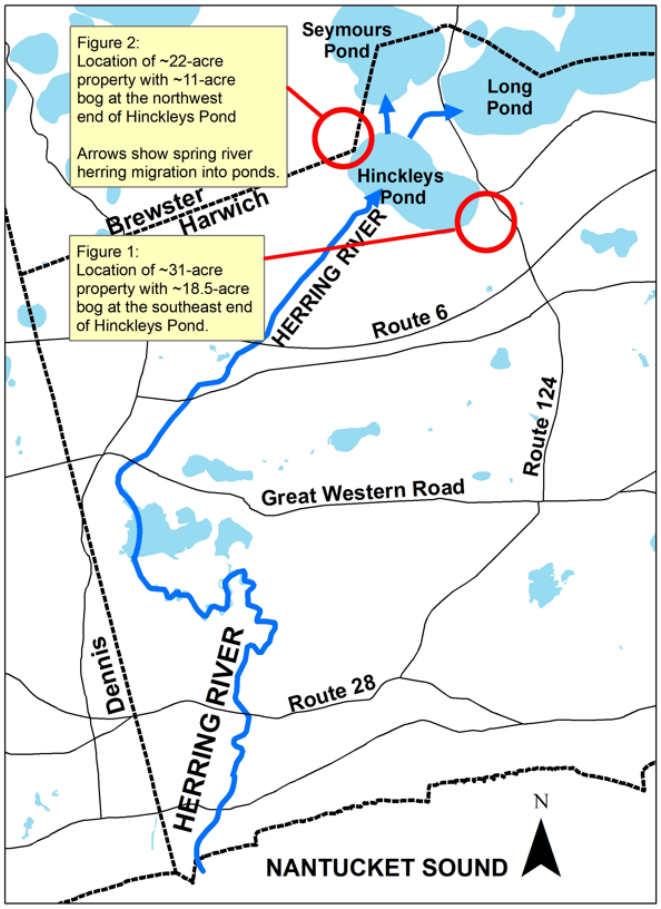
SNEP Watershed Grant
Hinckleys Pond-Herring River Headwaters Eco-Restoration Project
Final Report – Executive Summary

October 31, 2024

The Southeast New England Program (SNEP) Watershed Grant of helped fund Phase One of the Hinckleys Pond-Herring River Headwaters Eco-Restoration Project to meet the goals of data collection, design, and permitting, which will inform Phase Two eco-restoration construction. Ultimately, Phase Two will meet the project goals of restoring approx. 30 acres of retired cranberry bog to natural wetlands, restoring approx. 500 feet of pond shore, and create public trails as well as student learning opportunities.

The project locations include an approx. 11-acre bog (Warner Bog) and 19-acre bog (Jenkins Bog) bookending the 174-acre Hinckleys Pond at the headwaters of the Herring River estuary in Harwich, Massachusetts. The nearest street address for the 19-acre Jenkins Bog is 10 Headwaters Drive, Harwich. The nearest street address for the 11-acre Warner Bog is 36 Proprietor's Way, Harwich.

