

Funding Recommendations for 2021-22 Trust Fund Monies

Projects recommended for funding

Project Name	City/Town	Award Amount	Match
<i>Norman Bird Sanctuary Habitat Restoration: Invasive Removal and Native Planting</i>	Middletown	\$25,000	\$30,000
<i>Improving Fish Passage on the Saugatucket River</i>	South Kingstown	\$50,000	\$50,000
<i>Ten Mile River Reservation Dam Removal Assessment</i>	Pawtucket	\$50,000	\$10,469
<i>Woonasquatucket River Streambank Stabilization: San Souci Drive</i>	Providence	\$50,000	\$36,000
<i>Salt marsh restoration and adaptation at Fogland Point, the Haile Preserve on the Palmer River and Canonchet marsh on the Narrow River</i>	Tiverton	\$50,000	\$14,574
TOTAL		\$225,000	\$141,043

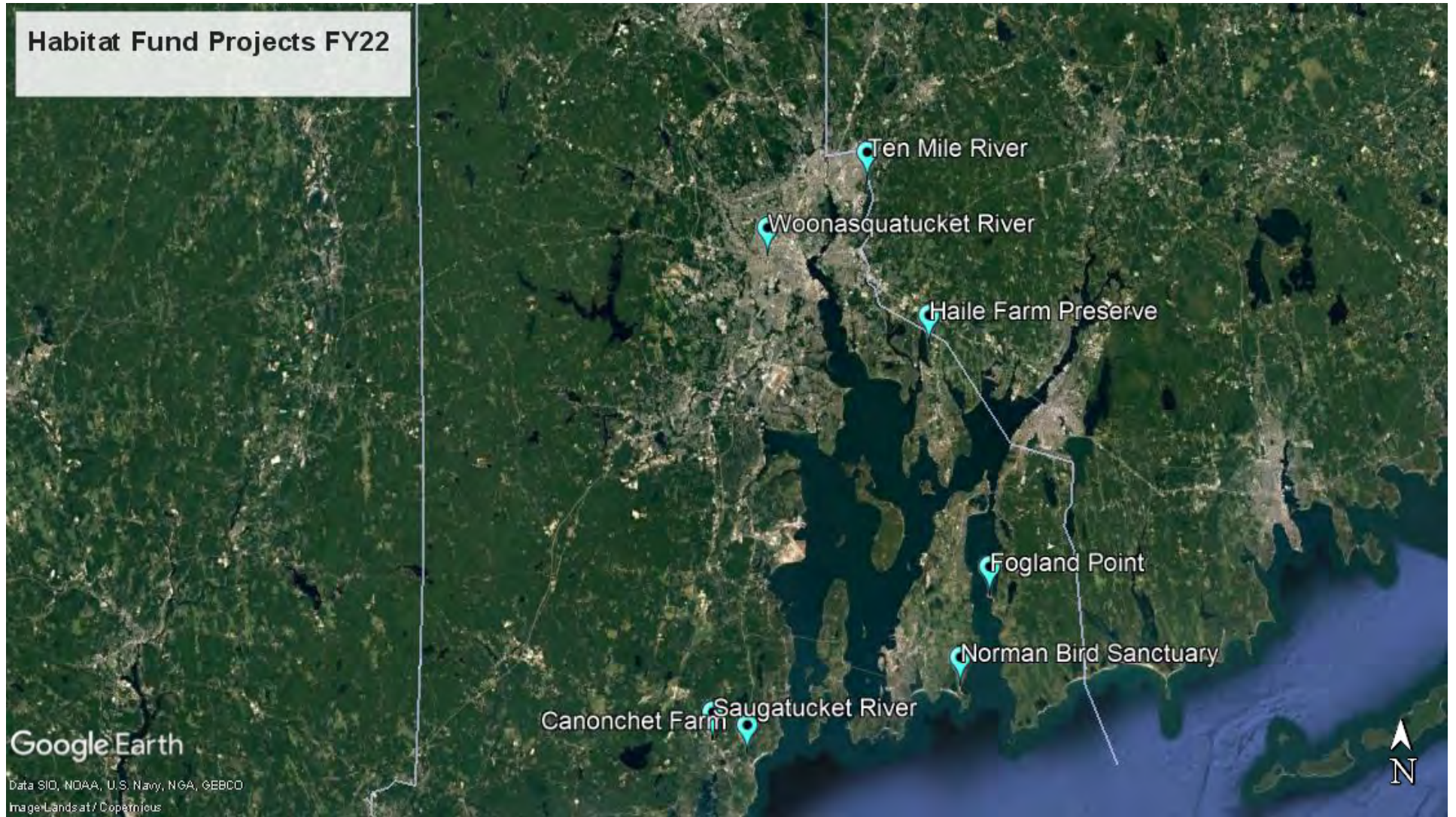
Habitat Restoration Team Technical Advisory Committee

Members:

<u>Member</u>	<u>Affiliation</u>
Tom Ardito	Restore America's Estuaries
Caitlin Chaffee	Narragansett Bay National Estuarine Research Reserve
Phil Edwards	DEM Division of Fish and Wildlife
Leah Feldman	Coastal Resources Management Council
Wenley Ferguson*	Save The Bay
Alan Gettman	DEM Mosquito Abatement Coordination Program
Mike Gerel	Narragansett Bay Estuary Program US Fish and Wildlife
Suzanne Paton	Service
Margherita Pryor	US Environmental Protection Agency
James Turek	NOAA Fisheries Restoration Center

*Recused from full proposal evaluation

Habitat Fund Projects FY22



Google Earth

Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image Landsat/Copernicus

Rhode Island Coastal and Estuary Habitat Restoration Fund

Full Proposal Form 2021/2022

I. PROJECT SUMMARY

1. Project Title:

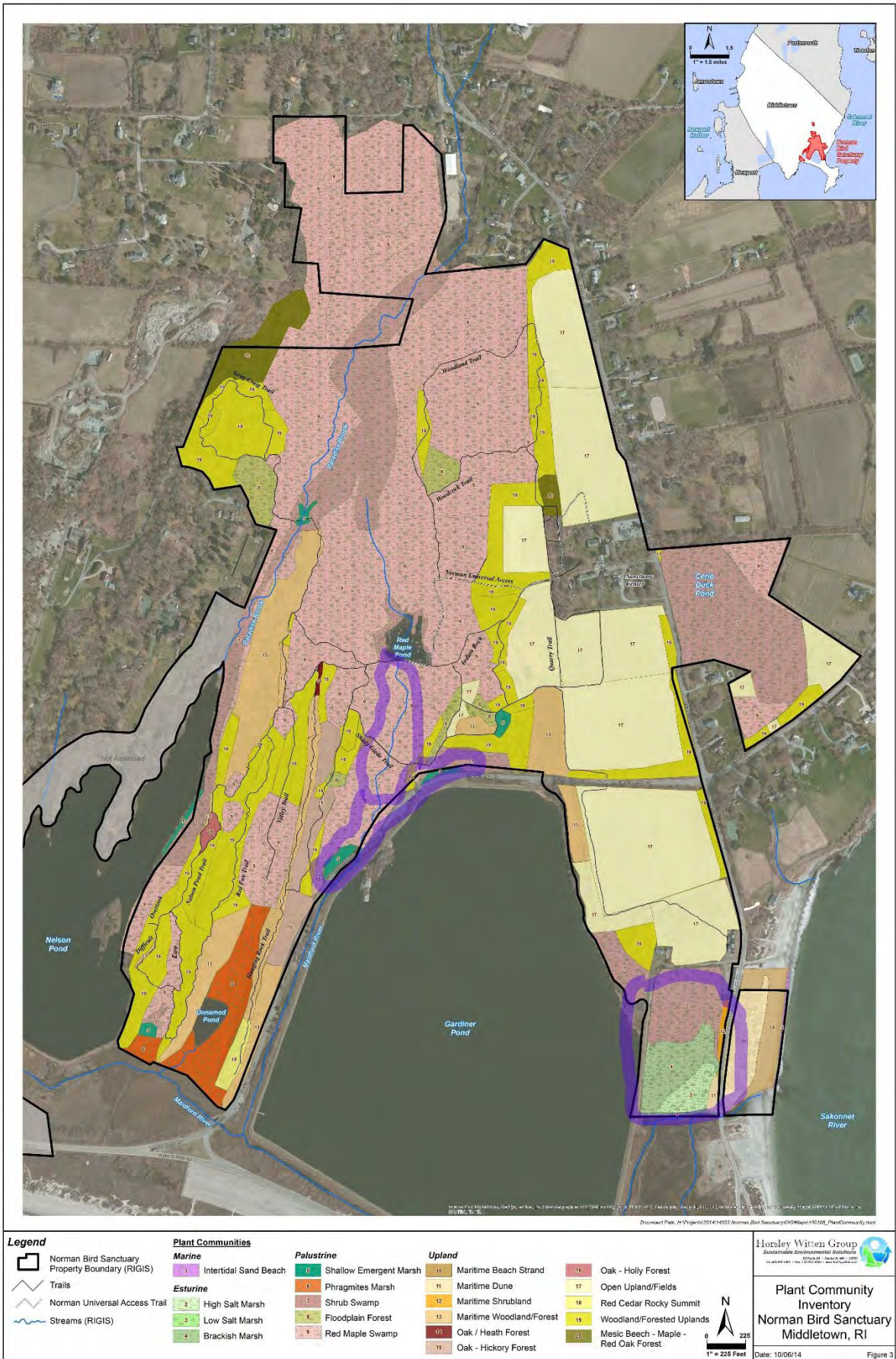
Norman Bird Sanctuary Habitat Restoration – Invasive Removal and Native Planting

2. Project Location and coordinates (include map):

This native and invasive plant species project includes two priority restoration sites on Norman Bird Sanctuary's preserved 300+ acre property in Middletown, Rhode Island. Funding from the Rhode Island Coastal and Estuary Habitat Restoration Fund has previously supported several small dune planting projects at the Sanctuary's beachfront property at Third Beach. This project is designed to substantially build upon that work to implement our [Comprehensive Management Plan](#) and [Invasive Plant Species Management Plan](#), which were developed with the assistance of Horsley Witten Group in 2016. Funding is requested to address two priority sites for restoration with invasive plant removal and the planting of native plant species. These two vulnerable areas were selected to address habitat areas that are priority areas for invasive plant removal and are also vulnerable to changing habitat types due to the implications of climate change (see the map on the following page for project locations marked in purple on the Plant Community Inventory – *note the Technical Advisory Committee requested a map of existing habitats and the inventory map below is provided; see also the STORMTOOLS sea level rise mapping provided in the attachments*):

Third Beach Road - This site encompasses the far Southeast portion of the Sanctuary's property along Third Beach Road where the Maidford River intersects the road and culvert at Third Beach. The site extends north towards the Sanctuary's Coastal Education Center and the total area is approximately five acres. This project will focus on the western side of the road and the remaining areas in the beachfront dunes where there is Japanese knotweed (*Polygonum cuspidatum*), oriental bittersweet (*Celastrus orbiculatus*) and Porcelain berry (*Ampelopsis glandulosa*). A new, but manageable, population of phragmites (*Phragmites australis*) has also begun to compete with the existing switchgrass (*Panicum virgatum*).

Hanging Rocks Road - This 5-acre portion of the Sanctuary's property includes a wetlands complex along Hanging Rocks Roads where the tributary feeding out of the Sanctuary's Red Maple Pond intersects with the road. One portion of this site consists of two palustrine wetlands - the first being a shallow emergent marsh and the second a red maple swamp. There are healthy populations of native plants, but a large amount of reed canary grass (*Phalaris arundinacea*) has begun to spread. The other portion of this site is north-east along Hanging Rocks Road and consists of two palustrine wetlands which are being invaded heavily by watercress (*Nasturtium officinale*) and other invasive species such as European privet (*Ligustrum vulgare*). The last position of this site includes the stream corridor from Hanging Rocks Road up to the Red Maple Pond dam. This watershed has a drainage area amounting to 100 acres of the Sanctuary's 300+ acres. River herring were sighted below the dam likely as a result of USFWS's Sachuest Point National Wildlife Refuge's 2018 box culvert and thin layer deposition and marsh enhancement projects in the Sachuest Marsh. This stream flows under Hanging Rocks Road and along a critical drinking water supply berm, operated by the City of Newport, until it converges with the lower Maidford River. The berm and geological formation of Hanging Rock form a narrow corridor resulting in frequent flooding along Hanging Rocks Road.



- 3. Project type (*Design, Construction or Other*):**
Construction – invasive plant removal and planting of native plant species.
- 4. Habitat type (*River System, Salt Marsh, Seagrass, Shellfish Bed, other*):**
Nine habitat types are involved in this project: shallow emergent marsh, red maple swamp, emergent marsh, shrub swamp, maritime shrubland, brackish marsh, high salt marsh, low salt marsh, and maritime dune.
- 5. Restoration technique (*e.g. re-vegetation, tidal restoration, etc.*):**
Re-vegetation with native plant species after invasive plant removal.
- 6. Total acreage or miles(*river systems*) of habitat to be restored, or project area planning unit size:**
The project area is approximately ten acres. However, there are both healthy native plant communities as well as extensive invasive plant species within those ten acres.
- 7. Project benefits:**
The benefits of habitat restoration with native plant species will assist with the reduction of the spread of invasive species, the creation of improved wildlife habitat, the increase in biodiversity, and the construction of resilient and diverse habitat that help to better withstand the effects of climate change. In addition, the educational components of this project present an opportunity to enhance community resilience.
- 8. Project partners (*organizations providing financial or other support to the project*):**
 - **United States Fish and Wildlife Service** (see the attached letter of support from Charles Vandemoer, Project Leader of the Rhode Island National Wildlife Refuge Complex)
 - **Town of Middletown** (see the attached letter of support from Shawn Brown, Town Administrator)
 - **van Beuren Charitable Foundation** (see discussion below regarding matching grant funding that allowed us to hire a manager for a new Conservation Crew to address these habitat projects)
- 9. Is this an ongoing project that has previously received funds from the CRMC Coastal and Estuarine Habitat Restoration Fund? If yes, year(s) funding was awarded:**
The Rhode Island Coastal and Estuarine Habitat Restoration Fund provided smaller grants for dune planting in Norman Bird Sanctuary's property on the beach side of Third Beach Road in 2007, 2020 and 2021. This project is similar in terms of planting native vegetation but is significantly larger in scope as discussed below.

IV. PROPOSAL NARRATIVE

1. Justification and Purpose

This project is designed to restore native plant species to priority areas on the Norman Bird Sanctuary property and to implement our 2016 [Comprehensive Management Plan](#) and [Invasive Plant Species Management Plan](#). Horsley Witten Group's analysis included an inventory of the important habitat types on the Sanctuary property and an analysis of the extent of predominant invasive plant species observed and their density and accessibility. The planning process resulted in a methodology to prioritize areas for invasive species management. Since the completion of these plans, Norman Bird Sanctuary staff have been addressing priority areas throughout our 300+ acre property with existing staff. As described more fully below, the two proposed areas include priority sites identified in the Invasive Plan which are also particularly vulnerable to the implications of climate change.

In November of 2021, we were awarded a significant grant from the van Beuren Charitable Foundation (vBCF) to hire an additional staff member to develop a Conservation Crew program. Funding from the Rhode Island Coastal and Estuarine Habitat Restoration Fund in combination with the vBCF grant will greatly expand our capacity to implement our habitat management plans. We are building a dedicated corps of trained volunteers who will work closely with the existing Norman Bird Sanctuary staff to address habitat management for invasives as well as trail maintenance, garden stewardship, and historic and cultural resource management. With vBCF funding, we recently hired Jay Manning as our Conservation Manager and he brings extensive experience in grant and project management from his time working at the Rhode Island Department of Environmental Management.

Following priority recommendations of the Invasive Plan, we selected two project areas that are prime candidates for restoration as they contain significant populations of invasive species and are especially vulnerable to anticipated effects of climate change (see STORMTOOLS mapping of the project areas with 2 foot and 5 foot sea level projections). Both project areas are ecologically important as they both connect to the Maidford River and support a wide variety of wildlife including fish, shorebirds, amphibians, and insects. The sites also complement the Maidford River/Sachuest Marsh restoration projects implemented by the USFWS' Sachuest Point National Wildlife Refuge. The short-term benefits will include slowing the spread of invasive species, creating wildlife habitat, and increasing biodiversity. Our long-term goals are to create resilient and diverse habitats that will withstand the effects of climate change.

The **Third Beach Road** site is a 5-acre portion of the 38-acre area of the Norman Bird Sanctuary that was preserved in 2003. This property includes a portion of Third Beach (the beach parcels of Third Beach are owned from south to north by USFWS, Middletown, Norman Bird Sanctuary, and a private landowner). While the majority of the Sanctuary's 300 acres were created under the terms of the will of Mabel Norman Cerio in 1949, she created a family trust for the 38 beachfront acres. In 2002, Mabel's heirs notified the Sanctuary of an offer to purchase this property by a private developer of \$3,687,000. After a significant multi-million-dollar fundraising effort with tremendous community and governmental support, Norman Bird Sanctuary purchased the parcels in 2003. Both the Rhode Island Department of Environmental Management and the Aquidneck Land Trust assisted with the project by purchasing conservation easements and the Third Beach Property Management Plan was developed as a required element of the easement. Significant dune habitat restoration was accomplished over the years by the removal of more than a dozen beach cabanas and the planting of native plant species (see the 1972 and present-day photos of the restoration where the cabanas and significant parking areas were removed and the parcels have been significantly restored to natural habitat). The Third Beach Road project will primarily focus on the western side of the road and will also address those areas on the eastern side of the road to augment prior dune planting projects.

The **Hanging Rocks Road** site is 5-acre portion of the Sanctuary's property below Red Maple Pond. It includes a wetlands complex along Hanging Rocks Roads as well as the stream corridor from Hanging Rocks Road up to the Red Maple Pond dam. The Red Maple Pond watershed has a drainage area amounting to 100 acres of the Sanctuary's 300+ acres. There have been limited restoration activities in this project area and Horsley Witten Group identified numerous priority areas for invasive plant removal. As with the Third Beach Road site, this low-lying area is likely to undergo significant habitat change and migration due to sea level rise. Habitat changes are likely from the road up to the Red Maple Pond dam. The attached STORMTOOLS mapping of anticipated sea level rise highlights both of these areas.

The Invasive Plant Management Plan included specific site recommendations for priority sites for invasive plant removal in both of these two project areas (for Third Beach Road sites see attached management approaches INV 91, 96, 115, 147 and 148; for Hanging Rocks Road see INV 136, 141, 143 and 144). It is important to note that additional invasive plant species sites have been identified since the development of this plan in 2016, and the work plan below includes an updated analysis of existing site conditions with the assistance of a consulting botanist.

2. Project Activities, Schedule and Work Plan

This project is scheduled to begin during the spring of 2022 with invasive plant removal and native plant planting in the fall of 2022 (these two actions will restore ecosystem services and other activities will involve planning and coordination to support these actions). The following timeline is proposed:

- Initiate vBCF development of the Conservation Crew project – February 2022
- Retain consultant horticulturalist/botanist – April 2022
- Stakeholder and partner meeting to discuss project scope – May 2022
- Analysis of existing habitat conditions and projected future conditions – June 2022
- Development of restoration training program for Conservation Crew – June 2022
- Stakeholder and partner meeting to discuss project – July 2022
- Final design of restoration plan – July 2022
- Restoration training program for Conservation Crew – July 2022
- Invasive plant removal and native plants and planting – August to October 2022
- Initiate development of interpretive signage – December 2022
- Development of Monitoring Plan – February 2023
- Installation of interpretive signage – May 2023
- Report from Monitoring Plan – June 2023
- Final project report – July 2023

3. Minimization of Adverse Impacts

Minimizing adverse impacts from this project is critical as stream corridors and wetlands are extremely sensitive, and their balance is easily shifted with disturbance. A dedicated group of workers on the Conservation Crew will be trained on many topics such as plant identification, plant removal techniques, and planting native species. Being able to identify native and invasive plants will ensure that native plants are not being disturbed. Techniques of proper invasive plant removal will be important training to ensure the invasive plants are removed entirely with minimal disturbance to the surrounding area. Teaching workers proper horticultural techniques for planting will give our plants the greatest chance of success. In addition, we plan to educate our workers and create protocols for minimizing disturbance in wildlife habitat and nesting areas. We also plan to produce educational signage highlighting our rationale and methodology for invasive plant removal, which may have an impact on visitors for years to come.

4. Public Support

Support for this project is demonstrated by an existing partnership of adjacent landowners along Third Beach Road. As described above, the beach parcels are owned by USFWS, the Town of Middletown, Norman Bird Sanctuary, and a private landowner. This partnership holds annual coordination meetings to share plans for beach management issues including piping plover protection, dune planting, beach management, and water quality concerns for beach closures (see attached letters of support). This project specifically plans to continue this partnership to solicit the respective expertise of these partners. In addition, the Technical Advisory Committee's comments on our pre-proposal included a recommendation to coordinate with the Southern New England Program's Maidford River project. In preparing for this full proposal, we briefed Elizabeth Scott on the scope and purpose of this project. After a discussion of the shared purpose of both projects to protect habitats adjacent to the Maidford River, she expressed strong support for the goals of this project and affirmed the consistency with the upstream Maidford River project.

5. Economic and Educational Benefits

While there will be community-based economic benefits associated with this project pertaining to the protection of Third Beach and adjoining roadways, the primary benefits of this project are educational in nature. As described above, Norman Bird Sanctuary will develop educational training protocols for the Conservation Crew volunteers. In addition, interpretive signage will provide the public with information regarding: dune and wetland habitat types, the importance of restoration with native plant species, techniques for identification and removal of invasive species, and the implications of climate change as well as climate change resilience. Norman Bird Sanctuary's Third Beach Education Center (where hundreds of summer campers visit yearly) is adjacent to the two project sites and provides an excellent home for this interpretive signage. In addition to these educational benefits to the general public, the entire concept of establishing the Conservation Crew is to provide a robust educational foundation for our volunteers to learn from the various projects and use that experience in future endeavors.

6. Climate Change and Coastal Resiliency

This project was specifically designed to enhance the resiliency of these vulnerable low-lying areas on Third Beach Road and Hanging Rocks Road. One of the comments of the Technical Advisory Committee regarding our pre-proposal was the consideration of habitat migration due to sea level rise. Native plantings will reduce vulnerability to erosion from wind, rain and flooding due to anticipated changes caused by climate change. In consultation with a botanist and project partners, this project will focus on purchasing plant groups such as grasses, sedges, and rushes that will greatly benefit in erosion control as well as creating habitat for wildlife. Plants such as seaside goldenrod and saltmarsh cordgrass will help facilitate the inevitable changes that these habitats will go through as a result of climate change (see the STORMTOOLS mapping of projected impacts to the project sites).

The concerns to be addressed in this project include erosion as a result of sea level rise and the increased frequency, duration, and intensity of storms, including wind and water erosion, storm surge, run off and coastal flooding. The roadway systems on Third Beach Road and Hanging Rocks Road are of particular concern to the Town of Middletown given the summer traffic associated with beachgoers. In addition, the lower Maidford River also runs along the water supply reservoir owned by the City of Newport. The water supply berm and Hanging Rock itself form a narrow corridor resulting in flooding. These roadway systems and drinking water infrastructure are at significant risk from the flooding and sea level rise (see Middletown vulnerability [planning documents](#)).

7. Environmental Justice

While this project will not take place within an Environmental Justice priority area, the project will incorporate a goal of environmental justice to provide for a meaningful involvement of a variety of all people of all races and incomes. The Conservation Crew program funding from the vBCF grant does address environmental justice concerns as it includes reaching out to communities on or near Aquidneck Island that do meet the definition of priority areas in order to include a broad variety of individuals in the project. Our method for selecting the conservation crew volunteers will meet these equity standards and goals of increasing diversity. The ongoing outreach already embedded within Norman Bird Sanctuary's existing programming will greatly benefit from this grant by exposing some of our more at-risk populations to climate change resilience methods and therefore strengthening our fight against the environmental injustices inherent in global climate change.

8. Planning Consistency and Restoration Priority

This project is consistent with a local and state planning initiative that was developed in collaboration with the Sanctuary, the Rhode Island Department of Environmental Management and the Aquidneck Land Trust. As part of the purchase of the property, the Third Beach Property Management Plan was developed as a required element of the easement. The management of the property is required to be passive but specific management is required to protect piping plovers (*Charadrius melodus*) in accordance with USFWS guidelines which are incorporated by reference in the plan. The planting of native plants and fencing are required to discourage foot traffic. In addition, the removal of multiflora rose and Japanese knotweed are required but Japanese rose (*Rosa rugosa*) may remain where appropriate to stabilize the dunes and control foot traffic.

In order to anticipate the implications of climate change, this project is also designed to restore habitat areas in the most vulnerable areas on Norman Bird Sanctuary's campus. The project is designed to be consistent with the Rhode Island Shoreline Change Special Area Management Plan (SAMP). This SAMP includes adaptation strategies and techniques for coastal properties and the following recommended restoration practices in the SAMP are met through this project:

- Dune restoration is the practice of constructing new or restoring existing dunes as a means of dissipating wave energy and addressing storm surge and coastal erosion.
- Coastal wetland creation or enhancement involves a range of methods to stabilize or enhance coastal wetlands, which can help stabilize shorelines and dissipate wave energy.

Lastly, this project is consistent with the Comprehensive Conservation Plan adopted by the U.S. Fish & Wildlife Service for the Sachuest Point National Wildlife Refuge. This plan targets invasive plant species management as roughly 40% of the plant species on the refuge are invasive and cover 80% of the refuge.

