each ILF project in accordance with terms described in 33 CFR 332.7(a). DU will confirm the site protection instruments proposed for use are acceptable to the IRT prior to project implementation. For each project, a site protection instrument (e.g., conservation easement or other acceptable alternative) will be subject to USACE approval and will become part of the official project record. For projects requiring a conservation easement, an endowment will be established to pay for the annual monitoring and any necessary enforcement of the easement. The conservation easement endowment will be held in a designated, USACE-approved FDIC insured, non-wasting account.

The real estate instrument providing long-term protection of the compensatory mitigation site must, to the extent appropriate and practicable, prohibit incompatible uses that might otherwise jeopardize the objectives of the compensatory mitigation project. Where appropriate, multiple instruments recognizing compatible uses such as passive recreation (e.g., hunting, fishing, hiking) may be used (33 CFR 332.7(a) (2)).

The real estate instrument, management plan, or other long-term protection mechanism must contain a provision requiring 60-day advance notification to the district engineer before any action is taken to void or modify the instrument, management plan, or long-term protection mechanism, including transfer of title to, or establishment of any other legal claims over, the compensatory mitigation site (33 CFR 332.7(a) (3)).

5.9.2 Sustainability

Each Program project will be designed, to the maximum extent practical, to require little or no long-term management per the terms described in 33 CFR 332.7(b). This includes minimization of active engineering features and appropriate siting to ensure that natural hydrology and landscape context will support long-term sustainability.

5.9.3 Adaptive Management

If the annual monitoring findings indicate that the ILF project is not making expected progress towards meeting the performance standards, DU shall notify the District Engineer as soon as possible as detailed in the terms described in 33 CFR 332.7(c) (1-3). Likewise, if the IRT determines that the project is not making expected progress towards meeting the performance standards, USACE shall report, in writing, any findings and recommend if corrective measures are needed.

In such instances, DU in consultation with USACE and the IRT, will determine the appropriate adaptive management steps necessary to meet the performance standards of the ILF project. Measures may include, but are not limited, to site modifications, design changes, and invasive plant species and animal control. Performance standards and monitoring requirements may be revised based on adaptive management measures necessary to address deficiencies and ensure project success. Performance standards may also be revised to reflect changes in management strategies if the new performance standards ensure that ecological benefits are comparable or superior to those detailed in the original mitigation plan. No other revisions to performance standards will be allowed except in the case of natural disasters per the terms detailed in 33 CFR 332.7(c) (4).

5.9.4 Long-term Management

Program project sites will be subject to a long-term management plan. The long-term management plan will have a description of any anticipated management needs and projected cost estimates. A portion of the credit sales to be determined by DU and the long-term manager in consultation with the IRT and subject to USACE approval shall be placed in a non-wasting, interest-bearing endowment, at a FDIC-Insured financial institution, to ensure that funds will be available for long-term management. The long-term manager will be identified in the project-specific mitigation plan. DU may assign long-term management obligations to another entity, subject to approval by the District Engineer per 33 CFR 332.7(d).

Long-term stewardship will likely require real estate instruments such as long-term management agreements that designate a responsible land stewardship manager and the associated management requirements. Under the 2008 Mitigation Rule, these obligations may be held by qualified entities such as federal, tribal, state, or local resource agencies, non-profit conservation organizations including DU, or private land managers. For federal or state property, long-term protection may be provided through facility management plans or integrated natural resource or facilities maintenance plans that mirror minimum requirements typical of a long-term management plan.

The long-term management plan, or other long-term stewardship mechanism must contain a provision requiring 60-day advance notification to the district engineer before any action is taken to void or modify the instrument, management plan, or long-term protection mechanism, including transfer of title to, or establishment of any other legal claims over, the compensatory mitigation site (33 CFR 332.7(a) (3)).

Appropriate long-term financing (e.g., stewardship endowment) may be managed by DU or a third party for this purpose as non-wasting endowments, trusts, or contractual arrangements with future responsible parties. Because government agencies may be limited in their ability to accept, manage, and disburse funds for long-term management of compensatory mitigation project sites, for projects on public land, DU will work with the IRT and federal and state partners to identify appropriate mechanisms to ensure the requirements for long-term protection and stewardship established by the 2008 Final Rule are fulfilled. Costs for long-term management and monitoring of mitigation projects will be considered by the Program when establishing pricing for credits. Calculation of costs will be based on annualized stewardship and organizational cost accounting methods and included in site specific mitigation plans submitted to the IRT for project funding approvals.

5.10 Strategy for Periodic Evaluation and Reporting

DU and the IRT will conduct regular meetings, as requested or as often as deemed necessary but at least annually, to review site-specific mitigation projects, conduct Program evaluation and auditing, review Program and project performance, evaluate adherence to Program goals, objectives and project prioritization criteria, credit pricing, and to develop project-specific approaches to address other significant watershed priorities. Annual Program reports summarizing organizational and site-specific project performance relative to the Compensation

Planning Framework and Prioritization Strategy and Program status will be provided. In accordance with the 2008 Final Rule, annual Program reports must include an annual report ledger showing the beginning and ending balance of available Advance Credits and permitted impacts for each resource type provided by the Program. Accounting of sales of Advanced and Released credits will also be provided, in accordance with the 2008 Final Rule. The annual report shall cover a period from July 1 through June 30, corresponding to the Sponsor's Fiscal Year calendar. Annual reports will also present brief summaries of progress towards meeting Service Area specific credit obligations.