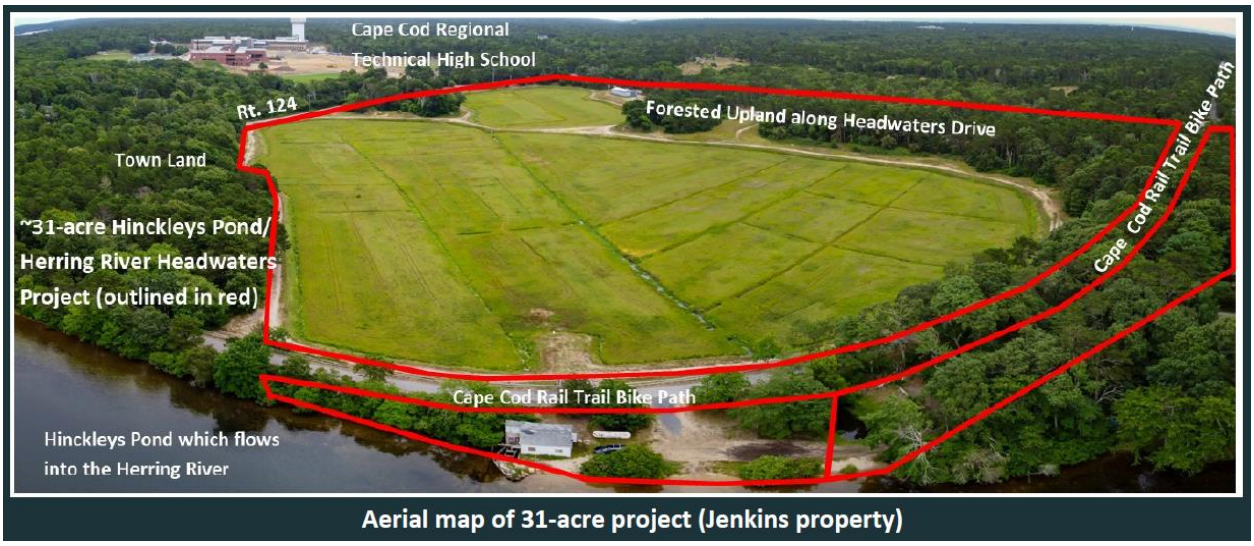


Excessive nutrient loading of nitrogen and phosphorous into Cape Cod's estuaries and ponds causes water quality degradation, loss of healthy habitat, water access closures, and hinders recovery of the once robust river herring fishery. In Harwich, the river herring spawning area of Hinckleys Pond is connected by the Herring River and salt marsh estuary to Nantucket Sound.

For more than a decade, too much phosphorous entering Hinckleys Pond had caused toxic cyanobacteria algae blooms. A 2012 report by engineering firm CDM-Smith concluded that up to 7% of the pond's phosphorous load emanates from two agricultural bogs (Jenkins Bog and Warner Bog) that pump water from, and release water back into, the pond. The two bogs located at the SE and NW ends, respectively, of Hinckleys Pond are proposed for ecological restoration to increase the area of functioning wetland, enhance water quality and herring spawning habitat in Hinckleys Pond, and improve the water quality of the Herring River downstream.

The mission of the local nonprofit land trust Harwich Conservation Trust (HCT) is to preserve land that protects woods, water, wildlife and our shared quality of life on Cape Cod. Thanks to SNEP funding for ecological restoration design and permitting, HCT is leading the effort to rewild retired bogs on Hinckleys Pond at the headwaters of the Herring River in Harwich.

HCT, a, led the successful effort to acquire a 31-acre property from the Jenkins family that includes a 19-acre retired bog. Meanwhile, Jake Brown and family own a 22-acre property with 11-acre Warner Bog. Mr. Brown and his family are supportive of restoration activities on their bog.



Aerial map of 31-acre project (Jenkins property)

The geographic scope of the project is to ecologically restore the two retired bog systems bracketing the NW and SE ends of the 174-acre Hinckleys Pond at the headwaters of the Herring River. The scope of work to occur concurrently at these two bogs is similar to the approach taken for the restoration of other retired cranberry bogs in southeastern Massachusetts.

Inter-Fluve was contracted by HCT to work on this project. Inter-Fluve and HCT have been working together on the restoration designs for HCT's retired bogs within the Robert F. Smith Cold Brook Preserve in Harwich Port. Inter-Fluve has also led the designs and construction observation for the restoration efforts in Plymouth (Eel River, Tidmarsh Farms, and Foothills Preserve) and Falmouth (Coonamessett River and Childs River). Based on this recent history, HCT has confidence in the methods and design approaches taken to develop ecological restoration designs that, once implemented, will result in enhanced wetland habitats and improved water quality.

Project Benefits

1. Create a resilient ecosystem of healthy waters and wetland habitats through the reduction of nutrient loading from two former agricultural sites. Transitioning the property to restored wetland reduces phosphorous load into the pond by up to 7% according to a 2012 Evaluation of Hinckleys Pond water quality report completed by engineering firm CDM-Smith, contracted by the Town of Harwich.
2. Restore 30 acres of healthy wetlands and natural habitat biodiversity.
3. Promote a sustainable community by connecting the public to a new walking trail destination at this ecologically restored destination. Explore potential for creating an All Persons Trail at the 19-acre site that can provide access to people with mobility challenges.
4. Restore public scenic view of Hinckleys Pond from the Cape Cod Rail Trail bike path as well as restore natural pond shoreline to enhance river herring habitat.