9. Species of Concern

This project is intended to positively impact wildlife species, some of which are listed as species of concern in the state of Rhode Island. As discussed above, this project and the Third Beach Management Plan are designed to benefit the continued protection of piping plovers. Piping plovers will benefit from the coastal dune restoration as they breed on ocean shores in soft sandy areas with sparse vegetation, which is consistent with the restoration proposed at Third Beach Road. It is likely that saltmarsh sparrow (*Ammospiza caudacuta*) will benefit from the project as it is designed to improve forage habitat. In addition, a particular insect we anticipate to see benefiting from this project is the spartina borer (*Photedes inops*). This species of moth relies on coastal wetlands, and its larvae feed on *Spartina* spp. which we have included in our list of plants to restore the Third Beach Road site. Lastly, it is important to note that river herring were seen in the stream below Red Maple Pond likely as a result of Sachuest Point National Wildlife

Refuge's 2018 box culvert and thin layer deposition project. Populations of alewife (*Alosa pseudoharengus*) and blueback herring (*Alosa aestivalis*), collectively referred to as river herring, may successfully use the existing and restored stream corridor habitat.

10. Permitting

It is not anticipated that a permit will be required for the proposed project as such projects may be exempt from permitting but may require notice to state agencies. It is our understanding that state wetlands rules are currently being modified but limited planting in perimeter wetland or riverbank wetland (Rule 6.18) can be completed without a wetland permit but requires notice to the state restoration team. Similarly, cutting for invasive species control in wetlands is exempt (Rule 6.02K) but require state review and approval. Accordingly, it is possible that a wetlands permit or at least notice may be required should any planting be proposed in or adjacent to wetland areas. As the actual planting areas are more fully refined, we will coordinate with Rhode Island agencies (CRMC and RIDEM) to assess any permitting needs.

11. Capacity of Lead Organization

Norman Bird Sanctuary will be the project lead and will be responsible for project management, budget, and completion of the final report. Kaity Ryan serves as the Executive Director of the Norman Bird Sanctuary and will oversee and manage the project. The primary staff included in project development and implementation include:

- Jay Manning, Conservation Manager, recently joined the staff as a result of the vBCF grant. He was formerly a Principal Engineer with Rhode Island Department of Environmental Management's Office of Water Resources and brings years of technical experience in project and grant management.
- Joseph McLaughlin, Director of Properties, has been on staff since 2005. He has managed previous rounds of funding from the Rhode Island Coastal and Estuarine Habitat Restoration Fund and the Natural Resources Conservation Service including dune and grassland habitat restoration at the Norman Bird Sanctuary's main campus and Third Beach property.
- Karen Barbera, Principal Designer with Inspired Design, will assist in invasive plant identification, planning and native planting design. She is an award-winning horticulturalist and has 25 years of experience in Southern New England.
- Jolie Colby, who recently joined the Sanctuary staff as our Director of Environmental Education, recently completed her PhD in Education at the University of California at Santa Barbara where she taught Endangered Species Management. She was formerly the Director of Education for a neo-tropic conservation field study school and wildlife sanctuary.

In addition, two important partners that will be a part of the planning process including the Town of Middletown and USFWS's Sachuest Point National Wildlife Refuge. We have worked with these partners on projects on adjacent properties to restore habitat along Third Beach and in the Sachuest Marsh.

V. SUSTAINABILITY

1. Maintenance

Both project sites will require oversight and maintenance to ensure that native plants are successfully establishing themselves, while invasives are not re-establishing themselves. Norman Bird Sanctuary staff will monitor these sites with visits twice a year and will remove invasive plants and purchase additional plants as needed to supplement any unsuccessful planting.

2. External Factors

Increased sea level rise, flooding, erosion and many other factors have been considered in prioritizing project areas and our plant selection. These low-lying areas of the Norman Bird Sanctuary will certainly be influenced by the effects of climate change. Accordingly, we have selected plants that can best withstand the anticipated changes and stresses. When selecting plants, we plan to purchase plants that thrive in coastal areas, are resistant to salt, resistant to roadside conditions, help reduce erosion, can outcompete invasive plants and can provide benefits to local wildlife. The plants on our list have been researched and will be confirmed with a consulting botanist to ensure they will be planted into appropriate habitats. Having native plants thriving in these habitats will enhance the durability of these sites as well as help facilitate the changes that will come with climate change.

VI. EVALUATING PROJECT SUCCESS

1. Performance Measures

This project's success will be measured by the reduction of invasive plants, survival rate of plants that have been planted, how well those plants will establish populations, and how well they will compete with invasive species. Beyond the successful establishment of native plant populations, we are seeking to create resilient habitats that will continue providing important ecological benefits in the midst of a changing climate. A sign of success would be our sites having greater resistance to effects such as flooding, erosion, salt tolerance, and severe weather events.

With respect to the success of the Conservation Crew program, we will monitor the recruitment of volunteers, the success in training programs, and the retention of volunteers for future projects. With respect to our project partners, we will assess our continued coordination with the Town of Middletown and USFWS.

2. Monitoring Plan

Norman Bird Sanctuary invested considerable resources into the development of our [Comprehensive Management Plan](#) and [Invasive Plant Species Management Plan](#). Horsley Witten Group's analysis included a comprehensive review of pre-project conditions. We intend to ground through any changes to these existing conditions before initiating this project and will assess the project twice a year as well as after any severe weather events. Monitoring reports will be available to project and funding partners.

VII. PROJECT BUDGET TEMPLATE

BUDGET CATEGORY	CRMC REQUEST	MATCH	MATCH PENDING OR SECURED? (select one)	SOURCE OF MATCH	TOTAL
Purchase of Native Plant Species	\$17,500	\$1,250	Secured	van Beuren Charitable Foundation	\$19,000
Management of Conservation Crew Volunteers	\$0	\$20,000	Secured	van Beuren Charitable Foundation	\$20,000
Sanctuary staff management of project, work on project, and reporting	\$8,000	\$2,000	Secured	van Beuren Charitable Foundation	\$10,000
Habitat planning/consulting botanist	\$2,000	\$2,000	Secured	van Beuren Charitable Foundation	\$4,000
Interpretive Signage	\$2,000	\$2,000	Secured	van Beuren Charitable Foundation	\$4,000
Stipends for Volunteers	\$0	\$2,500	Secured	van Beuren Charitable Foundation	\$2,500
Tools and gloves for Volunteers	\$500	\$0			\$500
Apparel for Volunteers	\$0	\$250			\$250
TOTAL	\$30,000	\$30,000		TOTAL PROJECT COST	\$60,000

VIII. BUDGET NARRATIVE

Purchase of Native Plant Species

The majority of the costs for native plants are allocated for CRMC funding with an additional amount of matching funds from the van Beuren Charitable Foundation to cover and unanticipated costs. The list of plant species below for both sites will be adjusted as a result of additional site analysis by our consulting horticulturalist and project partner experts and final design of the planting plan.

The Third Beach Road site is approximately five acres and includes dune planting as well as land adjacent to the salt marsh. Plants with high salt tolerance have been selected for this area and including:

- Marsh elder (*Iva frutescens*) - two-gallon pots (\$24.99 ea)
- Groundsel tree (*Baccharis halimifolia*) - three-gallon pots (\$29.99 ea)
- Seaside goldenrod (*Solidago sempervirens*) - plug flats (\$99.99 ea)
- American beach grass (*Ammophila breviligulata*) - one gallon pots (\$9.99 ea)
- Saltmeadow cordgrass (*Spartina patens*) - plug flats (\$99.99 ea)

Saltmarsh cordgrass (*Spartina alterniflora*) - plug flats (\$99.99 ea)

Saltmeadow rush (*Juncus gerardii*) - 4" plants (\$2.60 ea)

Beach plum (*Prunus maritima*) - 2 gallon plants (\$24.99 ea)

For the planting at the Hanging Rocks Road site, the total area for planting and restoration is approximately five acres and includes a wetlands complex along Hanging Rock Road and the stream corridor of the tributary feeding out of the Sanctuary's Red Maple Pond. An effective approach will be to seed areas that have been disturbed by invasive species removal. The seed mix we have examined contains 27 native plant species including grasses, sedges, rushes, and wildflowers and costs \$1,337.50 per acre. It is anticipated that the seed mix would be augmented by the selection of plug flats and pots of native plants.

Management of Conservation Crew Volunteers

Funding for this new position was provided by a grant from the van Beuren Charitable Foundation. Accordingly, this existing funding is being used as matching funds and no CRMC funding is needed to fund the recent hiring of Jay Manning as our Conservation Manager. This position is critical to develop and implement the project, oversee project design, management and training of Conservation Crew volunteers, and coordination with partners and consultant horticulturalist.

Sanctuary staff management of project, work on project, and reporting

For the following personnel costs, the activity for each staff member is listed as is the hourly rate. We anticipate that staff costs to manage this project will substantially exceed the request amount and thus we are not requesting costs to cover fringe. The primary staff will include:

Kaity Ryan, Executive Director – project management and oversight and final reporting (\$43.26/hr.)

Joseph McLaughlin, Director of Properties – project planning and implementation (\$27.88/hr.)

Dan Fedorenko, Property Technician – project implementation (\$15.86/hr.)

Dakota Taylor, Land Stewardship/Community Engagement Coordinator – project implementation (TerraCorps)

Jolie Colby, Director of Environmental Education – project training, planning, and signage (\$34.65/hr.)

Madison Williams, Marketing & Communications Assistant – design of signage (\$16.34/hr.)

Habitat planning/consulting botanist

The costs for Karen Barbera, Principal Designer with Inspired Design, is \$125/hr. and we have requested that these costs be split with funding from both CRMC and the van Beuren Charitable Foundation.

Interpretive Signage

Development of this signage will primarily include staff costs with Jolie Colby, Jay Manning and Madison Williams for the content and design. The estimated costs involve the printing and construction of signage and the costs are proposed to be split with funding from both CRMC and the van Beuren Charitable Foundation.

Stipends for Volunteers

Funding for stipends have been provided by the van Beuren Charitable Foundation.

Tools and gloves for Volunteers

Funding for the estimated costs for tools and gloves is request from CRMC.

Apparel for Volunteers

Funding for the Conservation Crew apparel has been provided by the van Beuren Charitable Foundation.

IX. ADDITIONAL MATERIALS

Please include the following with your application:

- Site and Locus Maps
- Ground-level photographs of existing site conditions
- Aerial photographs, if available
- Preliminary design drawings, maps or engineering plans, if available
- Pertinent physical, ecological, biological, and cultural / historical survey data
- Letters of support

AUTHORIZED SIGNATURE

AUTHORIZED AGENT OF LEAD ORGANIZATION



1/28/2022

Signature

Date

Return your completed proposal by 4:00 p.m. on **January 28, 2022** to:

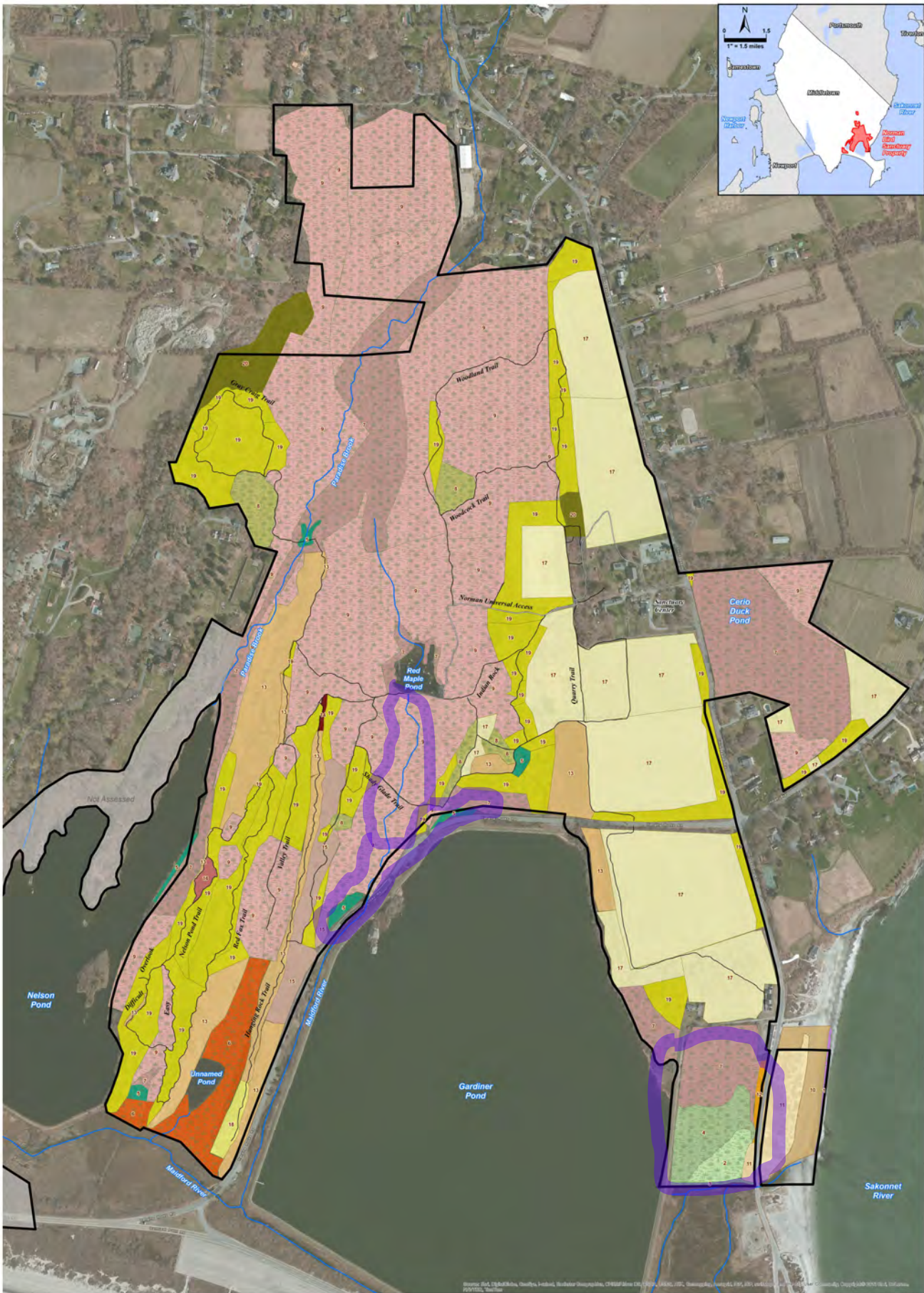
Caitlin Chaffee
NBNERR
RI Dept. of Environmental Management
235 Promenade Street
Providence, RI 02908

caitlin.chaffee@dem.ri.gov

Applicants are required to submit one (1) signed hard copy of the proposal form and one (1) electronic copy in Adobe PDF format. ****Please submit electronic copy as a SINGLE PDF FILE containing all application materials.****

Contact Caitlin Chaffee at **401-222-4700 xt. 277-4417** with any questions.





Document Path: H:\Projects\2014\14053 Norman Bird Sanctuary\GIS\Map\150108_PlantCommunity.mxd

Legend

- Norman Bird Sanctuary Property Boundary (RIGIS)
- Trails
- Norman Universal Access Trail
- Streams (RIGIS)

Plant Communities

- Marine**
- 1 Intertidal Sand Beach
- Estuarine**
- 2 High Salt Marsh
 - 3 Low Salt Marsh
 - 4 Brackish Marsh

- Palustrine**
- 5 Shallow Emergent Marsh
 - 6 Phragmites Marsh
 - 7 Shrub Swamp
 - 8 Floodplain Forest
 - 9 Red Maple Swamp

- Upland**
- 10 Maritime Beach Strand
 - 11 Maritime Dune
 - 12 Maritime Shrubland
 - 13 Maritime Woodland/Forest
 - 14 Oak / Heath Forest
 - 15 Oak - Hickory Forest

- 16 Oak - Holly Forest
- 17 Open Upland/Fields
- 18 Red Cedar Rocky Summit
- 19 Woodland/Forested Uplands
- 20 Mesic Beech - Maple - Red Oak Forest



Horsley Witten Group
Sustainable Environmental Solutions
100 South Main Street, Suite 200
Middletown, RI 02842
Tel: 401-885-1100 • Fax: 401-885-1101 • www.horsleywitten.com

Plant Community Inventory
Norman Bird Sanctuary
Middletown, RI

Date: 10/06/14 Figure 3

Third
Beach
Road

Maidford
River



Third
Beach
Road

Maidford
River



Third
Beach
Road
1972
with
cabanas
in dune



Third
Beach
Road
2003/2004
with
cabanas in
dune



Map Community Maps Contributors, MassGIS, © OpenStreetMap, Microsoft, Esri, HERE, Garmin, SafeGraph, INCREMENT P, MST, NAVSAT, USGS, EPA, NPS, US Census Bureau, USDA, Rhode Island Department of Transportation, FIGIS, University of Rhode Island Environmental Data Center (UR-EDC)

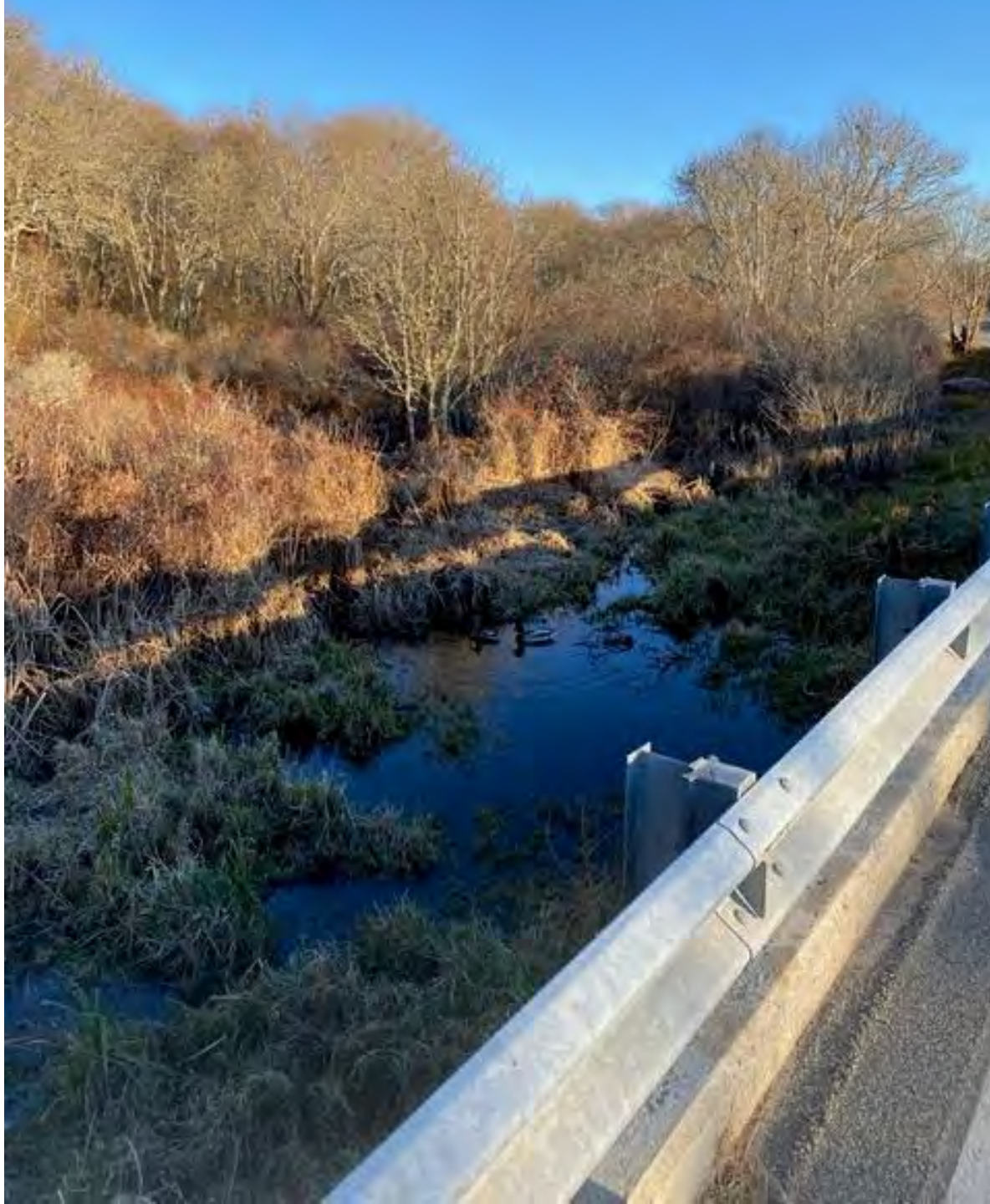
Hanging
Rocks
Road

Gardiner
Pond
(Newport
Water)



Hanging Rocks Road

(Red Maple
Pond stream
flows under
this culvert)



Hanging Rocks Road

Low lying
areas



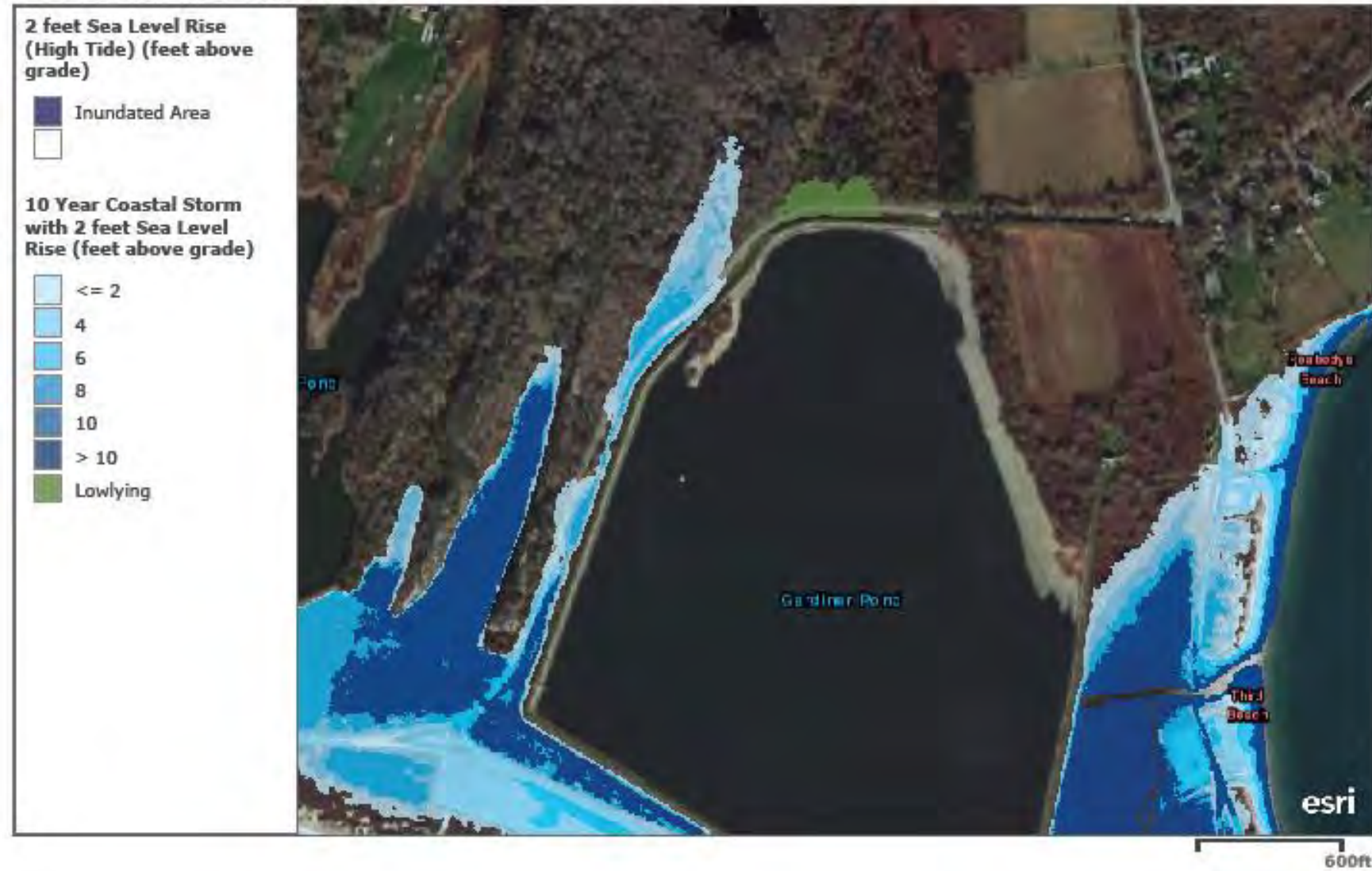
Hanging
Rocks
Road with
Red Maple
Pond

2020 (Fall)



Two Feet Sea Level Rise Projection (StormTools)

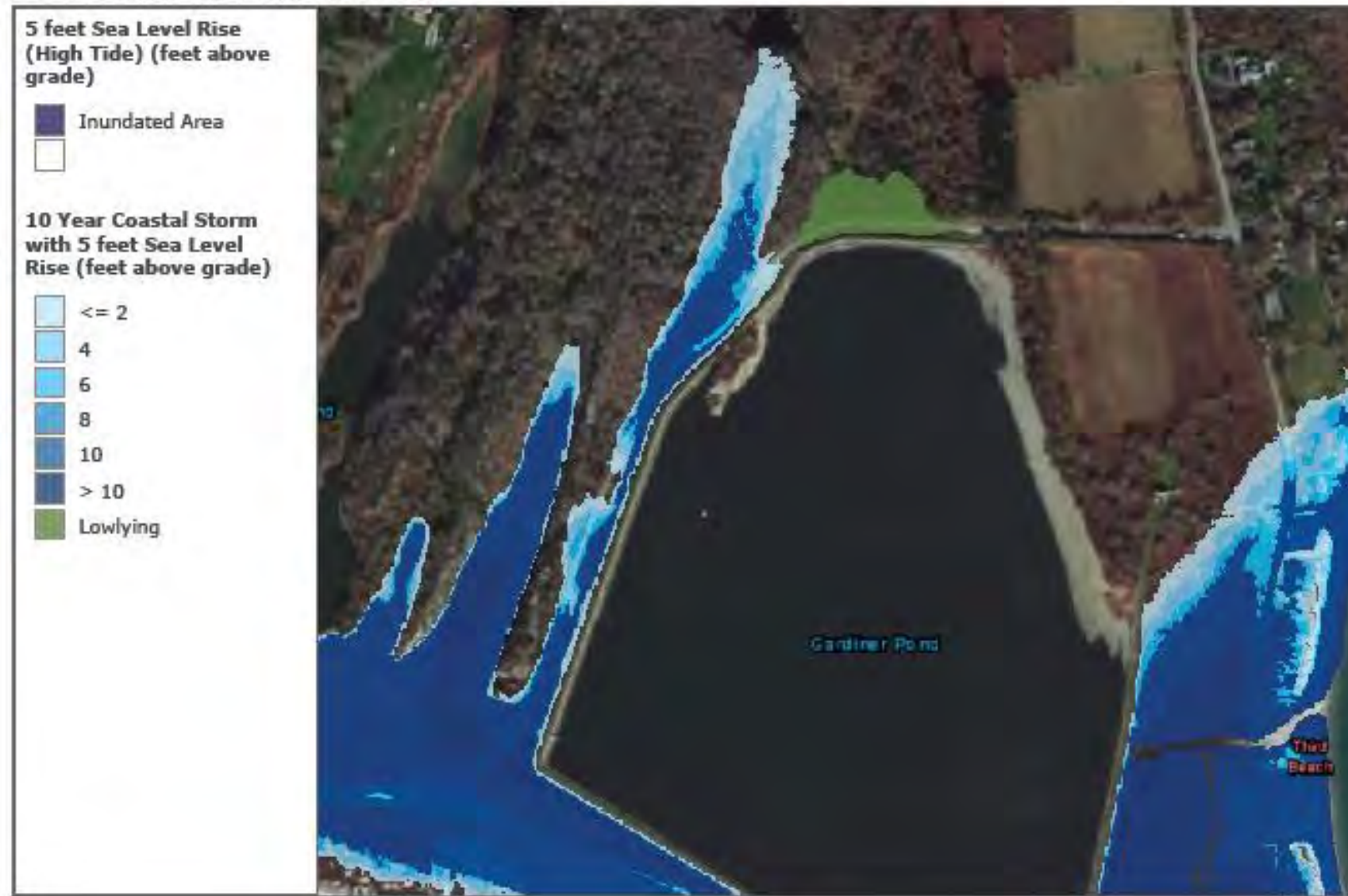
2 FEET SLR: Nuisance Storms.