DU will also submit an annual financial reporting statement for the Program. The statement will detail all income, disbursements and interest earned in the Program Account and sub-accounts for DU's previous fiscal year (July 1 to June 30). DU will always maintain a cost-accounting reconciliation (e.g., cost of land acquisition, project planning, construction, monitoring, maintenance, contingencies and administration) and will make such information available upon request of USACE.

6 PROGRAM ACCOUNT

DU will establish a Program Account that will be held at a financial institution that is a member of the Federal Deposit Insurance Corporation. Interest or other earnings that accrue from the Program Account will remain in the account. Disposition of funds from the Program Account will occur following USACE approval, which may be used for activities such as implementing Program projects or emergency project repairs. The USACE has the authority to direct those funds to alternative compensatory mitigation projects in cases where the ILF Sponsor does not provide compensatory mitigation in accordance with the specified time frame. The USACE has the authority to audit the Program Account at any time.

The Program Account will track deposits from the sale of credits and expenses associated with implementing Program projects. In the situation where the DU has met all the mitigation obligations associated with specific credit sales, then DU may use any remaining funds to establish mitigation projects in advance of additional advanced credit sales.

DU will maintain a system for tracking the production of credits, credit transactions, and financial transactions separated for each project within the Service Areas. DU will submit an Annual Program Report to the IRT that will include program data from the previous fiscal year (July 1 – June 30). The Annual Report will include the following documents: summary sheet, income statement, expense statement, credit report summary, and the detailed credit report as described earlier.

7 EXAMPLES OF DUCKS UNLIMITED TIDAL WETLAND PROJECTS

DU's recognized leadership in regional wetland conservation prioritization, planning, design, and implementation demonstrates our qualifications for operating the Program. In addition, DU currently directs and manages multiple coastal restoration projects near the Service Areas (Figure 3). Selected recent and ongoing DU projects information is presented below. These partnership-based, ecologically significant projects contributed to the watershed's health and connectivity and will be used as representative models to replicate for developing and implementing Program projects.

Broad Meadows/Narrow River Restoration
Location - Orient, New York
Timeline - 2020 – 2025
Acreage - 77

Broad Meadows Marsh is impounded at its downstream end by an earthen berm approximately 230 feet long. Portions of this earthen berm were breached during Hurricane Sandy in 2012 and subsequently restored. Downstream of the 230-linear foot earthen berm are the tidal reaches of Narrow River featuring intact and high-functioning tidal marshes. The twin culverts within the southern earthen berm are undersized and restrict tidal flows to the upstream marsh. Due to the restriction, Broad Meadows Marsh is currently dominated by the invasive plant Phragmites.

Removal of the tidal barrier presented by the twin gates will result in ecological recovery of the Phragmites-infested marshes through conversion to tidal or brackish marsh. Therefore, DU, the Town, and NY DEC plan to replace the twin culverts with one or more self-regulating tide gates that would increase the typical tidal range within the marsh but would block higher tides and storm flows that would inundate roads and property. The Town utilized Grant and DU match funding to hire design and construction contractors to replace the existing culverts with self-regulating tide gates and some additional hydrology improvements (e.g., roadway culverts to extensions of marsh, weir to adjacent ag ditch). DU and DEC will provide technical support for bidding, design, permitting, and construction oversight.

This project was identified as a "high priority" restoration project in the 2017 PEP Habitat Restoration Plan and the 2020 PEP CCMP. Furthermore, the coastal salt marsh habitats within this project area have been identified by both the Black Duck Joint Venture (BDJV) and ACJV as the most important habitat for conservation for wintering American black ducks and salt marsh sparrows (ranked top 10% for both species).

Herring River Marsh Restoration
Location - Wellfleet, Massachusetts
Timeline - 2023 – 2025
Acreage - 185

Over a century ago the Herring River Estuary was a pristine 1,100-acre tidal marsh. At the time, the Herring River played a critical role in linking freshwater to the saltwater bay of Wellfleet Harbor, but in 1909 a dike was built at Chequessett Neck Road that impeded the natural flow of water, altering the estuary's ecology and transforming it from salt marsh to freshwater wetlands and upland forests. DU partnered with the National Park Service, USFWS, NOAA, Massachusetts Division of Ecological Restoration, Wellfleet Conservation Trust, Friends of Herring River, the town of Wellfleet, and others on a $60 million project to replace the dike with a bridge and implement vegetative and sediment management to re-establish natural salt marsh conditions. The bridge will be equipped with control gates to return the natural flow of tidewater to the marsh.

