

**SNEP Watershed Implementation Grants  
Final Report  
Nantucket Conservation Foundation  
Windswept Bog Wetland Restoration**

**0. Executive Summary – SEE ATTACHED.**

**1. Cover Information**

Date: October 8, 2024

Project Name

Subaward Number: SWIG23-6-NAN-WIND

Subaward Period: September 12, 2023 -  
December 31, 2025

Subrecipient Organization: Nantucket Conservation Foundation

Report Contact Person, with telephone & email:

Karen Beattie

Vice President of Science & Stewardship

508-208-4147; kbeattie@nantucketconservation.org

Report Type: Final

**2. Project Report Narrative**

Summarize the Project activities undertaken during the reporting period within the following headings, building upon the narrative from previous reports, if any.

**2.A. Project Results**

**Project Summary:**

Windswept Bog is a former organic cranberry farm on the northeast end of Nantucket Island. The farm is privately owned by NCF, a non-profit dedicated to conservation and stewardship of Nantucket's open lands. The bogs are central to 231 acres of protected open space including freshwater wetlands, hardwood forests, and upland grasslands. The overall restoration project will restore 40 acres of former cranberry bog to self-sustaining natural wetlands and integrate the restored wetlands into the broader landscape and watershed. The project has been recognized by the Massachusetts Division of Ecological Restoration (DER) as a DER Priority Project; partners have been coordinating since 2019 to develop and permit the restoration design. SWIG23 funding contributed to implementation of Phase 1 of the restoration, which restored ~14 acres to diverse wetland habitats.

**Key Objectives:**

There are three high-level goals for the restoration of Windswept Bog: (1) successful ecological restoration, (2) long-term conservation, and (3) continued passive recreational access. To achieve these goals, the project design focuses on restoring hydrology to support self-sustaining wetlands within the site, eliminating barriers to fish and wildlife movement, addressing farm-related physical simplification to dramatically enhance habitat and expand resident (and transient) biota, and providing opportunities for scientific research, public education, and passive recreation.

The project's process-based restoration approach will ultimately repair the natural movement and storage of water as a driver for wetland recovery and re-establishment of self-sustaining wetlands. Work across all phases of the project will remove 3,500ft+ of berms and 28 water control structures to restore wetland hydrology and connectivity and establish a self-sustaining wetland system. Roughening 14 bog cells (6 cells in Phase 2 plus 8 completed in Phase 1) will break up mats of cranberry and underlying sand, expose native peat and seed bank, and create microtopography for diverse wetland habitat. Excavation to lower ground surface elevations will establish a range of habitats (semi-permanently to seasonally flooded wetlands). Collectively, 40 acres of retired cranberry bogs will be restored to wetland habitats, providing flood dampening and improved water quality immediately upstream of Polpis and Nantucket Harbors (which are both impaired for nitrogen and bacteria). The project will preserve refugia for inland species and eventual marsh migration, in turn, reducing exposure to sea level rise and storm damage.

The project will also demonstrate and refine design and construction approaches that can be applied to other retired bogs and resilience projects across the region focused on nature-based strategies for flood protection and adaptation in coastal systems. NCF's ongoing research program at the site will track both short-term and long-term restoration success and facilitate transfer of lessons learned from the project to the broader region.

**Major Tasks:****QAPP Development**

The QAPP was developed and submitted for RAE and USEPA approval. The QAPP for the project was fully approved on February 29, 2024.

**Ongoing Outreach/Education Prior to and During Construction**

NCF has completed meet-and-greets with neighbors prior to construction, as well as hosting one-on-one tours for interested neighbors of the site during construction to answer questions and describe the work that has occurred.

- The initial site visit with Nantucket Conservation Commission was completed prior to construction.
- The 'user friendly' plan renderings have appeared in multiple venues, including:
  - Nantucket Today: The Winter Issue—this is a complementary local magazine available in print at local shops as well as online.
  - New England Public Radio story: "At a Nantucket cranberry bog, conservation group launches its biggest restoration project" (February 15, 2024)
  - The project sign installed at the trailhead parking area
  - The Nantucket Conservation Foundation's and Living Observatory's respective websites
- Other news media have also featured the project in response to a press release
- A complete list of media coverage is included below in Section 2F (with copies also

included as an attachment)