Maxar | URI OCE, URI EDC, URI CRC, RI CRMC, NACCS | URI EDC | RIGIS | RIGIS, University of Rhode Island Environmental Data Center | Esri, HERE, Garmin, iPC

Five Feet Sea Level Rise Projection (StormTools)

5 FEET SLR: Nuisance Storms.





United States Department of the Interior

FISH AND WILDLIFE SERVICE



Rhode Island National Wildlife Refuge Complex
50 Bend Rd., Charlestown, RI 02813
Phone (401) 364-9124 Fax (401) 364-0170

January 24, 2022

Caitlin Chaffee, Reserve Manager
Narragansett Bay National Estuarine Research Reserve
Rhode Island Department of Environmental Management
235 Promenade Street Providence, Rhode Island, 02908

Re: Letter of support, Norman Bird Sanctuary grant proposal to the Rhode Island Coastal and Estuary Habitat Restoration Fund

Dear Reserve Manager Chaffee:

The lower Maidford River watershed is an integral site for long term maintenance of natural resources. Several issues including the presence of invasive species, poor water quality attributes, channeling of streams, removal of vegetation within riparian habitats, and human use levels combine to place direct and indirect negative pressures on this system. While any one factor may have varying impacts, the cumulative effect of all of these parameters may reduce resiliency of the lower watershed to such things as a warming climate, changes in sea level, and storm frequency and magnitude.

The wetlands figure greatly in long term migration of saltmarsh habitats, as well as retention of high-quality freshwater wetlands in the watershed. Note that within proposed treatment areas at Third Beach, purple loosestrife (*Lythrum salicaria*), is present, a highly aggressive species which can rapidly colonize disturbed sites. Release of biological agents (*Galerucella spp.*) is being used to combat this species. and has been successful at Roger Williams Zoo.

Control or removal of Invasive plant species can help lessen overall environmental stressors in the watershed, and potentially enhance resiliency. Within this context, the Service supports the proposed implementation of an invasive species control program on the Norman Bird Sanctuary. Such actions will compliment previous efforts by the Sanctuary, as well as other invasive control efforts implemented by the Town, the City of Newport, and the Service in the lower watershed.

CHARLES VANDEMOER
Project Leader
Rhode Island National Wildlife Refuge Complex



MIDDLETOWN
Rhode Island

TOWN ADMINISTRATOR
TOWN OF MIDDLETOWN

350 East Main Road, Middletown, RI 02842
(401) 842-6500 | MiddletownRI.com

January 18, 2022

Caitlin Chaffee, Reserve Manager
Narragansett Bay National Estuarine Research Reserve
Rhode Island Department of Environmental Management
235 Promenade Street
Providence, Rhode Island, 02908

Re: Letter of support for the Norman Bird Sanctuary grant proposal to the Rhode Island Coastal and Estuary Habitat Restoration Fund

Dear Reserve Manager Chaffee:

On behalf of the Town of Middletown, I am writing to express our support for Norman Bird Sanctuary's proposal habitat restoration project proposal for the Rhode Island Coastal and Estuary Habitat Restoration Fund. We have coordinated with Norman Bird Sanctuary on various projects over many years to improve water quality and habitat.

We would welcome partnering with them again to advance invasive plant removal and restoration with native plant species along Third Beach Road and Hanging Rocks Road. We coordinate with each other along our respective dune and beachfront properties on Third Beach Road. In addition, Norman Bird Sanctuary's property along Hanging Rocks Road is important to the town to protect water quality and habitat along the roadway leading to the lower Maidford River. Middletown coordinated with Norman Bird Sanctuary on the Sachuest Point National Wildlife Refuge's recent projects to restore the Maidford Marsh and we welcome the continued partnership.

Please let me know if you would like any additional information or if the Town of Middletown can be of any assistance.

With best regards, I remain

Respectfully yours,

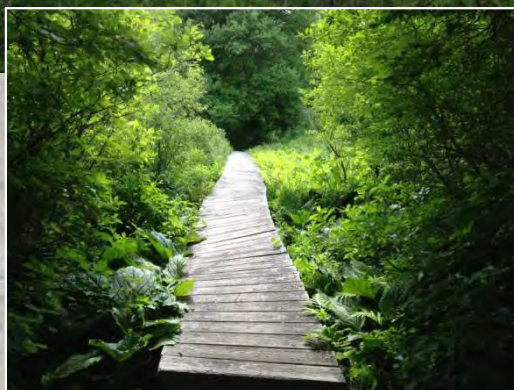
Shawn J. Brown, CPA, CFE
Town Administrator

Norman Bird Sanctuary



Invasive Plant Species Management Plan

June 2016



Prepared for:

Norman Bird Sanctuary

583 3rd Beach Road
Middletown, RI 02842



Prepared by:

Horsley Witten Group, Inc.


90 Route 6A, Sandwich, MA 02563
508.833.6600



Horsley Witten Group
Sustainable Environmental Solutions

Hanging Rock Rd

3rd Beach Rd

INVASIVES MANAGEMENT		HW ID:	INV91
Total Area (ac): 0.33	PHOTO		
Primary Species of Concern: Honeysuckle			
Other Invasive Species Present: Multiflora Rose (codominant), Grapevine			
Density: High			
Surrounding Community Type: Shrub Swamp			
Accessibility: High			
Preliminary Priority: Medium			
Description/Management Approach: Cut, pull, and remove all above-ground growth and vines. Dig and pull out roots as practicable. Repeat cutting as necessary to control any new shoots. Restore area with native plantings where shrubs are removed.			
			<i>Honeysuckle and multiflora rose form a dense edge.</i>


Date Assessed: June 30, 2014

Assessed by: ACS/AMB

INVASIVES MANAGEMENT		HW ID:	INV92
Total Area (ac): 0.37	PHOTO		
Primary Species of Concern: Garlic Mustard			
Other Invasive Species Present: Honeysuckle (codominant), Privet			
Density: High			
Surrounding Community Type: Woodlands			
Accessibility: High			
Preliminary Priority: Medium/Low			
Description/Management Approach: Cut, pull, and remove all above-ground growth and vines. Dig and pull out roots as practicable. Repeat cutting as necessary to control any new shoots. Restore area with native plantings where shrubs are removed.			
			<i>Garlic mustard carpets this area of forest beneath honeysuckle shrubs.</i>


Date Assessed: June 30, 2014

Assessed by: ACS/AMB

INVASIVES MANAGEMENT		HW ID:	INV95
Total Area (ac): 0.01	PHOTO		
Primary Species of Concern: Phragmites			
Other Invasive Species Present:			
Density: High			
Surrounding Community Type: Red Maple Pond/Swamp			
Accessibility: High			
Preliminary Priority: High			
Description/Management Approach: Cut above ground growth prior to tasseling in late summer. Remove all above ground growth. Repeat as new growth appears.			
<i>Phragmites grows near Red Maple Pond.</i>			


Date Assessed: May 9, 2014

Assessed by: ACS/AMB

INVASIVES MANAGEMENT		HW ID:	INV96
Total Area (ac): 0.00	PHOTO		
Primary Species of Concern: Phragmites			
Other Invasive Species Present: multiflora rose, honeysuckle, Oriental Bittersweet, Viburnum dentatum, alder			
Density: High			
Surrounding Community Type: Red Maple Pond/Swamp			
Accessibility: High			
Preliminary Priority: High			
Description/Management Approach: Cut above ground growth prior to tasseling in late summer. Remove all above ground growth. Repeat as new growth appears.			
<i>A small patch of Phragmites grows on Red Maple Pond.</i>			


Date Assessed: May 9, 2014

Assessed by: ACS/AMB

INVASIVES MANAGEMENT		HW ID:	INV115
Total Area (ac): 0.08	PHOTO		
Primary Species of Concern: Multiflora Rose			
Other Invasive Species Present: Honeysuckle, Oriental Bittersweet			
Density: Medium			
Surrounding Community Type: Red Maple Swamp			
Accessibility: Medium			
Preliminary Priority: Medium			
Description/Management Approach: Cut, pull, and remove all above-ground growth and vines. Dig and pull out roots as practicable. Repeat cutting as necessary to control any new shoots. Restore area with native plantings where shrubs are removed.			
			<i>Multiflora rose along the outlet to Red Maple Pond.</i>


Date Assessed: June 11, 2014

Assessed by: ACS/AMB

INVASIVES MANAGEMENT		HW ID:	INV116
Total Area (ac): 0.02	PHOTO		
Primary Species of Concern: Multiflora Rose			
Other Invasive Species Present:			
Density: Medium			
Surrounding Community Type: Red Maple Swamp			
Accessibility: High			
Preliminary Priority: High			
Description/Management Approach: Cut, pull, and remove all above-ground growth and vines. Dig and pull out roots as practicable. Repeat cutting as necessary to control any new shoots. Restore area with native plantings where shrubs are removed.			
			<i>Multiflora rose becomes established at the edge of this area of wetland.</i>


Date Assessed: June 11, 2014

Assessed by: ACS/AMB

INVASIVES MANAGEMENT		HW ID:	INV135
Total Area (ac): 1.35	PHOTO		
Primary Species of Concern: Phragmites			
Other Invasive Species Present:			
Density: High			
Surrounding Community Type: Deep Emergent Marsh			
Accessibility: Low			
Preliminary Priority: Low			
Description/Management Approach: Cut above ground growth prior to tasseling in late summer. Remove all above ground growth. Repeat as new growth appears.			
<i>Phragmites marsh south of Valley Trail.</i>			


Date Assessed: June 30, 2014

Assessed by: ACS/AMB

INVASIVES MANAGEMENT		HW ID:	INV136
Total Area (ac): 0.38	PHOTO		
Primary Species of Concern: Phragmites			
Other Invasive Species Present:			
Density: High/Medium			
Surrounding Community Type: High & Low Marsh			
Accessibility: Low			
Preliminary Priority: Medium			
Description/Management Approach: Cut above ground growth prior to tasseling in late summer. Remove all above ground growth. Repeat as new growth appears.			
<i>Patches of Phragmites grow in the salt marsh.</i>			


Date Assessed: June 30, 2014

Assessed by: ACS/AMB

INVASIVES MANAGEMENT		HW ID:	INV141
Total Area (ac): 2.26	PHOTO		
Primary Species of Concern: Oriental Bittersweet			
Other Invasive Species Present: Porcelain Berry, Honeysuckle, Raspberry, Grapevine, Purple Loosestrife (small isolated patch)			
Density: High			
Surrounding Community Type: Shrub Swamp & Marsh			
Accessibility: Medium			
Preliminary Priority: Medium			
Description/Management Approach: Cut/pull purple loosestrife. Manage before it spreads. For other plants, Cut, pull, and remove above-ground growth. Dig and pull out roots. Repeat cutting as necessary to control any new shoots. Augment managed area with native plantings.			
			<i>A dense periphery of invasive plants around the wetland.</i>


Date Assessed: September 4, 2014

Assessed by: ACS

INVASIVES MANAGEMENT		HW ID:	INV142
Total Area (ac): 0.31	PHOTO		
Primary Species of Concern: Honeysuckle			
Other Invasive Species Present: Oriental Bittersweet, Multiflora Rose, Privet, Raspberry			
Density: High			
Surrounding Community Type: Open Upland/Fields			
Accessibility: High			
Preliminary Priority: High/Medium			
Description/Management Approach: Cut, pull, and remove all above-ground growth. Dig and pull out roots as practicable. Repeat cutting as necessary to control any new shoots. Augment managed area with native plantings.			
			<i>Invasive plants border the road around an open field.</i>


Date Assessed: September 4, 2014

Assessed by: ACS

INVASIVES MANAGEMENT		HW ID:	INV143
Total Area (ac): 0.002	PHOTO		
Primary Species of Concern: Japanese Knotweed			
Other Invasive Species Present:			
Density: Low			
Surrounding Community Type: Dune & High Marsh			
Accessibility: High			
Preliminary Priority: High			
Description/Management Approach: Cut and pull above-ground growth. Dig/pull roots to remove all root fragments. Restore area with native dune species. Manage while still small and isolated. High priority.			
<p><i>A small patch of Japanese knotweed on the coastal dune.</i></p>			


Date Assessed: September 4, 2014

Assessed by: ACS

INVASIVES MANAGEMENT		HW ID:	INV144
Total Area (ac): 0.005	PHOTO		
Primary Species of Concern: Phragmites			
Other Invasive Species Present:			
Density: Low			
Surrounding Community Type: Maritime Dune & Beach			
Accessibility: High			
Preliminary Priority: High			
Description/Management Approach: Cut above ground growth prior to tasseling in late summer. Remove all above ground growth. Repeat as new growth appears. Vital to manage this small patch before it spreads more.			
<p><i>A small patch of Phragmites at Third Beach.</i></p>			


Date Assessed: September 4, 2014

Assessed by: ACS

INVASIVES MANAGEMENT		HW ID:	INV147
Total Area (ac): 0.012	PHOTO		
Primary Species of Concern: Multiflora Rose			
Other Invasive Species Present:			
Density: Low			
Surrounding Community Type: Red Maple Swamp			
Accessibility: High			
Preliminary Priority: High			
Description/Management Approach: Cut, pull, and remove all above-ground growth. Dig and pull out roots as practicable. Repeat cutting as necessary to control any new shoots. Augment managed area with native plantings if desired. High priority.			
<i>Multiflora rose grows along the Maidford River.</i>			

Date Assessed: September 4, 2014

Assessed by: ACS

INVASIVES MANAGEMENT		HW ID:	INV148
Total Area (ac): 0.013	PHOTO		
Primary Species of Concern: Multiflora Rose			
Other Invasive Species Present:			
Density: Low			
Surrounding Community Type: Red Maple Swamp			
Accessibility: High			
Preliminary Priority: High			
Description/Management Approach: Cut, pull, and remove all above-ground growth. Dig and pull out roots as practicable. Repeat cutting as necessary to control any new shoots. Augment managed area with native plantings if desired. High priority to manage before spread.			
<i>Multiflora rose adjacent to the boardwalk on Shady Glade.</i>			

Date Assessed: September 4, 2014

Assessed by: ACS

Rhode Island Coastal and Estuary Habitat Restoration Fund

Full Proposal Form 2021/2022

****for planning projects please use Full Proposal Form for Planning Projects**

I. PROJECT SUMMARY

- 1. Project Title:** Improving Fish Passage on the Saugatucket River
- 2. Project Location** (*include map*): Wakefield
- 3. Project type** (*Design, Construction or Other*): Construction
- 4. If other, please specify:**
- 5. Habitat type** (*River System, Salt Marsh, Seagrass, Shellfish Bed, other*): River system
- 6. If other, please specify:**
- 7. Restoration technique:** Fish passage improvement
- 8. Total acreage or miles(river systems) of habitat to be restored, or project area planning unit size**
Improve diadromous fish access to 300 acres of spawning and rearing habitat
- 9. Project Benefits:** Improve upstream and downstream passage for the diadromous fish runs in the Saugatucket River. Increase the size of the sustainable population and eventual supply of forage species to recreational and commercial fish in the coastal stream, Point Judith Pond, Block Island Sound, and the Western North Atlantic.
- 10. Project Partners:** Rhode Island Department of Environmental Management, Division of Fish and Wildlife, USFWS Coastal Program, and NOAA Coastal Restoration Center.
- 11. Is this is an ongoing project that has previously received funds from the CRMC Coastal and Estuarine Habitat Restoration Fund?** yes If yes, year(s) funding was awarded: 2010, 2012, and 2018.

II. PROJECT MANAGER CONTACT INFORMATION

- 1. Name:** John F. O'Brien
- 2. Organization:** The Nature Conservancy In Rhode Island
- 3. Address:** 159 Waterman Street
- 4. City:** Providence
- 5. State:** RI
- 6. Zip:** 02906
- 7. Phone:** 401-331-7110 x4526 **Cell:** 401-835-3011
- 8. Email:** jobrien@tnc.org

Property Owner(s): Eric Thunberg, owner of Palisades Mill. Permission attached.

Applicant must document ownership of project site or permission to perform all proposed restoration, maintenance and monitoring activities (*include appropriate documentation*)

III. BUDGET SUMMARY

(List individuals or organizations providing financial or in-kind support to the project under Project Partners)

Amount Requested from Trust Fund		\$70,000
Matching Funds	Project Partner(s)	Amount of Match
	TNC (Inkind)	\$25,000
	DEM/Fish and Wildlife (Inkind)	\$25,000
	TOTAL PROJECT COST	\$120,000

IV. PROPOSAL NARRATIVE (five pages maximum)

1. Justification and Purpose

Describe the human impacts and previous restoration activities at the proposed project site. If multiple sites, please describe the impacts and previous restoration activities at each). Briefly describe the proposed project, its restoration goals, long-term and short-term outcomes.

The Saugatucket River is located in southern Rhode Island in the Town of South Kingstown. This small coastal watershed (11,018 acres) flows into the northern end of Pt. Judith Pond. It is actually the largest fluvial system contributing to Block Island Sound. Historic references report that runs of diadromous fish (alewife, blueback herring, and American eel) were once very plentiful in the Saugatucket River but disappeared from the watershed with the construction of mill dams in the 1800’s. Efforts to restore diadromous fish to the watershed began in the 1970’s with the construction of the first fish ladder at the

Main Street Dam in Wakefield. Shortly after a second fish ladder was constructed at the Palisades Mill in Peacedale providing access for spawning fish into Peacedale Pond. A third ladder was eventually constructed at the outflow of Indian Lake in 2003.

Figure 1 shows the location of each of these fish ladders in the watershed. A healthy Saugatucket River diadromous fish population will provide important ecological services to Pt. Judith Pond, other South Shore Coastal Ponds, and Rhode Island and off shore waters. Diadromous fish provide an important forage base to support sustainable populations of recreational and commercial fish. Based on the extent of the spawning and nursery habitat in the Saugatucket River watershed, this system has the potential to support river herring populations of over 200,000 spawning adults. As part of the ongoing restoration program, the monitoring of up and down stream fish passage through the existing fish ladders continues during each year's annual run.

Most recent observations and assessments by RIDEM, NOAA, and USFWS fish passage engineers have identified several problems as well as options to improve fish passage at both the Palisades Mill and the Indian Lake fish ladders. The Nature Conservancy worked closely with the DEM Division of Fish and Wildlife to raised funding in 2018 to improve the Indian Lake fish ladder. This current funding request will support modifications for improving fish passage at the Palisades Mill ladder.

2. Project Activities, Schedule and Work Plan

Describe the planned on-the-ground project activities, and explain how each activity will help to restore ecosystem functions. List specific project activities and when they will occur (month and year). Indicate when annual and final project reports will be submitted.

The USFWS Fish Passage Engineering Group is under contract with The Nature Conservancy and has surveyed the Palisades Mill fish ladder. Based on the survey work, a number of modifications have been recommended. The following is a short paragraph of the proposed work. A detailed scope of work, design recommendations, engineering drawings, plans, and specifications have been prepared by USFWS and are included as Attachment A, "Survey and Design Recommendations to Improve Fish Passage at the Palisades Mill Fish Ladders". The modifications to the Palisades Mill ladder will be scheduled for late summer or early fall of 2022. A final report of the work accomplished will be submitted one year after receiving the letter of award.

Palisades Mill Fish Ladder

Modifications are necessary to improve attraction to the entrance to the ladder as well as decreasing velocities in the fishway to meet acceptable levels for the passage of river herring. Modifications to the ladder will include revising and installing a new baffle system (48 new wooden baffles) to create a false 1:8 slope and installing a steep pass at the fishway entrance to hydraulically connect the water within the entrance channel to the tail water.

3. Minimization of Adverse Impacts

What are the potential impacts resulting from project activities (e.g. the disturbance of sensitive species by construction activities), and how will these impacts be minimized (e.g. scheduling construction to avoid disturbance of sensitive species).

This activity is for modifications to an existing concrete fish ladder. No instream work will be done. All construction will occur after the spring spawning run.

3. Public Support

Demonstrate public support for the project by providing evidence of communication with adjacent landowners, community members and other stakeholders. Describe planned or completed community / stakeholder education and outreach efforts.

Support: This project, as well as other projects improving fish passage, is strongly supported by both commercial and recreational anglers.

Education and Outreach: Both the Nature Conservancy and the Department of Environmental management will carry a link on their web site that outlines the project and the conservation/habitat restoration outcomes. RIDEM/Fish & Wildlife also conducts educational fishway tours to area schools and clubs and with the owner's permission these sites provide options in the South Kingstown area.

4. Economic and Educational Benefits

How will the proposed project provide direct economic and/or educational benefits to a community and/or the state?

Recreational fishing in Rhode Island is an extremely popular and important outdoor recreation activity. Based on the 2011 National Survey, fishing-related expenses in Rhode Island totaled \$130 million annually. Stream restoration, improving connectivity, provides a direct benefit to this important recreational activity both in fresh and salt water. Both adult and juvenile river herring provide an important forage base for freshwater and saltwater game fish such as largemouth bass, chain pickerel, striped bass and bluefish. Increasing the diadromous spawning populations in the Saugatucket River will substantially enrich the main river as well as the lower river estuary leading into Point Judith Pond, Rhode Island sound and the western North Atlantic.

5. Climate Change and Coastal Resiliency

How have the present and future impacts of climate change been considered during the project planning and design phases? What impact will the project have on resilience of coastal or estuarine habitat to climate change?

Fish ladders provide passage around dams and other obstacles to spawning and nursery grounds for Diadromous fish. Fish ladders are designed to operate over a specific stream flow range. Climate change has caused a significant increase in extreme weather events and has expanded the range of stream flow during the migratory seasons. Modifying or adjusting the design of fish ladders will provide proper water levels and velocities in the ladders to accommodate effective fish passage with current and future fluctuations in stream flow.

6. Planning Consistency and Restoration Priority

Is the proposed project consistent with the goals of a local, state or regional planning initiative? Please specify initiative and explain (see [CRMC website](#) for guidance). Does the proposed project involve a state, regional or federal priority habitat restoration need or special consideration? Please specify and explain (see [CRMC website](#) for guidance).

Improving fish passage on the Saugatucket River is consistent with the “Rhode Island State Estuary and Coastal Habitat Restoration Strategy”, the “Rhode Island State Wildlife Management Plan”, the ASMFC “Interstate Fishery Management Plan for Shad and River Herring”.

7. Species of Concern

Will the project result in benefits to wildlife species listed as federally or state endangered, threatened, or species of concern within Rhode Island? Please specify which species will benefit and how. For a list of species, see the Rhode Island National Heritage Program’s listing of animals at: http://www.rinhs.org/wp-content/uploads/ri_rare_animals_2006.pdf or a listing of plants at: http://www.rinhs.org/wp-content/uploads/ri_rare_plants_2007.pdf

Improvements to this fish ladder will increase upstream passage, spawning and nursery habitat for river herring. The National Marine Fisheries Service has listed river herring (both alewives and blue backs) as “species of concern” and continues to evaluate the status of Atlantic Coast river herring populations. River herring are listed as NOAA trust resources and are federally managed species through the Atlantic States Marine Fisheries commission (ASMFC). Currently there is a moratorium on the taking of river herring in Rhode Island freshwater and marine waters. Alewife, blue back herring and American eel fall under the ASMFC Coast Wide Management Program. There is a coast wide management program for each species. In addition, the 2015 Rhode Island Wildlife Action Plan has listed each of these four species as a “Species of Greatest Conservation Need” (GCN).