Scope of Work:

Data Collection

Field data collection was critical to providing the information needed to appropriately design the wetland restoration as well as navigate the environmental permitting process.

Sediment sampling:

Sediment sampling at ten locations on each site was initially proposed for this project analyzing for heavy metals, herbicides, PCBs, PAHs, VOCs, and TOC. As part of the feasibility study completed in spring 2021, four sediment samples were already analyzed at the larger 19-acre site (Jenkins Bog, SE end of pond) indicating 'clean' conditions and showing constituents at normal environment background levels, therefore far below EPA public health thresholds.

New guidance regarding sediment sampling and management of sediment and soils during construction activities for the ecological restoration of retired cranberry bogs evolved through discussions between MassDEP and the MA Division of Ecological Restoration (DER). New guidance was obtained that sediment sampling was not necessary on these projects if the sediment and soils are to remain on the project site, as is the case for this project. Therefore, this task was removed from Inter-Fluve's scope of work and replaced by the development of the QAPP. The QAPP was been developed, approved by EPA, and signed by all required parties by June 30, 2022.

Hydrology:

Water level loggers were installed in both study areas. At the Jenkins Bogs, two water level loggers were installed to monitor groundwater, one was installed within a bog channel to monitor surface water levels, and one was installed in Hinckleys Pond to monitor fluctuations in pond water levels. At Warner Bog, one water level logger was installed in the bog to monitor groundwater, one was installed within a bog channel to monitor surface water levels, and one was installed in Hinckleys Pond to monitor fluctuations in pond water levels. Water level data has been downloaded two times to date and will continue to be downloaded and analyzed through the summer and fall. The water level loggers were removed from the project site after collecting water level data throughout 2022. The data was then analyzed and incorporated in the designs.

Restoration Design:

