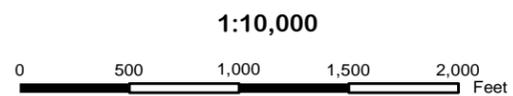
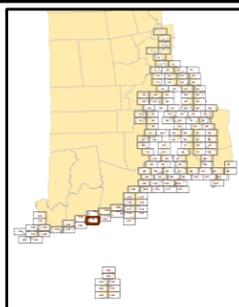


Appendix A

Ninigret SLAMM Maps



Map
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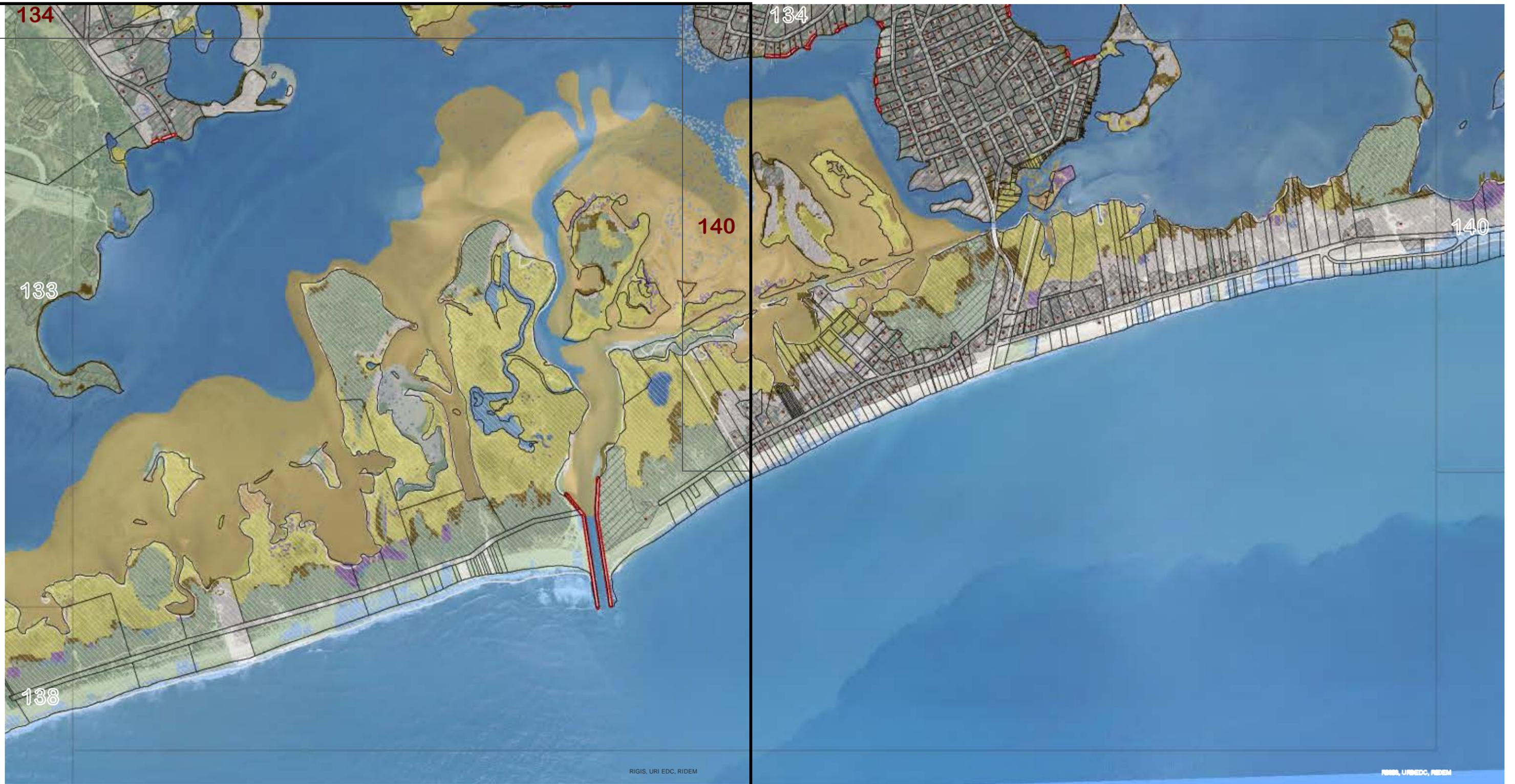
- | | | | |
|--|--------------------|--|--------------------------------|
| | Developed Upland | | Salt Marsh |
| | Undeveloped Upland | | Brackish Marsh |
| | Rocky Intertidal | | Scrub/Shrub Transitional Marsh |
| | Beach | | Fresh Marsh |
| | Tidal Flat | | Hardened Shores |
| | Open Water | | Buildings |
| | Swamp | | Parcel Boundaries |
| | Tidal Creek | | |

Tidal Marsh Vulnerability Analysis: Current Condition

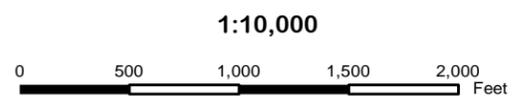
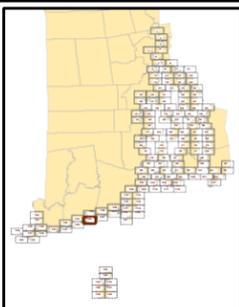


NOAA grant award #:
NA12OAR4310108





Map
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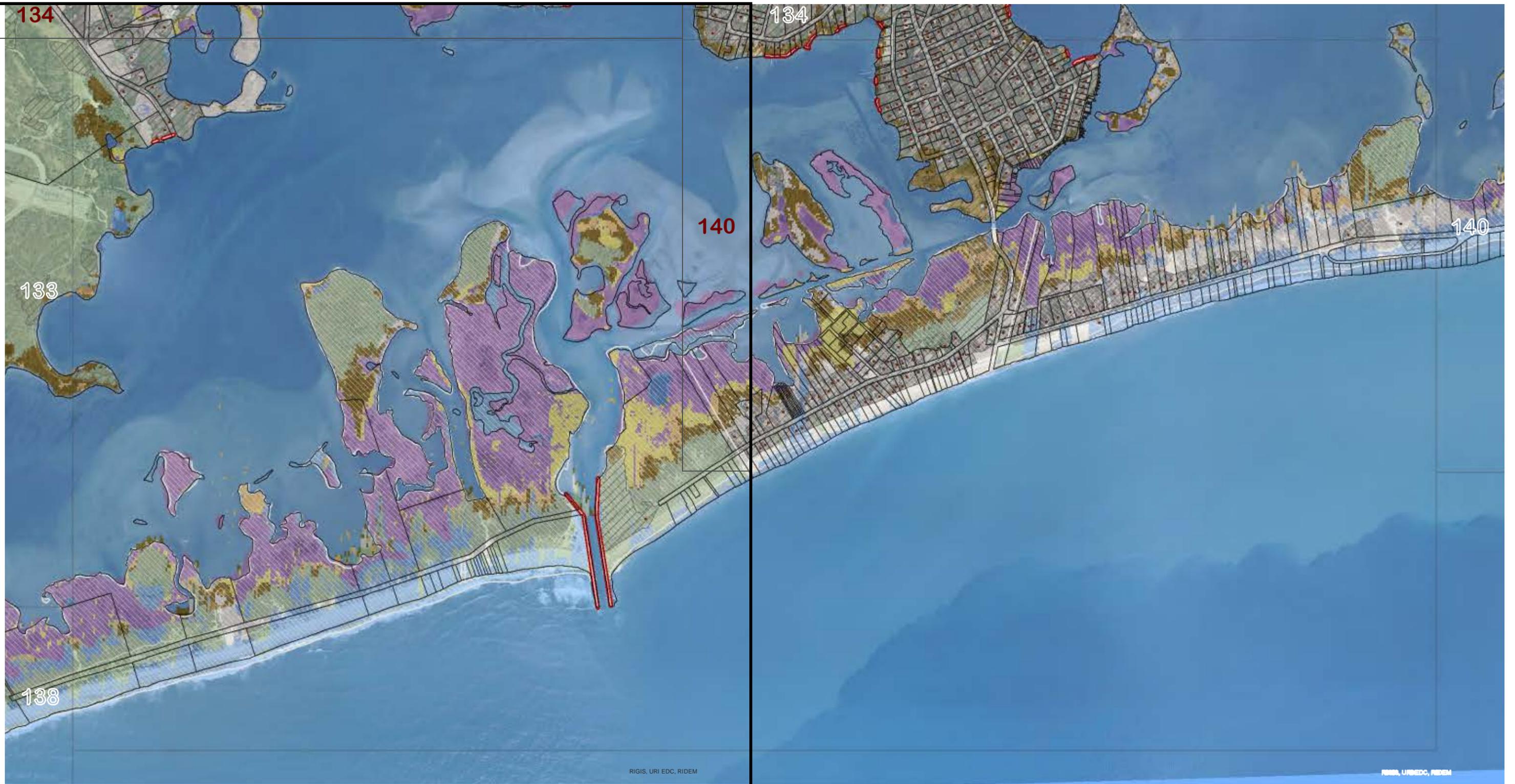
-  Potential Marsh Zone
-  Persistent Marsh Zone
-  Potential Marsh Loss
-  Open Water and Tidal Flat
-  Current Fresh Wetlands
-  Protected Open Space
-  Hardened Shores
-  Buildings
-  Parcel Boundaries
-  Developed Land
-  CRMC Coastal Barriers

Tidal Marsh Vulnerability Analysis: One Foot Sea Level Rise Model

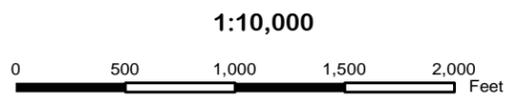
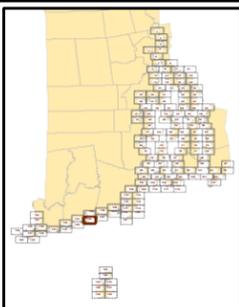


NOAA grant award #:
NA120AR4310108





Map
139



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-  Potential Marsh Zone
-  Persistent Marsh Zone
-  Potential Marsh Loss
-  Open Water and Tidal Flat
-  Current Fresh Wetlands
-  Protected Open Space
-  Hardened Shores
-  Buildings
-  Parcel Boundaries
-  Developed Land
-  CRMC Coastal Barriers

Tidal Marsh Vulnerability Analysis: Three Foot Sea Level Rise Model

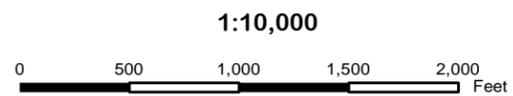
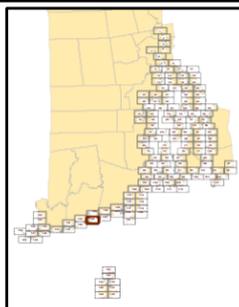


NOAA grant award #: NA120AR4310108





Map
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-  Potential Marsh Zone
-  Persistent Marsh Zone
-  Potential Marsh Loss
-  Open Water and Tidal Flat
-  Current Fresh Wetlands
-  Protected Open Space
-  Hardened Shores
-  Buildings
-  Parcel Boundaries
-  Developed Land
-  CRMC Coastal Barriers

Tidal Marsh Vulnerability Analysis: Five Foot Sea Level Rise Model



NOAA grant award #:
NA120AR4310108



Appendix B

Programmatic Agreement (PA) between the District, the Tribe,
and the Coastal Resources Management Council

LETTER OF AGREEMENT

This letter of Agreement is made between the Narragansett Indian Tribal Historic Preservation officer (THPO), located on the Narragansett Indian Reservation near Charlestown Rhode Island, and the U.S. Army Corps of Engineers, New England District, Regulatory Division, located at 696 Virginia Road, Concord, Massachusetts. In its permitting responsibilities pursuant to the Clean Water Act and the Rivers and Harbors Act, the Corps of Engineers regulates the discharge of dredged or fill material into waters of the US, including wetlands, and work in or affecting navigable waters of the US. In administering the regulatory program, the Corps must insure permitted activities comply with a number of federal laws, including the National Historic Preservation Act of 1966, as amended (NHPA). The purpose of this agreement is to insure that the Corps of Engineers effectively consults with the THPO on permit actions that would affect archaeological, historical, sacred, and burial sites of the Narragansett Indian Tribe. This consultation shall insure that such Indian sites are properly identified and characterized by the THPO, so that the Corps of Engineers and the THPO may carry out their responsibilities pursuant to Section 106 of the NHPA. Such responsibilities shall include, but may not be limited to the following: 1) take into account the potential impacts to such tribal sites of projects to be permitted; 2) fully evaluate and jointly plan alternatives or measures to avoid, minimize or mitigate the adverse effects of the proposed activity on such tribal sites. These measures may include archaeological investigation and data recovery plans.