DU secured funding for the habitat restoration portion of the project resulting in vegetation management, design and construction of dike removal, and beneficial use of fill as thin layer placement to restore historic marsh elevations. Upland woody vegetation was cleared in 125 acres of Duck Harbor to promote growth of native salt marsh species from the seedbank and allow the site to naturally revert to a salt marsh community. Once the dike is removed and bridge is built (to be completed in 2025), tide gates will be incrementally opened to reintroduce tidal flow to 890 acres. Restored tidal flows will improve water quality and promote the expansion of shellfish in the estuary and Wellfleet Bay. It will also allow Atlantic Herring to reach their historic spawning ponds. Influx of salt water will combat invasive phragmites and allow native salt marsh species to re-establish. This will increase the diversity of wildlife and habitat in the estuary and is expected to provide food, shelter, nesting, and migratory habitat for many species of birds, including the at-risk American black duck and saltmarsh sparrow.

Rachel Carson National Wildlife Refuge Restoration
Location - Wells, Maine
Timeline - 2021 – 2025
Acreage - 309

DU and the USFWS are working to reverse the trend of salt marsh loss at Rachel Carson National Wildlife Refuge, which protects over 5,700 acres of undeveloped land along the Atlantic coast of southern Maine. DU secured multiple grants to develop salt marsh restoration projects utilizing thin layer placement, ditch remediation, and runnel installation.

The dramatic loss of marsh habitat in Maine has negatively impacted many species of wildlife, particularly the saltmarsh sparrow, recently placed on the state's endangered species list in 2023. Agricultural practices coupled with sea-level rise are causing the marshes to break. When water becomes trapped on the marsh surface, the peat breaks down and causes the entire marsh to sink. For species like the saltmarsh sparrow that nest in the native grasses of the marsh, a few inches can be the difference between life or death. It's estimated there are now less than 1,600 saltmarsh sparrows in Maine. To help support these endangered bird populations, DU and Rachel Carson staff will be restoring 309 acres of salt marsh in Wells. This work is funded by multiple NAWCA grants, in partnership with the Trust for Public Lands.

DU completed survey and design work to strategically remediate ditches and install runnels (shallow channels < 12 inches deep). Biologists used hand tools to complete most of the work and minimize potential damage from large construction equipment. This innovative low-cost,

low-impact method addresses the effects of legacy salt hay farming and returns the natural ebb and flow of water to the marsh, allows vegetation to grow and capture sediments, and further elevates the surface of the marsh to a point where it can keep pace with continued sea-level rise. The strategic placement of runnels throughout degraded areas of the marsh will not only help regenerate the vegetation essential for the saltmarsh sparrow to nest, but also mitigate salt marsh loss caused by humans. Peat excavated during this process was hauled away in sleds and repurposed as thin layer placement throughout the marsh.

Supawna Meadows NWR Goose Pond
Location - Salem County, New Jersey
Timeline - 2021-2023
Acreage - 430

DU worked with the USFWS and several partners, utilizing a National Fish and Wildlife Foundation Delaware Watershed Conservation Fund grant, to restore 430 acres of tidal marsh at Supawna Meadows National Wildlife Refuge in Delaware Bay. The refuge's 2,200-acre tidal marsh is threatened by human development, which is negatively impacting natural water flow. A hurricane in the 1930s breached a historic dike used to prevent erosion, flooding the marsh and changing vegetative communities. These 430 acres are former agriculture land, being returned to natural habitat. The project design plans and permitting were completed in 2021, with construction completed in 2023.

Construction included rehabilitation of the stone breakwater along the Delaware River shoreline to improve tidal exchange and provide shoreline protection. This strategy took advantage of the existing infrastructure by removing stone in areas where the breakwater was inhibiting tidal flows and adding stone to damaged sections to attenuate wave energy and reduce shoreline erosion. The project also included beneficial use of dredge material to restore historic tidal marsh elevations, providing a more economical

Spring Creek Restoration
Location - Jamaica Bay, New York
Timeline - 2022 – 2023
Acreage - 35

Spring Creek Park is in Northern Jamaica Bay, immediately west of JFK airport and contains the largest undeveloped land and wetlands in northern Jamaica Bay. DU's involvement in this project consisted of providing matching funds, leveraging and facilitating resource deployment, and providing overall restoration design suggestions. The 55-acre park boasts 20 acres of tidal wetland, dominated by *Spartina alterniflora*, which is showing significant signs of degradation. The park also contains approximately 30 acres of coastal maritime forest, several acres of which were recently restored, and recently constructed bioswales capturing stormwater from the adjacent neighborhood. DU in coordination with NYC Parks and ACOE worked to restore the site in 2023. The goals of the project are to restore significant areas of salt marsh and coastal forest, re-establishing ecologic functions and services for wildlife and adjacent neighborhoods in an important tributary of Jamaica Bay.

The overall project implemented several restoration techniques, such as, (1) excavate upland fill covering historic wetlands to re-establish tidal inundation and plant with native salt marsh plant species, (2) in adjacent coastal high marsh and upland, remove invasive plant species and plant the new wetland buffer with native maritime species, (3) pilot sand placement and planting on denuded former marsh, (4) beneficially reuse excavated fill material on site to restore adjacent impervious areas of the former compost facility, creating a contoured landscape capped with clean sand and loam and planted with native coastal grasses, scrubs and trees. The project benefited 35 acres of tidal wetland habitat (nine acres of tidal marsh and 21 acres of maritime forest/upland habitat).