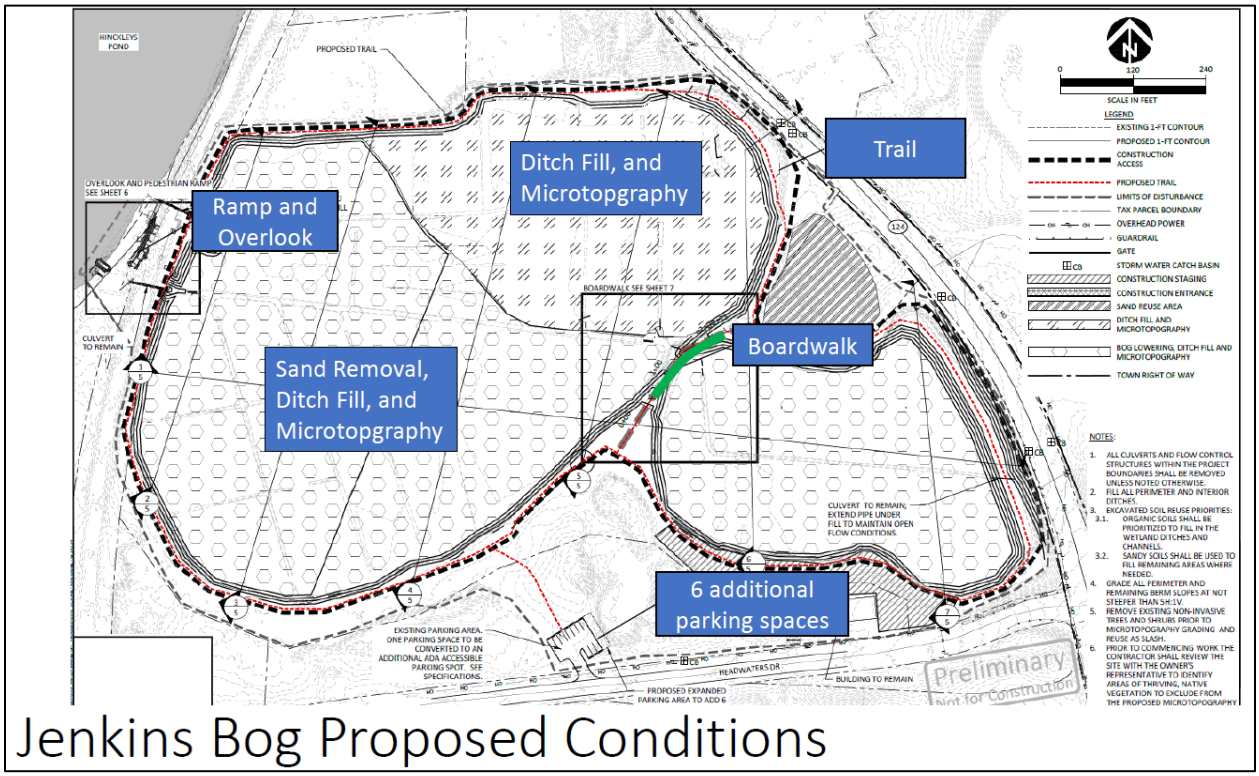
Design deliverables included design plan sets, a basis of design report, engineer's estimate of probable construction costs, and a design meeting. Preliminary design submittals occurred at approximately the 75% complete level before reaching the construction-ready 100% submittal. The 75% design plans were based on the design concepts described in the two eco-restoration feasibility studies completed by Inter-Fluve as well as the Phase One design meetings with the project partners. These designs were sufficient for the permitting process. A basis of design memo accompanied the 75% designs to explain the reasoning behind the designs. The 100% final designs then followed the permitting process and continued meetings with the project partners. The 100% final designs were stamped and provided for construction bidding. Design sheets include access, existing conditions, staging, sequencing, proposed treatments, microtopography, erosion control measures, and vegetation plan.

Jenkins Bog Existing Conditions

The proposed restoration developed during the restoration design process includes removing and/or replacing barriers to flow and aquatic organism passage throughout the former bogs within the project site. Other elements of work are filling existing ditches and creating microtopography to help restore historical hydrologic and vegetative conditions; and, for Jenkins Bog, improving pedestrian walking trail access. Portions of the anthropogenically-placed sand

Warner Bog Existing Conditions

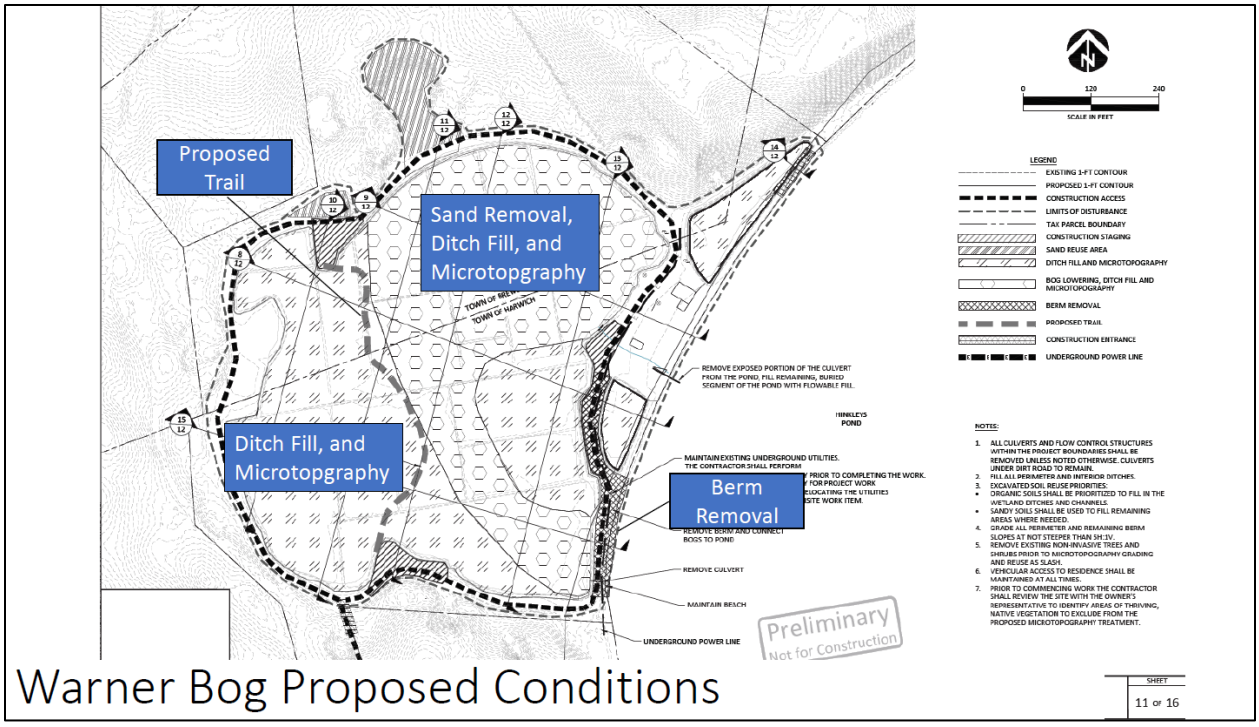
within the bogs will be removed, allowing the wetland surface to be flooded more regularly and allowing the wetland vegetation to flourish. Native wetland vegetation will be planted to provide cover and shade for the channel and wetland habitat.