The Corps of Engineers agrees to: 1) provide all public notices for individual permit projects in Massachusetts to the THPO and allow 30 days from the date of the notice for the THPO to provide comments as described below; 2) provide copies of Massachusetts Programmatic General Permit notifications on projects (West of Worcester to and including Greenfield, Middleborough and surrounding towns, Kingston and surrounding towns and Deer Island) to the THPO and allow 10 days from the date of the notification for the THPO to provide comments as described below. In both cases, if the THPO does not respond within the review period, no impact to tribal sites will be assumed.

If previously unidentified tribal sites within areas of Corps jurisdiction are encountered by the permittee during construction, notification of the Corps of Engineers is required by the permittee. The Corps of Engineers further agrees to notify and consult with the THPO regarding proper identification, assessment and treatment of such tribal sites.

The THPO agrees, in cases where the THPO intends to comment, to: 1) respond to the Corps of Engineers in writing, within the review periods listed, as to the likelihood of presence of tribal sites. If tribal sites are present at the proposed project site, consultation between the Corps of Engineers and the THPO will occur in the following manner. The THPO agrees to: 1) provide as much information as possible regarding the presence, extent, character and significance of such sites to the tribe; 2) provide comments as to the THPO's determination on the impact of the proposed project on tribal sites; 3:

REGULATORY DIVISION

Ea

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**PROGRAMMATIC AGREEMENT AMONG
THE CORPS OF ENGINEERS, NEW ENGLAND DISTRICT,
RHODE ISLAND COASTAL RESOURCES MANAGEMENT COUNCIL,
AND THE NARRAGANSETT INDIAN TRIBE**

WHEREAS, the Corps of Engineers, New England District (hereafter Corps) and the Rhode Island Coastal Resources Management Council (hereafter CRMC) are in the process of completing a Feasibility Study for the purpose of restoring aquatic habitat in Ninigret, Quonochontaug, and Winnipaug Ponds; and restoration of anadromous fish passage to Cross Mills Stream; and

WHEREAS, the Corps and the Narragansett Indian Tribe (hereafter Tribe) have initiated formal consultation as per Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, implementing regulations 36 CFR 800, the Department of Defense American Indian and Alaska Native Policy (October 20, 1998), the Corps Engineer Regulation ER 1105-2-100, Appendix C-4 (Cultural Resources), (e) Native American considerations, the April 1999 Letter of Agreement between the Tribe and the Corps Regulatory Branch, and other relevant policy guidance and regulations; and

WHEREAS, the Tribe is a sovereign nation recognized and acknowledged under treaties and laws of the United States; and

WHEREAS, under NHPA Section 101(d)(2)(D)(iii) and (d)(5), the Tribe has been designated and will assume the functions of a Tribal Historic Preservation Officer, with respect to tribal lands, and whereby tribal historic preservation regulations may take the place of review regulations for the protection of cultural resources off tribal lands; and

WHEREAS, The Project is located within the Tribe's historical aboriginal home territory, which encompasses the entire state of Rhode Island and portions of Massachusetts and Connecticut; and

WHEREAS, Section 106 of NHPA and 36 CFR 800.4(c) require that Federal agencies identify historic properties within a proposed project area including those that may have cultural or religious significance to Native American peoples; and

WHEREAS, acknowledging the special expertise that the Tribe possesses in assessing the eligibility of historic properties that may possess religious and cultural significance to them.

NOW THEREFORE, the Corps, CRMC, and the Tribe agree to abide by the following stipulations for the consideration of cultural resources during the remainder of the Feasibility Study.

STIPULATIONS

The Corps and CRMC will ensure that the following measures are carried out:

1. Prior to implementation of the Project, the Tribe will be given the opportunity to identify historic properties within the Project that may be of religious, sacred, or spiritual significance. Upon identification of Tribal historic properties, the Corps and CRMC, recognizing that an Indian tribe or Native Hawaiian organization may be reluctant to divulge specific information regarding the location, nature, and activities associated with such sites, will ensure that the confidentiality of this information is addressed pursuant to 36 CFR 800.11(c).
2. In the event that historic properties are identified, and in accordance with 36 CFR 800.5, the Corps and the Tribe will apply the Criteria of Adverse Effect to properties within the area of potential effects. An adverse effect is found when an undertaking may alter, directly or indirectly any of the characteristics of a historic property that qualify the property for inclusion in the National Register. If an adverse effect is found, further consultation will take place between the Corps, CRMC, and the Tribe to develop and evaluate alternatives or modifications to the undertaking that could avoid, minimize or mitigate adverse effects.
3. The Tribe will ensure that identification of historic properties is conducted in a timely fashion prior to construction so that proper resource avoidance, impact minimization, or mitigation may be conducted.
4. In the event that cultural resources are identified during the construction phase of the Project, the Corps and CRMC will ensure that appropriate mechanisms are in place for post-review discoveries as per 36 CFR 800.13. The Corps, in consultation with the Tribe and CRMC, will determine necessary actions to resolve adverse effects. All parties will be notified and given an opportunity to respond. The Corps shall take into account their recommendations and carry out appropriate actions as agreed upon. The Narragansett Tribal Historic Preservation Officer will be contacted in the event of any inadvertent discovery.
5. In the event that human skeletal remains are uncovered, all work within the surrounding area of the find shall immediately cease. The Contractor shall immediately notify the Contracting Officer Representative (COR). The COR will notify the Corps Project Manager and Archaeologist/Tribal Coordinator. The Narragansett Tribal Historic Preservation Officer will be contacted immediately upon notification. Upon identification of the human remains, further consultation will take place to determine the proper course of action and disposition of the remains. The Contractor, Corps, CRMC, and the Tribe will follow the procedures stipulated in the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 (43 CFR Part 10) under Inadvertent Discoveries (Section 10.4), consistent with Tribal burial practices and laws. Applicable Rhode Island laws and regulations concerning burials will be followed by the Contractor, Corps, and CRMC with all other types of human remains that are discovered.

6. At any time during the implementation of the measures stipulated herein should any objection to any such measure or manner of implementation be raised, all parties shall take the objection into account and consult as needed to resolve the objection. If further consultation is not productive and the objection is not resolved, the comments of the Advisory Council on Historic Preservation (Council) will be sought. The Council, as the Federal agency established to implement and oversee the Section 106 process, may decide to become involved or may be invited to consult by any of the consulting parties as a means of resolving conflicts and completing the Section 106 process.

Execution and implementation of this Programmatic Agreement evidences that the Corps has satisfied its Section 106 responsibilities for all individual undertakings of the project.

U.S. Army Corps of Engineers, New England District

By: _____ Date: _____
Colonel Brian E. Osterndorf, District Engineer

Narragansett Indian Tribe, Tribal Historic Preservation Officer

By: _____ Date: _____
John B. Brown III, Tribal Historic Preservation Officer

Rhode Island Coastal Resources Management Council

By: _____ Date: _____
Grover J. Fugate, Executive Director, Rhode Island Coastal Resource Management Council

ACCEPTED for the Advisory Council on Historic Preservation

By: _____ Date: _____
John M. Fowler, Executive Director, Advisory Council on Historic Preservation

Appendix C

RI South Coast Habitat and Community Resiliency Project
Quality Assurance Project Plan

**HURRICANE SANDY COASTAL RESILIENCY COMPETITIVE
GRANTS PROGRAM**

QUALITY ASSURANCE PROJECT PLAN (QAPP)

Rhode Island South Coast Habitat and Community Resiliency Project
Easy Grants ID: 41739

COMPLETED PLAN PREPARED BY:

Thomas E. Kutcher

for

The Rhode Island Coastal Resources Management Council

May 18, 2015

Refer correspondence to:

Thomas E. Kutcher, Narragansett Baykeeper
Save The Bay, Narragansett Bay
100 Save The Bay Drive
Providence, RI 02905
401-272-3540 ext. 116
tkutcher@savebay.org

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1.0 PROJECT MANAGEMENT

1.1 TITLE AND APPROVAL SHEET

Project Title: Rhode Island South Coast Habitat and Community Resiliency Project

Prepared by: Thomas E. Kutcher

Approvals:

National Fish and Wildlife Foundation, Mandy Chesnutt, Senior Manager of Conservation Programs:

Signature: _____ Date: _____

Rhode Island Coastal Resources Management Council, Caitlin Chaffee, Policy Analyst:

Signature: _____ Date: _____

Narragansett Bay National Estuarine Research Reserve, Kenneth Raposa, PhD., Research Coordinator:

Signature: _____ Date: _____

Save The Bay, Wenley Ferguson, Director of Habitat Restoration:

Signature: _____ Date: _____

1.2 CONTACT INFORMATION

All personnel listed below will receive copies of this Quality Assurance Project Plan (QAPP), and any approved revisions of this plan.

Title	Name (Affiliation)	Phone Number/E-mail
Operation Manager	Caitlin Chaffee	(401) 783-7350
Primary Field Sampler	Wenley Ferguson	(401) 272-3540 x 105
Environmental Scientist	Kenneth Raposa, PhD.	(401) 683-7849
National Fish and Wildlife Foundation (NFWF) Senior Manager, Conservation Programs	Mandy Chesnutt, NFWF	(202) 595-2486 Mandy.Chesnutt@NFWF.org
QA Specialist	Thomas Kutcher	(401) 272-3540 x 116

1.3 PROJECT OBJECTIVES AND APPROACH

The Rhode Island Coastal Resources Management Council in partnership with the Towns of Westerly and Charlestown, RI, the Salt Ponds Coalition, Save The Bay, and the US Fish and Wildlife Service Coastal Program are proposing to restore salt marsh habitats in Ninigret Pond using innovative techniques similar to those piloted by the National Parks Service and US Army Corps of Engineers in Jamaica Bay, New York (www.nps.gov/gate/naturescience/marshrestoration.htm). Project goals include the restoration and enhancement of approximately 30 acres of salt marsh habitat, evaluation and monitoring of project methods, design for dissemination to regional partners proposing similar projects, and assessment and monitoring of additional sites within Rhode Island where similar projects could be implemented.