8. Permitting

List any federal, state or local permits required to complete the project and the permit application status for each.

9. Capacity of Lead Organization (attach additional materials if necessary)

Demonstrate the capacity of the lead and/or partner organizations to successfully complete the proposed project by providing any or all of the following: a) a description of the organization(s) b) resume(s) or summary of qualifications of involved personnel c) evidence of successfully completed habitat restoration or conservation projects.

The Nature Conservancy is the largest worldwide conservation organization. The Rhode Island Chapter Field Office is staffed with habitat restoration specialists including administrators, biologists, and a conservation engineer. The Chapter is supported by a regional grant service network that includes grant specialist, fiscal officers, and legal staff. The Conservancy is currently involved in a number of marine and freshwater habitat restoration projects in Rhode Island that are providing important deliverables on time and on budget. The Chapter has a reputation for being experienced, responsible, and effective, working with grant opportunities that have short time frames. Scott Comings, Associate Director of the RI TNC Chapter will be the TNC Project Manager for the Saugatucket River project. He will be assisted by John O’Brien, who is now the Partnership Specialist at TNC, and has many prior years of experience at DEM,

Division of Fish and Wildlife, where he led the diadromous fish program. They will partner with Phil Edwards and Pat Magee with DEM Division of Fish and Wildlife. In addition, the project team will include personnel from, USFWS Fish Passage Engineers and the NOAA Restoration Center.

V. SUSTAINABILITY (one page maximum)

1. Maintenance

What is the estimated “lifespan” of each planned restoration activity? What are the anticipated short-term and long-term (beyond the funding period) operation and maintenance requirements of the project? Specify who will be responsible for funding and carrying out each O & M activity. Indicate when and with what frequency activities will occur.

The Department of Environmental Management is the primary agency responsible for managing the natural resources of the state of Rhode Island. The Department’s Division of Fish and Wildlife monitors the populations of diadromous fish and maintains and operates the various fishways located on streams throughout the state. Fishways are checked and adjustments are made regularly during the spring run and again in the late summer and fall to assist with the outmigration of juveniles. Currently DFW operates and maintains the Palisades fish ladder and plans to continue to do so.

2. External Factors

Identify existing external (off-site) factors that could reduce the chances of achieving the project goals (e.g. stormwater inputs to the site from the surrounding drainage area). Explain how these external factors will be addressed. Describe any additional measures taken to help ensure long-term success of the project (e.g. installation of stormwater management practices or securing of conservation easements). What are the likely future effects of climate change and future sea level rise on the proposed project and how will these be addressed?

Not applicable

VI. EVALUATING PROJECT SUCCESS (one page maximum)

1. Performance Measures

How will the success of the project be measured in relation to the restoration goals set forth in this proposal? List performance measures and how they will be recorded. Include a detailed monitoring plan; if applicable.

(See below).

2. Monitoring Plan

Describe any planned or completed pre- and post-project monitoring activities. For each monitoring activity list the frequency and month/year of start and end date and the parameters measured. List the entity or entities responsible for funding and carrying out each monitoring activity, and describe how results will be

made available to CRMC and the public. If using an established monitoring protocol, please provide references (see CRMC website for information on established monitoring protocols).

An increase in the abundance of the targeted diadromous species will serve as the metrics for performance of the proposed restoration project. These results will be measured through monitoring of the pre-spawned adult returns conducted by the Rhode Island DEM, Division of Fish and Wildlife at each ladder throughout the spring run. In addition, the Division will also be sampling for juveniles in the late summer and early fall, both in the river and in Point Judith Pond . The long term goal of the project is to improve fish passage on the Saugatuck River increasing the population of self-sustaining populations of diadromous fish.

VII. BUDGET NARRATIVE (one page maximum)

Please provide a description and justification for each line item included in the project budget form (e.g. for personnel costs, provide hourly and fringe rates, for travel specify rate and estimated number of miles). Please specify any match requirements for each source of funding. Please include costs associated with required annual and final reports to CRMC. Be sure to detail how CRMC funds will be used.

Design and Construction Oversight

Funding for design and construction oversight will be provided by The Nature Conservancy (TNC). The TNC Conservation Engineer as well as the USFWS Fish Passage Engineers (under contract with TNC) will provide all of the required services for design, bid specifications, selection of contractors, and construction oversight. This will be an inkind contribution to the project with an estimated value of approximately \$25,000.

Construction

Attachment A. (see below) contains a scope of work and detailed designs and drawings for necessary modifications to each of the fish ladders. Preliminary estimates for the costs of modifications to the Palisades Mill fish ladder were developed by TNC and USFWS engineers and were confirmed with onsite reviews by local contractors. The total request from RICEHRF is \$70,000.

Monitoring

Funding for monitoring performance, maintenance, and adjustments of the fish ladders will be provided by the DEM Division of Fish and Wildlife. These facilities are incorporated into their diadromous restoration program and as serviced on a routine basis. During both the spring and the fall run periods, the ladders are checked frequently to evaluate returns and outmigrants and adjusted as necessary. This will be an inkind contribution to the project with an estimated value of \$25,000.

IX. ADDITIONAL MATERIALS

Please include the following with your application:

Site and Locus Maps

Ground-level photographs of existing site conditions

Aerial photographs, if available

Preliminary design drawings, maps or engineering plans, if available

Pertinent physical, ecological, biological, and cultural / historical survey data

Letters of support from non-partner entities. *It is not necessary to include letters of support from entities listed within this proposal as project partners.*

Email with Owners Approval/Permission to Proceed with Modifications to the Fish Ladder Baffles

-----Original Message-----

From: Eric Thunberg <eric@thunberg.com>

Sent: Monday, June 28, 2021 8:00 AM

To: Edwards, Phillip (DEM) <phillip.edwards@dem.ri.gov>

Cc: Scott Joyal <suvfire@gmail.com>; McGee, Patrick (DEM) <patrick.mcgee@dem.ri.gov>

Subject: Re: FW: [EXTERNAL] : Palisades fish barrier and fishway repairs

Morning Phil, I'm good with the proposed baffle changes on the ladder side, please proceed.

Regarding the fish barrier, really have no idea what that looks like or entails, so please send over more information when the plans are complete.

On Tue, Jun 22, 2021 at 2:19 PM Edwards, Phillip (DEM) <phillip.edwards@dem.ri.gov> wrote:

>

> Hi Scott

>

>

>

> Hope all is well and thanks for letting Bryan and Pat survey the side channel last week. USFWS fish passage engineers are currently working on a fish barrier design and I will send it to you for review. This is for the dead-end channel, and we would have an interest in the natural stone if available. We could discuss this request when the plans are complete.

>

>

>

> Attached please see the designs for the Palisades fish passage improvements. If Eric is OK with us moving forward we will begin to secure outside funding sources. These changes will assist fish passage when water flows are high. These designs are similar to the project proposed years ago and by changing the baffle boards we would change the slope and hence the water velocities inside the fishway.

>

>

>

> Please call any time or I'd be happy to stop by and go over the plans.

> When the barrier designs are complete we could meet and discuss both.

> -Thanks Phil

>

>

>

>

>

> 401-789-0281 ext 33

>

>

>

>



Figure 1. A location map showing the position of the Palisades Mill and Indian lake Fish Ladders on the Saugatucket River.



Figure 2. Palisades Mill Fish Ladder

AUTHORIZED SIGNATURE

AUTHORIZED AGENT OF LEAD ORGANIZATION

Scott B. Comings

1/3/2022

Signature

Date

Return your completed proposal by **January 23, 2015** to:

**Caitlin Chaffee
NBNERR
RI Depart. Of Environmental Management
235 Promenade Street
Providence, RI 02908**

Caitlin.chaffee@dem.ri.gov

Applicants are required to submit one (1) signed hard copy of the proposal form and one (1) electronic copy in Adobe PDF format. **** Please submit electronic copy as a SINGLE PDF FILE containing all application materials.****

Contact Caitlin Chaffee at **401-222-4700 xt.277-4417** with any questions.



Attachment A

United States Fish and Wildlife Service Division of Fisheries Fish Passage Branch

Survey and Design Recommendations to Improve Fish Passage at the Palisades Mill Fish Ladder

Palisades Mill Fish Ladder

The intent of this section is to clarify the proposed design alterations provided by the Northeast Region R5 U.S. Fish and Wildlife Service (USFWS) Fish Passage Engineering Group (Engineering). The recommended changes to the existing design are based on current USFWS fish passage criteria (USFWS, 2017) as well as visual inspections of fish, and velocity measurements taken within the existing fishway during multiple site visits.

Background

The existing fishway located at the Palisades Mill is a standard Denil design which consists of a 3 foot wide prismatic concrete channel. Baffles (in this case made of wood) act as roughness elements along the sloped sections to dissipate the kinetic energy of the water, creating a low velocity zone of passage for migratory fish species. The current slope of the Palisades Denil is 16.7% or 1:6 (Vertical:Horizontal). Current USFWS Engineering criteria (Criteria) recommends that a 16.7% slope is applied only to fishways designed specifically for Salmonids (e.g., Atlantic salmon, brook trout). A slope no steeper than 12.5% (1:8) is recommended for Alosines (e.g., river herring, American shad) in order to maintain velocities through the baffles that are within the species swimming capabilities.

Fish passage of Alosines, since the Palisades fishway was constructed in the 1970s, has not been successful based on the fact that in multiple years river herring have been witnessed stacking up near the entrance of the fishway (an indicator of a poorly functioning entrance and/or velocities within the fishway forcing them back out). After many years of the fish having to be manually lifted over the Palisades Mill Dam, an attempt was made to remedy the situation. Five additional baffles were added within the exit channel of the fishway in 2013. The purpose of these baffles was to reduce the amount of flow into the fishway and in turn, reducing the velocities through the baffles. USFWS Engineering personnel conducted several site visits post installation of the five baffles. It was determined that the reduction in flow did not decrease velocities within the fishway to acceptable (meeting Engineering Criteria) levels for Alosines (based on measurements taken on site), and fish continued to be delayed at the entrance (personal communication with RIDEM personnel).

Proposed Design Recommendations

Several design issues were discovered during multiple site visits by USFWS Engineering personnel at the Palisades fishway. These concerns are described in detail below followed by a list of recommended design changes to improve upstream fish passage.

Issues:

1. Entrance Conditions – Current Criteria recommends several critical parameters to be met at a fishway entrance in order to achieve successful upstream passage:
 - 1a. First, the entrance should be submerged by a minimum of 2 feet. Submerged in this case, meaning the tailwater should reside 2 feet above the entrance channel floor.
 - 1b. Second, the entrance should maintain an entrance jet with a maximum velocity (specifically for Alosines) of 6 feet per second (ft/s).
 - 1c. Third, the velocities within the entrance channel (horizontal channel leading to the lowermost baffle) should remain within 1-1.5 ft/s to allow the fish to stage (i.e., rest) prior to traversing the sloped section of the fishway.

Measurements taken by USFWS Engineering personnel found that the entrance was not properly submerged, velocities at the entrance exceeded 7 ft/s, and velocities within the entrance channel were upwards of 3-4 ft/s. Video footage of actively migrating river herring was taken during the 2017 season which validated velocities exceeded the swimming capabilities, and upstream passage was being hindered. Fish were witnessed falling back and generally struggling to maintain position within the entrance channel.

2. Slope – Current Criteria recommends a slope no steeper than 12.5% (1:8) for passage of Alosines. The existing fishway maintains a slope of 16.7% (1:6). The high velocities within the entrance channel are due to a transfer of momentum from the sloped sections (i.e., the kinetic energy is not being dissipated appropriately to achieve velocities within the recommended range of 1-1.5 ft/s).

Recommendations:

1. It is recommended that the slope be altered to conform to a 12.5% slope. This is intended to be done by modifying the geometry of the baffles to create a “false” 1:8 slope (i.e., the 12.5% slope is created via the invert of the baffles rather than the concrete floor). Most baffles will have a different geometry in order to achieve this recommendation. The baffles within the lower leg of the fishway will be rather large to translate the 12.5% slope into the entrance channel. The baffles could consist of two halves (i.e., the top half would include the v-notch geometry and lower half would simply be a spacer) if weight limitations are an issue.
2. A steep pass is recommended to be installed at the fishway entrance (exact location and elevations to be determined once tailwater data is collected). This is necessary to hydraulically connect the water within the entrance channel to the tailwater, once the slope is changed to 12.5%, in an appropriate manner for fish passage. If originally designed to a 12.5% slope, the overall footprint would have been longer in order to for the fishway flow to properly meet the tailwater (i.e., without an excessive drop). The proposed design recommendations aim to utilize the existing footprint. Therefore the water surface within the entrance channel will reside 2-3 feet higher than the current water surface, due to the location where the 12.5% slope will be forced to end.
3. Stop logs adjacent to the steep pass are recommended in order to control the amount of flow entering the steep pass. The hydraulic capacity of the steep pass is less than that of the Denil and therefore excess water will be discarded over the section of stop logs. The excess water will be utilized as attraction flow. Engineering will provide RIDEM with an Operations and Maintenance (O&M) plan once tailwater data is collected and the proposed design is finalized.
4. A complete set of plans, profiles, and baffle designs have been prepared.

Rhode Island Coastal and Estuary Habitat Restoration Fund Full Proposal Form 2021/2022

****for planning projects please use Full Proposal Form for Planning Projects**

I. PROJECT SUMMARY

1. **Project Title:** Ten Mile Reservation Dam Removal Assessment
2. **Project Location and coordinates (include map):** Within the Ten Mile River north of Armistice Boulevard in the City of Pawtucket, Rhode Island RIDEM Dam ID #294



3. **Project type (Design, Construction or Other):** Dam Removal Assessment
4. **If other, please specify:** NA
5. **Habitat type (River System, Salt Marsh, Seagrass, Shellfish Bed, other):** River System
6. **If other, please specify:** NA
7. **Restoration technique (e.g. re-vegetation, tidal restoration, etc.):** Dam Removal
8. **Total acreage or miles(river systems) of habitat to be restored, or project area planning unit size:** Approximately 1.2 miles of riverine habitat restored, and approximately 21 acres of open-water impoundment restored to vegetated riparian habitat.
9. **Project benefits:** Increased river connectivity for aquatic organisms including river herring, increased water quality by removing impoundment and revegetation of forested wetland and shrub swamp along the riverbanks.

IV. PROPOSAL NARRATIVE (five pages maximum)

1. Justification and Purpose

The Ten Mile River Watershed Council, in coordination with RIDEM and Save The Bay, proposes to conduct additional assessments of the Ten Mile River Reservation Dam for fish passage alternatives, primarily removal of the dam and restoration to a free-flowing river channel. These assessments will be conducted by Fuss and O'Neill who was hired to conduct the reconnaissance report. The assessments will include sediment characterization and hydrologic and hydraulic modeling.

The state-owned dam is listed as a low hazard dam in the 2021 RIDEM dam safety report. The 10-foot high and 175-foot long dam was built in 1926 and obstructs anadromous fish passage to upstream spawning habitat in the Ten Mile River and Seven Mile River. The dam creates a shallow 21 acre impoundment that extends 1.2 miles upstream. The impoundment suffers from significant algal blooms during the summer months and is host to non-native aquatic plants. The impoundment is on RIDEM's 303(d) list as impaired for Total Phosphorus and Fecal Coliform. The 2014 Ten Mile River TMDL shows the entire Ten Mile River does not meet state water quality standards for total phosphorus, dissolved oxygen, pathogens, and the following metals: aluminum, cadmium, lead, and iron.

The Ten Mile River has been the focus of a large anadromous fish restoration project which included the construction of fish ladders at the first three dams on the Ten Mile River: the Omega Pond dam, the Hunts Mill dam, and the Turner Reservoir dam. Restoring anadromous fish passage to the lower Ten Mile River has provided anadromous fish access to spawning habitat, including the Turner Reservoir and the 3.2 miles of river between the Turner Reservoir and the Ten Mile River Reservation Dam. While RIDEM Fish & Wildlife observations show that river herring can reach the base of the Ten Mile River Reservation Dam, removal of the dam would increase the length of accessible river miles to anadromous fish for spawning including approximately 2.6 river miles in the Ten Mile River and 3.5 river miles in the Seven Mile River in Massachusetts.

The short term goal of this project is to continue the assessment of river restoration options at the Ten Mile River Reservation Dam. The long-term goals for this project are to:

- restore aquatic connectivity by restoring a free-flowing river,
- provide upstream fish passage to the Ten Mile River and the Seven Mile River in Massachusetts,
- improve flood resiliency by reducing upstream flood elevations and downstream flood impacts, should the dam fail, and
- improve the water and habitat quality in the stretch of river that is currently an impoundment.

2. Project Activities, Schedule and Work Plan

The Ten Mile River Watershed Council, in coordination with RIDEM and Save The Bay, will develop a scope of work for continuing the dam removal feasibility assessment at the Ten Mile River Reservation Dam. The scope will include:

- conducting sediment analysis of chemical constituents,
- conducting sediment characterization for scour assessment and developing a sediment management plan, and
- conducting a hydrologic and hydraulic (H & H) assessment to assess the effects of dam removal on sediment mobility, fish passage, and upstream infrastructure at Benefit Street in Pawtucket.

The Watershed Council has retained Fuss and O'Neill to conduct the reconnaissance study with funding from CRMC's CEHRTF in 2021. To date, Fuss and O'Neill has completed the field work to conduct a reconnaissance study including sediment probes to depth to refusal to estimate of sediment volume and has written a draft reconnaissance report which includes a proposed restoration approach. The project partners reviewed the report in early January and Fuss and O'Neill will finalize the reconnaissance study in January 2022.

The report included an assessment of the sediment in the impoundment which characterized the average depths of the loose and firm sediments (2.4' and 1.4' respectively). In the narrower sections of the pond, the character of the sediment transitioned from muck to silt then to sand, and ultimately to gravel at the upper reaches of the impoundment. The refusal appeared to be more sandy/gravelly substrate in the deeper portions of the pond, likely reflecting the character of the original channel thalweg.

The report also included an initial assessment of the potential impact of the dam removal on the Pawtucket Country Club's irrigation pump located in the impoundment. The project partners have met with the Pawtucket Country Club to share the proposed restoration plan and to learn about water use to further assess the impacts of dam removal on the irrigation pump. The Pawtucket Country Club has an annual lease from RIDEM which allows them use of the RIDEM lands along the east side of impoundment including part of their parking area and use of the irrigation pump.

The draft Reconnaissance Report also included a conceptual dam removal approach, construction sequencing, overview of environmental permitting and an Order of Magnitude Opinion of Probable Cost. The project partners will share the Report with CRMC once finalized.

The proposed funding from CRMC's CEHRTF would be used for the sediment sampling, H & H modeling and project management. For the sediment sampling the consultant, Fuss and O'Neill, will:

- perform due diligence to better understand potential sediment contaminants,
- obtain at least 3 sediment samples in the impoundment including 1 sample upstream and 1 sample downstream,
- analyze for chemical quality as well as gradation for scour assessment,
- obtain supplemental transects for sediment depth and original channel bottom for sediment management and H&H model, and
- develop a technical memorandum.

For the H & H modeling, Fuss and O'Neill will:

- obtain FEMA Flood Insurance Study data,
- recreate FEMA FIS model from Turner Reservoir Dam to Benefit Street (approximately 25 sections),
- create new existing conditions hydraulic model,
- create a hydraulic model of post conditions with dam removed and fish passage measures or improvements and sediment mobility potential,
- model improvements for preferred concept up to Benefit Street, and
- develop a technical memorandum.

Timeline:

April 2022: Ten Mile River Watershed Council, with support from project partners, creates a scope of work with Fuss & O'Neill to conduct the sediment sampling and H & H modeling.

May - July 2022: Fuss & O'Neill conducts sediment sampling in the impoundment and downstream of the dam.

August - October 2022: Fuss & O'Neill conduct H & H modeling.

November - December 2022: Fuss & O'Neill creates a draft report of findings and shares results with project partners.

January 2023: Project partners share results of the report with CRMC, MA Division of Marine Fisheries, the City of Pawtucket, the Town of Seekonk and the Pawtucket Country Club. Partners host a public meeting.

March 2023: Fuss & O'Neill finalizes the H & H modeling and sediment characterization report; and project partners submit final grant report to CRMC.

3. Minimization of Adverse Impacts

For future sediment characterization, river access will be from the paved parking area adjacent to the Pawtucket Country Club. The proposed sampling will be done by handheld equipment deployed from a boat with minimal disturbance to sediments above the dam.

The Pond and adjacent forested areas provide an open water and upland habitat interface characterized by a warm water system on an urbanized river. The removal of the dam would eliminate much of the ponded open water habitat. It would be replaced by a restored river corridor habitat, a river channel, and a naturally vegetated floodplain complex abutting forested uplands to the west and the current parking area, golf course, and residential land use to the east.

Dam removal construction activity is not part of this grant application, but when it occurs permitting agencies may restrict in-river construction may restrict in-river construction to the low-flow season (July 1st to October 31st) due to typical RIDEM permitting conditions of approval. The time of year restriction is to ensure that construction within the River will occur when flows are generally at their lowest. In this case, a portion of the Pawtucket Country Club parking area would still need to be used for construction access and potentially storage during this period. Fuss & O'Neill outlined a potential construction sequencing scenario to minimize adverse impacts from the dam removal that addressed dewatering, sediment management, potential green infrastructure to address stormwater outfalls and site stabilization measures.

4. Public Support

The project team has discussed the restoration project with the City of Pawtucket, Town of Seekonk, and the Pawtucket Country Club. We will share the final Reconnaissance Report and the concept design for dam removal with these stakeholders as well at the Massachusetts Division of Marine Fisheries and the Massachusetts Division of Ecological Restoration. After the completion of the sediment sampling and the modeling, the project partners will hold a public meeting with stakeholders and the public.

The Ten Mile River Watershed Council will work with project partners including Save The Bay to publicize results of the assessments through local press and Save The Bay publications and social media.

5. Economic and Educational Benefits

Removal of this dam will reduce long term inspection and maintenance costs of the dam.

This project will highlight to the public specific adaptation strategies that can be implemented to restore riverine habitats and adapt to changing conditions due to climate change. Since the western side of the impoundment is publicly accessible via the Ten Mile Bike Path, there will be opportunities to install interpretive signage about the benefits of riverine restoration for water quality, increased river connectivity for anadromous and riverine species and improved habitat conditions for spawning in multiple languages. As an educational tool, the dam removal will show habitat restoration in action. Fishing for riverine species will likely improve.

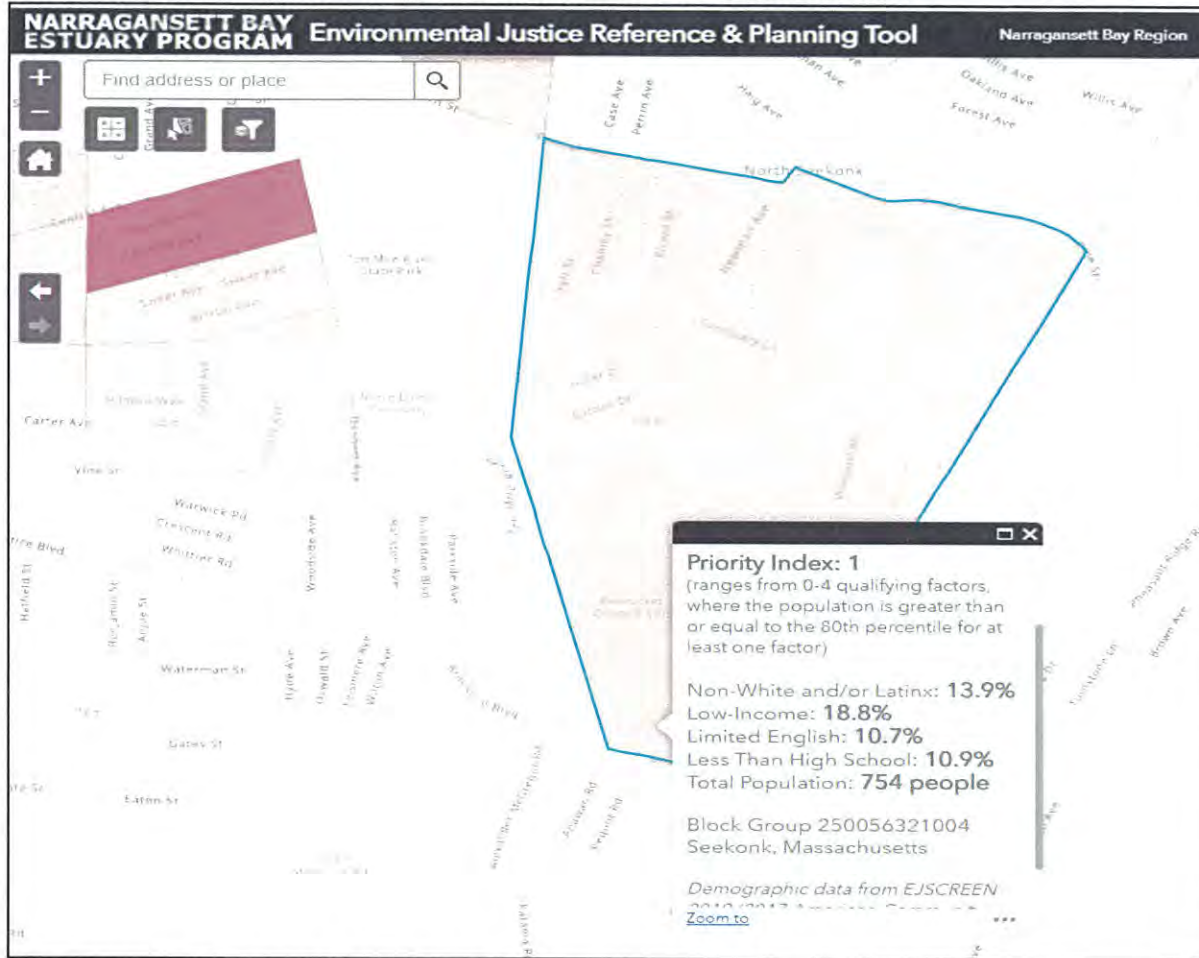
6. Climate Change and Coastal Resiliency

This project will assess improving the resiliency of this river habitat by recreating a natural river corridor from a formerly impounded area. Through dam removal, the water temperature will be lowered and will provide riverine habitat that is more resilient to warming temperatures. Restoration of a free flowing river will restore freshwater wetlands and improve the water quality of this impaired water body by increasing the dissolved oxygen level and reducing conditions that allow phosphorus loading from the sediment. As the climate warms and floods become more frequent and intense, removal of this dam will also remove a failure hazard.