Compliance

Construction activities within, and adjacent to, retired cranberry bogs required multiple local, state, and federal permits. The permitting process included submitting forms, public notification, public hearings, and site walks with agency reviewers. The following permits were required for the restoration of the two retired bog sites:

- MA Environmental Policy Act (MEPA) Expanded Environmental Notification Form (EENF)
- Wetlands Protection Act Notice of Intent - Conservation Commission and MA Department of Environmental Protection (DEP)
- MA Historical Commission (MHC) Project Notification Form and Memorandum of Agreement
- National Historic Preservation Act (NHPA) Section 106 Phase 1 Reconnaissance Survey
- Section 404 (Army Corps of Engineers)
- National Pollutant Discharge Elimination System (NPDES) Stormwater (US Environmental Protection Agency)
- DCR construction access permit



Within Phase One Hinckleys Pond – Herring River Headwaters Eco-Restoration Project, the data collection, design, and permit work occurred concurrently at the two bog sites resulting in cost savings which are reflected in the grant proposal amount of $146,700.

Permitting began in August 2022 and by December 2022 the MEPA EENF documents had been drafted. New MEPA regulations were expected in early January, so Inter-Fluve waited for that release prior to submitting the permit. The MEPA review process was complete by June 30, 2023.

Because the project was being submitted as an Ecological Restoration Notice of Intent and there is fewer than 100 cubic yards of dredging, there was no requirement to submit a 401 Water Quality Certification. The NOIs for Brewster and Harwich and the Army Corps 404 permit application were submitted by June 30, 2024. The Orders of Conditions from Brewster and Harwich the construction access permit from DCR, and the Army Corps of Engineers Section 404 permit were received by October 31, 2024.

Inter-Fluve then went on to completed the construction bid documents, and publicly bid the project for construction.

Project Budget

The total project cost for the Phase One Hinckleys Pond – Herring River Headwaters Eco-Restoration Project was $196,700, with $146,700 in SNEP grant funding, and $50,000 private match funding.

Funding for the Phase Two -Eco-Restoration Construction has been secured from the following sources:

- NOAA 2023 Transformational Habitat Restoration Grant - $1.6m
- National Estuaries Program Coastal Watersheds Grant Program - $250,000
- Department of Conservation and Recreation MassTrails Grant Program - $100,000
- Harwich Conservation Trust fundraising - $150,000

Next Steps:
Completion of Phase One funded by the SNEP Watershed Grant Program provides a comprehensive planning platform for embarking upon Phase Two of eco-restoration construction. The project has now in the public bidding process for construction.