It is known that sea level rise, eutrophication and other human-induced environmental stressors can interact to reduce the resiliency of salt marsh habitats. Ecologists from Save The Bay and The Narragansett Bay National Estuarine Research Reserve (NBNERR) have documented degradation and subsidence of marsh habitats within the proposed project areas as part of their state-wide Rhode Island Salt Marsh Assessment (RISMA). Through analysis of historic and recent aerial imagery as well as on the ground monitoring, they have documented relatively rapid changes in Rhode Island marshes including an increase in open water area within the marshes and loss of specific vegetation communities that indicate stress induced by rising sea levels. This phenomenon has been observed in marshes throughout the state and region, and

supports GIS modeling work done by CRMC that predicts high levels of salt marsh loss from rising sea levels.

The proposed project would restore and enhance approximately 30 acres of degraded salt marsh habitat within the Ninigret Pond barrier and coastal lagoon complex by the placement and dispersal of dredged material from approved sedimentation basins on the marsh surface to increase surface elevations. Increasing marsh surface elevations and replanting the restored areas will in turn enhance salt marsh vegetation, increasing the lifespan and resiliency of the marsh complex to future coastal storms and increased rates of sea level rise induced by climate change. This will allow the marsh to continue to function as a storm surge buffer and flood storage area. It will also preserve and extend the marsh's many functions and values that support the tourism, recreation, fishing, and boating industries that are crucial to the economic wellbeing of the surrounding communities. These functions and values include aesthetic and open space, water quality improvement, carbon sequestration, nursery habitat for commercial and recreational fisheries, and breeding and foraging habitat for important migratory bird species including salt marsh sparrow, a bird of conservation concern. Planning and assessment for two additional project sites will be completed, and methodologies and techniques piloted in this project will be shared with state and regional partners to facilitate future restoration efforts.

Environmental monitoring will be conducted to accurately evaluate the success of the restoration efforts and to quickly identify any problems requiring adaptive management. The monitoring parameters chosen are based upon those developed by the National Park Service (Roman et al. 2001), the New York State Salt Marsh Restoration and Monitoring Guidelines (available on-line at <http://www.habitat.noaa.gov/pdf/saltmarsh1.pdf>), and professional experience of STB, CRMC, NBNERR, and US EPA. In the short term, the monitoring will yield information to evaluate restoration and adaptive management activities in Ninigret Pond and to ensure the highest degree of project success. In the long term, the monitoring will enhance our understanding of ecosystem processes within Rhode Island coastal pond salt marshes and thereby contribute to the understanding and management of the causes of marsh loss.

Monitoring will employ a BACI (Before, After, Control, Impact) study design. Sampling will occur prior to and after restoration. In this BACI design, the placement of dredge material and planting in salt marsh near the Ninigret Pond Breachway is the "Impact" site and an undisturbed marsh within the National Wildlife Refuge in Ninigret Pond is the "Control" site. In this type of study design it is possible to differentiate, with a degree of statistical certainty, response to restoration actions versus changes due to inter-annual variation. For example, if the control marsh remains unchanged over time while the impacted marsh changes, it can be concluded that the changes observed were due to the restoration rather than due to inter-annual variation. Because the Control

site is degrading (and is thus not the *target* of restoration) restoration success will additionally consider Target reference data, which is continually collected by the NBNERR as part of the National Estuarine Research Reserve System's (NERRS) Sentinel Site program. NERRS Sentinel sites were chosen to provide reference data from representative (least-degraded) sites. Sentinel sites will provide information on achieving target structure and function by comparison of the Impact (restored) marsh to a representative salt marsh.

All monitoring activities shall occur at the appropriate tide level, which generally is low tide. A list of monitoring parameters, frequency, sample size, distribution and methodology is provided in Table 1 and are discussed in sections below.

The objective of this document is to identify the quality assurance components that are necessary to implement the project activities under the Rhode Island South Coast Habitat and Community Resiliency Project. This objective will be achieved by using accepted methodologies to collect and/or measure, analyze and/or interpret samples.

Required monitoring or measurements will begin May 15, 2015 and end Oct 31, 2016. Table 1 lists the parameters that will be monitored. Refer to Appendix A for more details and timeline.

Table 1. Parameters to be monitored at Impact and Control marshes; *data also available for Target marsh; **Data to be collected under a concurrent but separate Hurricane Sandy Coastal Resiliency Grant project not detailed in this QAPP

Monitoring parameter	Method	Protocol
Vegetation		
Species composition & abundance*	Point intercept	Roman et al. 2001
Plant height (<i>dominant vegetation</i>)	Measurement of plants	Roman et al. 2001
Photos of veg plots*	Digital photography	K. Raposa, pers. comm.
Stem density per species	Stem counts	Roman et al. 2001
Above ground production	Clip plots	Morris and Haskin 1990, modified
Belowground macro-organic matter	Soils core analysis	Twohig and Stolt 2011
Photo points	Digital photography	K. Raposa, pers. comm.
Hydrology		
Water level*	Water level loggers	Turner 2011
Avian		
Species composition & abundance**	Point counts	Saltmarsh Habitat and Avian Research Program protocols (www.tidalmarshbirds.org)
Nekton		

Species composition & abundance*	Throw traps	Raposa and Roman, 2001
Crab density	Burrow counts	K. Raposa, unpublished data
<i>Sediment Elevation & Accretion</i>		
Elevation surveys*	RTK	Messaros et al. 2012
Surface elevation & accretion*	SETs and marker horizons	Cahoon et al. 2006
Subsidence and sediment accretion	6" ceramic tiles	Neubauer et al. 2002, modified
<i>Soil Characteristics</i>		
Shear strength	Shear vane	Turner 2011

Vegetation monitoring

Vegetation monitoring will be conducted to characterize the relative species composition, abundance, height, and productivity of the vegetation among the marshes (Control, Impact, and Target). Transects for vegetation monitoring will be established in both the restoration (Impact) marsh (n = 6) and the Control marsh (N = 5), which is located 670m west of the restoration site on the same back barrier in Ninigret Pond. Existing transects will also be selected for vegetation sampling in the Target marsh, located at Nag Marsh on Prudence Island in Narragansett Bay. A prevalence of healthy high marsh habitat at this site makes it practical for use as a Target marsh.

Vegetation monitoring will be conducted at the peak of the growing season in mid-August through September. Vegetation will be sampled in 1m² plots located along established transects according to Roman et al (2001). To locate transects, marshes will be divided into equal-sized sections, and transects will be randomly located within each section. Several transects will be interspersed and randomly located within each marsh segment. Transects are stratified, running from upland edge to creek or open water. Vegetation will be monitored within 20 plots along the transects. One square meter (1m²) vegetation plots will be located a meter from each transect stake. At the vegetation monitoring location a meter stick will be placed perpendicular to the transect line. Marked dowels will be placed perpendicular from the meter stick every 25 cm to mark a 1 meter square quadrat. Using the point intercept method, vegetation at 50 points in the plot will be documented. These data will be used to calculate a percent cover of the 1m² plot for each species. A digital photograph will be taken from directly above each vegetation plot prior to sampling. Sixteen (16) random plant heights of the following species from each plot will be measured and recorded: *Spartina alterniflora*, *Spartina patens*, *Distichlis spicata*, *Juncus greenii*, *Scirpus sp.*, and *Phragmites australis*. This monitoring will be conducted at Control and Impact marshes pre- and post-restoration.

To avoid destruction of the vegetated marsh surface, above-ground biomass will be estimated using non-destructive height and stem-count data characterizing the dominant species within a 0.25-m subplot within each vegetation plot, modified from

Morris and Haskin (1990). Height and density measurements, per species, will be used to populate regression functions that are determined for each species a priori. The sum of the estimated biomass of all stems counted for all species will be used as an estimate of above-ground biomass for the plot. Regression functions will be generated for common salt marsh species by associating plant height to plant biomass per stem for each species. Training data biomass measurements will be made using clip plot methods according to Roman et al (2001). The Roman method will be applied to plants outside of the vegetation plots, but within the study marsh systems.

Belowground biomass will be measured adjacent to the 10 above-ground plots, according to (Neill 2002), but with cores gathered using a McCauley corer to minimize habitat impacts. Belowground biomass will be sampled outside of permanent vegetation plots to avoid damage the vegetation plots.

Nekton monitoring

Nekton (fish and decapod crustaceans) sampling will be conducted once in July and once in September, pre and post restoration, at low tide, following Raposa and Roman (2001). A 1.0-m² aluminum trap will be tossed onto open water (pool, creek, pond) and pushed into the sediment to prevent nekton escape. A net will be used to scoop out the nekton. All nekton will be identified to species and counted. The first 15 individuals of each species will be measured. After counting and measurement, animals will be returned to the water outside the trap. The dip net procedure will be repeated around all sides of the trap until all nekton are removed. Approximately 20 sample plots will be randomly selected within each marsh.

Burrowing crabs are generally considered to have a mutualistic relationship with low marsh cordgrass (*Spartina alterniflora*). However, the effects of increasing densities of these crabs are uncertain and may be associated with edge degradation. Burrow densities will be estimated by counting and measuring crab burrows within ~20 randomly-located 0.25-m² plots along the creek or pond edge each of the Control, Impact, and Target marshes.

Avian monitoring

Avian monitoring will be conducted by Dr. Christopher Elphick of the University of Connecticut's Saltmarsh Habitat and Avian Research Program, under a different Hurricane Sandy Coastal Resiliency grant using established point count methods under (List QAPP number). Surveys will include both songbird and waterbird point counts. These data will be incorporated into our analysis of ecological response.

Water Levels

Water levels will be recorded at Control, Impact, and Target marshes using Onset® Hobo® self-contained water-level loggers according to manufacturer's directions. Two units will be deployed in each marsh during the peak of the growing season for four

continuous weeks. These data will be used to determine flooding frequencies and water depth.

Elevation monitoring

Restoration will rely upon the deposition of large quantities of dredged material to obtain an intertidal elevation suitable to support salt marsh vegetation. Marsh accretion and elevation dynamics (i.e., marsh development processes) will be monitored using three Sediment Elevation Tables (SETs) at the Impact, Control, and Target sites. The SET installation and monitoring protocol will follow Cahoon et al. (2002). A 0.25-m² feldspar plot will be established adjacent to each SET. For each plot, 4Kg of feldspar will be spread over a 0.25-m² area to establish a recognizable artificial soil horizon that can be analyzed for accretion using methods according to (Cahoon et al. 2006). A brass elevation benchmark will be surveyed into the concrete base of each SET in the Impact marsh by a professional engineering firm using survey-quality GPS and laser technologies. These benchmarks will serve as benchmarks for further elevation studies using laser surveying equipment.