- A Partners and Funders Site Tour took place on March 5, 2024 with 18 project partners (including 1 representative from SNEP) and press from 3 media outlets (Inquirer & Mirror, Nantucket Current, Boston Globe).
- Boardwalks to reconnect passive recreation trails across newly restored areas were installed in March 2024.
- Capacity-building via NCF's participation as a partner in the Living Observatory learning community around cranberry bog restoration is underway—NCF participated in an event with Living Observatory in July 2023, members of the Living Observatory community participated in the Partners and Funders Tour and two project updates have been posted on the Living Observatory website (<https://projects.livingobservatory.org/>).
- NCF has been producing aerial images and drone photo/video of the project throughout construction and using this material for update posts, with plans to create a project documentary from the footage later on.
- NCF has also set up multiple time-lapse cameras to document post-restoration ecosystem development.
- Social media posts featuring the project have been published by all project partners including by NCF, MassDER, SumCo Eco-Contracting, and Fuss & O'Neill, as well as on local Nantucket news accounts.
- Interpretive signage is under development now and will hopefully be installed by spring 2025.
- NCF hosted monthly public tours of the restoration site beginning in April through September 2024 and will resume these tours in 2025 as soon as Phase 2 construction is completed.

### **Contractor Selection**

Bid solicitation, review, and contractor selection took place between October 20, 2023 and December 4, 2023 via a competitive process that was documented in a memo titled "Bidding Process & Bid Evaluation Review and Comments: Windswept Bog Wetland Restoration" dated December 4, 2023 (previously provided to SNEP/RAE). The effective date of the construction contract established between NCF and SumCo Eco-Contracting is December 18, 2023.

### **Mobilization and implementation of Phase 1 of the Wetland Restoration – 100% Complete**

Mobilization began in early January, 2024 and implementation of Phase 1 construction was complete by March 15. A final Phase 1 close-out walk was completed with the contractor on April 2, 2024.

### **On-site Monitoring and Construction Direction by Restoration Design Team**

Fuss & O'Neill's wetland scientists and project designers as well as NCF staff were on site approximately weekly throughout construction to guide field decisions regarding the restoration, confirm that construction was proceeding in accordance with the project design, and provide oversight and administration of the construction contract.

### **Monitoring of Restoration Response & Adaptive Management to Prepare for Phase 2**

Since construction of Phase 1 was completed in March 2024, NCF and project partners conducted post-restoration monitoring (described in detail in the approved QAPP), which included monitoring of: hydrology, soils, vegetation, photo monitoring points, etc.

Fuss & O'Neill staff have completed monthly monitoring visits to conduct visual field observations of surface flow patterns in restored areas and overall patterns of vegetation establishment. Water level loggers removed during active construction were reinstalled on April 1, 2024 and will continue to record continuous measurements of groundwater throughout the site. In September 2024, the team collected baseline soil profiles for the restored bog cell areas; as time progresses, this baseline information will allow the team to track development of hydric soils as an indicator of wetland hydrology.

NCF staff collected vegetation transect data in September 2024. Pre-restoration transects were re-established so that pre-restoration and post-restoration data can be compared to quantify change over time as a result of the restoration effort.

Finally, NCF has been collecting monthly photos at established photo-points. Photos are collected from the same vantage point and in the same cardinal direction each time so that the data can be qualitatively compared to observe and track change before, during, and after restoration.

## **2.B. Next Steps & Recommendations**

Phase 1 restoration areas were selected because they were representative of different site conditions and provided a good variety of restoration activities to observe post-restoration to gain additional information, which has now been incorporated into the design for Phase 2. Construction of Phase 2 is required to complete restoration of the remaining 6 bog cells, creating a continuous, dispersed flow path through the site and connecting the already-restored cells to the natural adjoining wetlands. Phase 2 is also necessary to achieve restoration of the full extent of proposed restoration—the second phase encompasses roughly 2/3 of the total wetland acreage to be restored on the site.

With Phase 1 restoration and post-restoration monitoring now complete, the project is ready for Phase 2. Construction is slated to begin again on November 1, 2024 and continue through March 15, 2025. Phase 2 implementation will restore the remaining 6 bog cells (~26 acres) in the central portion of the site, for a total of approximately 40 acres of restored wetlands across phases. Along with the wetland restoration, upland areas between the bog cells will also be restored and enhanced to facilitate expansion of sandplain grassland habitats and other community types. Phase 2 construction will mirror the work performed in Phase 1, including microtopography, excavation, and construction of boardwalks for public access, resulting in completion of the entirety of the planned restoration project.