Construction is scheduled to begin in January 2025 and is estimated to take place over 5 months. Post construction monitoring, including water level hydrologic monitoring and vegetation monitoring will then continue through until 2027.

SNEP Watershed Grant
Hinckleys Pond-Herring River Headwaters Eco-Restoration Project
Final Report

Date: October 31, 2024

1. Cover Information

Project Name: Hinckleys Pond – Herring River Headwaters Eco-Restoration Project
Subaward Number: SNEPWG21-13-HCT
Grant and Reporting Period: December 14, 2021 - December 31, 2023; the grant was extended to October 31, 2024

Subawardee Organization
Report Contact Person, with telephone & email: Michael Lach, Executive Director, Harwich Conservation Trust (HCT), 508-432-3997, mike@harwichconservationtrust.org
Project Leader: same

Report Type: Final

2. Project Report Narrative

2.A. Project Results

The SNEP grant of $146,700 helped fund Phase One of the Hinckleys Pond-Herring River Headwaters Eco-Restoration Project to meet the goals of data collection, design, and permitting, which will inform Phase Two eco-restoration construction. Ultimately, Phase Two will meet the project goals of restoring approx. 30 acres of retired cranberry bog to natural wetlands, restoring approx. 500 feet of pond shore, and create public trails as well as student learning opportunities.

The project locations include an approx. 11-acre bog (Warner Bog) and 19-acre bog (Jenkins Bog) bookending the 174-acre Hinckleys Pond at the headwaters of the Herring River estuary in Harwich, Massachusetts. The nearest street address for the 19-acre Jenkins Bog is 10 Headwaters Drive, Harwich. The nearest street address for the 11-acre Warner Bog is 36 Proprietor's Way, Harwich.

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The Harwich Conservation Trust, a local nonprofit land trust, led the successful effort to acquire a 31-acre property from the Jenkins family that includes a 19-acre retired bog. Meanwhile, Jake Brown and family own a 22-acre property with 11-acre Warner Bog. Mr. Brown and his family are supportive of restoration activities on their bog.

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2.B. Next Steps & Recommendations
Completion of Phase One funded by the SNEP Watershed Grant Program provides a comprehensive planning platform for embarking upon Phase Two of eco-restoration construction. The project has now in the public bidding process for construction.

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2.D. Project Partners

Harwich Conservation Trust (HCT):
HCT is the lead organization and manager for the Hinckleys Pond-Herring River Headwaters Eco-Restoration Project. HCT has experience in this field with its Cold Brook Eco-Restoration Project located in Harwich Port within the Saquatucket Harbor watershed. HCT and partners have been working with Nick Nelson and team from Inter-Fluve, which has completed the 75% design plans for the 66-acre wetland and riparian restoration project. HCT Executive Director Michael Lach has served with the organization for 21 years providing project management and land trust leadership throughout his tenure.

Brown Family:
The Brown Family owns the 22-acre site on the pond's western shore. They committed to supporting the proposed Phase One data collection, design, and permitting work. They also committed to providing public walking access on their property through a conservation restriction granted to HCT. The Brown Family has a history of proactive land and water protection leadership in the Hinckleys Pond – Herring River Headwaters watershed. In 2016, the Brown Family donated 7.2 acres with more than 300 feet of shoreline for permanent protection by HCT. In 2020, the Brown Family donated another 6.65 forested acres to HCT along the westerly edge of their approx. 11-acre bog. At present, they have been actively engaged in helping to raise awareness and funds for the 31-acre Jenkins project on the opposite side of the pond. They have also funded an eco-restoration feasibility study for their own 11-acre bog to make sure that eco-restoration planning progresses concurrently, cost-effectively, and holistically along with the 31-acre Jenkins site.

The Compact of Cape Cod Conservation Trusts, Inc.:
The main role of The Compact of Cape Cod Conservation Trusts, Inc. (aka The Compact) was partnering on the acquisition phase of the 31-acre Jenkins site. On June 1, 2021, in a buy-and-hold purchase from the Jenkins family The Compact stepped in to help keep the 31-acre property off the market during this unprecedented escalation of real estate values, which gives HCT time to raise the necessary funds. On June 21, 2021 HCT received $180,000 from the Massachusetts Department of Conservation and Recreation (DCR) when DCR purchased a 1.4-acre portion of the property adjacent to DCR's Cape Cod Rail Trail.