A 16-cm ceramic floor tile will be set flush with the marsh surface beside each of the 20 vegetation plots in the Impact and Control marshes. From these, we will be able to assess sediment deposition depth, compaction, subsidence, and sediment accretion using simple measuring tools and laser leveling based on SET benchmarks. Additionally, the Town of Charlestown will conduct annual elevation surveys in the Impact and Control sites using a real-time kinetic (RTK) GPS unit. This unit is capable of collecting moderately accurate (2-6 cm per point) elevation data with very high spatial resolution. Coupled with more accurate survey data, these data will be able to provide a high-resolution topographic characterization of the marsh surface along transects and within vegetation plots.

Soil Shear Strength

Soil shear strength will be monitored as an indicator of marsh soil health. Healthy peat and mineral marshes are typically firm with high shear strength, whereas marshes degraded by waterlogging or decomposition caused by ponding or nutrient enrichment tend to be more fluid with relatively poor shear strength, even as above-ground production may increase in some cases. Shear strength may therefore detect marsh degradation that may not be indicated by biological sampling alone. We will use a Dunham E-290 Hand Vane Tester (shear vane), deployed according to manufacturer directions, to assess the shear strength of soils from the surface to refusal or to 100cm, at 10-cm intervals, following Turner (2011). This method will indicate soil conditions throughout the profile of the marsh platform.

1.4 DATA QUALITY OBJECTIVES

The Project will pursue collecting data to characterize the physical and ecological trajectories of the Impact marsh, relative to the Control and Target marshes, to study the effects and gage the success of restoration efforts. Data collection efforts primarily

entail the direct measurement of physical and ecological parameters of a sample size sufficient to produce statistically significant trends or comparisons among sites. Statistical power analyses have previously been conducted to assess the sample sizes necessary to confidently assess trends or differences in (1) vegetation composition and abundance (n=20 per treatment), (2) nekton composition and abundance (n=15 per treatment), (3) crab burrow densities (n=20 per treatment), and (4) SETs (n=36 measurements per station). Other parameters will be measured at a resolution conventional to facilitating salt marsh assessment, as published in peer-reviewed or agency literature (refer to Appendix A).

Biological and physical field samples will otherwise not be replicated or quality-assured, as measurements are generally straightforward and labor-intensive. The Quality Assurance Specialist will use best professional judgment, based on years of wetland scientific field work and research, to assess whether protocols are conducted with sufficient rigor and care to be used for analysis. For example, the Quality Assurance Specialist will directly observe or otherwise evaluate throw-trapping for nekton, vegetation sampling, collection of below-ground biomass, elevation survey protocols, and soil characteristic sampling to ensure that protocols are strictly followed and investigators discard or resample any data corrupted by user error, equipment failure, or any other deficiency.

1.5 DOCUMENTATION AND RECORDS

All records generated by this project will be stored at Save The Bay main office located at 100 Save The Bay Drive, Providence, RI. Records stored for this project will include all laboratory records pertinent to this project. Copies of records held will be provided to project manager and maintained in the project file.

Copies of this QAPP will be distributed to all parties involved with the project, including signatories and field sampling and laboratory personnel. Any future changes or amendments to the QAPP will be held and distributed in the same fashion. Copies of previous versions of the QAPP will be clearly marked as “superseded by Revision #” so as not to create confusion.

The records of all project information and data used to complete the activities of the project will be retained for at least seven years from the date of sampling, measurement, report, or application.

2.0 DATA ACQUISITION

2.1 SAMPLING INFORMATION

Information on sample locations can be found in Appendix B. Sampling protocols are summarized in Section 1.3 and are adapted from the *Field Methods Manual: US Fish and Wildlife Service (Region 5) salt marsh study* (James-Pirri et al. 2002, www.gso.uri.edu/mjip/Field%20Manual%20for%20Monitoring%20Protocols.pdf). Data will be collected in the field and laboratory using datasheets as appropriate per method.

2.2 Sample Storage, Preservation and Holding Times

Vegetation samples for regression analysis will be placed into sealed zip-lock freezer bags immediately following sampling, labeled, and transported to the laboratory in a cooler. The samples will be refrigerated within 6 hours of collection.

Soil samples for belowground biomass will be placed into sealed plastic zip-lock freezer bags immediately following sampling, labeled, and transported to the laboratory in a cooler. The samples will be frozen within 6 hours of collection and thawed just prior to analysis. In cases where analysis will be conducted within 48 hours of collection, the samples will not be frozen, but will be refrigerated until analysis is conducted.

SAMPLE IDENTIFICATION

All samples will be identified with a unique number and samples labeled with the following information.

- Marsh ID
- Plot ID
- Date
- Time
- Initials of sample collector

FIELD MEASUREMENTS

Field sampling protocols are summarized in Section 1.3 and are adapted from the *Field Methods Manual: US Fish and Wildlife Service (Region 5) salt marsh study* (James- Pirri et al. 2002, www.gso.uri.edu/mjip/Field%20Manual%20for%20Monitoring%20Protocols.pdf).

QC SAMPLE COLLECTION

This activity does not apply to this project.

FIELD INSTRUMENT CALIBRATION

Routine field instrument calibration will be performed at least once per day, prior to instrument use, to ensure instruments are operating properly and producing accurate and reliable data. Calibration will be performed at a frequency recommended by the

manufacturer.

DECONTAMINATION PROCEDURES

All field and sampling equipment that will contact samples will be decontaminated after each use in a designated area.

FIELD DOCUMENTATION

All field activities will be adequately and consistently documented to ensure defensibility of any data used for decision-making and to support data interpretation. Data collected in the field will be recorded on the field sheets and uploaded to Excel spreadsheet software.

2.3 SAMPLE CUSTODY AND DOCUMENTATION

Sample Custody will be traceable from the time of sample collection until results are reported.

DOCUMENTATION PROCEDURES

The primary field sampler will be responsible for ensuring that the field sampling team adheres to proper custody and documentation procedures. Field datasheets will be maintained for all samples collected during each sampling event.

CHAIN-OF-CUSTODY FORM

This activity does not apply to this project.

SAMPLE SHIPMENTS AND HANDLING

This activity does not apply to this project.

LABORATORY CUSTODY PROCEDURES

The following sample control activities will be conducted at the laboratory:

- Initial sample login and verification of samples
- Verify sample preservation (e.g., temperature)
- Notify the project coordinator if any problems or discrepancies are identified
- Proper samples storage, including daily refrigerator temperature monitoring and sample security.

3.0 ANALYTICAL REQUIREMENTS

This activity does not apply to this project.

4.0 QUALITY CONTROL REQUIREMENTS

The types of quality control assessments required for this project are discussed below.

4.1 QUALITY ASSURANCE OBJECTIVES (QAOS)

This activity does not apply to this project. Refer to Section 1.4 for an overview of data quality objectives.

4.2 DEVELOPMENT OF PRECISION AND ACCURACY OBJECTIVES

The number of samples or replicates collected and analyzed will reflect prior analyses of statistical power sufficient to produce significant information for each parameter assessed, or otherwise follow established protocols for parameter analysis according to peer-reviewed or agency literature.

4.3 INTERNAL QUALITY CONTROL

This activity does not apply to this project.

4.4 FIELD QUALITY CONTROL

Quality Assurance Specialist will directly observe or otherwise evaluate throw-trapping for nekton, vegetation sampling, collection and laboratory analysis of below-ground biomass, elevation survey protocols, and soil characteristic sampling to ensure that protocols are strictly followed and investigators discard or resample any data corrupted by user error, equipment failure, or any other deficiency.

4.5 LABORATORY QUALITY CONTROL

Any samples processed at the USEPA AED lab or other partner laboratories will adhere to existing wetland laboratory operating procedures, QAPPs, and quality assurance protocols of the laboratory.

5.0 INSTRUMENTATION AND EQUIPMENT PREVENTIVE MAINTENANCE

5.1 SAMPLE EQUIPMENT CLEANING PROCEDURES

Equipment used for sample collection must be cleaned and maintained in accordance with proper field practices.

5.2 ANALYTICAL INSTRUMENT AND EQUIPMENT TESTING PROCEDURES AND CORRECTIVE ACTIONS

Any instruments used at the USEPA AED lab and other partner laboratories will be maintained as described in existing wetland laboratory operating procedures, QAPPs, and quality assurance protocols of the laboratory.

5.3 INSTRUMENT CALIBRATIONS AND FREQUENCY

This activity does not apply to this project.

6.0 DATA MANAGEMENT

Copies of field logs, original preliminary and final reports, and electronic media reports will be kept for review by Save The Bay. The field crew will retain original field logs. The contract laboratory will retain laboratory data forms.

Field data sheets are checked and signed in the field by the project Quality Assurance Specialist. They will identify any results in which holding times have been exceeded, sample identification information is incorrect, samples were inappropriately handled, or calibration information is missing or inadequate. Such data will be marked as unacceptable by and will not be entered into the electronic data base and/or otherwise used for project analysis, reporting or other purpose.

Partner laboratories will report their results to the project manager. The manager will verify sample identification information, review the forms, and identify the data appropriately in the database.

After data entry or data transfer procedures are completed for each sample event, data will be inspected for data transcription errors, and corrected as appropriate. After the final QA checks for errors are completed, the data will be added to the final database.

6.1 DATA ASSESSMENT PROCEDURES

Data must be consistently assessed and documented to determine whether project QAOs have been met, quantitatively assess data quality and identify potential limitations on data use. Assessment and compliance with quality control procedures will be undertaken during the data collection phase of the project.

6.2 DATA TO BE INCLUDED IN QA SUMMARY REPORTS

During the project, NFWF may require periodic reporting, as noted below.

The following table summarizes the types of data to be reported and the method in which that information will be delivered to

NFWF staff.

Data	Data Description	Reporting Method	Frequency
Monitoring Data	Raw data on parameters listed in Table 1	Raw data, reports, and/or spreadsheets, electronically on CD or via e-mail.	At NFWF Request during the closeout procedure
Geospatial Data	Google or GIS polygon maps, latitude/longitude info, watershed segment	Shapefile or image	At NFWF Request during the closeout procedure

At project completion, the field team will provide copies of the field data sheets (relevant pages of field logs) as a representative sample subset submittal of analysis. At a minimum, sample-specific information must be provided for each sampling type to NFWF staff according to the QA Summary Report template, included as Attachment D.

6.3 REPORTING FORMAT

All results meeting data quality objectives and results having satisfactory explanations for deviations from objectives will be reported in the QA Summary Report. The final results will include the results of all field and laboratory samples. Results will be reported to NFWF at project completion as noted in Section 6.2 above. Reports may be submitted electronically along with the final programmatic report.

7.0 DATA VALIDATION AND USABILITY

7.1 LABORATORY DATA REVIEW, VERIFICATION, AND REPORTING

Only data, which have met data quality objectives, or data, which have acceptable deviations clearly noted, will be submitted by the laboratory. When QA requirements have not been met, the samples will be reanalyzed when possible and only the results of the reanalysis will be submitted, provided they are acceptable.

7.2 Self-Assessment, Data System Audits

Periodic self-assessments and/or data system audits are implemented based on the nature and scope of project-specific data collection activities. For data users, these technical audits and assessments provide project personnel with a tool to determine whether data collection activities are being or have been implemented as planned. They also provide the basis for taking action to correct any deficiencies that are discovered. For QAPP Categories 1-2, NFWF may request periodic self-assessments or a data system audit. For QAPP Categories 3-4, NFWF requires the implementation of one of these tools. The decision is made by the project manager and based on the

frequency of project-specific data activities.