7. Environmental Justice

The dam is not within any environmental justice priority areas, however the neighborhoods upstream of the dam abutting the eastern side of the impoundment in Seekonk are areas that are Priority Index 1. The neighborhoods adjacent to the Ten Mile River State Park on the west side of the impoundment in Pawtucket are areas that are Priority Index 1 and 3 (see below). The Ten Mile River flows through a second Priority Index 1 area downstream of

the dam before flowing into Omega Pond and then into the Providence River.



The concerns outlined in EPA’s Guidance on Environmental Justice include equitable development. Equitable development is a place-based approach for encouraging environmental justice. In the context of environmental justice and planning, equitable development improves public involvement; supports collaborative problem solving; and makes a visible difference in communities that are underserved, under-resourced, and overburdened. Lower-income community members and people of color are successfully guiding the changes that occur within their communities rather than reacting to them. At this stage in the project, Ten Mile River Watershed Council, RIDEM Division of Fish and Wildlife and Save The Bay will be brainstorming ways to involve community stakeholders that may have been left out of the planning process in the past so that their ideas and concerns can be incorporated into any proposed river restoration here.

8. Planning Consistency and Restoration Priority

At the state level, the project meets the goal of the State of RI’s Resilient Rhody Report, the Rhode Island Wildlife Action Plan, and RIDEM’s Strategic Plan for the Restoration of Anadromous Fish. This restoration and resiliency project will meet state goals outlined in the *Resilient Rhody* report developed by the Governor’s office and an interagency team by removing the dam and enhancing the resilience on the Ten Mile River. In RIDEM’s *Rhode Island Wildlife Action Plan*, dams as modifications to natural systems, are highlighted as threats to wildlife and climate change. Increased temperature and precipitation intensity can exacerbate the effects of these existing threats. This river system is listed in the RIDEM Strategic Plan for the Restoration of Anadromous Fishes to Rhode Island Coastal Streams, prepared in 2002 as a “standout for anadromous restoration”. This project will support the goals of river restoration and fish passage within the Ten Mile River watershed by increasing spawning habitat for anadromous fish through removing impediments to fish passage.

9. Species of Concern

The National Marine Fisheries Service (NMFS) lists alewives and blueback herring as species of concern. Currently there is a moratorium on the taking of river herring and American shad in Rhode Island fresh and marine waters whose populations have not recovered since the early 2000s when the recreational fishery was closed to harvest. American eel are not listed, but they are an ASMFC managed species. This restoration project may increase the spawning habitat for diadromous fish species including alewife (*Alosa aestivalis*) and American eel (*Anguilla rostrata*) by converting an impounded area into a free flowing river reach. Additionally it will improve stream continuity to enhance habitat for some resident species. The following species, in addition to alewife and eel, have been collected by RIDEM in the Ten Mile River and its impoundments: black crappie, bluegill, brown bullhead, gizzard shad, golden shiner, goldfish, largemouth bass, pumpkinseed, redbfin pickerel, tessellated darter, white catfish, white perch, white sucker, yellow bullhead, and yellow perch.

Massachusetts Endangered Species Act (MESA) Project Review – The project is not located within Estimated Habitats of Rare Wildlife or Priority Habitat of Rare Species; however, project partners will invite Mass Wildlife to consult on the project. In Rhode Island, the upstream portion of the river is not within any mapped Natural Heritage Area, however the downstream section of the river is within mapped Natural Heritage Areas for Marsh Wren and Zigzag Bladderwort.

Permitting

This stage of the project proposal does not require permitting, however a larger dam removal restoration project will require coordination between the regulatory programs in both Massachusetts and Rhode Island to minimize the amount of work that it will take to develop permit applications and obtain permits from the regulators. Early coordination in the planning stages of the project will be necessary to communicate with regulators from MA and RI and facilitate participation of all parties in a team meeting to determine how to execute the permit application process most efficiently.

State: RIDEM Wetlands Application to Alter Freshwater Wetlands

Federal: Army Corps of Engineers General Permit

State: Review by the Rhode Island Historical Preservation & Heritage Commission

It is not clear at this time which, if any, of these permits would be required since the dam is located entirely within the state of Rhode Island and only a portion of the impoundment is in Massachusetts. For purposes of this reconnaissance study, we are assuming that all the permits typically required for a dam removal in Massachusetts could be required for this project including local review by the Seekonk Conservation Commission. Early planning consultation with the State of Massachusetts is recommended to determine what level of permitting would be required for the removal of this dam.

10. Capacity of Lead Organization (attach additional materials if necessary)

The Ten Mile River Watershed Council is a designated watershed council by the Rhode Island Rivers Council. Keith Gonsalves is the President of the Council. The Ten Mile River Watershed Council was established in 2001 and has conducted annual fish counts for the last 6 years. Most recently, the Ten Mile River Watershed Council has led an effort in 2021 to hand pull water chestnuts in the Turner Reservoir in coordination with RIDEM.

Save The Bay is partnering with the Ten Mile River Watershed Council on this project including grant writing and project coordination. Save The Bay has a long track record of successful restoration projects funded through the Trust Fund. We have been project proponents as well as supporting partners. We have been partners on dam removal and fish passage projects on the Pawcatuck, Pawtuxet, Ten Mile, Kickemuit and Blackstone Rivers. We have also successfully completed salt marsh restoration and riparian restoration projects throughout the watershed. Kate McPherson, Save The Bay's Riverkeeper is a Professional Wetland Scientist and has expertise in wetlands permitting. She has overseen the dam removal, adaptive management and monitoring at Shady Lea Dam. Wenley Ferguson, Save The Bay's Director of Restoration, has been involved in all phases of fish passage and dam removal projects including securing funds for engineering, permitting and construction and stakeholder engagement.

V. SUSTAINABILITY (one page maximum)

1. Maintenance

What is the estimated “lifespan” of each planned restoration activity? What are the anticipated short-term and long-term (beyond the funding period) operation and maintenance requirements of the project? Specify who will be responsible for funding and carrying out each O & M activity. Indicate when and with what frequency activities will occur.

This phase of the project does not have maintenance associated with it. An ultimate dam removal restoration would be designed to provide fish passage into the future with little maintenance required. At this stage in the project it is not clear what sort of design elements will be incorporated into a dam removal proposal.

2. External Factors

This site is somewhat impacted by stormwater runoff. For the potential future design of dam removal here Fuss & O’Neill has recommended a conceptual design of stormwater management green infrastructure at each of the stormwater outfalls into the pond including the Country Club parking lot and Sunrise Drive from Seekonk. The typical contaminants in stormwater runoff from developed areas and roadways are expected to be present in the river. There are also numerous stormwater pipes discharging to the Pond from other adjacent land uses. We are not aware of any buried infrastructure along the edge of the Pond/River, or beneath the Pond/River. The City of Pawtucket and Town of Seekonk, in addition to the Pawtucket Water Board, indicated no knowledge of buried utility infrastructure in this area.

The modeling will take into account precipitation events with increased intensity that are a result of climate change.

VI. EVALUATING PROJECT SUCCESS (one page maximum)

1. Performance Measures

This stage of the project will be evaluated as a success when all additional modeling and sampling has been conducted and a final report has been prepared. It is the project team’s experience that it is often easier to find funding sources for construction projects, and we will seek diverse funding sources for engineering, permitting and construction in the future.

2. Monitoring Plan

Since this project is still in initial development a monitoring plan of the impoundment area is not required at this time, however, in other dam removal projects factors including wildlife use, monitoring for nonnative invasive species, sediment accumulation that may block aquatic organisms, and fish migration monitoring, if appropriate.

The Ten Mile River Watershed Council will conduct presence/absence monitoring of river herring at the base of the Ten Mile Reservation Dam during the spring herring run and will share the data with project partners.

VII. PROJECT BUDGET TEMPLATE

BUDGET CATEGORY	CRMC REQUEST	MATCH	MATCH PENDING OR SECURED? (select one)	SOURCE OF MATCH	TOTAL
Fuss and O’Neill consulting services for H & H modeling and sediment characterization	\$50,000	\$3,360	Secured	Fuss and O’Neill in-kind contribution	\$53,360
President - Ten Mile River Watershed Council	\$0	\$1,427	Secured	Ten Mile River Watershed Council	\$1,427
Staff - RIDEM/Fish & Wildlife Staff Technical Support	\$0	\$1,700	Secured	RIDEM	\$1,700
Staff - Save The Bay Director of Habitat Restoration & Narragansett Bay Riverkeeper	\$0	\$3,982	Secured	Save The Bay operating funds	\$3,982
TOTAL	\$50,000	\$10,469		TOTAL PROJECT COST	\$60,469

VIII. BUDGET NARRATIVE (one page maximum)

Line 1: The Ten Mile River Watershed Council will retain Fuss and O’Neill to conduct the H & H modeling and the sediment characterization. The estimated cost for these tasks are \$21,000 for the sediment sampling, \$24,000 for the H & H modeling and \$5,000 for project management. Fuss and O’Neill will provide 20 hours of in-kind staff time as well at \$168/hour.

Line 2: Keith Gonsalves, the president of the Ten Mile River Watershed Council will dedicate 50 hours of time at the federal volunteer rate of \$28.54/hour for the project management of the grant and monitoring of herring downstream of the dam and stakeholder outreach.

Line 3: Phil Edwards, Chief of Division of Fish and Wildlife will dedicate 15 hours at \$60/hour in feasibility assessment and report review and Patrick McGee, Principal Biologist of Freshwater and Diadromous Fisheries at Division of Fish and Wildlife will dedicate 20 hours at \$40/hour on field work and report review.

Line 4: Kate McPherson, Save The Bay’s Riverkeeper will dedicate 60 hours at \$39.04/hour to assist with field work, stakeholder engagement and report review and Wenley Ferguson, Director of Restoration will dedicate 35 hours at \$46.85/hour on report review, stakeholder engagement and identification of future funds for design, engineering and permitting.

IX. ADDITIONAL MATERIALS

Please include the following with your application:

- Site and Locus Maps
- Ground-level photographs of existing site conditions
- Aerial photographs, if available
- Preliminary design drawings, maps or engineering plans, if available
- Pertinent physical, ecological, biological, and cultural / historical survey data
- Letters of support

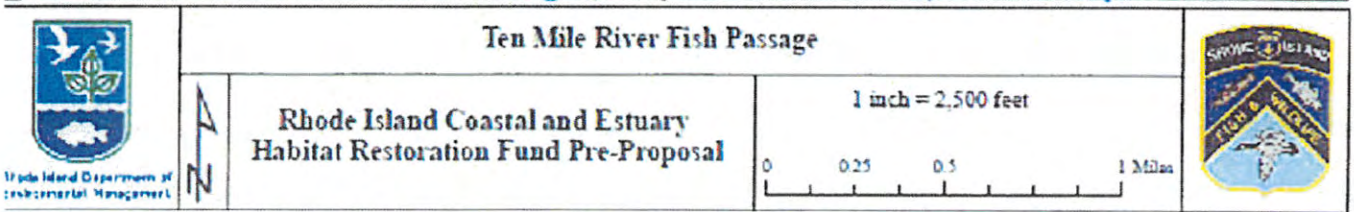
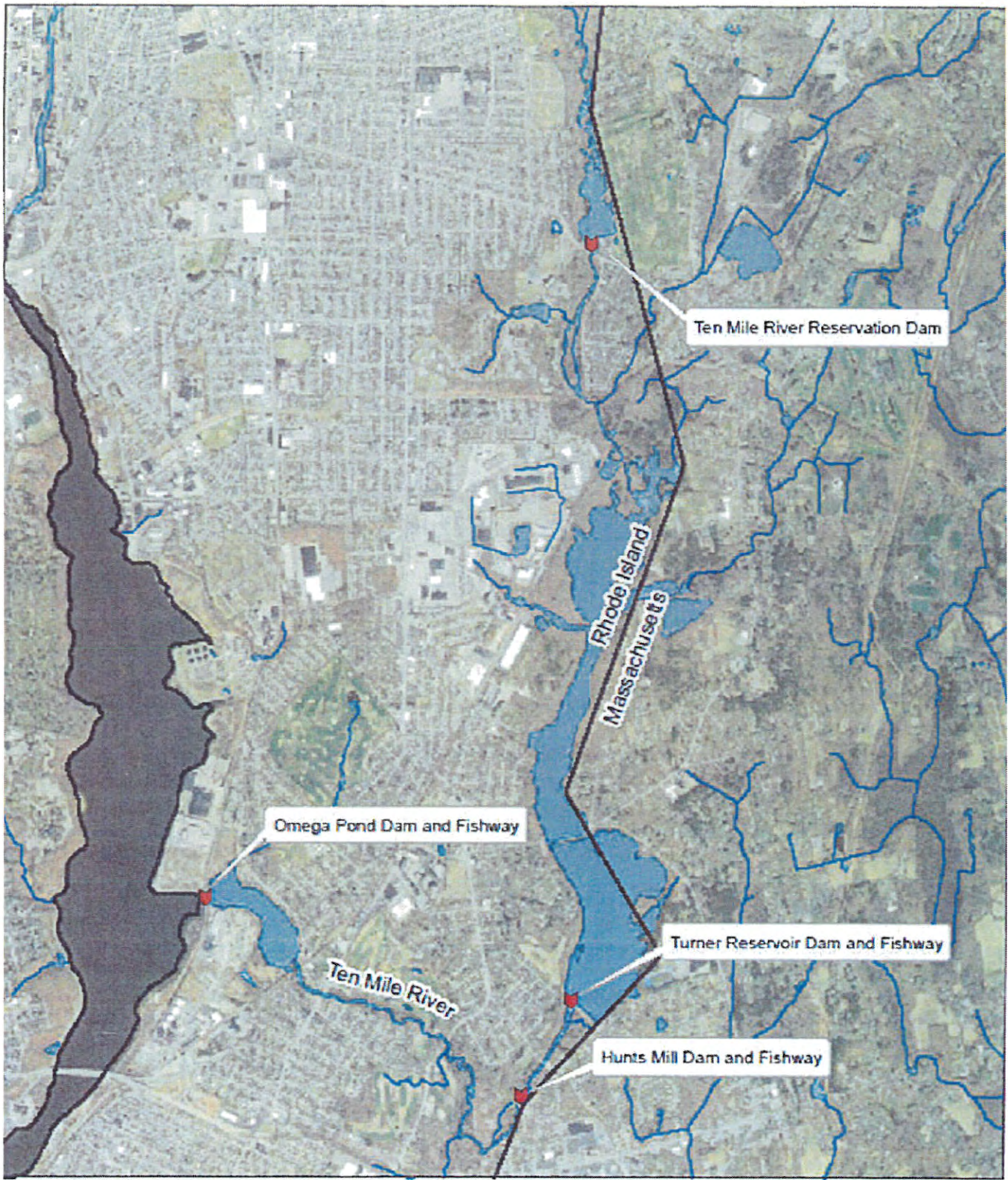


Figure 1: Map of lower Ten Mile River Watershed and location of Ten Mile River Reservation Dam.



Figure 2: Ten Mile River Reservation dam and impoundment taken from Armistice Boulevard.

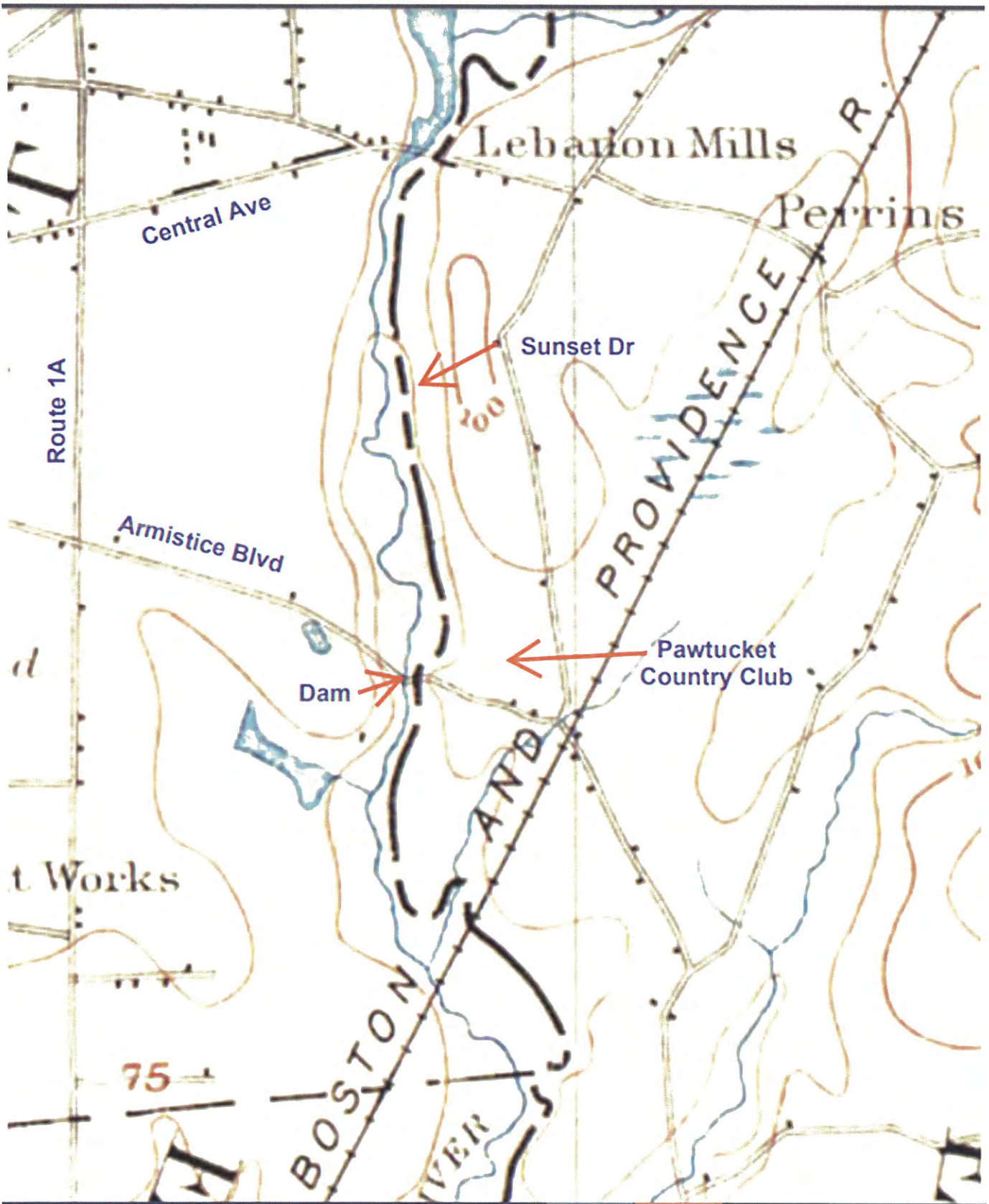


Figure 3: 1887 map of Ten Mile River corridor upstream of Armistice Boulevard where the impoundment is now located.

AUTHORIZED SIGNATURE

AUTHORIZED AGENT OF LEAD ORGANIZATION

Keith Jensen

Signature

1/26/2022

Date

C R M C

COASTAL RESOURCES MANAGEMENT COUNCIL

AUTHORIZED SIGNATURE

AUTHORIZED AGENT OF LEAD ORGANIZATION



Rhode Island
Department of Environmental Management

DIVISION OF FISH AND WILDLIFE

277 Great Neck Rd
West Kingston, RI 02892

401 789-0281
FAX 401 783-7490

January 25, 2022

Keith Gonsalves
Ten Mile River Watershed Council
P.O. Box 16611, 10 Newman Avenue
Rumford, RI 02916

RE: Ten Mile River Reservation Dam Assessment for Fish Passage

Dear Mr. Gonsalves:

This letter is in response to the Ten Mile River Watershed Council's request to apply for a CRMC Habitat Trust fund grant to continue to assess the state owned Ten Mile River Reservation Dam for fish passage. Rhode Island Department of Environmental Management's (RIDEM), Division of Fish & Wildlife (DFW) supports the Council's work on the fourth dam on the Ten Mile River to further investigate fish passage options. We understand the second phase of the proposed fish passage feasibility study will include the following activities on the dam:

- develop a scope of work
- sediment analysis of chemical constituents
- sediment characterization for scour assessment
- sediment management plan
- hydrologic and hydraulic assessment.

The Ten Mile River Watershed Council and partners have permission to complete the assessment work described above. Please coordinate with Patrick McGee (DFW) and if access above the dam is required outside of state property, permission will have to be requested from private landowners.

Sincerely,

Phil Edwards

Phil Edwards, Chief, RIDEM Division of Fish & Wildlife

CC: Jason McNamee, Ph.D. Deputy Director, RIDEM Bureau of Natural Resources
Patrick McGee, RIDEM DFW, Principal Fisheries Biologist



The Commonwealth of Massachusetts

Division of Marine Fisheries

251 Causeway Street, Suite 400, Boston, MA 02114
p: (617) 626-1520 | f: (617) 626-1509
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CHARLES D. BAKER
Governor

KARYN E. POLITO
Lt. Governor

KATHLEEN A. THEOHARIDES
Secretary

RONALD S. AMIDON
Commissioner

DANIEL J. MCKIERNAN
Director

January 25, 2022

Caitlin Chaffee
Narragansett Bay National Estuarine Research Reserve
RI Department of Environmental Management
235 Promenade St
Providence, RI 02908

Re: Ten Mile River Watershed Council application on the Ten Mile River Dam Removal Assessment to the RI Coastal Resources Management Council's Coastal and Estuarine Habitat Restoration Trust Fund

Dear Caitlin,

The Massachusetts Division of Marine Fisheries offers our support to the proposal by the Ten Mile River Watershed Council to advance the analysis of fish passage improvements for the Ten Mile River Reservation Dam. The dam is owned by the Rhode Island DEM Division of Fish and Wildlife, and the project partnership includes Save the Bay, whom we have worked successfully with in recent years on fish passage improvement projects in Massachusetts.

The collective aquatic restoration efforts in the Ten Mile River watershed in recent years is a success story for improving river connectivity and diadromous fish passage in a large watershed that connects to both Rhode Island and Massachusetts. After these downstream efforts, migratory fish can presently reach but not pass the target dam. We have reviewed the present proposal and the prior Reconnaissance and Concept Design for Dam Removal prepared by Fuss & O'Neill, and fully encourage your support for this regionally important fish passage and river restoration improvement effort.

Sincerely,

Bradford Chase

Bradford Chase
Senior Marine Fisheries Biologist
Brad.chase@mass.gov

Cc:

John Sheppard, Mass. Division of Marine Fisheries
Patrick McGee, RI DEM Division of Fish and Wildlife

Rhode Island Coastal and Estuary Habitat Restoration Fund Full Proposal Form 2021/2022

****for planning projects please use Full Proposal Form for Planning Projects**

I. PROJECT SUMMARY

- 1. Project Title:** Woonasquatucket River Streambank Stabilization – San Souci Drive, Providence
- 2. Project Location and coordinates (include map):** Woonasquatucket Riverbank along San Souci Drive in Providence, 41.817242889139585, -71.44291803530052 (see attached map)
- 3. Project type (Design, Construction or Other):** Design
- 4. If other, please specify:** N/A
- 5. Habitat type (River System, Salt Marsh, Seagrass, Shellfish Bed, other):** River System
- 6. If other, please specify:** N/A
- 7. Restoration technique (e.g. re-vegetation, tidal restoration, etc.):** Streambank stabilization, buffer restoration, and re-vegetation
- 8. Total acreage or miles(river systems) of habitat to be restored, or project area planning unit size:** 0.161 Acres, 607 Linear Feet of Riverbank
- 9. Project benefits:** 1) Streambank stabilization, 2) Improved streambank wildlife habitat, 3) Prevent slumping of Woonasquatucket River Greenway, San Souci Spur, just completed, into river.
- 10. Project partners (organizations providing financial or other support to the project):** City of Providence Departments of Public Works and Planning & Development, United Way of Rhode Island, Councilman Oscar Vargas
- 11. Is this is an ongoing project that has previously received funds from the CRMC Coastal and Estuarine Habitat Restoration Fund? Yes If yes, year(s) funding was awarded:** \$16,900 awarded in 2019

II. PROJECT MANAGER CONTACT INFORMATION

- 1. Name:** Alicia J. Lehrer, Executive Director
- 2. Organization:** Woonasquatucket River Watershed Council (WRWC)
- 3. Address:** 45 Eagle Street, Suite 202
- 4. City:** Providence
- 5. State:** RI
- 6. Zip:** 02909-1082
- 7. Phone:** 401-861-9046
- 8. Email:** alehrer@wrwc.org
- 9. Property Owner(s):** City of Providence, United Way of Rhode Island

Applicant must document ownership of project site or permission to perform all proposed restoration, maintenance and monitoring activities (*include appropriate documentation*).