Completion of Phase 2 will complete the full extent of the restoration design to achieve the desired ecological and community benefits of the project and set the entirety of the site on a trajectory toward redevelopment of self-sustaining natural wetlands. NCF's Ecological Research, Stewardship and Restoration Department will take over from there, engaging in ongoing monitoring and research after the site is restored to track how vegetation, turtles and other wildlife, and water quality respond to the restoration work over the long-term.

## **2.C. Compliance**

A Quality Assurance Project Plan (QAPP) for the post-Phase 1 monitoring effort was prepared for the project and was approved by EPA on February 29, 2024.

All project permits were issued prior to commencement of Phase 1 construction:

- MA Wetlands Protection Act Restoration Order of Conditions (SE48-3655), issued July 10, 2023
- U.S. Army Corps of Engineers Section 401 Verification Letter (NAE-2023-01812), issued December 20, 2023
- NHESP Habitat Management Plan (23-5199 (19-38610)), approved May 26, 2023
- NPDES Construction General Permit (MAR1004YX), Active as of December 29, 2023

## **2.D. Project Partners**

List major Project partners, and briefly note their contributions.

- Nantucket Conservation Foundation (NCF)
  - Karen Beattie –VP of Science & Stewardship – Project Lead providing grant management, ecological oversight, and liaison to NCF Staff and Board of Trustees
  - Dr. Jen Karberg –Director of Research & Partnerships; oversight of ecological monitoring
  - Kelly Omand –Plant Research Ecologist/Botanist – rare plant habitat; leading ongoing vegetation transect monitoring at randomly-located monitoring locations that were established pre-restoration
  - Danielle O’Dell -Wildlife Research Ecologist- rare wildlife habitat; input on turtle habitat needs, construction best practices
  - Nick Larrabee –Director of Land Management – former bog manager
  - Cormac Collier –President and CEO – fundraising; outreach
  - Neil Foley –Interpretive Education Coordinator/Ecologist
- MADER Jessica Cohn –Cranberry Bog Program/Ecological Restoration Specialist -technical assistance/financial support
- Fuss & O’Neill -Michael Soares and Dr. Julianne Busa– restoration design leads; wetland scientists; technical and design oversight during construction
- NHESP - oversight of Habitat Management Plan
- SumCo Eco-Contracting (Travis Sumner) -- Contractor - implementation of restoration design

## **2.E. Volunteer and Community Involvement**

No volunteer time was proposed as match and volunteer hours have not been contributed during the reporting period. From a public safety perspective, it was decided that having volunteers on site during construction would not be prudent.

## **2.F. Outreach & Communications**

The project has received extensive media attention, including from the Boston Globe, which printed a front page story with pictures of the site immediately post-restoration in mid-March. Links to a number of these media stories are provided below. Please see above for the full outline of active outreach, engagement, and communications activities that NCF has conducted over the course of the project.

- [NPR for the Cape & Islands](#)
- [The Nantucket Current](#)
- [Inquirer & Mirror](#)
- [Daybreak Nantucket](#)
- [WXTK News Radio](#)
- [CapeCod.com](#)
- [Nantucket Today](#)
- [Boston Globe](#) (online with video coverage March 12 and in print (front page story) on March 14<sup>th</sup>)

Copies of press releases and media articles are also attached.

### 3. Project Budget Report

#### 3.A. Summary Budget Tables

**Summary Budget Table 1: Expenditures by Federal Cost Category**

Budget Category	Total SWIG Award	Total Non-Fed 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	--	\$63,788			\$103,695	\$103,695	in-kind
Fringe	--	\$8,974			\$12,743	\$12,743	in-kind
Travel	--	--					
Equipment	--	--					
Supplies	--	--					
Contracts	\$255,000	\$350,000	\$255,000	\$255,000	\$206,473	\$206,473	Cash
Other	--	--					
<b>Total Direct</b>	<b>\$255,000</b>	<b>\$422,762</b>	<b>\$255,000</b>	<b>\$255,000</b>	<b>\$322,911</b>	<b>\$322,911</b>	
Indirect							
<b>Total</b>	<b>\$255,000</b>	<b>\$422,762</b>	<b>\$255,000</b>	<b>\$255,000</b>	<b>\$322,911</b>	<b>\$322,911</b>	