Marsh Runnel Creation at Reeds Beach, Cape May National Wildlife Refuge
Location - Cape May, New Jersey
Timeline - 2020 – 2020
Acreage - 52

The USFWS, Cape May National Wildlife Refuge manages property along the Delaware Bay including the Reeds Beach unit. Reeds Beach includes a ~100 acre tidal marsh restoration area threatened by the effects of sea level rise, severe storms, and man-made hydrologic modifications. Mosquito ditches that grid the marsh are failing and silting in, resulting in the retention of water on the marsh platform. The resulting vegetation die-back and changes in vegetative community structure may lead to permanent marsh loss and conversion to open water, affecting wildlife, and thereby exacerbating the vulnerability of these wetlands to sea level rise and coastal storm events. USFWS completed the first phase of restoration on 48 acres of the Reeds Beach tidal marsh in 2017. The USFWS and DU completed the second phase of restoration to improve tidal saltmarsh health and resiliency by installing runnels, clearing blocked tidal ditches, and reorienting straight tidal ditches on 52 acres of the tidal marsh habitat. The project included hiring a contractor to dig a new series of shallow, sinuous runnels or channels, with the assistance of refuge staff and DU. More specifically, the restoration 1) facilitated a more natural hydraulic regime 2) enhanced saltmarsh resilience 3) improved rates of accretion and 4) improved marsh habitat for wildlife.

Parker River
Location - Newbury, Massachusetts
Timeline - 2024 – 2026
Acreage – 1,150

DU, USFWS, and Mass Audubon, partnered on a grant to restore 1,150 acres of salt marsh habitat at Parker River National Wildlife Refuge. The project uses nature-based techniques, such as runneling and ditch remediation, to restore marsh hydrology to pre-colonial era, making the marsh more resilient to climate change, and restore habitat for salt marsh sparrow, American black duck, red knot, Atlantic sturgeon, and soft-shell clams. The project also aims to increase stormwater retention, flood abatement, storm surge attenuation, and carbon sequestration capabilities. Monitoring will utilize on-site data collection and remote sensing. On-site data collection will document baseline conditions and following implementation of the hydrological improvements, will provide evidence for changes in hydrology that lead to vegetation improvement and increase in elevation.

8 REFERENCES

[AREGCBA 2020] New York State Accelerated Renewable Energy Growth and Community Benefit Act 2020. https://www.nyserda.ny.gov/About/Newsroom/2020-Announcements/2020-04-03-New-York-State-Announces-Passage-Of-Accelerated-Renewable-Energy-Growth-And-Community-Benefit-Act-As-Part-Of-2020-2021-Enacted-State-Budget (Accessed 6-1-2021)

Cameron Engineering and Associates. 2015. Long Island Tidal Wetlands Trends Analysis. *New England Interstate Water Pollution Control Commission*, *207*.

Chant, R.J., Ralston, D.K., Ganju, N.K. *et al.* 2021. Sediment Budget Estimates for a Highly Impacted Embayment with Extensive Wetland Loss. *Estuaries and Coasts* **44**, 608–626. https://doi.org/10.1007/s12237-020-00784-3

Crosby, S. C., Sax, D. F., Palmer, M. E., Booth, H. S., Deegan, L. A., Bertness, M. D., & Leslie, H. M. 2016. Salt marsh persistence is threatened by predicted sea-level rise. *Estuarine, Coastal and Shelf Science*, *181*, 93–99. https://doi.org/10.1016/j.ecss.2016.08.018

Drexler, J.Z., Woo, I., Fuller, C.C. and Nakai, G., 2019. Carbon accumulation and vertical accretion in a restored versus historic salt marsh in southern Puget Sound, Washington, United States. *Restoration Ecology*, *27*(5), pp.1117-1127.

G. Basso, K. O'Brien, M. Albino Hegeman and V. O'Neill. 2015. Status and trends of wetlands in the Long Island Sound Area: 130-year assessment. U.S. Department of the Interior, Fish and Wildlife Service. (36 p.)

Hartley, M.J. and A.J. Weldon, eds. 2020. Saltmarsh Sparrow Conservation Plan. Atlantic Coast Joint Venture, acjv.org/documents/SALS_plan_final.pdf

Kutcher, T.E., Raposa, K.B., and Roman, C.T., A rapid method to assess salt marsh condition and guide management decisions. 2022 Ecological Indicators. 138, 108841

Kritzer, J. and Hughes, A., 2010. The role of salt marshes in sustaining Long Island fisheries. *Memoirs of the Torrey Botanical Society*, *26*, pp.34-41.