III. BUDGET SUMMARY

(List individuals or organizations providing financial or in-kind support to the project under Project Partners)

Amount Requested from Trust Fund		\$50,000
Matching Funds	Project Partner(s)	Amount of Match
In-Kind	Providence DPW Chief Engineer Staff Time	\$5,000
Cash	Rhode Island Coastal and Estuary Habitat Restoration Fund (previous unexpended grant remainder)	\$9,750
Cash	WRWC Project management Staff Time (from SNEP Pilot Watersheds Initiative)	\$17,250
In-Kind	United Way of RI Staff Time	\$4,000
TOTAL PROJECT COST		\$86,000

IV. PROPOSAL NARRATIVE (five pages maximum)

1. Justification and Purpose

Proposed Project: The Woonasquatucket River Watershed Council (WRWC) proposes to restore and stabilize the streambank along the San Souci Drive and the United Way of Rhode Island Property in urban Providence, RI. We plan to use a mix of both hard (rip rap) and softer (geogrid, coir fiber matting, and/or other plantable structures planted with native, wildlife friendly vegetation) bank stabilization methods. This project will include design, permitting and construction phases. **Our goal** is sustainable restoration and stabilization of the streambank. **Both short-term and long-term outcomes** include creating a flood and weather resistant stable streambank that improves habitat for pollinators and mammals. Over the long-term this project will prevent further bank slumping and degradation of the recently installed multi-use trail at the top of the bank.

Human Impacts: The river in this area of Providence is channelized due to dense industrial, commercial, and residential development along its banks. As climate change brings higher intensity and more frequent storms, erosion along this bend in the river has become worse over the last ten years. We need to stabilize it before it degrades completely.

Previous Restoration Activities: This section of the Woonasquatucket River benefitted from previous restoration activities concurrent with building the multi-use trail on San Souci Drive in 2019. We received previous CRMC Coastal and Estuarine Habitat Restoration Funds in the amount of \$16,900 to purchase plants and soils and add pollinator habitat directly in and around the trail adjacent to the streambank and in the immediate vicinity such as on United Way of Rhode Island’s (UWRI) property and a new walkway that includes green stormwater infrastructure between Westminster Street and San Souci Drive in Olneyville Square. Because the trail project did not cost as much as initially estimated, we did not need to use all the funds allocated at that time. We still have \$9,750 remaining from those project funds and propose to use them to provide additional design, permitting and construction funds to the current project.

2. Project Activities, Schedule and Work Plan

May 2022: Convene project team (WRWC, City of Providence Engineer, United Way of RI staff)

May – June 2022: Develop and advertise RFP for design consulting services.

June – July 2022: Review bids, select consultant, sign agreement.

July – September 2022: Field data collection

September – November 2022: Alternative analysis and review concepts with project team

November 2022 – January 2023: Meet with interagency (RIDEM/CRMC) Habitat Restoration Team to solicit input on concepts

October – November 2022: Pre-application for second phase of design and permitting

January – February 2023: Basis of Design

January 2023: Apply for additional design funds

February – April 2023: Project Reporting

If funding remains, we will begin 60% design working toward permit submittal starting in March 2023

As shown above, we plan to apply for additional design, funds in 2022 and 2023 so that we can complete the design, permit and bid development by the end of 2023 and be ready to hire a contractor and construct in 2024.

3. Minimization of Adverse Impacts

The project site is urban and fairly disturbed. The project will entail very little in the way of disturbing existing sensitive species because there has been so much disturbance so frequently that sensitive species have not been able to establish recently. The fairly steep slope has suffered a great deal of erosion already and provides little habitat now. We will revegetate with the aim of providing additional mammal bird and pollinator habitat. We hope to stabilize the soil, at least in part, with physical measures including soil erosion blankets and stakes. However, given the extreme storm impacts along this area of the Woonasquatucket River, we expect that we will also need to add harder reinforcement measures including riprap.

4. Public Support

WRWC has worked in this project area for over 25 years. The multi-use trail on San Souci Drive, completed in 2019, was developed through our advocacy, partnership and funding efforts with strong community support. Through that effort, we met with all property owners surrounding the project area and have developed strong relationships with them. We also partnered closely with the City of Providence Departments of Planning and Development and Public Works as San Souci Drive is a Providence owned and operated street. Although we have had a long and productive relationship with United Way of Rhode Island, we deepened our relationship with them as Woonasquatucket River abutters and a property owner on San Souci Drive. Attached, you will find support letters from Providence City Council Member, Oscar Vargas who represents this part of Providence, Providence Chief Engineer, Craig Hoffman, who has committed to be part of our project team, and United Way of Rhode Island (UWRI) COO, Robert Bush, another member of the project team and our connection to the work that will take place on UWRI property.

5. Economic and Educational Benefits

Economic Benefits: The San Souci Greenway and its sister project, the San Souci connector, greatly enhance the aesthetics of Olneyville Square and provide a safe, beautiful alternative walking and biking connection to Olneyville Square. We have already heard from neighbors such as the Furgo, an energy

company based in the Netherlands, that these features the deciding factor in siting their Rhode Island branch in Olneyville.

Educational Benefits: The WRWC hosts K-12 environmental education programs as well as adult engagement programs such as our innovative Nuevas Voces/New Voices Program. We use all of our habitat restoration projects as learning tools for our students and adult cohorts. Our first Nuevas Voces cohort listed the visit to the San Souci Connector green infrastructure project as one of their best moments in the program because they could start to see how changes on the ground could impact climate related issues such as flooding and urban heat island. We will certainly use the San Souci streambank restoration project as learning opportunity and if possible, engage the public as volunteers in project installation. Finally, our River Ranger Program provides on the job training and education for youth surrounding the Woonasquatucket River Greenway. We work to train our full-time team in best practices to improve habitat and they in-turn train the young people that join the team as youth trainees. Our plan is to use this project as a training tool for the River Rangers while they install as much of the project as possible in house with professional oversight.

6. Climate Change and Coastal Resiliency

As described above, this project will stabilize the streambank and create sustainable wildlife habitat to directly mitigate the effects of and provide resilience in the face of increased flashy streamflows and flooding related to higher intensity and more frequent storms brought about by climate change. This project will have direct impacts on resilience of habitat to climate change. It will improve streambank habitat resilience to increased storm flows and protect migratory fish spawning habitat that can make up for a other coastal habitat losses due to climate change.

We considered the present and future impacts of climate change during the project planning and design phases. As a result, the project is designed to withstand stronger and more frequent storms and rainfall amounts. It is also designed to improve avian, mammal and pollinator habitat along this stretch of the Woonasquatucket River.

7. Environmental Justice

This project takes place in and will benefit an environmental justice community. The proposed project takes place in the Olneyville neighborhood of Providence in an area identified by the Narragansett Bay Estuary Program as their highest environmental justice priority area: Priority Index 4 – 94.9% non-white and/or Latinx, 47.3% low income, 41.5% limited English, 47.1% less than high school education level.

This area is also listed as between the 90th and 96th percentile in EPA Region 1 for all environmental justice indices using EPA's EJ Screen tool: https://ejscreen.epa.gov/mapper/ejscreen_SOE.aspx

8. Planning Consistency and Restoration Priority

This project is consistent with CRMC's restoration priorities of enhancing habitats' resiliency to climate change on projects located within Environmental Justice communities and/or that address Environmental Justice Concerns. We have discussed both these priorities in sections 6 and 7 above.

9. Species of Concern

The project will help assure the success of fish runs which can lead to an increase in breeding populations of birds on the Woonasquatucket. Some of the species of concern listed in the above report, such as black crowned night heron and the hooded merganser are already observed on the Woonasquatucket.

10. Permitting:

This project will require a Rhode Island Department of Environmental Management (RIDEM) Freshwater Wetlands Permit, will likely require a RIDEM Water Quality Certification and a US Army Corps of Engineers Permit. We plan to apply for all once we have reached the 60% design phase.

11. Capacity of Lead Organization

The Woonasquatucket River Watershed Council, a 501(c)(3) organization creates positive environmental, social and economic change by revitalizing the Woonasquatucket River, its Greenway and its communities. The WRWC is actively involved in and plays a critical role in ongoing restoration efforts in the watershed including the initiative to restore fish runs to Woonasquatucket; restore the Centredale Manor Superfund site; wetland restoration efforts such as the Deerfield Park and Department of Public Works projects in Smithfield; and riparian buffer restoration projects such as those we successfully completed at Cutler Brook in Glocester, and the Stillwater Brook in Smithfield. The WRWC brings local knowledge and the ability to coordinate funding and partners to facilitate project success.

The WRWC has a long history of coordinating project partners on successful fish passage projects under the leadership of Alicia Lehrer, WRWC's Executive Director. To date, we have successfully completed five fish passage projects with deep appreciation to the Coastal and Environmental Habitat Restoration Trust for ongoing support to complete them all. Lisa Aurecchia, WRWC's Director of Projects, has successfully coordinated and overseen project development, RFP development, bid management, and construction for dozens of projects throughout the Woonasquatucket Watershed including five green infrastructure projects completed in the last three years. Resumes for Alicia Lehrer and Lisa Aurecchia available upon request.

V. SUSTAINABILITY (one page maximum)

1. Maintenance

We cannot fully address project maintenance until designs have been completed. However, we intend to design a project that will stand the test of time and extreme flooding conditions for at least 25 years.

Should we design any hard armoring of the toe of the streambank, as we suspect we will need to, this will require little or no maintenance. However, the WRWC River Rangers will inspect the entire project at least monthly during the growing season every year for at least three years following construction.

For other stabilization and planting methods that ultimately become part of this project, WRWC commits to monthly maintenance for at least three years including the following:

- Inspection of all elements of the projects
- Trash removal
- Invasive removal
- Watering
- Replacing vegetation if/when necessary
- Communicating with Providence DPW if any issues arise that will affect the San Souci multi-use trail

As the state designated steward of the Woonasquatucket River Watershed and the Woonasquatucket Greenway, WRWC is committed to long-term maintenance of all our projects. We continually pursue opportunities for long-term maintenance funding and employ a full-time maintenance crew to care for all of our projects and resources. We are currently learning to use GPS-based maintenance application that will help us track projects, their specifications for function and operation, and regular maintenance activities so that as our team grows and changes, we have seamless transfer of effective maintenance.

2. External Factors

Climate change is already causing increased frequency and intensity of storms that have led to the issues we are addressing with this project, especially, the destabilization and slumping of the streambank into the river. The vegetated streambank will need ongoing maintenance as described above and extremely intense storms could compromise the project. We know that this is the case and therefore, our plan for ongoing maintenance will assure project success over the long term.

Sea level rise is not expected to affect this project as sea level rise should not affect any areas upstream of Rising Sun Mills on the Woonasquatucket.

VI. EVALUATING PROJECT SUCCESS (one page maximum)

1. Performance Measures

Success of this project will be measured through annual monitoring of fish return through the fish ladder at Rising Sun Mills (see monitoring plan below). WRWC volunteers, under the supervision of RIDEM F&W, monitor annual migratory fish return to the Woonasquatucket at the first fish ladder, Rising Sun Mills. Over 40 volunteers participate in monitoring annually. The WRWC, in partnership with RIDEM F&W, train volunteers in monitoring fish return and recording data.

Additionally, as this project has an educational component as well as a restoration component, WRWC will track the number of youth and adults, especially from the Olneyville neighborhood, that join WRWC educational programs through tours of the restored riverbank.

2. Monitoring Plan

Rangers maintain the site and monitor for slumping and erosion on a weekly basis. WRWC volunteers monitor fish return annually at the Rising Sun Mills Fish Ladder using RIDEM F&W monitoring protocol.

Volunteers collect direct counts at least twice daily from the middle of March through the middle of May annually. They record data in a notebook stored in a lockbox at the site. The data are analyzed by RIDEM F&W. The WRWC reports results through our Constant Contact email list, on our website, in our newsletter and directly to project partners.

Since 2010, over 40 volunteers have collected fish return data at Rising Sun Mills annually. The WRWC will assure that this practice continues in perpetuity by coordinating with RIDEM F&W, recruiting, training and setting up a monitoring calendar annually. As more habitat becomes available, we expect to see an increase in fish return at Rising Sun annually.

Additionally, the WRWC began a new volunteer monitoring program in 2014 that we continue annually. Volunteers collect fish community data annually through an electrofishing program at two sites on the Woonasquatucket. The upstream site is located on a section of river next to Whipple Field in Smithfield, a site we consider to be a fairly pristine riverine site. The second site is just downstream of Rising Sun Mills Dam in Providence, our urban site. Volunteers inventory the fish community once annually at each site on a 100' stretch of the river. This program allows us to establish a baseline and monitor changes in the fish community. We expect that our fish passage projects will strengthen the fish community diversity and population at our downstream site because all river fish will have a greater habitat range as a result of our fish passage projects. Our protocol for this program was developed with the assistance of Alan Libby, state Fishery Biologist.

Finally, as we are in the process of finalizing our five year grant agreement through the Southeast New England Program (SNEP) Pilot Watersheds Initiative, we know we will at least 3 years of support after construction for all our watershed restoration activities. Maintenance will include monthly inspections during the growing season for three years as well as invasive removal and plant replacement if necessary. Should the bank stabilization show signs of failing, the WRWC team will work with partners to correct any issues expediently.

VII. PROJECT BUDGET TEMPLATE

BUDGET CATEGORY	CRMC REQUEST	MATCH	MATCH PENDING OR SECURED? (select one)	SOURCE OF MATCH	TOTAL
RFP Development / Consultant Selection		\$4,000 \$1,000	PENDING SECURED	SNEP Pilot Watersheds In-Kind DPW Time	\$5,000
Project Management	\$10,000	\$5,000	PENDING	SNEP Pilot Watersheds	\$15,000
Project Team Meetings	\$5,000	\$5,000 \$8,000	PENDING SECURED	SNEP Pilot Watersheds In-Kind DPW & UWRI Time	\$18,000
Field Data Collection	\$13,250	\$9,750	SECURED	Previously Funded CEHRTF Grant	\$23,000
Alternatives Analysis	\$13,000	\$1,000	SECURED	SNEP Pilot Watershed	\$14,000
Habitat Restoration Team Meeting	\$2,000	\$1,000	PENDING	SNEP Pilot Watersheds	\$3,000
Basis of Design	\$6,750	\$1,250	PENDING	SNEP Pilot Watershed	\$8,000
SUBTOTAL CURRENT DESIGN PART 1 REQUEST	\$50,000	\$36,000		TOTAL CURRENT PROJECT COST	\$86,000
FUTURE WORK PLANNED/COSTS					
60% Design Submittal		\$18,000	PENDING	2023 CEHRTF Request	\$18,000
Permitting		\$19,000	PENDING	2023 CEHRTF Request	\$19,000
Final Engineering (90% & 100%), specs and bid package		\$17,000	PENDING	2023 CEHRTF Request	\$17,000
Bid Administration		\$5,000	PENDING	2024 CEHRTF Request	\$5,000

Construction Oversight / Admin		\$40,000	PENDING	2024 CEHRTF Request	\$40,000
Construction		TBD			
Maintenance		\$30,000	PENDING	SNEP Pilot Watershed	
FUTURE TOTAL	TBD	TBD		TOTAL PROJECT COST	TBD

VIII. BUDGET NARRATIVE (one page maximum)

RFP Development & Consultant Selection: \$5,000

- No CRMC Funds Requested
- WRWC Staff Time (paid through SNEP Pilot Watersheds grant)
 - Alicia Lehrer, Executive Director, 12.5 hours @ \$80/hour (includes fringe) = \$1,000
 - Lisa Aurecchia, Director of Projects, 50 hours @ \$60/hour (includes fringe) = \$3,000
- Providence DPW Time (in-kind), 10 hours @ \$100/hour (including fringe) = \$1,000

Project Management: \$15,000

- CRMC Funds Requested for Consultant Staff Time: \$10,000
- WRWC Staff Time (paid through SNEP Pilot Watersheds grant)
 - Alicia Lehrer, Executive Director, 20 hours @ \$80/hour (includes fringe) = \$1,600
 - Lisa Aurecchia, Director of Projects, 56.7 hours @ \$60/hour (includes fringe) = \$3,400

Project Team Meetings: \$18,000

- CRMC Funds Requested for Consultant Staff Time: \$5,000
- WRWC Staff Time (paid through SNEP Pilot Watersheds grant)
 - Alicia Lehrer, Executive Director, 20 hours @ \$80/hour (includes fringe) = \$1,600
 - Lisa Aurecchia, Director of Projects, 56.7 hours @ \$60/hour (includes fringe) = \$3,400
- Providence DPW Time (in-kind), 40 hours @ \$100/hour (including fringe) = \$4,000
- UWRI Time (in-kind), 40 hours @ \$100/hour (including fringe) = \$4,000

Field Data Collection: \$23,000

- CRMC Funds Requested for Consultant Staff Time: \$13,250
- Previously granted CRMC funds for Consultant Staff Time: \$9,750

Alternatives Analysis: \$14,000

- CRMC Funds Requested for Consultant Staff Time: \$13,000
- WRWC Staff Time (paid through SNEP Pilot Watersheds grant)
 - Alicia Lehrer, Executive Director, 5 hours @ \$80/hour (includes fringe) = \$400
 - Lisa Aurecchia, Director of Projects, 10 hours @ \$60/hour (includes fringe) = \$600

Habitat Restoration Team Meeting: \$3,000

- CRMC Funds Requested for Consultant Staff Time: \$2,000
 - Alicia Lehrer, Executive Director, 5 hours @ \$80/hour (includes fringe) = \$400
 - Lisa Aurecchia, Director of Projects, 10 hours @ \$60/hour (includes fringe) = \$600

Basis of Design: \$8,000

- CRMC Funds Requested for Consultant Staff Time: \$6,750
- Additional Consultant Staff Time (paid through SNEP Pilot Watersheds grant): \$1,250

IX. ADDITIONAL MATERIALS

See Appendix A - Attachments for Additional Materials Listed Below:

Site and Locus Maps

Ground-level photographs of existing site conditions

Aerial photographs, if available

Preliminary design drawings, maps or engineering plans, if available (preliminary project cost estimates done by San Souci Greenway consultant)

Pertinent physical, ecological, biological, and cultural / historical survey data

Letters of support (City of Providence Department of Public Works, United Way of Rhode Island, Councilman Oscar Vargas)

AUTHORIZED SIGNATURE

AUTHORIZED AGENT OF LEAD ORGANIZATION

Alicia J. Lehrer

Signature **Alicia J. Lehrer, Executive Director**

January 28, 2022

Date

Return your completed proposal by 4:00 p.m. on **January 28, 2022** to:

Caitlin Chaffee
NBNERR
RI Dept. of Environmental Management
235 Promenade Street
Providence, RI 02908

caitlin.chaffee@dem.ri.gov

Applicants are required to submit one (1) signed hard copy of the proposal form and one (1) electronic copy in Adobe PDF format. ****Please submit electronic copy as a SINGLE PDF FILE containing all application materials.****

Contact Caitlin Chaffee at **401-222-4700 xt. 277-4417** with any questions.



Appendix

Attachments

San Souci Streambank Restoration, Site & Locus Map & Aerial Photo

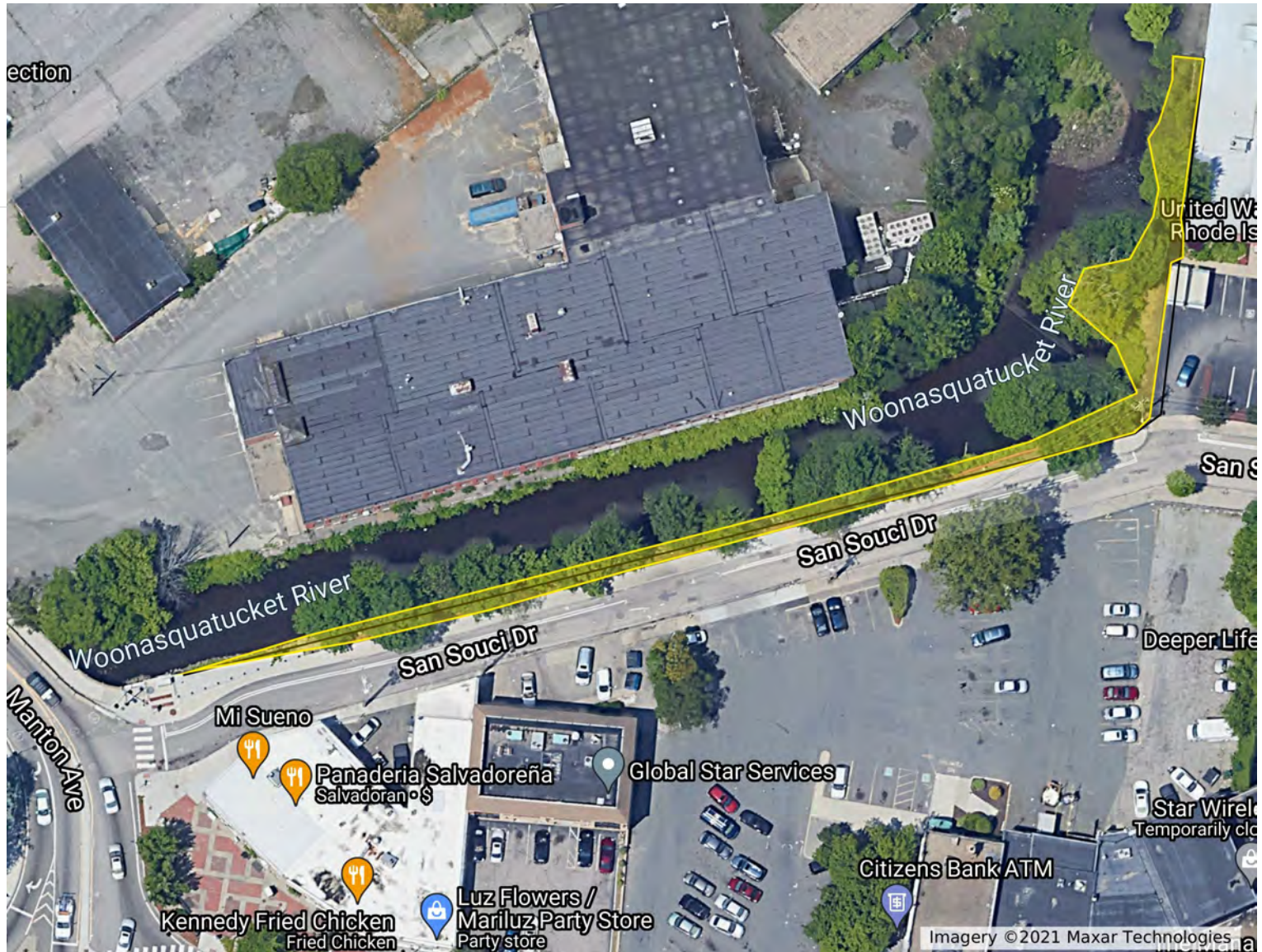
Streambank Restoration Area



Streambank Restoration Area



Linear Feet of Riverbank



Ground Level Photos of Existing Site Conditions







1 CedarStreet - Suite 400
 PROVIDENCE, RI 02903
 PHONE: 401 272 8100
 FAX: 401 273 9694

Project Number: 72919
 Project Name: San Souci Dr
 Estimated By: JM 3/5/2018
 Checked By:

San Souci Drive River Embankment Armorment - Order of Magnitude Cost Estimate

Code	Description	Unit	QTY	Unit Price	Cost
201.0301	CUTTING AND DISPOSING ISOLATED TREES AND STUMPS (4"- 24")	EACH	28	\$700.00	\$19,600.00
201.0321	CLEARING AND GRUBBING	SY	444	\$5.00	\$2,220.00
201.0415	REMOVE AND DISPOSE GUARDRAIL AND POST ALL TYPES	LF	400	\$5.00	\$2,000.00
202.0300	UNCLASSIFIED EXCAVATION	CY	960	\$40.00	\$38,400.00
202.0700	COMMON BORROW	CY	960	\$25.00	\$24,000.00
206.0301	COMPOST FILTER SOCK	LF	400	\$6.00	\$2,400.00
206.9902	SILT CURTAIN	LF	400	\$6.00	\$2,400.00
709.0200	CONCRETE HEADWALL FOR PIPE CULVERTS Std 2.1.0	CY	2	\$1,300.00	\$2,600.00
910.9901	EARTH RETAINED SLOPE	SF	3400	\$10.00	\$34,000.00
910.9902	BIAXIAL GEOGRID REINFORCEMENT	SY	1778	\$10.00	\$17,777.78
920.0090	PLACED STONE RIPRAP R-6, R-7, R-8	CY	300	\$200.00	\$60,000.00
920.0200	FILTER FABRIC FOR RIP-RAP	SY	7200	\$5.00	\$36,000.00
L05.0505	EROSION CONTROL BLANKET	SY	533	\$5.00	\$2,665.00
Subtotal Cost:					<u>\$244,062.78</u>
<i>Landscaping (5%):</i>					\$12,203.14
Subtotal Cost:					<u>\$256,265.92</u>
<i>Control of Water (25%):</i>					\$64,066.48
Subtotal Cost:					\$320,332.40
<i>Contingency (40%) :</i>					<u>\$128,132.96</u>
Total Estimate:					<u>\$448,465.35</u>
SAY					\$450,000.00

Notes:

- 1) Estimate based on Cross Section shown in Figure 1 attached
- 2) Includes R+D items to existing roadway
- 3) Existing slope is 1.5:1 to 1:1
- 4) Estimate includes armorment of 400' of embankment from NBC Station to 50' beyond bend in River
- 5) "Control of Water" assumes river is less than 3' in depth and a sand-bag coffer dam is used



CITY OF PROVIDENCE

Jorge O. Elorza, Mayor

January 24, 2022

Alicia Lehrer
Executive Director
WRWC
45 Eagle Street, Suite 202
Providence, RI 02909

Re: Woonasquatucket River Watershed Council Coastal and Estuary Habitat Restoration Fund Proposal – Woonasquatucket River Streambank Stabilization – San Souci Drive, Providence

Dear Ms. Lehrer:

The City of Providence Department of Public Works (DPW) is an enthusiastic partner with the Woonasquatucket River Watershed Council (WRWC) on the above referenced project. We appreciate WRWC as a partner as you have had great success in planning and implementing projects that protect and improve City resources for our residents, visitors and ecosystems.