8.0 REFERENCES

Cahoon, D. R. et al. (2002). High-precision measurements of wetland sediment elevation: II. The rod surface elevation table. *Journal of Sedimentary Research*, 72(5), 734-739.

Cahoon, D. R., & Turner, R. E. (1989). Accretion and canal impacts in a rapidly subsiding wetland. II. Feldspar marker horizon technique. *Estuaries* 12:260–268.

James-Pirri, M. J., Roman, C. T., & Erwin, R. M. (2002). *Field Methods Manual: US Fish and Wildlife Service (Region 5) Salt Marsh Study*. University of Rhode Island, Narragansett, RI
(www.gso.uri.edu/mijp/Field%20Manual%20for%20Monitoring%20Protocols.pdf).

Messaros, R. C., Woolley, G. S., Morgan, M. J., & Rafferty, P. S. (2012). *Tidal wetlands restoration*. INTECH Open Access Publisher.

Morris, J. T., & B. Haskin. (1990). A 5-yr record of aerial primary production and stand characteristics of *Spartina alterniflora*. *Ecology* 71:2209–2217.

Neubauer, S. C. et al. (2002). Sediment deposition and accretion in a mid-Atlantic (USA) tidal freshwater marsh. *Estuarine, Coastal and Shelf Science*, 54(4), 713-727.

Raposa, K. B., & Roman, C. T. (2001). Seasonal habitat-use patterns of nekton in a tide-restricted and unrestricted New England salt marsh. *Wetlands*, 21(4), 451-461.

Roman, C. T., James-Pirri, M. J., & Heltshe, J. F. (2001). *Monitoring salt marsh vegetation. A protocol for the long-term coastal ecosystem monitoring program at Cape Cod National Seashore*. Wellfleet, MA.

Turner, R. E. (2011). Beneath the salt marsh canopy: loss of soil strength with increasing nutrient loads. *Estuaries and Coasts*, 34(5), 1084-1093.

Twohig, T. M., & Stolt, M. H. (2011). Soils-based rapid assessment for quantifying changes in salt marsh condition as a result of hydrologic alteration. *Wetlands*, 31(5), 955-963.

APPENDICES

APPENDIX A. MONITORING ACTIVITIES AND TIMELINE

Monitoring field season timeline for 2015 and 2016, unless noted

Monitoring parameter	Time of Year
<i>Vegetation</i>	
Transect set up: impact site	May, 2015
Transect set up: reference site	May, 2015
Vegetation monitoring (ref and impact)	Aug-Sept
Species composition & abundance	Aug-Sept
Plant height (<i>dominant vegetation</i>)	Aug-Sept
Stem density	Aug-Sept
Above ground production: clip plots	Aug-Sept
Belowground biomass sampling collection	Sept/Oct
Photo points	Aug-Sept
<i>Hydrology</i>	
Water level-ref and impact	July
<i>Avian</i>	
Species composition & abundance	June
<i>Nekton</i>	
Species composition & abundance	July and Sept
<i>Surface Elevation & Accretion</i>	
Deploy SETs and feldspar plots @ impact site	Jun, 2015
SET monitoring (ref and impact)	Aug-Sept
Monitor sediment tiles	Aug-Sept
Feldspar Plots	Aug-Sept
<i>Soils</i>	
Sheer vane	Aug-Sept

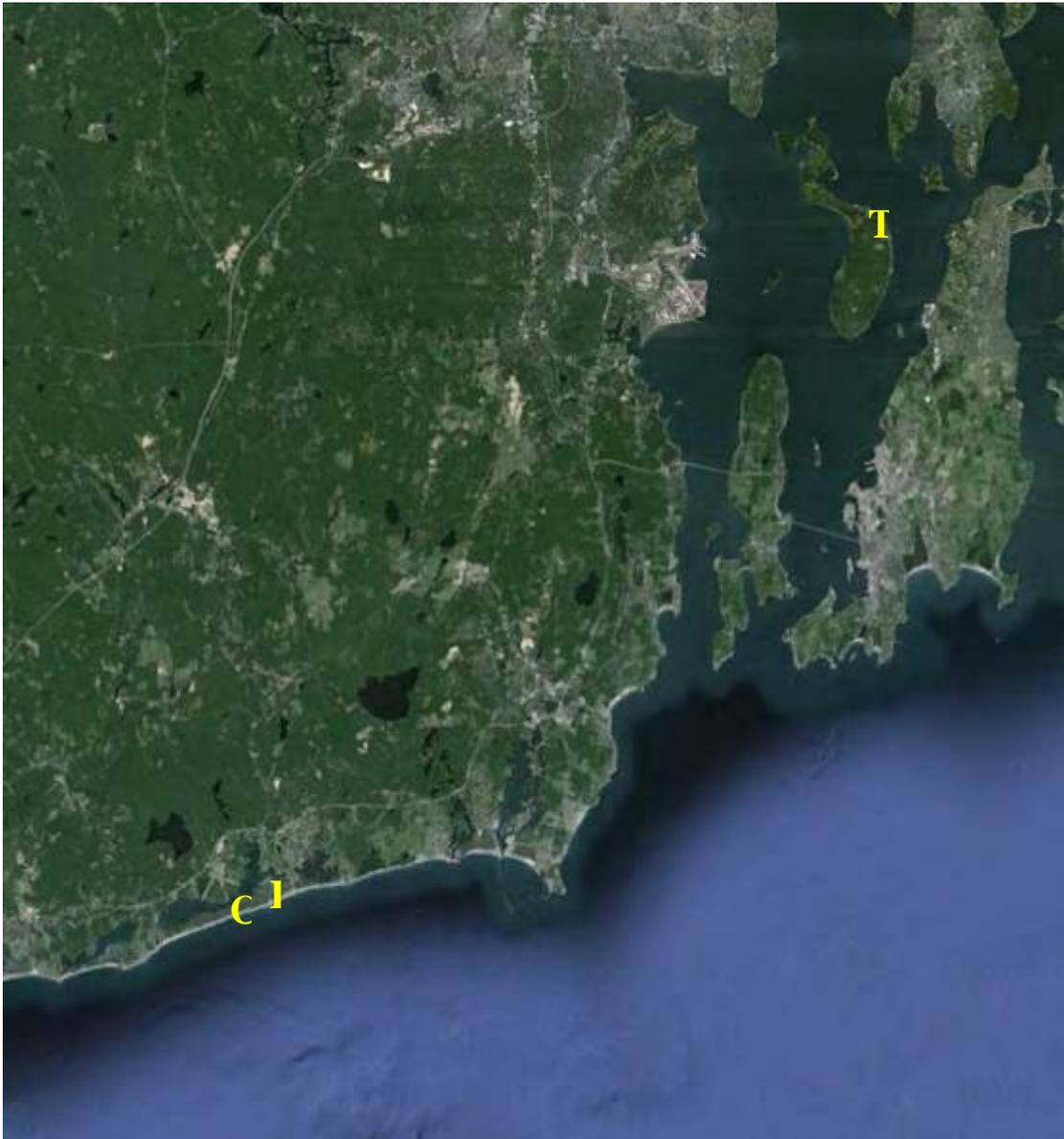
APPENDIX B. PROJECT SITE MAPS



Aerial image depicting the Impact marsh, sampling transects, and vegetation monitoring plot locations



Aerial image depicting the Control marsh, sampling transects, and vegetation monitoring plot locations



Aerial image depicting the approximate locations of the Impact (I), Control (C), and Target (T) marshes in coastal Rhode Island and Narragansett Bay

Appendix D

Section 106 Correspondence





United States Department of the Interior

FISH AND WILDLIFE SERVICE

Southern New England -New York Bight Coastal Program
50 Bend Road
Charlestown, RI 02813
<http://www.fws.gov/r5sne>



RE: Section 106 Consultation, Rhode Island South Coast Habitat
and Community Resiliency Project, Ninigret Pond, Charlestown, RI

June 5, 2015

Mr. Edward F. Sanderson
Executive Director, State Historic Preservation Officer
Rhode Island Historical Preservation & Heritage Commission
Old State House
150 Benefit Street
Providence, RI 02903-1209

Dear Mr. Sanderson:

The U.S. Fish and Wildlife Service (USFWS), in partnership with the Coastal Resources Management Council (CRMC), the Town of Charlestown (Town), the Salt Ponds Coalition, Save the Bay, and the Rhode Island Department of Environmental Management's Division of Fish and Wildlife, is proposing to restore degraded tidal marsh in State of Rhode Island-owned lands on the west side of the breachway in Ninigret Pond (see enclosed Map 1). The dredging portion of the project will be to reestablish a sedimentation basin and relief channel that was created during the Army Corps of Engineers (ACOE) South Coast Habitat Restoration Project. Under the previous project, the ACOE consultation process occurred in 2002, and the dredging and associated restoration was implemented in 2006. During this project, we will be utilizing the same dredging techniques, but we will utilize the mobilized sediment to restore elevations in the tidal marsh through thin layer deposition. Additional material would be deposited in the intertidal area of the beach directly south of the project area, west of the breachway (see enclosed Map 1).

This project was funded through the Department of Interior Hurricane Sandy Resiliency funds administered through the National Fish and Wildlife Foundation. The USFWS is providing technical support as a project partner and has agreed to serve as lead Federal agency to facilitate National Environmental Policy Act compliance. CRMC, the project administrator, has retained the firm of Fuss & O'Neill, Inc., to complete site assessments and design plans. The overall project goals and general construction approach have been agreed upon by the cooperating partners, and preliminary design plans are in development. The dredge operation will involve the use of hydraulic dredging equipment, with the material being pumped onto target portions of the marsh, totaling approximately 22 acres (see enclosed Map 2). Disposal sites identified are all areas that formerly supported high marsh species and have recently been degraded to standing

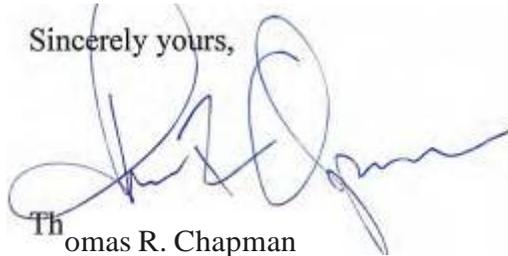
Mr. Edward F. Sanderson
June 5, 2015

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shallow water, that are not draining adequately, and are losing elevation. The goal of the project is to achieve elevations and adequate flooding and drainage to support the wide range of species that utilize high marsh habitats during their life cycle, including salt marsh sparrow (*Ammodramus caudacutus*), willet (*Tringa semipalmata*), and mummichog (*Fundulus heteroclitus*). Target elevations were established for the marsh based on detailed elevation surveys and the current elevations of desired high marsh plant communities, allowing for projected sea level rise over the next decade. We anticipate that the project will make the system more resilient to rising tides and storm surges, and support the marsh in continuing to provide important ecological functions.