[LISS] Long Island Sound Study. 2015. Long Island Sound Comprehensive Conservation and Management Plan 2015 Returning the Urban Sea to Abundance. https://longislandsoundstudy.net/wp-content/uploads/2015/09/CCMP_LowRes_Hyperlink_singles.pdf

[LISS] Long Island Sound Study. 2023. National Estuary Program Summary Work Plan, https://longislandsoundstudy.net/wp-content/uploads/2023/08/FY2023-NEP-Work-Plan-Final-with-alt-text.pdf

MacDonald, Dana and Gregory Edinger. 2000. Identification of reference wetlands on Long Island, New York. Final report prepared for the Environmental Protection Agency, Wetland Grant CD992436-01. New York Natural Heritage Program, New York State Department of Environmental Conservation. Latham, NY. 106 pp. plus appendices.

Maher, N. and Starke, A., 2023. Suboptimal Rootzone Growth Prevents Long Island (NY) Salt Marshes from Keeping Pace with Sea Level Rise. *Estuaries and Coasts*, pp.1-18.

Miller, M.J. and Able, K.W., 2002. Movements and growth of tagged young-of-the-year Atlantic croaker (Micropogonias undulatus L.) in restored and reference marsh creeks in Delaware Bay, USA. *Journal of Experimental Marine Biology and Ecology*, *267*(1), pp.15-33.

[NOAA] National Oceanic and Atmospheric Administration. 2022. NAO 216-123:

NOAA Mitigation Policy for Trust Resources. https://www.noaa.gov/organization/administration/noaa-administrative-orders-chapter-216-program-management/nao-216-123-noaa-mitigation-policy-for-trust-resources

[NYS-DEC] New York Department of Environmental Conservation. 2024. Tidal wetlands Permit Program. 2/1/2024. https://dec.ny.gov/regulatory/permits-licenses/waterways-coastlines-wetlands/tidal-wetlands-permit-program/sample-plans-diagrams-list

[NYNHP] New York Natural Heritage Program. 2013. High Sat Marsh Conservation Guide. New York Natural Heritage Program. Albany, NY. 9 pgs.

[NYNHP] New York Natural Heritage Program. 2024. Rare species and community occurrences, biodiversity databases, element occurrence record digital dataset. Accessed 1-20-2024.

[NYSCLCPA, 2021] New York State Climate Leadership and Community Protection Act. 2021. New York State Senate Bill S6599

[PEP] Peconic Estuary Partnership. 2020a. *Comprehensive Conservation and Management Plan: Protecting & Restoring Long Island's Peconic Bays*, https://indd.adobe.com/view/201ca273-3278-44ee-b907-a8308ec3d4a5

[PEP] Peconic Estuary Partnership. 2020b. Peconic Estuary Partnership Habitat Restoration Plan, https://www.peconicestuary.org/wp-content/uploads/2021/04/PEP-2020-Habitat-Restoration-Plan-FINAL.pdf

Peteet, D.M., Nichols, J., Kenna, T., Chang, C., Browne, J., Reza, M., Kovari, S., Liberman, L. and Stern-Protz, S., 2018. Sediment starvation destroys New York City marshes' resistance to sea level rise. *Proceedings of the National Academy of Sciences*, *115*(41), pp.10281-10286.

Pirani, R; Stinnette, I; Da Silva, R; Lerman-Sinkoff, S; Lodge, J; Giudicelli, A; and Boicourt, K., 2018. NY–NJ Harbor & Estuary Program Action Agenda 2017-2022, Hudson River Foundation. New York, NY.

Race, M.S., and Fonseca, M.S 1996. Fixing Compensatory Mitigation: What will it take? Ecological Applications. https://doi.org/10.2307/2269556

Roman, C.T., Lynch, J.C. and Cahoon, D.R., 2023. Twenty-year record of salt marsh elevation dynamics in response to sea-level rise and storm-driven barrier island geomorphic processes: Fire Island, NY, USA. *Estuaries and Coasts*, pp.1-15.

Rozas, L.P., Caldwell, P. and Minello, T.J., 2005. The fishery value of salt marsh restoration projects. *Journal of Coastal Research*, pp.37-50.

[SSER] South Shore Estuary Reserve. 2022. Long Island South Shore Estuary Reserve Comprehensive Management Plan, https://dos.ny.gov/system/files/documents/2022/09/2022-sser-cmp.pdf

Spencer, T., Schuerch, M., Nicholls, R. J., Hinkel, J., Lincke, D., Vafeidis, A. T., et al. 2016. Global coastal wetland change under sea-level rise and related stresses: The DIVA Wetland Change Model. *Global and Planetary Change*, *139*, 15–30. https://doi.org/10.1016/j.gloplacha.2015.12.018

Teo, S.L.H. and Able, K.W., 2003. Habitat use and movement of the mummichog (Fundulus heteroclitus) in a restored salt marsh. *Estuaries*, *26*, pp.720-730.

Tiner, R., K. McGuckin and M. Fields. 2012. Changes in Long Island wetlands, New York: circa 1900-2004. U.S. Fish and Wildlife Service, Northeast Region, Hadley, MA. 12 pp.

Tiner RW. 2009. Native Phragmites Located on Long Island. The Quarterly Newsletter of the Long Island Botanical Society 19(2): 9-12

Tiner, R.W., K. McGuckin, and J. Herman. 2015. Wetland Characterization and

Landscape level Functional Assessment for Long Island, New York. U.S. Fish and Wildlife Service, Northeast Region, Hadley, MA. 25 pp. plus Appendices.