MA Dept. of Conservation & Recreation (DCR):
DCR owns and manages the 25-mile Cape Cod Rail Trail bike path including more than 1,000 feet bordering both sides of the 31-acre site. HCT worked with DCR to secure $180,000 in DCR funding on June 21, 2021 toward the acquisition phase of the 31-acre Jenkins site. HCT will also partner with DCR to create an interpretive educational sign at a scenic overlook from the bike trail.

2.E. Volunteer and Community Involvement

Volunteer hours were not a significant part of the Phase One design project. However, we have continued to plan for collaboration with faculty of the Cape Cod Regional Technical High School to involve students with scientific studies including sampling for water quality and identifying invasive plant species.

HCT volunteer photographer Gerry Beetham has captured pre-restoration images of the site and HCT volunteers Steve and Eileen Furlong have taken a series of pre-restoration aerial photographs of the site.

2.F. Outreach & Communications

Describe any outreach or educational activities (e.g. training, brochures, videos, press releases or public events) related to the Project. **Include PDF copies of press releases, outreach documents, newspaper articles, etc. as described under "Supporting Materials," below.**

The HCT Fall Newsletter, mailed to 14,000 households, introduces the upcoming project with further detailed articles to be included in future editions.

HCT & Association to Preserve Cape Cod (APCC) provided an informational presentation on the project to the Harwich Select Board on October 28, 2024. This was a project update and opportunity for Q&A from the Select Board, town staff and the public.

3. Project Budget Report

Summary Budget Table 1: Expenditures by Federal Cost Category

Budget Category	Total Budgeted Funds	Total Budgeted Match	Grant Funds Expended This Period	Grant Funds Expended Cumulative	Match Funds Expended This Period	Match Funds Expended Cumulative	Match Source (note cash or in-kind)
Personnel							
Fringe							
Travel							
Equipment							
Supplies							
Contracts	$146,700	$50,000	$13,084.00	$146,700	$8,616	$49,966	Cash Donation
Other							
Total Direct	$146,700	$50,000	$13,084.00	$146,700	$8,616	$49,966	Cash Donation
Indirect							
Total	$146,700	$50,000	$13,084.00	$146,700	$8,616	$49,966	Cash Donation

Summary Budget Table 2: Expenditures by Project Task (Grant Funds Only)

Budget Category	Budgeted Grant Funds	Expended Progress Period 1	Expended Progress Period 2	Expended Progress Period 3	Expended Progress Period 4	Expended Progress Period 5	Expended Progress Period 6	Expended Progress Period 7	Actual Expended to Date
Task 1 – PM	$13,984	$0	$4,846.00	$7,402.50	$2,597.50	$0	$222	$0	$15,068.00
Task 2 – Data Collection	$21,362	$0	$13,369.46	$8,229.74	$0	$0	$0	$0	$21,599.20
Task 3 – Preliminary Designs	$75,335	$0	$25,810.00	$14,189.50	$10,813.75	$0	$576	$11,313	$51,389,25
Task 4 – Final Designs	$36,019	$0	$0	$1,620.00	$13,511.81	$9,954	$20,473.74	$1,771	$45,559.55
Task 5 - Bidding	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total	$146,700	$0	$44,025.46	$31,441.74	$26,923.06	$9,954	$21,271.74	$13,084.00	$146,700

4. Supporting Materials

- Received permits
- Construction bid documents
- Select Board Agenda for project update
- Newsletter excerpt introducing project

5. Certification

Include this language: *The undersigned verifies that the descriptions of activities and expenditures in this final report are accurate to the best of my knowledge; and that the activities were conducted in agreement with the grant contract. I certify that the matching fund levels established in the grant contract and reported here have been met.*

Grantee Signature: Michael W. Lach

Name: Michael Lach
Job Title: Executive Director
Date: November 15, 2024
Organization: Harwich Conservation Trust (HCT)