The USFWS, together with our restoration partners, recognizes the importance of cultural resources associated with our salt ponds, and seeks to avoid, minimize, or mitigate for any potential impacts to historic resources at the site. As lead Federal agency, the USFWS will coordinate the review of this project in accordance with section 106 of the National Historic Preservation Act (36 CFR 800), as amended. By this letter, the USFWS initiates formal section 106 consultation with the Rhode Island Historical Preservation and Heritage Commission. Preliminary plans developed by Fuss & O'Neill, Inc., are available upon request. Suzanne Paton will serve as the USFWS point of contact on this project if you have need of any additional information or have any questions. She can be reached at 401-364-4124, extension 39, and by email at suzanne_paton@fws.gov.

Sincerely yours,



Thomas R. Chapman

Supervisor
New England Field Office
and Southern New England-
New York Bight Coastal Program

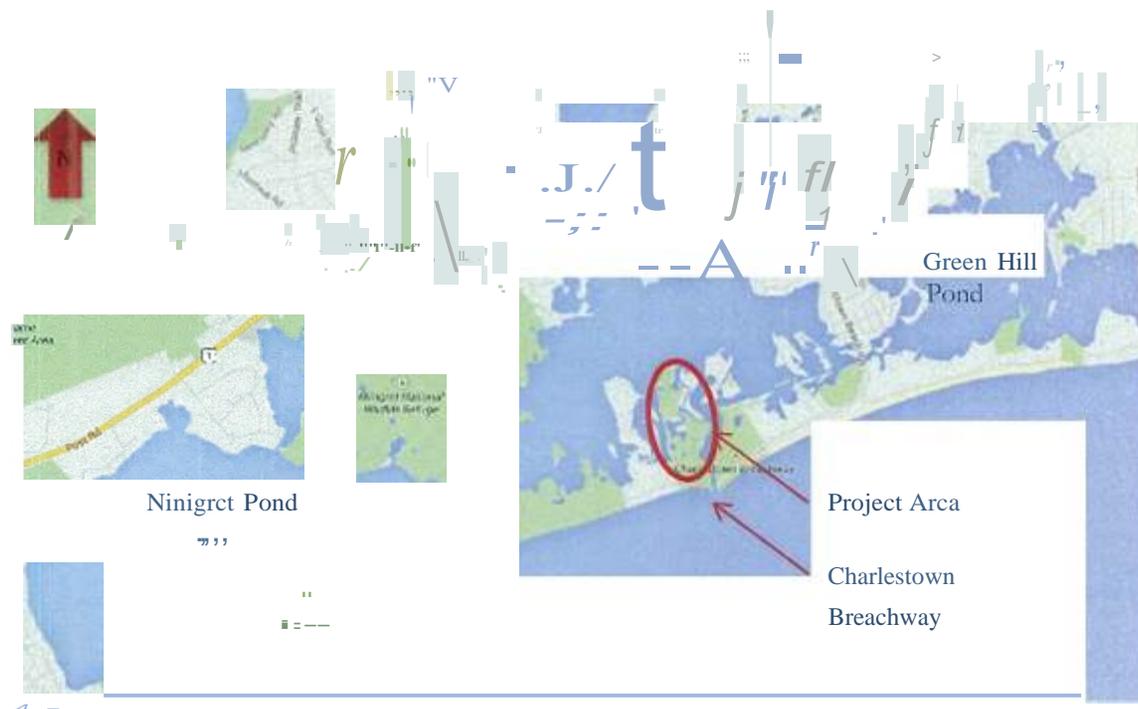
Enclosures

Mr. Edward F. Sanderson
June 5, 2015

3

cc: Reading file
Caitlin Chafee, CRMC
Steve McCandless, Town of Charlestown
Catherine Sparks & Jay McGinn, RI DEM
Art Ganz (President) & Alicia Eichenger (Executive Director), Salt Ponds Coalition
Wenley Ferguson, Save the Bay
Nils Wiberg, Fuss & O'Neill, Inc.
ES: SPaton:6-5-15:401-364-9124

Map 1: Project Location



Located in Charlestown, Rhode Island at (41.357871,-71.640970)

Map 2: Priority Restoration Areas on Ninigret Pond Salt Marsh





United States Department of the Interior

FISH AND WILDLIFE SERVICE

U.S.
FISH & WILDLIFE
SERVICE

Southern New England -New York Bight Coastal Program
50 Bend Road
Charlestown, RI 02813
<http://www.fws.gov/r5nep>

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Re: Rhode Island South Coast Habitat
and Community Resiliency Project
Ninigret Pond, Charlestown, RI

June 5, 2015

Mr. John Brown
Tribal Historic Preservation Officer
Narragansett Indian Tribe
Post Office Box 268
Charlestown, Rhode Island 02813

Dear Mr. Brown:

The U.S. Fish and Wildlife Service (USFWS), in partnership with the Coastal Resources Management Council (CRMC), the Town of Charlestown (Town), the Salt Ponds Coalition, Save the Bay, and the Rhode Island Department of Environmental Management's Division of Fish and Wildlife, is proposing to restore degraded tidal marsh in State of Rhode Island-owned lands on the west side of the breachway in Ninigret Pond (see enclosed Map **1**). The dredging portion of the project will be to reestablish a sedimentation basin and relief channel that was created during the Army Corps of Engineers (ACOE) South Coast Habitat Restoration Project. Under the previous project, the ACOE consultation process occurred in 2002, and the dredging and associated restoration was implemented in 2006. During this project, we will be utilizing the same dredging techniques, but we will utilize the mobilized sediment to restore elevations in the tidal marsh through thin layer deposition. Additional material would be deposited in the intertidal area of the beach directly south of the project area, west of the breachway (see enclosed Map 1).

This project was funded through the Department of Interior Hurricane Sandy Resiliency funds administered through the National Fish and Wildlife Foundation. The USFWS is providing technical support as a project partner and has agreed to serve as lead Federal agency to facilitate National Environmental Policy Act compliance. CRMC, the project administrator, has retained the firm of Fuss & O'Neill, Inc., to complete site assessments and design plans. The overall project goals and general construction approach have been agreed upon by the cooperating partners, and preliminary design plans are in development. The dredge operation will involve the use of hydraulic dredging equipment, with the material being pumped onto target portions of

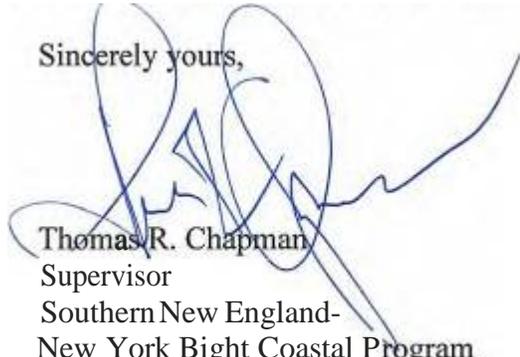
Mr. John Brown
June 5, 2015

2

the marsh, totaling approximately 22 acres (see enclosed Map 2). Disposal sites identified are all areas that formerly supported high marsh species and have recently been degraded to standing shallow water, that are not draining adequately, and are losing elevation. The goal of the project is to achieve elevations and adequate flooding and drainage to support the wide range of species that utilize high marsh habitats during their life cycle, including salt marsh sparrow (*Ammodramus caudacutus*), willet (*Tringa semipalmata*), and mummichog (*Fundulus heteroclitus*). Target elevations were established for the marsh based on detailed elevation surveys and the current elevations of desired high marsh plant communities, allowing for projected sea level rise over the next decade. We anticipate that the project will make the system more resilient to rising tides and storm surges, and support the marsh in continuing to provide important ecological functions.

The USFWS, together with our restoration partners, recognizes the importance of cultural resources associated with our salt ponds. As lead Federal agency, the USFWS will coordinate the review of this project in accordance with section 106 of the National Historic Preservation Act (36 CFR 800), as amended. The USFWS extends an invitation to the Narragansett Indian Tribe to consult on the project. If you are interested in participating in the consultation, please contact my staff member Suzanne Paton, the USFWS point of contact on this project, at 401-364-4124, extension 39, or by email at suzanne_paton@fws.gov. The USFWS would then formally recognize the Tribe as a consulting party, and provide you with copies of any work products, notifications of public meetings, or other relevant materials related to the Rhode Island South Coast Habitat and Community Resiliency Project for your review and consideration.

Sincerely yours,



Thomas R. Chapman
Supervisor
Southern New England-
New York Bight Coastal Program

Enclosures

Mr. John Brown
June 5, 2015

3

cc: Reading file
Caitlin Chafee, CRMC
Steve McCandless, Town of Charlestown
Catherine Sparks & Jay McGinn, RIDEM
Art Ganz (President) & Alicia Eichenger (Executive Director), Salt Ponds Coalition
Wenley Ferguson, Save the Bay
Nils Wiberg, Fuss & O'Neill, Inc.
D.J. Monette, RO Native American Liaison, Hadley, MA
ES: SPaton:6-5-15:401-364-9124

Map 1: Project Location



Located in Charlestown, Rhode Island at (41.357871,-71.640970)

Map 2: Priority Restoration Areas on Ninigret Pond Salt Marsh



LEGEND

CJ TLD Restoration Areas

6 **CJ** Project Area

O FUSS & O'NEILL

LETTER OF AGREEMENT

This letter of Agreement is made between the Narragansett Indian Tribal Historic Preservation officer (THPO), located on the Narragansett Indian Reservation near Charlestown Rhode Island, and the U.S. Army Corps of Engineers, New England District, Regulatory Division, located at 696 Virginia Road, Concord, Massachusetts. In its permitting responsibilities pursuant to the Clean Water Act and the Rivers and Harbors Act, the Corps of Engineers regulates the discharge of dredged or fill material into waters of the US, including wetlands, and work in or affecting navigable waters of the US. In administering the regulatory program, the Corps must insure permitted activities comply with a number of federal laws, including the National Historic Preservation Act of 1966, as amended (NHPA). The purpose of this agreement is to insure that the Corps of Engineers effectively consults with the THPO on permit actions that would affect archaeological, historical, sacred, and burial sites of the Narragansett Indian Tribe. This consultation shall insure that such Indian sites are properly identified and characterized by the THPO, so that the Corps of Engineers and the THPO may carry out their responsibilities pursuant to Section 106 of the NHPA. Such responsibilities shall include, but may not be limited to the following: 1) take into account the potential impacts to such tribal sites of projects to be permitted; 2) fully evaluate and jointly plan alternatives or measures to avoid, minimize or mitigate the adverse effects of the proposed activity on such tribal sites. These measures may include archaeological investigation and data recovery plans.

The Corps of Engineers agrees to: 1) provide all public notices for individual permit projects in Massachusetts to the THPO and allow 30 days from the date of the notice for the THPO to provide comments as described below; 2) provide copies of Massachusetts Programmatic General Permit notifications on projects (West of Worcester to and including Greenfield, Middleborough and surrounding towns, Kingston and surrounding towns and Deer Island) to the THPO and allow 10 days from the date of the notification for the THPO to provide comments as described below. In both cases, if the THPO does not respond within the review period, no impact to tribal sites will be assumed.

If previously unidentified tribal sites within areas of Corps jurisdiction are encountered by the permittee during construction, notification of the Corps of Engineers is required by the permittee. The Corps of Engineers further agrees to notify and consult with the THPO regarding proper identification, assessment and treatment of such tribal sites.