[USACE] U.S. Army Corps of Engineers. 2022. ORM database.

[USACE] U.S. Army Corps of Engineers. 2023a. FOIA request.

[USACE] U.S. Army Corps of Engineers. 2023b. Regulatory In-lieu Fee and Bank Information Tracking System (RIBITS).12/18/23. https://ribits.usace.army.mil/ribits_apex/f?p=107:2

[USDA] United States Department of Agriculture, Natural Resources Conservation Service. 2022. Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296.

[USCB] U.S. Census Bureau QuickFacts. 2022. Education Survey. U.S. Census Bureau. https://www.census.gov/quickfacts (Accessed on August 15, 2023)

Warren, R. S., Fell, P. E., Rozsa, R., Brawley, A. H., Orsted, A. C., Olson, E. T., Swamy, V., & Niering, W. A.. 2002. Salt Marsh Restoration in Connecticut: 20 Years of Science and Management. *Restoration Ecology*, *10*(3), 497-513. https://doi.org/10.1046/j.1526-100X.2002.01031.x

Weston, N.B., 2014. Declining sediments and rising seas: an unfortunate convergence for tidal wetlands. *Estuaries and Coasts*, *37*(1), pp.1-23.

Yellen, B., Woodruff, J. D., Baranes, H. E., Engelhart, S. E., Geyer, W. R., Randall, N., & Griswold, F. R. 2023. Salt Marsh Response to Inlet Switch-Induced Increases in Tidal Inundation. *Journal of Geophysical Research: Earth Surface*, *128*(1), e2022JF006815. https://doi.org/10.1029/2022JF006815

[2008 Final Rule] 2008. Federal Register. Final Rule for: Compensatory Mitigation for Losses of Aquatic Resources. 33 CFR Parts 325 and 332, 40 CFR Part 230. U.S. Army Corps of Engineers, DoD; and Environmental Protection Agency.

Appendix 1 – Project Development Process and Project

Prioritization

The Program Sponsor will lead the identification, development, and implementation of Program projects, as well as be responsible for the monitoring, and long-term success of Program Sponsor led projects. The process will be aligned with both the Prioritization Strategy (below) and the Compensation Planning Framework. The Program Sponsor will utilize our extensive network of conservation and other partners to develop and implement Program projects. Projects may be fully developed with Program funds, or distinct components of a larger Restoration effort. In any situation, all Program projects will comply with the 2008 Final Rule. The Sponsor will seek approval to expend funds in the Program Account for Project Development. If approval to disburse funds from the Program Account has not already been received by the Program Sponsor, it shall be provided following a positive review of a Draft Technical Proposal, provided USACE believes the proposed project has the potential to satisfy Credit obligations. Approvals to disburse funds for expenses related to project development will not be unreasonably withheld.

Review Timelines § 332.8(d)
As in-lieu fee project sites are identified and optioned or otherwise secured by the Program Sponsor, a Mitigation Plan including all applicable items listed in 332.4(c) (2-14) will be prepared and submitted to the IRT. The Program Sponsor where possible will execute temporary agreements that limit the need for outside funding outlays to secure a site prior to agency approval of implementation funds (e.g., exclusive rights to purchase, Memorandums of Understanding, or other instruments that reduce the need to purchase lands ahead of authorization to utilize implementation funds) to enable requisite IRT and internal reviews consistent with standard review periods. The Notice to Proceed to Mitigation Plan development for a specific project must not be unreasonably withheld and a decision shall be reached by the IRT in a timely manner. Upon receipt of a Mitigation Plan, USACE has 30 days to make a completeness determination, if determined complete, a 30-day public notice is required, USACE then distributes the comments received by the IRT and any public comments to the Program Sponsor and IRT within 15 days of the close of comment period, and the Corps must send the initial evaluation letter within 30 days of the comment period closing.

A complete Mitigation Plan will be developed in accordance with the requirements of the 2008 Final Rule. Following review by the IRT, the IRT will determine whether to approve the Mitigation Plan. An approved Mitigation Plan shall become legally enforceable upon its incorporation into the Instrument through an amendment to the Instrument signed by the Parties that approved the ILF Project.

The IRT shall meet on a regular basis as determined by the USACE to review and approve ILF projects and discuss program management issues in a timely manner. The IRT shall be responsive to DU in terms of providing feedback and guidance on proposed mitigation sites and Mitigation Plans. Similarly, The Program Sponsor will be responsive to IRT questions and inquiries as program sponsor.

The Program Sponsor intends to collaborate with partners, experienced and technically capable in establishing wetlands compensation projects (e.g., other non-profit conservation organizations, private entities, governmental entities, and others), with knowledge of the Service Areas to

develop and implement ILF projects. These ILF Projects may be fully developed through funds from credit sales, or ILF Projects may be a component of larger restoration efforts. In all cases, the Program Sponsor will be responsible for ensuring the projects are developed and implemented in compliance with the Instrument. The Program Sponsor may engage partners in various ways, e.g., direct selection of existing Restoration efforts; requests for assistance with Project development and/or implementation; formal requests for proposals (RFPs); etc.