Providence DPW maintains the street, sidewalks and stormwater facilities on San Souci Drive. The City was glad to partner with WRWC as we designed and installed the bikeway along that road in Olneyville. DPW understands that the streambank there is subject to erosion and as our storms and corresponding river flows increase due to climate change, erosion issues will accelerate. We all have a stake in protecting the new bike path and street and DPW would be happy to work with you to review bank stabilization options that can meet the challenges of increased river flow while improving habitat and quality of life in Olneyville.

DPW commits \$5,000 in in-kind staff time to work with WRWC and your other project partners to bank stabilization/habitat restoration alternatives and review preliminary designs for this site. We appreciate WRWC's innovative approaches that integrate ecosystem functions into their designs such as incorporating plants with harder armoring practices that can provide adequate protection while improving habitat. Additional streambank vegetation will have multiple benefits in this highly developed area, adding neighborhood appeal and wildlife habitat.

We hope the Coastal and Estuary Habitat Restoration Fund will select WRWC's proposed project so we can continue to work together to improve quality of life and habitat in Providence.

Sincerely,

Craig Hochman, PE
City Engineer

DEPARTMENT OF PUBLIC WORKS
700 Allens Avenue, Providence, Rhode Island 02905
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United Way of Rhode Island

January 25, 2022

Alicia Lehrer
Executive Director
WRWC
45 Eagle Street, Suite 202
Providence, RI 02909

Re: Woonasquatucket River Watershed Council Coastal and Estuary Habitat Restoration Fund Proposal – Woonasquatucket River Streambank Stabilization – San Souci Drive, Providence

Dear Ms. Lehrer:

United Way of Rhode Island (UWRI) is an enthusiastic partner on your proposed *Coastal and Estuary Habitat Restoration Fund Proposal – Woonasquatucket River Streambank Stabilization – San Souci Drive, Providence*. Part of the streambank you propose to stabilize is on UWRI property, and we willingly grant Woonasquatucket River Watershed Council (WRWC) access to this part of our property for the life of the project, including long-term maintenance.

UWRI has enjoyed a long-time partnership with WRWC. We appreciate your initiative in developing the San Souci bikeway and the improvements you made and continue to make on our property with our collaboration so that our presence in Olneyville Square can serve our community better.

For this project, UWRI commits to providing staff time to work with WRWC in project planning and implementation worth \$4,000, and additional project funding to assist with the habitat improvements on our property in the amount of \$5,000, for a total project contribution of \$9,000.

We sincerely hope your application for this critical project is successful and look forward to working with you.

In partnership,

A handwritten signature in black ink, appearing to be "RB" with a flourish.

Robert Bush (He/Him)
Chief Operating Officer
United Way of Rhode Island

Oscar Vargas
Councilman - Ward 15

150 Dora St
Providence, RI 02909



PROVIDENCE CITY HALL
25 DORRANCE STREET, ROOM 310
PROVIDENCE, RI 02903
OFFICE: 401-521-7477
WARD15@PROVIDENCERI.GOV

January 24, 2022

Caitlin Chaffee
NBNERR
RI Dept. of Environmental Management
235 Promenade Street
Providence, RI 02908

Re: Woonasquatucket River Watershed Council Coastal and Estuary Habitat Restoration Fund Proposal – Woonasquatucket River Streambank Stabilization – San Souci Drive, Providence

The purpose of this letter is to support the grant application submitted by Woonasquatucket River Watershed Council (WRWC) for funding through the R.I. Coastal and Estuarine Habitat Restoration Program and Trust Fund. The funding from this grant will be vital to the stabilization of the streambank along San Souci Drive.

As the councilmember representing this district, I happily support this project as I believe this project directly responds to the needs of the community. Stabilizing the streambank ensures that a primary area of commerce and transportation in Ward 15 is protected. I have continuously advocated for projects that seek to improve the environment in which residents of Ward 15 live as WRWC has done. WRWC has provided an array of services to the community that range from improving river and park resources to redeveloping bike and walking trails.

I support this grant application because this project is vital to the economic and environmental sustainability of the Ward 15 and City of Providence as a whole. This project will have a positive impact on the residents, and workers throughout my district.

Thank you for your consideration and please feel free to reach me at the City Council office at 401-521-7477 should you have any questions

Sincerely,

Oscar Vargas
Councilman – Ward 15
150 Dora Street
Providence, RI 02909



THE BAY CENTER
100 Save The Bay Drive
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EXPLORATION CENTER
Easton's Beach
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SOUTH COAST
CENTER
Riverside Building
8 Broad Street
Westerly, RI 02891
phone/fax: 401.315.02891

January 27, 2022

Caitlin Chaffee, Narragansett Bay Estuarine Research Reserve
RIDEM
295 Promenade Street
Providence, RI 02908

Dear Caitlin,

Please find attached Save The Bay's proposal titled "**Salt Marsh Restoration at Haile Farm Preserve, Fogland Beach and Canonchet Farm Salt Marsh Restoration Projects**" for funding from the Coastal Resources Management Council's Coastal and Estuarine Habitat Restoration Trust Fund. Save The Bay is partnering with the Town of Tiverton, the Warren Land Conservation Trust, and Friends of Canonchet Farm on the proposed projects. The Town of Tiverton, the Warren Land Conservation Trust, and the Town of Narragansett are the landowners of the property where the marsh restoration projects are planned.

Please feel free to contact me if you have any questions, 401-272-3540 ext. 105. Thank you in advance for your consideration of this proposal.

Sincerely,

A handwritten signature in black ink that reads "Wenley Ferguson". The signature is fluid and cursive.

Wenley Ferguson
Director of Restoration



**Rhode Island Coastal and Estuary Habitat Restoration Fund
Full Proposal Form 2021/2022**

I. PROJECT SUMMARY

1. **Project Title:** Salt marsh restoration at Fogland Beach, Haile Farm Preserve, and Canonchet Marsh
2. **Project Location** (*include map*): Fogland Beach, Haile Farm Preserve on the Palmer River and Canonchet Marsh and Narrow River
3. **Project type** (*Planning, Design, Construction, Monitoring and Assessment or Other*): Design, permitting and implementation
4. **If other, please specify:**
5. **Habitat type** (*River System, Salt Marsh, Seagrass Bed, Shellfish Bed, Coastal Upland or Other*): Salt Marsh
6. **If other, please specify :**
7. **Restoration Technique:** (*e.g. re-vegetation, tidal restoration, etc.*): Restoration of tidal hydrology through the use of runnels
8. **Total acreage of habitat to be restored :** Fogland Beach salt marsh ~7 acres, Haile Farm Preserve salt marsh ~27 acres and Canonchet Farm salt marsh ~9 acres
9. **Project Benefits:** Restoration of marsh function and value by facilitating drainage of impounded water on marsh surface and allow marsh revegetation
10. **Project Partners:** Town of Tiverton and Tiverton's Open Space Commission, Warren Land Conservation Trust, Friends of Canonchet Farm and Town of Narragansett
11. **This is an ongoing project that has previously received funds from the CRMC Coastal and Estuarine Habitat Restoration Fund. No If yes, year(s) funding was awarded and amount(s)**

IV. PROJECT DESCRIPTION

1. Justification and Purpose

Accelerated sea level rise, and legacy human impacts from agricultural and mosquito control activities are impacting the ability of marshes to keep pace with sea level rise, threatening the ecological health and viability of salt marshes throughout the region, and impacting critical habitat and essential ecosystem functions. Over the past 11 years, Save The Bay (STB) and project partners have conducted 16 small scale marsh restoration and adaptation projects to address rapidly changing conditions in the region's salt marshes using runnels and selective ditch maintenance to restore tidal hydrology. Save The Bay will expand efforts in the coming year(s) at three marshes:

1. Haile Farm Preserve (located on the east side of the Palmer River)
2. Fogland Beach (Tiverton)
3. Canonchet Farm (located on Pettasquamscutt Cove on the Narrow River)

All three marshes are experiencing varying levels of degradation including impounded water on the marsh platform, vegetation die-off, and degradation of marsh substrate. Degraded root mats were found in the impounded water areas, an indication that the marsh surface has changed from vegetated to open water. The goal of these projects is to allow the marsh surface to revegetate and to prevent further subsidence, thereby restoring the health and function of salt marshes while helping marshes adapt to accelerated sea level rise rates.

Vegetation monitoring data from previous adaptation projects have shown greater vegetation coverage and less standing water on the marsh surface, including 8 years of pre- and post- monitoring data from a tidal hydrology restoration project at a grid-ditched marsh on Winnapaug Pond conducted by STB in 2013 and 2014 (Besterman, 2022) and at the Narrow River, Round Marsh and Calf Pasture Point (unpublished STB data). By providing shallow drainage, these projects have allowed vegetation to recover, created micro-topography on the marsh platform through placement of the excavated peat, helped restore high marsh habitat for salt marsh dependent species such as the salt marsh sparrow, and reduced mosquito-breeding habitat.

The goal of the proposed salt marsh restoration projects is to restore the health and function of the salt marshes by restoring hydrology through the installation of runnels to facilitate drainage of impounded water on the marsh platform. Short-term outcomes (after one growing season) include the marsh platform converting from open water to bare substrate and slowly revegetating. Additionally, impounded water areas will drain stabilizing unconsolidated sediments and reducing mosquito breeding habitat. In the long-term (2-5 growing seasons), revegetation will occur in impounded water areas and belowground biomass will increase to help stabilize the sediment, enable marsh building processes and prevent further subsidence. Excavated peat placed on the marsh platform will revegetate and stabilize, creating micro-topography and potentially enhancing habitat for salt marsh dependent species such as the salt marsh sparrow, *Ammospiza caudacuta*.

Haile Farm Preserve

The Warren Land Conservation Trust recently received the title to a parcel (previously owned by the Town of Warren) that has extensive salt marsh, brackish marsh, red maple swamp and undeveloped upland. The marsh is experiencing increased standing water due to agricultural embankments (low elevation earthen berms) on the marsh platform and stormwater inputs from the watershed. Addressing the impounded water at the upper edge of the marsh will help facilitate marsh migration as sea levels

rise in the freshwater wetlands and uplands bordering the salt marsh. To address the stormwater inputs, the Town of Warren, STB, and the Warren Land Conservation Trust are working with the Southeast New England Program Network Partners (SNEP) on retrofitting the retention basin that discharges to the freshwater wetlands bordering and infiltrating stormwater in the watershed.

Fogland Beach marsh

The Fogland Beach salt marsh (north of the barrier spit) is experiencing early signs of degradation in an area where a former road or path crossed the marsh. Water is trapped in this feature causing conversion to low marsh species, vegetation die-off, and creation of mosquito breeding habitat. Additionally we have identified agricultural embankments (earthen berms and stone walls) that were used to manage water on the marsh to increase the production of hay. These features were installed as far back as the 1700s and altered the hydrology of the marsh by restricting tidal flow (Adamowicz, 2021). Today these features impound both brackish and salt water on the marsh surface. The RI Natural History Survey assessed this marsh in 2022 and found that it is ranked in the upper 25% of the salt marshes assessed state-wide due to the extent of existing high marsh habitat and scrub shrub habitat. The western section of the marsh was not assessed and is at a lower elevation with a greater amount of impounded water.

Canonchet Farm/Pettasquamscutt Cove

The Canonchet Farm salt marsh abuts the USFWS Chafee Refuge along Pettasquamscutt Cove. The marsh is highly degraded due to a stone and earthen that was placed along the edge of the marsh for the Sea View railroad that acts as a tidal restriction. The berm used today for power lines, impounds water on the marsh surface and has caused a significant amount of the marsh platform to be covered with water. STB is working with the Friends of Canonchet, stewards of the property owned by the Town of Narragansett on the development of the restoration plan.

2. Project Activities, Schedule and Work Plan

Save The Bay proposes to work with local partners to plan, permit and implement salt marsh restoration and adaptation projects at Fogland Beach, Haile Farm Preserve and Canonchet Farm. STB has begun to develop plans for restoring tidal hydrology through the use of runnels for each salt marsh and will consult with RIDEM's Mosquito Abatement Coordinator and project partners on the plan review. STB will submit permits to CRMC, RIDEM Water Quality Certificate Program, and Army Corps of Engineers on behalf of the Towns of Tiverton and Narragansett and the Warren Land Conservation Trust. Once permits are received, STB staff, with volunteers from partnering organizations, will implement the restoration projects - digging shallow runnels by hand and with RIDEM's low ground pressure excavator to facilitate drainage of impounded water off the marsh surface. Pre- and post- restoration vegetation and water level monitoring will be conducted to assess the effects of the restored hydrology on vegetation recolonization. The schedule of activities for 2022 will include finalizing restoration plans, writing and submitting state and federal permits, and conducting pre restoration monitoring. In 2023, STB will implement the first phase of the restoration activity and conduct post- restoration monitoring. In 2024, STB will continue the 2nd phase of the restoration.

Timeline:

April 2022: Collaborate with RIDEM's Mosquito Abatement Coordinator and project partners (property owners) on conducting site assessments and finalizing the restoration plans.

May 2022 – June 2022: Develop permit applications and submit permit packages to CRMC, RIDEM, and ACOE

August – September 2022: Establish monitoring transects and conduct pre-restoration monitoring at the three marshes.

Fall 2022 – Winter 2023: Once permits are received, conduct the first phase of the restoration projects including the excavation of runnels by hand or with the low ground pressure excavator at the three salt marshes.

March 2023: Submit an annual report to CRMC.

Spring 2023: Coordinate dig days with project partners.

August – September 2023: Conduct first year of post-restoration monitoring.

Fall 2023 – Spring 2024: Assess effects of the first phase of runnel installation on drainage and based upon the site conditions continue to conduct the 2nd phase of the runnel excavation. Maintain existing runnels from the 1st phase and extend runnels by hand digging.

March 2024: Submit final report to CRMC. Share results of first year of monitoring data with project partners, restoration practitioners through presentations and reports. STB will continue to monitor and maintain the sites with project partners after the grant period.

3. Minimization of Adverse Impacts

To minimize disturbance to salt marsh species such as the salt marsh sparrow and the willet that nest in the high marsh, work in the salt marsh will occur outside of the salt marsh bird nesting season. We will conduct vegetation and water level monitoring at the end of the growing season between August and September and excavation and maintenance of runnels will occur between September and May.

4. Public Support

Save The Bay is collaborating with volunteer organizations in each of the communities to plan and conduct the salt marsh restoration projects. We have received letters of permission from each of the property owners to conduct the restoration projects. We have conducted site visits with each of our partnering organizations and during the implementation phase of the project will work with their members to organize dig days to help excavate the runnels. STB is also developing a salt marsh steward program to train interested volunteers in assessing salt marshes post storm events, to clear debris runnels, and assist with the maintenance of runnels. Volunteers from these organizations will be given the first opportunity to train as salt marsh stewards at their respected sites.

5. Economic and Educational Benefits

Economic benefits from salt marsh restoration projects include improved habitat for nekton that live in salt marshes and are forage fish for recreationally and commercially valuable species such as striped bass and bluefish. Other economic benefits include improved recreational opportunities for the public, such as fishing and birdwatching. Healthy marshes can also provide some level of protection for infrastructure during coastal storms.

There will be many opportunities through our community partners to educate the public about restoration efforts.

- The Warren Land Conservation Trust has an active membership and regularly organizes walks at the Haile Farm Preserve on their trail system.
- The Friends of Canonchet Farm has a newsletter and bulletin board at the trail head which will provide an opportunity to highlight the restoration work. Additionally, Friends of Canonchet Farm also lead walks and there is access to an area to overlook the marsh from the old railroad bed.
- The Tiverton Open Space Commission, the Town of Tiverton, and STB are planning to develop a master plan for Fogland Beach and the conservation area to the north. This master planning process will be an opportunity to educate residents of Tiverton and users of Fogland Beach about the value of the salt marsh and the need to restore it.

Wenley Ferguson will continue to transfer lessons learned from these and other salt marsh restoration projects that have used runnels to restore tidal hydrology with restoration practitioners throughout the region through USFWS' SMART (Salt Marsh Adaptation and Resilience Team). Wenley is a member of the SMART Design Review Team and participates in monthly meetings to review projects with restoration practitioners from the region including Maine, Connecticut, New York, New Jersey, Delaware, Maryland and Virginia. We also have been continuing to provide technical assistance on projects in the Buzzards Bay and Westport River watersheds in coordination with Bristol County MA Mosquito Control and participate in Connecticut's Salt Marsh Working group and Massachusetts' Salt Marsh Working Group. Additionally, Wenley is working with the inter-agency Atlantic Coast Joint Venture on sharing lessons learned through presentations and site visits. The use of runnels to restore tidal hydrology and the placement of peat to create microtopography is included in the Atlantic Coast Joint Venture's Salt Marsh Sparrow Conservation Plan.

Wenley is working with Elizabeth Watson from Drexel University and Cathy Wigand from the EPA's Atlantic Ecology Division on finalizing a paper from the Narrow River runnel project conducted with USFWS from 2015 to 2016. The study that STB conducted with guidance from research partners included a Before After Control Impact design of vegetation, pore water and groundwater level data from 2014 and 2019. Wenley shared the monitoring data from the Winnapaug Pond project conducted from 2013 to 2014 (funded by CEHRTF and USFWS' Coastal Program) and lessons learned on runnel planning, implementation, and maintenance in a paper on runnels authored by Alice Besterman from the Woodwell Climate Research Center and Buzzards Bay Coalition. Wenley is working with Alice on a document for practitioners to capture the steps for planning, permitting, implementation and maintenance of runnels.

6. Climate Change and Coastal Resiliency

Improving the health and function of salt marshes by providing shallow drainage of expanding impounded water areas will allow plants to recolonize the marsh, will stabilize the peat and unconsolidated sediments, and will increase the ability of the salt marsh to keep pace with accelerated sea level rise. The loss of vegetated marsh poses a threat to the ecological health of salt marshes and the functions and values that they provide for fish and wildlife habitat, carbon sequestration, nutrient cycling, and storm buffering. Through addressing watershed impacts such as stormwater runoff that discharges into the marsh at Haile Farm Preserve and Fogland Beach and assessing other impediments to marsh migration in the bordering upland and freshwater wetlands, these projects will help facilitate marsh migration into suitable habitat areas.

7. Environmental Justice

Will the proposed project take place within or otherwise benefit environmental justice "priority areas" as defined by the Narragansett Bay Estuary Program's analysis of [Environmental Justice in the Narragansett Bay Region](#)? Does the proposed project incorporate Environmental Justice concerns as defined by the US EPA's Guidance on [Environmental Justice and Equitable Development](#)?

The Haile Farm Preserve, located on the Palmer River, abut neighborhoods that are designated Environmental Justice Priority Area-Index 1 (34% percent of the population is considered low-income). The Haile Preserve has opened up access to the eastern side of the Palmer River with walking trails adjacent to this neighborhood. There is only one other access area to the eastern side of the Palmer River (at the end of Palmer Avenue) also owned by the Warren Land Conservation Trust. Providing public access to the natural areas and the Palmer River

Canonchet Farm salt marsh abuts a neighborhood in Narragansett that is an Environmental Justice Priority Area-Index 1 (12% of the population is non-white Latinx, 49% of the population is considered low-income). The trails at Canonchet Farm are directly accessible from this section of Narragansett including the elementary school and public park.

STB and the project partners, will encourage environmental justice through improving public involvement with lower-income community members, people of color and indigenous community members and involving these communities with improving habitat health in their region. For this project, the Warren Land Conservation Trust and STB has involved the Friends of the Pokanoket in the early planning phases to share information about the marsh's degraded condition and strategies to improve its health. By involving the community in hands on restoration activities through these low tech restoration projects, there is an opportunity to involve members of the indigenous community in future restoration activities. STB is involving the community through the Warren Land Conservation Trust in addressing the water quality degradation caused by the failing retention basin that is impacting the water quality of the Palmer River. Enhancing access to these natural areas and restoring their functions and values provides an opportunity to improve environmental quality in a community that is underserved.

At Fogland Beach and Canonchet Farm there are opportunities to expand public involvement and education through community planning activities in developing long-term plans for Fogland Beach and educational signage that is accessible to multiple audiences.

8. Planning Consistency and Restoration Priority

Rhode Island's Coastal Wetland Restoration Strategy (2018) describes the need for salt marsh restoration due to past stressors and accelerated sea level rise. It highlights restoration techniques including drainage enhancement through the use of runnels and tidal hydrology restoration. The State's Wildlife Action Plan (2015) finds salt marshes as highly vulnerable to climate change and the salt marsh sparrow is listed as a Species of Greatest Conservation Need.

USFWS's Northeast region has identified the conservation of the saltmarsh sparrow and their habitat as a regional priority, including the most recent strategic planning document for the Coastal Program (Northeast Region Strategic Plan, 2017-2021). This plan specifically includes the intent to 'Facilitate projects to restore and enhance salt marsh, particularly high marsh habitat, to improve habitat quality for Saltmarsh Sparrow and other priority species.' The Atlantic Coast Joint Venture recently published a Saltmarsh Bird Conservation Plan for the Atlantic Coast (2019) in which they identify saltmarsh sparrow among the highest priority species for conservation. The plan identifies as a priority the implementation of promising management actions including 1) creation of runnels to improve drainage of ponded areas 2) improving drainage by remediating ditches, trunks and dikes to restore more natural hydrology and 3) creation of micro-topography/mounds to provide nesting areas less prone to flooding. Wenley Ferguson has met with staff from USFWS and the Atlantic Coast Joint Venture to show them examples of these restoration techniques. The plan identifies evaluating these restoration techniques as a priority science need to advance conservation for this species. Through a Natural Resource Conservation Service's Conservation Effects Assessment Project (CEAP) grant, the restoration activities implemented at these sites are being evaluated to help inform development of best management practices for use at additional sites. Wenley is working with Dave Burdick from UNH who has received funding from NRCS to monitor 6 restoration projects where STB has conducted tidal restoration through the use of runnels.

9. Species of Concern

Tidal marsh specialists such as the saltmarsh sparrow and other bird species that nest on the marsh such as the willet, *Tringa semipalmata*, rely on high marsh for nesting areas (i.e. *Spartina patens*, *Juncus gerardii*). With increased inundation of the marsh platform and loss of high marsh species, the salt marsh sparrow population has shown a significant decline over an 18 year period -wide according to the SHARP (Salt Marsh Habitat and Avian Research Program). The Saltmarsh Sparrow is listed as globally Vulnerable by the International Union for Conservation of Nature and is being considered for listing as federally endangered by the USFWS. Without healthy plants on the marsh platform to trap sediment and increase marsh surface elevation through the accumulation of belowground biomass, the surface of the marsh subsides and converts to shallow standing water. Since the impounded water areas become warm and hypersaline during the summer months, they do not support fish species that feed on mosquito larvae. The loss of vegetated marsh poses a profound threat to the ecological health of salt marshes and the functions and values that they provide for fish and wildlife habitat, carbon sequestration, nutrient cycling and storm buffering

10. Permitting

STB will prepare the following permits on behalf of the property owners in consultation with RIDEM's Mosquito Abatement Coordinator:

- Coastal Resources Management Council Assent
- Rhode Island Department of Environmental Management Water Quality Certificate
- General Permit from the Army Corps of Engineers (ACOE). During the permitting process through the ACOE, federal agencies including EPA, USFWS, and NOAA are consulted to ensure that the runnel implementation does not affect endangered species or essential fish habitat.

11. Capacity of Lead Organization (attach additional materials if necessary)

The project will be coordinated and implemented by Wenley Ferguson, Director of Habitat Restoration, who has overseen 16 restoration project using runnels to restore tidal hydrology. She has experience securing stakeholders, designing projects, developing the permit applications, overseeing implementation and conducting the pre and post restoration monitoring. Wenley has worked at STB since 1990 and on habitat restoration projects watershed wide since 1996.

She will be working with Ben Gasper, on a contractual basis to design, permit, implement and monitor these projects. Ben worked as a Field Technician at USFWS for 9 years and collaborated with Wenley and Al Gettman on the implementation of restoration projects that used runnels on the Narrow River and Sachuest marshes.

V. SUSTAINABILITY (one page maximum)

1. Maintenance

What is the estimated "lifespan" of each planned restoration activity? What are the anticipated short-term and long-term (beyond the funding period) operation and maintenance requirements of the project? Specify who will be responsible for funding and carrying out each O & M activity. Indicate when and with what frequency activities will occur.

Tidal hydrology restoration through the use of runnels requires maintenance of the runnels. Save The Bay will train project partners to assess how the runnels are functioning and to maintain them if they are clogged by sediment, wrack, or vegetation. STB will request 10-year permits from the permitting agencies since these projects require multiple years of phased runnel installation and maintenance.

2. External Factors

Identify existing external (off-site) factors that could reduce the chances of achieving the project goals (e.g. stormwater inputs to the site from the surrounding drainage area). Explain how these external factors will be addressed. Describe any additional measures taken to help ensure long-term success of the project (e.g. installation of stormwater management practices or securing of conservation easements). What are the likely future effects of climate change and future sea level rise on the proposed project and how will these be addressed?

At the Haile Preserve on the Palmer River, STB, the Land Trust, and the Town of Warren are collaborating with the SNEP Network and UNH's Stormwater Center to retrofit the existing retention basins that discharge stormwater and groundwater into the marsh. We are also working to reduce the amount of stormwater that enters the retention basin by installing stormwater infiltration practices in the Town's right of ways and potentially on Warren Land Conservation Trust land. Once retrofit designs are finalized, STB will continue to work with project partners on securing funds for final design, permitting and implementation.