The THPO agrees, in cases where the THPO intends to comment, to: 1) respond to the Corps of Engineers in writing, within the review periods listed, as to the likelihood of presence of tribal sites. If tribal sites are present at the proposed project site, consultation between the Corps of Engineers and the THPO will occur in the following manner. The THPO agrees to: 1) provide as much information as possible regarding the presence, extent, character and significance of such sites to the tribe; 2) provide comments as to the THPO's determination on the impact of the proposed project on tribal sites; 3:

REGULATORY DIVISION

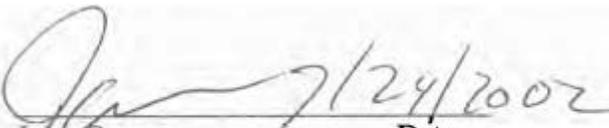
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consult with the Corps of Engineers regarding alternatives and/or measures that would be acceptable to the THPO to avoid, minimize or mitigate adverse effects o tribal sites. Every attempt will be made by the THPO to provide these comments to the Corps of Engineers within 21 days of the THPO's initial comment letter.

The Corps of Engineers agrees to: 1) fully consider the THPO's comments; 2) coordinate with the THPO in determining appropriate minimization and/or mitigation measures regarding adverse affects of tribal sites; and 3) when the Corps of Engineers determines, in consultation with the THPO, that the minimization/mitigation measures to address adverse affects on tribal sites, (which may include archaeological investigations and/or data recovery plan) are appropriate and consistent with its regulatory authorities, these archaeological investigation plans and data recovery plans will be developed in consultation with the THPO and implemented for the recovery of archaeological data from the tribal sites in the permitting of projects. Implementation of such plans shall be consistent with the *Secretary of the Interior's Standards and Guidelines for Archaeological Documentation* (48CFR 44737-37), AND TAKE INTO ACCOUNT THE Council's publication *Treatment of Archaeological Properties*, and shall be consistent with the Narragansett Indian Archaeological/Anthropological Committee's *Procedures and Rules for Registration and Protection of Tribal Historic Properties*. In such cases, the finalized investigations and plans shall conclude consultation with the THPO for the particular project under review.

This Agreement shall not create any new substantive rights for the parties than are authorized pursuant to the National Historic Preservation Act, the Archaeological Resource Protection Act, the Native American Graves Protection and Repatriation Act, and by executive order of the President of the United States.

BY:


John Brown Date
Tribal Historic Preservation Officer
Narragansett Indian Tribe


Christine A. Godfrey
Chief, Regulatory Division
U.S. Army Corps of Engineers

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**PROGRAMMATIC AGREEMENT AMONG
THE CORPS OF ENGINEERS, NEW ENGLAND DISTRICT,
RHODE ISLAND COASTAL RESOURCES MANAGEMENT COUNCIL,
AND THE NARRAGANSETT INDIAN TRIBE**

WHEREAS, the Corps of Engineers, New England District (hereafter Corps) and the Rhode Island Coastal Resources Management Council (hereafter CRMC) are in the process of completing a Feasibility Study for the purpose of restoring aquatic habitat in Ninigret, Quonochontaug, and Winnipaug Ponds; and restoration of anadromous fish passage to Cross Mills Stream; and

WHEREAS, the Corps and the Narragansett Indian Tribe (hereafter Tribe) have initiated formal consultation as per Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, implementing regulations 36 CFR 800, the Department of Defense American Indian and Alaska Native Policy (October 20, 1998), the Corps Engineer Regulation ER 1105-2-100, Appendix C-4 (Cultural Resources), (e) Native American considerations, the April 1999 Letter of Agreement between the Tribe and the Corps Regulatory Branch, and other relevant policy guidance and regulations; and

WHEREAS, the Tribe is a sovereign nation recognized and acknowledged under treaties and laws of the United States; and

WHEREAS, under NHPA Section 101(d)(2)(D)(iii) and (d)(5), the Tribe has been designated and will assume the functions of a Tribal Historic Preservation Officer, with respect to tribal lands, and whereby tribal historic preservation regulations may take the place of review regulations for the protection of cultural resources off tribal lands; and

WHEREAS, The Project is located within the Tribe's historical aboriginal home territory, which encompasses the entire state of Rhode Island and portions of Massachusetts and Connecticut; and

WHEREAS, Section 106 of NHPA and 36 CFR 800.4(c) require that Federal agencies identify historic properties within a proposed project area including those that may have cultural or religious significance to Native American peoples; and

WHEREAS, acknowledging the special expertise that the Tribe possesses in assessing the eligibility of historic properties that may possess religious and cultural significance to them.

NOW THEREFORE, the Corps, CRMC, and the Tribe agree to abide by the following stipulations for the consideration of cultural resources during the remainder of the Feasibility Study

STIPULATIONS

The Corps and CRMC will ensure that the following measures are carried out:

7. Prior to implementation of the Project, the Tribe will be given the opportunity to identify historic properties within the Project that may be of religious, sacred, or spiritual significance. Upon identification of Tribal historic properties, the Corps and CRMC, recognizing that an Indian tribe or Native Hawaiian organization may be reluctant to divulge specific information regarding the location, nature, and activities associated with such sites, will ensure that the confidentiality of this information is addressed pursuant to 36 CFR 800.11(c).

8. In the event that historic properties are identified, and in accordance with 36 CFR 800.5, the Corps and the Tribe will apply the Criteria of Adverse Effect to properties within the area of potential effects. An adverse effect is found when an undertaking may alter, directly or indirectly any of the characteristics of a historic property that qualify the property for inclusion in the National Register. If an adverse effect is found, further consultation will take place between the Corps, CRMC, and the Tribe to develop and evaluate alternatives or modifications to the undertaking that could avoid, minimize or mitigate adverse effects.

9. The Tribe will ensure that identification of historic properties is conducted in a timely fashion prior to construction so that proper resource avoidance, impact minimization, or mitigation may be conducted.

10. In the event that cultural resources are identified during the construction phase of the Project, the Corps and CRMC will ensure that appropriate mechanisms are in place for post-review discoveries as per 36 CFR 800.13. The Corps, in consultation with the Tribe and CRMC, will determine necessary actions to resolve adverse effects. All parties will be notified and given an opportunity to respond. The Corps shall take into account their recommendations and carry out appropriate actions as agreed upon. The Narragansett Tribal Historic Preservation Officer will be contacted in the event of any inadvertent discovery.

11. In the event that human skeletal remains are uncovered, all work within the surrounding area of the find shall immediately cease. The Contractor shall immediately notify the Contracting Officer Representative (COR). The COR will notify the Corps Project Manager and Archaeologist/Tribal Coordinator. The Narragansett Tribal Historic Preservation Officer will be contacted immediately upon notification. Upon identification of the human remains, further consultation will take place to determine the proper course of action and disposition of the remains. The Contractor, Corps, CRMC, and the Tribe will follow the procedures stipulated in the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 (43 CFR Part 10) under Inadvertent Discoveries (Section 10.4), consistent with Tribal burial practices and laws. Applicable Rhode Island laws and regulations concerning burials will be followed by the Contractor, Corps, and CRMC with all other types of human remains that are discovered.

12. At any time during the implementation of the measures stipulated herein should any objection to any such measure or manner of implementation be raised, all parties shall take the objection into account and consult as needed to resolve the objection. If further consultation is not productive and the objection is not resolved, the comments of the Advisory Council on Historic Preservation (Council) will be sought. The Council, as the Federal agency established to implement and oversee the Section 106 process, may decide to become involved or may be invited to consult by any of the consulting parties as a means of resolving conflicts and completing the Section 106 process.

Execution and implementation of this Programmatic Agreement evidences that the Corps has satisfied its Section 106 responsibilities for all individual undertakings of the project.

U.S. Army Corps of Engineers, New England District

By: _____ Date: _____
Colonel Brian E. Osterndorf, District Engineer

Narragansett Indian Tribe, Tribal Historic Preservation Officer

By: _____ Date: _____
John B. Brown III, Tribal Historic Preservation Officer

Rhode Island Coastal Resources Management Council

By: _____ Date: _____
Grover J. Fugate, Executive Director, Rhode Island Coastal Resource Management Council

ACCEPTED for the Advisory Council on Historic Preservation

By: _____ Date: _____
John M. Fowler, Executive Director, Advisory Council on Historic Preservation



STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

HISTORICAL PRESERVATION & HERITAGE COMMISSION

Old State House • 150 Benefit Street • Providence, R.I. 02903-1209

TEL (401) 222-2678

FAX (401) 222-2968

TTY / Relay 711

Website www.preservation.ri.gov

2 July 2015

Thomas R. Chapman
Supervisor
New England Field Office and Southern New England-New York Bight Coastal Program
United States Department of the Interior Fish and Wildlife Service
50 Bend Road
Charlestown, Rhode Island 02813

Re: Ninigret Pond Tidal Marsh Restoration
Charlestown, Rhode Island

Dear Mr. Chapman:

The Rhode Island Historical Preservation and Heritage Commission staff has reviewed the information that you submitted related to the above-referenced project. We understand that the U.S. Fish and Wildlife Service (USFWS) is acting as the lead federal agency for this project, which is funded through Department of the Interior Hurricane Sandy Resiliency funds administered through the National Fish and Wildlife Foundation. The Rhode Island Coastal Resources Management Council is acting as project administrator for the undertaking.

The proposed project is to restore degraded tidal marsh on the west side of the breachway in Ninigret Pond, in Charlestown, Rhode Island. The project will consist of dredging to reestablish a sedimentation basin and relief channel that was created by the United States Army Corps of Engineers and depositing the dredge material in the tidal marsh.

Based on our review of the information that you submitted, we have concluded that the proposed project will have no effect on historic above- or below-ground resources. Therefore, we have no objection to the proposed project.

These comments are provided in accordance with Section 106 of the National Historic Preservation Act. If you have any questions, please contact Jeffrey Emidy, Project Review Coordinator for this office.

Very truly yours,

~~FOR~~ Edward Sanderson,
Executive Director
State Historic Preservation Officer

C: Suzanne Paton, U.S. Fish and Wildlife Service, by email

130916.02jde



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Southern New England -New York Bight Coastal Program 50
Bend Road
Charlestown, RI 02813
<http://www.fws.gov/r5sneq>



CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Re: Rhode Island South Coast
Habitat and Community
Resiliency Project Ninigret Pond,
Charlestown, RI

August 7, 2015

Mr. John Brown
Tribal Historic Preservation
Officer Narragansett Indian Tribe
4425 South County Trail
Charlestown, Rhode Island 02813

Dear Mr. Brown:

Following your recent telephone conversations (June 11 and July 9, 2015) with Suzanne Paton of the Southern New England Coastal Program of the U.S. Fish and Wildlife Service (Service), we would like to clarify the following points with regard to the Rhode Island South Coast Habitat and Community Resiliency Project, originally described in our letter dated June 5, 2015.