The Mitigation Plan will include:

1. Objectives
2. Project timeline
3. Site selection
4. Site protection provisions including title report and endowment calculations
5. Site baseline information
6. Determination of credits and release credit determination credit release schedule
7. Mitigation work plan
8. Maintenance plan
9. Performance and success criteria
10. Monitoring plan
11. Reporting requirements
12. Long-term management plan
13. Adaptive management plan
14. Financial assurances
15. Other information deemed necessary by the IRT

Partner-Led Projects

The Program Sponsor may enter into a contractual arrangement or partnership with other entities to develop, implement, monitor, and manage Program projects. This process may involve a public Request for Proposals, be directly solicited, or utilize other mechanisms. Projects led by others will be subject to the Prioritization Strategy and IRT approval process as described herein. Projects led by other entities will be required to meet all requirements of the Program.

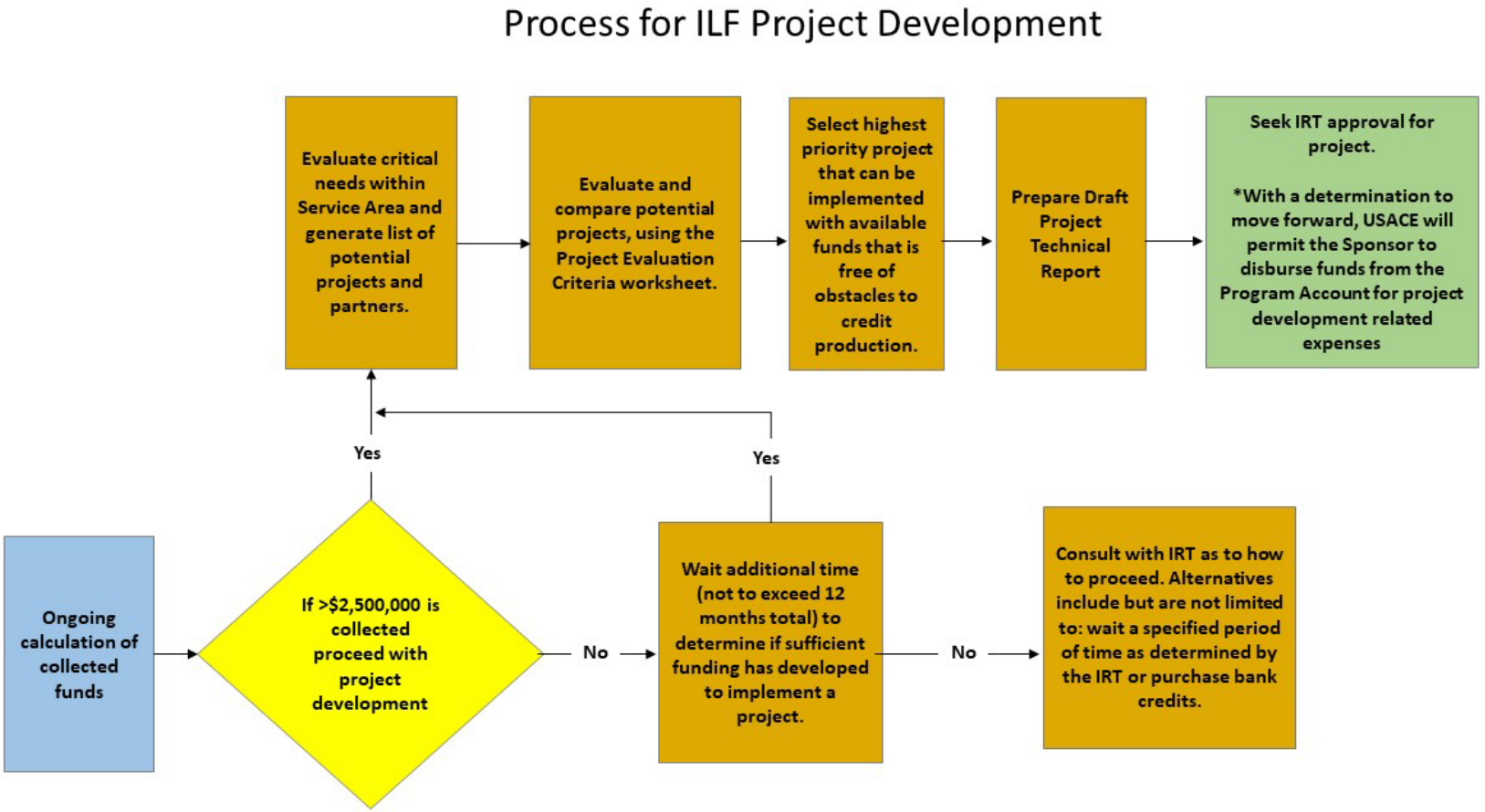

Figure 1 ILF Project Development.