At Fogland Beach, runoff from Three Rod Way and Fogland Beach Road also discharges onto the marsh. Save The Bay began working with the Town in 2018 as part of CRMC's Shoreline Adaptation and Inventory Program (SAID) to address stormwater runoff from the watershed that exacerbates flooding of Three Rod Way and creates conditions that allows *Phragmites* to thrive in the upper marsh. The partners with an engineer funded through the SAID project identified stormwater infiltration opportunities in the watershed and developed designs to reduce the amount of runoff that discharges into the marsh. The Town of Tiverton and STB have secured funds from SNEP to finalize stormwater infiltration designs and submit permit applications. We are working with the Town to submit an application for funding for implementation through RI Infrastructure Bank's Municipal Resiliency Program. We have expanded the scope of the project to include restoring connectivity under Three Rod Way. The restored hydrology will allow impounded water on the south side of the road in a salt and brackish marsh area to drain north to the unrestricted salt marsh. This wetland complex on the south side of the road includes a depression that was created to form a skating pond in the 1906s that is now dominated by *Phragmites australis*. The restoration plan will include grading the berms that formed the skating pond and allowing the impounded freshwater to drain under Three Rod Way to the salt marsh.

At Canonchet Farm, Save The Bay will share the restoration plans with National Grid that maintains the power lines to ensure that the shallow runnels will not impact the stability of the lines.

VI. EVALUATING PROJECT SUCCESS (one page maximum)

1. Performance Measures

How will the success of the project be measured in relation to the restoration goals set forth in this proposal? List performance measures and how they will be recorded. Include a detailed monitoring plan; if applicable (see below).

The success of the project will be measured by monitoring the vegetation response and the change in water level on the marsh surface as described in the monitoring plan below. Additional metrics will include number of community members involved in the project implementation and maintenance and press or social media about the marshes and restoration efforts. The time it will take for the tidal restoration efforts to restore functional salt marsh habitat will be dependent upon the existing conditions of the marsh. Fogland Beach is less degraded and we expect the marsh response will be sooner than the Canonchet Farm marsh on the Narrow River that has been inundated with impounded water for decades due to the tidal restriction and sooner than the Palmer River marsh that is impacted by agricultural embankments on the marsh and stormwater and groundwater discharges from the retention basin.

2. Monitoring Plan

Describe any planned or completed pre- and post-project monitoring activities. For each monitoring activity list the frequency and month/year of start and end date and the parameters measured. List the entity or entities responsible for funding and carrying out each monitoring activity, and describe how results will be made available to CRMC and the public. If using an established monitoring protocol, please provide references (see CRMC website for information on established monitoring protocols).

Monitoring transects will be established at each salt marsh restoration site to document changes to vegetation communities and water levels over time. Monitoring will be conducted pre- and post-restoration. Save The Bay uses a line point intercept method to monitor vegetation and conducts water level monitoring along each point of the transect as well. Additionally photo stations will be established at each salt marsh. Presence and absence of mosquito larvae will be assessed pre and post restoration. Adaptive management techniques will be implemented during subsequent years in direct response to the monitoring data. We will conduct 2 years of monitoring during this project and will continue to monitor the site up to 5 years with funding through STB and other sources to be secured in future years.

References:

Adamowicz, S.C., G. Wilson, D.M. Burdick, W. Ferguson, and R. Hopping. 2020. Farmers in the marsh: Lessons from history and case studies for the future. *Wetland Science & Practice* 183–195.

Besterman, A., R. Jakuba, W. Ferguson, D. Brennan, Costa, J., L. Deegan. 2021. Buying Time with Runnels: a Climate Adaptation Tool for Salt Marshes. *Estuaries and Coasts*.

<https://doi.org/10.1007/s12237-021-01028-8>

PROJECT BUDGET TEMPLATE

BUDGET CATEGORY	CRMC REQUEST	MATCH	MATCH PENDING OR SECURED? (select one)	SOURCE OF MATCH	TOTAL
Save The Bay staff, mileage and overhead	\$35,660				\$35,660
Excavator operator	\$4,200				\$4,200
Excavator transportation	\$1,140				\$1,140
RIDEM Mosquito Abatement Program's excavator	\$9,000				\$9,000
RIDEM Mosquito Abatement Coordinator (38 hours)		\$2,940	Secured	RIDEM Mosquito Abatement Program	\$2,660
Town of Tiverton's excavator operator and transportation		\$1,012	Secured		\$1,012
Members of Tiverton Open Space Commission (46 hours)		\$942	Secured	Tiverton Open Space Commission	\$1,313
Warren Land Conservation Trust board members and volunteers (102 hours)		\$2,911	Secured	Warren Land Conservation Trust	\$2,911
Friends of Canonchet Farm board members and volunteers (40 hours)		\$1,141	Secured	Friends of Canonchet Farm	\$1,141
Save The Bay Interns and Volunteers (194 hours)		\$5,537	Secured	Save The Bay	\$5,537
				TOTAL PROJECT COST	\$64,574

VII. BUDGET NARRATIVE (one page maximum)

Please provide a description and justification for each line item included in the project budget form (e.g. for personnel costs, provide hourly and fringe rates, for travel specify rate and estimated number of miles). Please specify any match requirements for each source of funding. Please include costs associated with required annual and final reports to CRMC. Be sure to detail how CRMC funds will be used.

Save The Bay Staff, Mileage & Overhead: Wenley Ferguson, STB's Director of Restoration, will spend 131 hours at \$46.90/hour and Ben Gasper, Restoration Field Technician, will spend 769 hours at \$30/hour. Mileage will equal \$1899 at \$0.47/mile. Save The Bay will use 10% overhead rate on the project expenses.

Excavator Operator: An excavator operator will be hired by Save The Bay for 7 days of operation at \$75/hour.

Excavator Transportation: A hired contractor will transport the excavator from URI's East Farm where RIDEM's Mosquito Abatement Program is located to Haile Farm Preserve and Canonchet Farm (Tiverton will transport the excavator to Fogland Beach as part of their in kind match).

RIDEM Mosquito Abatement Program's excavator: RIDEM's low ground pressure excavator will be rented for 9 days at \$1,000 per day.

RIDEM Mosquito Abatement Coordinator (38 hours): Al Gettman, RIDEM's Mosquito Abatement Coordinator will dedicate 38 hours at \$70/hour for mosquito breeding assessment, design review and construction coordination associated with the use of the low ground pressure excavator.

Town of Tiverton's excavator operator and transportation: The Town of Tiverton will provide transportation of the excavator to and from East Farm valued at \$420 and an operator for 2 days of excavator operation valued at \$592.

Members of Tiverton Open Space Commission (46 hours): The members of the Tiverton Open Space Commission will dedicate 46 hours valued at \$28.54/hour assisting with the site assessments, design review, permit submittal, project implementation and community outreach.

Warren Land Conservation Trust board members and volunteers (102 hours): The members of the Warren Land Conservation Trust will dedicate 102 hours valued at \$28.54/hour assisting with the site assessments, design review, permit submittal, project implementation and maintenance.

Friends of Canonchet Farm board members and volunteers (40 hours): The members of the Friends of Canonchet will dedicate 40 hours valued at \$28.54/hour assisting with the site assessments, design review, project implementation and runnel maintenance.

Save The Bay Interns and Volunteers (194 hours): Save The Bay interns will spend 145 hours assisting with the monitoring and runnel digging and volunteers will spend 49 hours assisting with runnel digging valued at the federal rate of \$28.54.

IX. ADDITIONAL MATERIALS

Please include the following with your application:

- Site and Locus Maps
- Ground-level photographs of existing site conditions
- Aerial photographs, if available
- Preliminary design drawings, maps or engineering plans, if available
- Pertinent physical, ecological, biological, and cultural / historical survey data
- Letters of support

AUTHORIZED SIGNATURE

AUTHORIZED AGENT OF LEAD ORGANIZATION


Signature

1/27/2022
Date

Return your completed proposal by 4:00 p.m. on **January 28, 2022** to:

Caitlin Chaffee
NBNERR
RI Dept. of Environmental Management
235 Promenade Street
Providence, RI 02908

caitlin.chaffee@dem.ri.gov

Applicants are required to submit one (1) signed hard copy of the proposal form and one (1) electronic copy in Adobe PDF format. ****Please submit electronic copy as a SINGLE PDF FILE containing all application materials.****

Contact Caitlin Chaffee at **401-222-4700 xt. 277-4417** with any questions.



AUTHORIZED AGENT OF LEAD ORGANIZATION



Figure 1: Haile Farm Preserve salt marsh owned by Warren Land Conservation Trust and the retention basin and outlet causing impounded water in the brackish marsh dominated by *Phragmites*. (2020 Google Earth image)



Figure 2: Agricultural embankment in foreground creating impounded water and vegetation die off on the marsh platform.

Haile Farm Preserve

draft restoration plan including location of former agricultural embankments

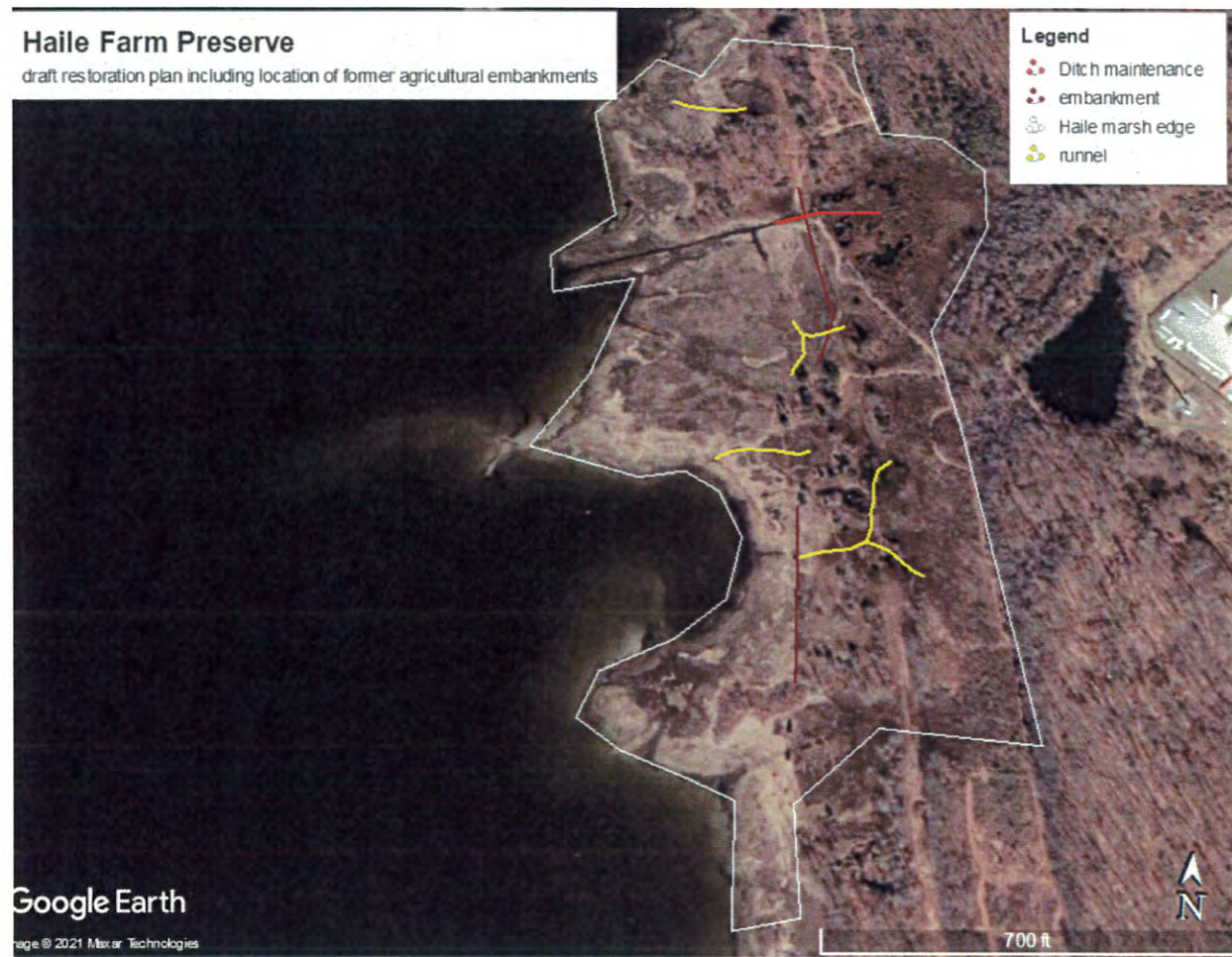


Figure 3: Draft restoration plan for Haile Farm salt marsh

Fogland Beach, Tiverton RI Drainage Enhancement Restoration Project



Figure 4: Site map and draft restoration plan for Fogland Beach marsh



Figure 5: Impounded water and Spartina alterniflora surrounded by high marsh vegetation in former path/road across the marsh at Fogland Beach.



Figure 6: Aerial image (2018) of Town of Narragansett's Canonchet Farm salt marsh



Figure 7: Berm impounds standing water on the marsh platform causing vegetation die-off.

Canochet Farm, Narragansett, RI
Draft Drainage Enhancement Plan

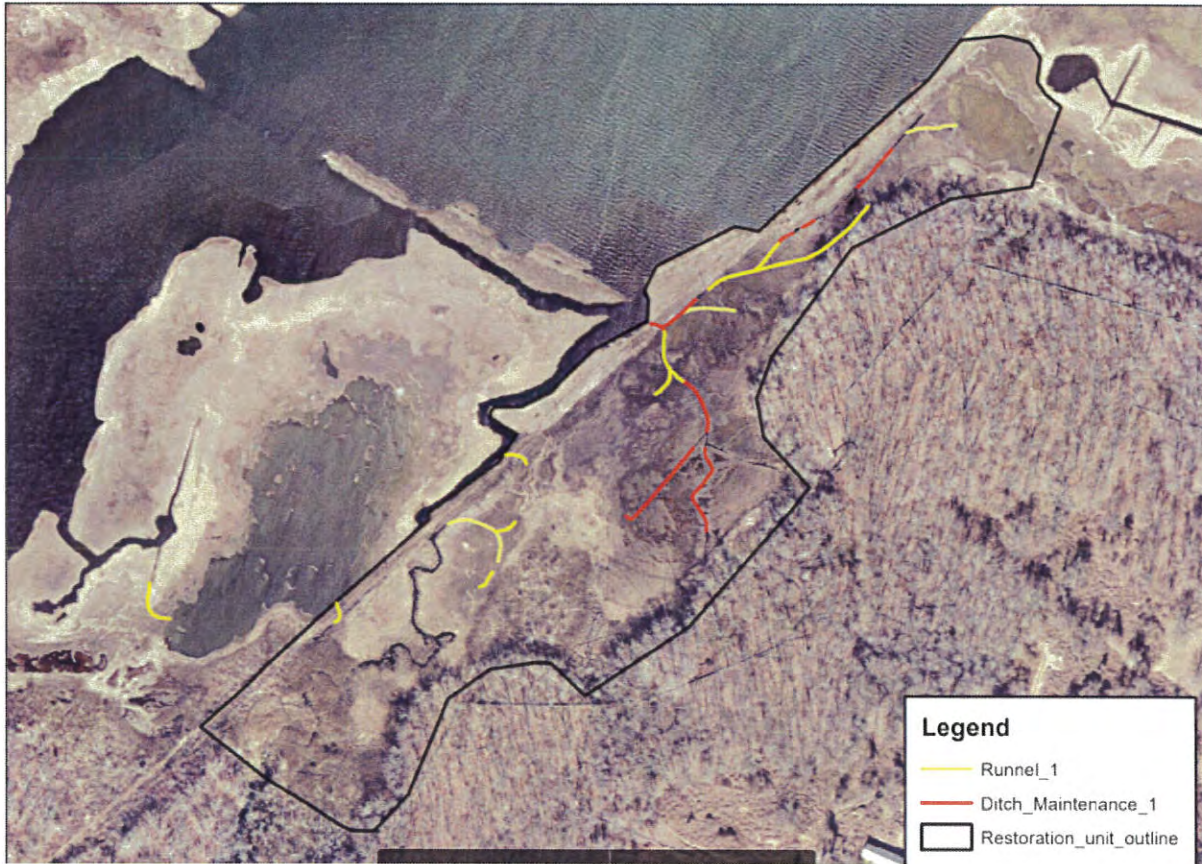


Figure 8: Draft restoration plan for Canonchet Farm salt marsh.



WARREN LAND CONSERVATION TRUST, INC.

January 14, 2022

Caitlin Chaffee
Narragansett Bay National Estuarine Research Reserve
RI Department of Environmental Management
235 Promenade St
Providence, RI 02908

Dear Ms. Chaffee,

The Warren Land Conservation Trust supports Save The Bay's proposal to CRMC's Coastal and Estuarine Habitat Restoration Trust Fund to conduct a salt marsh restoration project at the Haile Preserve on the Palmer River which is owned by the Land Trust. Members of the Warren Land Conservation Trust have been working with Save The Bay on the proposal entitled *Salt marsh restoration and adaptation at Fogland Beach, the Haile Preserve on the Palmer River and Canonchet marsh on the Narrow River*.

The Warren Land Conservation Trust has been an active steward of the Haile Preserve since it received the land from the Town of Warren in 2017 through the creation of public paths and removal of invasive plants in the uplands. The Land Trust has met with Save The Bay multiple times to discuss restoration efforts that can be conducted in the marsh to improve its health and function. Save The Bay is also working with the Land Trust and the Town of Warren to secure technical support from UNH's Stormwater Center to address excess discharge of stormwater and groundwater from a retention pond constructed in the 1990s in the salt marsh's watershed. The direct discharge to the freshwater wetlands adjacent to the salt marsh has caused the increase in *Phragmites* the marsh.

The members of the Land Trust will be involved in the plan and permit development and will work with Save The Bay on the installation of the runnels through hand digging since a significant portion of the marsh is not stable enough for the Department of Environmental Management's low ground pressure excavator. The Land Trust will also be involved in the maintenance and adaptive management of the runnels.

We look forward to continuing to partner with Save The Bay to restore this salt marsh along the Palmer River while developing and implementing plans to address stormwater discharges from its watershed.

Sincerely,

A handwritten signature in black ink, appearing to read "Rock Singewald".

Rock Singewald
President

C: Wenley Ferguson, STB

TOWN OF TIVERTON, RHODE ISLAND

OFFICE OF TOWN ADMINISTRATOR

January 18, 2022

Caitlin Chaffee
Narragansett Bay National Estuarine Research Reserve
RI Department of Environmental Management
235 Promenade St
Providence, RI 02908

Dear Ms. Chaffee,

The Town of Tiverton and the Tiverton Open Space Commission support Save The Bay's proposal to CRMC's Coastal and Estuarine Habitat Restoration Trust Fund to conduct a salt marsh restoration project at the Fogland Beach salt marsh owned by the Town. Members of the Open Space Commission have been working with Save The Bay on the proposal entitled *Salt marsh restoration and adaptation at Fogland Beach, the Haile Preserve on the Palmer River and Canonchet marsh on the Narrow River.*

This salt marsh restoration project will improve the habitat quality of Fogland Beach which is showing signs of degradation due to standing water and areas of vegetation die off in the high marsh. Save The Bay is working with the Town on a water quality and habitat restoration project adjacent to the salt marsh to reduce the amount of stormwater that flows directly into the marsh through the installation of stormwater infiltration areas along Fogland Road and Three Rod Way. Save The Bay has helped the Town secure funds for conceptual designs, engineering and permitting and is working with the Town on a grant to the Infrastructure Bank for the implementation funds. This project is also addressing the degraded salt marsh and marsh migration corridor on the south side of Three Rod Way which is currently isolated from the salt marsh to the north of Three Rod Way due the restriction that the road creates. As part of the stormwater project, the plan will include installing a drainage structure under the road to reconnect the isolated marsh and marsh migration corridor with the salt marsh.

The Town's Department of Public Works will work with Save The Bay on the installation of the runnels and the members of the Open Space Commission will be involved in the project implementation through hand digging runnels and maintenance and adaptive management. The Town's DPW, Recreation Commission and Open Space Commission are collaborating with Save The Bay on dune restoration efforts on the southside of Three Rod Way to restore the dune system on the barrier spit.

We look forward to continuing the partnership with Save The Bay to support the salt marsh restoration on this ecologically valuable area in Tiverton.

Sincerely,

Christopher Cotta



TOWN OF NARRAGANSETT

25 Fifth Avenue
Narragansett, RI 02882
Tel: (401) 782-0654 • Fax (401) 780-8765

JAMES R. TIERNEY
Town Manager
Commissioner of Public Safety

January 25, 2022

Caitlin Chaffee
Narragansett Bay National Estuarine Research Reserve
RI Department of Environmental Management
235 Promenade St
Providence, RI 02908

Dear Ms. Chaffee,

The Town of Narragansett supports Save the Bay's proposal to CRMC's Coastal and Estuarine Habitat Restoration Trust Fund to conduct a salt marsh restoration project at Canonchet Farm on the Narrow River which is owned by the Town. Members of Friends of Canonchet, the stewards of the Town owned land, have been working with Save the Bay on the proposal entitled *Salt marsh restoration and adaptation at Fogland Beach, the Haile Preserve on the Palmer River and Canonchet marsh on the Narrow River*.

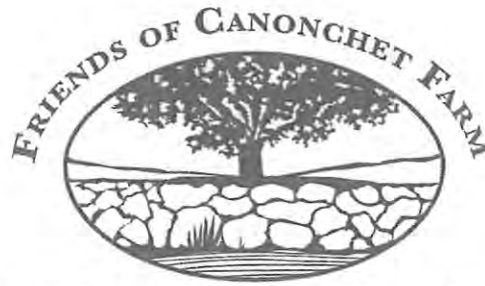
The salt marsh is extremely degraded due to restrictions to tidal flow from a berm that was created for power lines. Save The Bay and Friends of Canonchet Farm have met to discuss restoration efforts that can be conducted in the marsh to improve its health and function. Save The Bay will prepare a restoration plan and permit in coordination with the Town and Friends of Canonchet. The Friends of Canonchet will collaborate with Save the Bay on the installation of the runnels through hand digging since a significant portion of the marsh is not stable enough for the Department of Environmental Management's low ground pressure excavator as well as ongoing maintenance and adaptive management of the runnels. The Friends of Canonchet Farm have been active stewards of the town-owned land since 2007 managing invasive plants and creating paths in the uplands adjacent to the salt marsh.

This project will build upon the collaborative efforts between USFWS and Save the Bay on the marsh that abuts the Town property to the north. Additionally, the Town is working with Save the Bay on another project on the Narrow River to increase community resilience and restore coastal habitats at Middlebridge. Although we voice strong support for these worthy and environmentally friendly efforts, the Town cannot commit to any funding at this juncture.

We look forward to continuing to partner with Save the Bay on restoration efforts on the Narrow River and expand the efforts to include Canonchet Farm. Thank you so much for your hard work and sustained effort on this restoration project.

Sincerely,


James R. Tierney
Town Manager



The Friends of Canonchet Farm's mission is to improve, manage, and preserve Canonchet Farm in partnership with the public for the enjoyment of present and future generations.

Officers

President
Thomas Hoagland
Vice President
Carol Prest
Secretary
Amanda Moss
Treasurer
Richard Vangermeersch

January 26, 2022

Caitlin Chaffee
Narragansett Bay National Estuarine Research Reserve
RI Department of Environmental Management
235 Promenade St
Providence, RI 02908

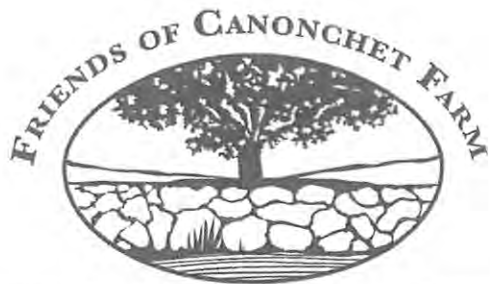
Trustees

Melissa Crawford
Marcia Izzi
Kathie Kelleher
Beth LaLiberte
Kevin McBride
Bob Stepanian
Alan Woodmansee

Dear Ms. Chaffee,

The Friends of Canonchet Farm support Save The Bay's proposal to CRMC's Coastal and Estuarine Habitat Restoration Trust Fund to conduct a salt marsh restoration project at Canonchet Farm on the Narrow River which is owned by the Town. Members of Friends of Canonchet, the stewards of the Town owned land, have been working with Save The Bay on the proposal entitled *Salt marsh restoration and adaptation at Fogland Beach, the Haile Preserve on the Palmer River and Canonchet marsh on the Narrow River.*

Board members of Friends of Canonchet Farm have conducted a site visit with Save The Bay to assess the condition of the marsh bordering the Narrow River and Crooked Brook. The salt marsh is extremely degraded by impounded water on the marsh surface caused by an historic railroad berm that is now used for power lines. At the site visit, we discussed restoration efforts through the use of runnels, access for the Department of Environmental Management's low ground pressure excavator and the opportunity to involve members of Friends of Canonchet in the hand digging of runnels in the portion of the marsh that is not stable enough for the excavator. The Friends of Canonchet will also assist with ongoing maintenance and adaptive management of the runnels.



The Friends of Canonchet Farm's mission is to improve, manage, and preserve Canonchet Farm in partnership with the public for the enjoyment of present and future generations.

The Friends of Canonchet Farm, the Town's Directors of Community Development and Recreation have met to discuss the project. There is support for the restoration project at the staff level and the project will be going before the Town Council in early February.

The Friends of Canonchet Farm have been active stewards of the town-owned land since 2007 managing invasive plants and creating paths in the uplands adjacent to the salt marsh. Save The Bay will prepare a restoration plan and permit in coordination with the Town and Friends of Canonchet.

This project will build upon the collaborative efforts between USFWS and Save The Bay on the marsh that abuts the Town property to the north. We look forward to partnering with Save The Bay on restoring and improving the health of Canonchet Farm's salt marsh.

Sincerely,

A handwritten signature in cursive script, which appears to read "Thomas Hoyle". The signature is written in black ink and is positioned below the word "Sincerely,".

President, Friends Of Canonchet Farm