During the Rhode Island South Coast Restoration Project, implemented by the New England District of the U.S. Army Corps of Engineers in conjunction with the Rhode Island Coastal Resources Management Council, the Narragansett Indian Tribe (Tribe) entered into formal consultation. At that time, a Programmatic Agreement was developed among the three agencies providing for Tribal oversight and consultation during project implementation which began in 2006. The scope of that project was much more extensive than the current Rhode Island South Coast Habitat and Community Resiliency Project and included fish passage at Cross Mills, as well as dredging in three coastal ponds. The one portion of the current project that remains unchanged from the previous project is the dredging of the sedimentation basin and relief channel at Ninigret Pond (also known as Charlestown Breachway). There will be no dredging of tidal shoals or other areas of the Pond.

Dredging of the sedimentation basin and relief channel under the current project will not exceed the footprint of the original sedimentation basin created in 2006.

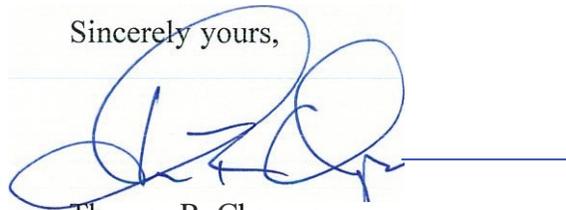
Mr. John Brown
August 7, 2015

2

Material being placed on the tidal marsh to the west of the Charlestown Breachway will not in any way preclude the Tribe from future access to the site. Under this project, the land ownership and status of this parcel will remain unchanged.

As lead Federal agency, the Service will continue to coordinate the review of this project in accordance with section 106 of the National Historic Preservation Act (36 CFR 800), as amended. If you have any further questions or concerns regarding this project, please contact Ms. Paton, the Service point of contact on this project, at 401-364-9124 , extension 39, or by email at suzanne_paton@fws.gov.

Sincerely yours,

A handwritten signature in blue ink, appearing to read 'T. Chapman', is written over a horizontal line. The signature is stylized and cursive.

Thomas R. Chapman
Supervisor
Southern New England-
New York Bight Coastal Program

Mr. John Brown
August 7, 2015

3

cc: Reading file
Caitlin Chafee, CRMC
Steve McCandless, Town of Charlestown
Catherine Sparks & Jay McGinn, RI DEM
Art Ganz (President) & Alicia Eichenger (Executive Director), Salt Ponds Coalition
Wenley Ferguson, Save the Bay
Nils Wiberg, Fuss & O'Neill, Inc.
D.J. Monette, RO Native American Liaison, Hadley, MA ES:
SPaton:8-7-15:401-364-9124

Section 7 Correspondence

500

eA/EB, FWS

16-I-2013,

June 8/31/16

recovery uploaded 8/5/16

INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION

Originating Person(s): Suzanne Paton, Supervisory Fish and Wildlife Biologist
Southern New England Coastal Program, Charlestown, RI

Telephone Number(s): (401) 213-4415

Date: August 1, 2016

I. Service Program(s) and Proposed Activity:

The Southern New England – NY Bight Coastal Program is working closely with the Coastal Resources Management Council (CRMC) and the Town of Charlestown on the “Rhode Island South Coast Habitat and Community Resiliency Project” funding through the DOI Hurricane Sandy Resiliency Appropriation administered through the National Fish and Wildlife Foundation.

The primary objective of the project is to restore approximately 30 acres of degraded salt marsh on the back barrier portion of Ninigret Pond in Charlestown, Rhode Island, through the deposition of dredged materials on the marsh surface. Material will be dredged from the sedimentation basin and relief channel within the Charlestown Breachway (Map 1). These basins were last dredged in 2012 as part of an Army Corps of Engineers project. At that time the dredge material was disposed of in the intertidal and sub-tidal areas of the beach to the east of the breachway. For this project the footprint of the dredge area will remain within the same sedimentation basin but the material will be re-used to build marsh elevation to the west of the breachway (Map 2). Once the target elevations have been achieved within the project area, any surplus material will be disposed of in the sub-tidal and intertidal area to the east of the breachway. The construction window will be November 15, 2016 through February 15, 2017.

II. Pertinent Species within the Area

Red Knot

Effective December 11, 2014, the rufa red knot was federally listed as a threatened species under the Endangered Species Act (79 FR 73706). During their southward migration to wintering areas, red knots typically feed on small clams and mussels found along coastal beaches and intertidal flats. Although the red knot is present as a mid-summer-early fall migrant on Cape Cod and they are occasionally seen in Rhode Island at Napatree Point (13 miles to the west of the project site) there are limited records confirming their presence in the coastal salt ponds. Fall migration is typically completed by mid-September to early October.

Northern Long-eared Bat

Effective May, 4, 2015, the northern long-eared bat (*Myotis septentrionalis*) was federally listed as a threatened species under the Endangered Species Act (80 FR 17974). During the summer,

northern long-eared bats roost singly or in colonies in forested habitat underneath bark, in cavities or in crevices of both live trees and snags (dead trees). Northern long-eared bats seem to be flexible in selecting roosts, choosing roost trees based on suitability to retain bark or provide cavities or crevices. During the evening, northern long-eared bats can be found foraging in a variety of forested and non-forested habitats, including wetlands. During winter, northern long-eared bats hibernate in caves and mines (hibernacula) with constant temperatures, high humidity, and no air currents. Factors affecting the species include modifications to bat hibernacula, disturbance of hibernating bats, and loss of forest habitat including forest fragmentation.

Piping Plover

Piping plover was federally listed as a threatened species under the Endangered Species Act during 1986. At that time the population in New England was estimated to be at less than 200 pair. Current estimates are that 918 pair of piping plover nested in the New England states during 2015, exceeding the recovery goal of 625 pair for the New England region. Breeding areas to the north and south of the range have not yet achieved their individual recovery goals however, and the overall Atlantic Coast population has still not reached the recovery goal of 2000 pairs. Plovers nesting in Rhode Island begin to arrive in mid-April and establish territories and remain on nesting sites through July and into August depending on the season. Individual plovers and other migratory shorebirds continue to use beaches and mudflats through mid-September.

Roseate tern

The North eastern population of Roseate tern were listed as endangered on November 2, 1987. The largest nesting colony near the project site is Great Gull Island off of the coast of Long Island, NY and approximately 27 miles south and west of the project site. Nesting birds arrive at this colony in May of each year and begin leaving in August with the end of migration sometime in September. Foraging and migrating terns do use the coastal ponds for foraging in shallow waters and for loafing on exposed mudflats during the summer and early fall with migration typically completed by mid- September.

III. Station Name and Action:

Station: Southern New England – NY Bight Coastal Program, Charlestown, RI
Action: Thin layer deposition on tidal marsh and intertidal zone as part of the Rhode Island South Coast Habitat and Community Resiliency Project funded through Disaster Relief Appropriations Act of 2013 administered by the National Fish and Wildlife Foundation. Technical assistance and lead federal status provided by the Service's Coastal Program.

IV. Location

Ninigret Pond and the Charlestown Breachway are on the south coast of Rhode Island in the Town of Charlestown (41°21'38.05"N, 71°38'20.11"W.).

V. Determination of Effects

A. Explanation of effects of action on species and critical habitats listed in II

Red Knot

Although the Project is located within a known fall migration area for the red knot (78 FR 60024), existing conditions within Ninigret Pond are not ideal for the species. There is the potential for use of the exposed mud flats during low tide during the migration window, although they are documented only rarely at this site. The proposed project will not impact any of the mudflat areas that are currently available as suitable habitat but will instead be focusing on vegetated and ponded areas within the tidal marsh. The work will also be conducted during the winter when red knot are not present at the site. Therefore, we conclude that the Project will have no effect on red knot. It is possible that the newly created sand flats will provide shorebird stop over habitat during spring and fall migration during the following season as we expect that they will take a few years to re-vegetate. This could include use by red knot, although they are more frequently detected at other sites along the Rhode Island coast.

Northern Long-eared Bat

Although the Project is within the mapped range of the northern long-eared bat (80 FR 17974), the degraded wetland habitat in the Project area provides no roost tree habitat. There are small islands within a short flight of the Project area as well as some tracts of coastal forest as close as 0.5 miles away. It is likely that northern long eared bats use trees in these coastal areas during the summer and fall. During the winter months, most northern long eared bats are thought to leave Rhode Island and over-winter in caves and mines. There are a few small hibernacula, however, that have been confirmed in coastal forts in the state, including Fort Wetherill and Fort Getty on Jamestown Island. These sites are approximately 16-17 miles from the Project site. Project work is scheduled to occur during the winter months when northern long-eared bats will be hibernating and not active or minimally active in areas around hibernacula. The proposed action does not involve removal of any trees and will not diminish the northern long eared bats ability to forage, breed or shelter in the general area when they return in the spring-summer-fall months. We therefore conclude that the project will have no effect on Northern long eared bats.

Piping Plover

Piping plover are known to nest on the barrier beach adjacent to the project site during the summer months and to forage on exposed mudflats in the pond during the spring and fall migration as well as during the summer months. The barrier beach to the west of the breachway where the work will occur is owned by the State of Rhode Island with lands further to the west owned by the National Wildlife Refuge System, and a private conservation group. The entire beach is managed to protect nesting birds during the breeding season, including complete closure of the sand trail as needed. Plovers will not be present at the site during the winter when the work will occur. It is possible that the sand that is deposited on the tidal marsh will be attractive to plovers in the spring as a foraging area where the deposited sand is flooded twice daily with the tides. At sites with a higher elevation that do not flood daily, it is possible that plovers and other shorebirds will use the site for roosting or even nesting until the vegetation returns. On the barrier it is possible that the sand deposited in the intertidal will be transported with the tides to

Charlestown Town Beach or Green Hill Beach to the east. This would be part of the natural process of suspension and movement of sediment in the ocean currents. We conclude that this project will have no effect on piping plover.

Roseate Tern

Roseate terns are known to forage in the shallow water of the coastal ponds during the breeding season and throughout migration. They also will loaf on mudflat areas during their migration. This typically extends into September, but Roseate terns are not expected to be in the State by the construction window November 15th and are not expected to return in the spring until well after the project construction window is completed. We conclude that this project will have no effect on Roseate tern.

B. Explanations of actions to be implemented to reduce adverse effects

Red Knot

Adverse effects are not anticipated, therefore, no measures to reduce affects are needed.

Northern Long-eared Bat

Adverse effects are not anticipated, therefore, no measures to reduce affects are needed.

Piping Plover

Adverse effects are not anticipated, therefore, no measures to reduce affects are needed.

Roseate Tern

Adverse effects are not anticipated, therefore, no measures to reduce affects are needed.

VI. Effect Determination and Response Requested

A. Listed Species Determination:

Red Knot: No effect

Northern Long-eared Bat: No effect

Piping Plover: No effect

Roseate Tern: No effect

B. Response Requested: None required

VII. Reviewing Ecological Services Office Evaluation

A. Concurrence: Concur

B. Formal Consultation Required: No

C. Conference Required: No

D. Nonconcurrency : N/A

Remarks: This consultation was reviewed by Susi vonOettingen, Endangered Species Specialist,
of the New England Field Office. *Susi vonOettingen* 8/3/2016

Suzanne Paton

Suzanne Paton, Supervisory Fish and Wildlife Biologist
Originating Official

8/3/2016

Date

*Acting
for:* *Thomas R. Chapman*

Thomas R. Chapman, Supervisor
New England Field Office
Reviewing Official

8/5/2016

Date