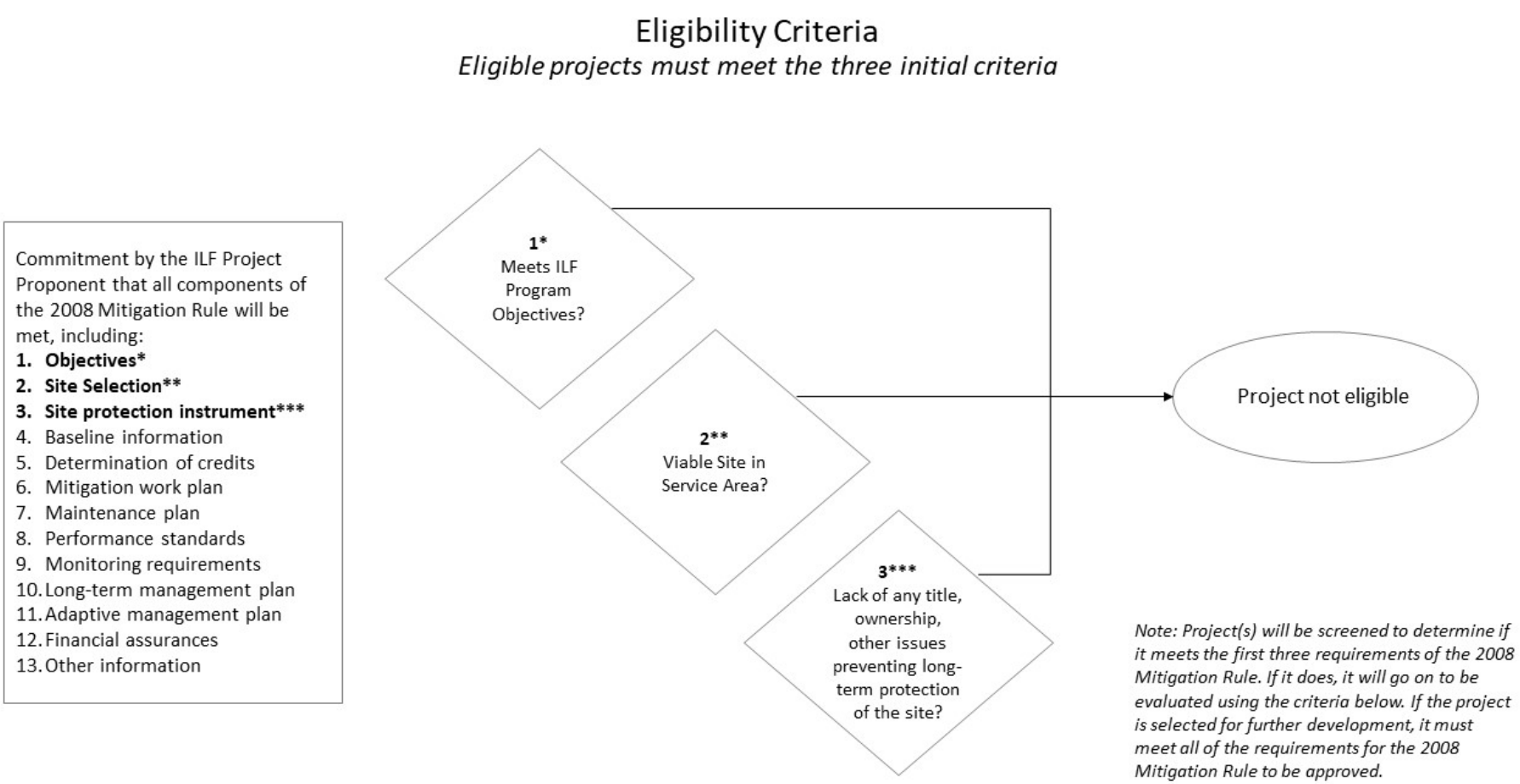

Figure 2 Project Eligibility Criteria

Evaluation Criteria

Eligible projects will be evaluated and compared using the following criteria.

(Circle the appropriate criteria in each category and place the corresponding score in the column to the right)

	LOW: 1	MEIDUM: 2	HIGH: 3	SCORE
Degree to which project addresses Service Area priorities	No priorities met, but meets other goals	One SA priority met	More than one SA priority met	
Potential for reestablishment or rehabilitation of wetlands	Enhancement	Rehabilitation	Reestablishment	
Use of natural processes in restoring ecological function	No natural process used to achieve ecological lift	1-2 ecological components improved using natural processes	All 3 ecological components improved using natural processes	
Extent of connectivity with other protected lands	Isolated	Within planned connectivity corridor or biological core areas	Immediately adjacent to protected lands	
Extent of buffer	Buffer less than 50 feet in width	Buffer between 50 and 100 feet	Buffer >100 feet	
Sea level rise vulnerability	Vulnerable to sea level rise	Some capacity for inland migration	Good capacity for inland migration	
Cost effectiveness	Per acre cost more than fee collection rate	Per acre cost equal to fee collection rate	Per acre cost less than fee collection rate	
Credits generated	Equal to minimum needed	More than minimum needed	Equal to or more than minimum needed / improves habitat metrics for species of greatest conservation need	
TOTAL				

Figure 3 Project Evaluation Criteria