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

Project Task	Total SWIG Award	Expended Progress Period 1	Expended Progress Period 2	Expended Progress Period 3	Expended Progress Period 4	Expended Progress Period 5	Actual Expended to Date
QAPP Development	\$5,000	\$5,000					\$5,000
Ongoing Outreach/Education Prior to and During Construction	--						--
Contractor Selection	--						--
Mobilization and implementation of Phase 1 Construction	\$250,000	\$250,000					\$250,000
On-site Monitoring and Construction Direction by Design Team	--						
Monitoring of Restoration Response and Adaptive Management to Prepare for Phase 2	--						--
<b>Total</b>	<b>\$255,000</b>	<b>\$255,000</b>					<b>\$255,000</b>

**3.B. Budget Narrative**

The approved SNEP Grant budget includes two line items under contracts:

- QAPP Subcontract expenses in the amount of \$5,000
- Phase 1 Construction Contractual expenses in the amount of \$250,000

Over the course of the project, we submitted invoices showing:

- QAPP Development
  - \$5,000 for QAPP development by Fuss & O’Neill, completed at 100% as reflected in progress updates above (F&O invoices dated March 19, 2024 and February 7, 2024).
- Mobilization and Implementation of Phase 1 Construction
  - \$100,000 toward SumCo Eco-Contracting construction contract (Pay Requisition #2)
  - \$150,000 toward SumCo Eco-Contracting construction contract (Pay Requisition #3)

NCF is also reporting cash and in-kind match. Cash was put towards the remainder of Pay Requisition #2 and #3, using DER grant funds.

In-kind services were provided by NCF staff for monitoring, construction contract management and oversight, and outreach according to the following breakdown:

a. Personnel (Grantee Org. Only)		In-kind match
Karen Beattie, NCF VP Science & Stewardship	15 wks @ 25 hrs/wk @ \$72.00	\$27,000
Jen Karberg, Dir. Research & Partnerships	15 wks @ 20 hrs/wk @ \$60.00	\$18,000
Jisun Reiner, Coastal Ecology Technician	9 mos @ 8 hrs/mo @ \$25.00	\$1,800
Nick Larrabee, Dir. Land Management	15 wks @ 20 hrs/wk @ \$48.00	\$14,400
Greg St. Aubin, Land Stewardship Technician	15 wks @ 5 hrs/wk @ \$38.94	\$5,841
Neil Foley, Interpretive Educator	15 wks @ 10 hrs/wk @ \$34.49	\$5,174
Danielle O'Dell, Wildlife Research Ecologist	20 wks @ 10 hrs/wk @ \$46.00	\$9,200
Jordan Gass, Wildlife Field Assistant	20 wks @ 20 hrs/wk @ \$22.00	\$8,800
Kelly Omand, Plant Research Ecologist	14 wks @ 10 hrs/wk @ \$46.00	\$6,440
Spencer Kimble, Botany Field Assistant	8 wks @ 20 hrs/wk @ \$22.00	\$3,520
Gabrielle Robinson, Botany Field Assistant	8 wks @ 20 hrs/wk @ \$22.00	\$3,520
<b>Total Personnel</b>		<b>\$103,695</b>

b. Fringe Benefits		
Karen Beattie, NCF VP Science & Stewardship	\$12.70/hr @ 375 hrs	\$4,763
Jen Karberg, Dir. Research & Partnerships	\$12.70/hr @ 300 hrs	\$3,810
Jisun Reiner, Coastal Ecology Technician	\$4.45/hr @ 72 hrs	\$320
Nick Larrabee, Dir. Land Management	\$4.45/hr @ 300 hrs	\$1,335
Greg St. Aubin, Land Stewardship Technician	\$4.45/hr @ 75 hrs	\$334
Neil Foley, Interpretive Educator	\$4.45/hr @ 150 hrs	\$668
Danielle O'Dell, Wildlife Research Ecologist	\$4.45/hr @ 200 hrs	\$890
Jordan Gass, Wildlife Field Assistant	\$0 (no benefits; seasonal staff)	\$0
Kelly Omand, Plant Research Ecologist	\$4.45/hr @ 140 hrs	\$623
Spencer Kimble, Botany Field Assistant	\$0 (no benefits; seasonal staff)	\$0
Gabrielle Robinson, Botany Field Assistant	\$0 (no benefits; seasonal staff)	\$0
<b>Total Fringe</b>		<b>\$12,743</b>

#### 4. Supporting Materials

Include high-resolution digital images of supporting materials related to the Project, including:

- Project maps and drawings;
- Project photographs, including photos depicting implementation sites before,



- during, and after implementation; photos of Project signs, etc.;
- Press releases, news articles, brochures, educational curricula, etc.

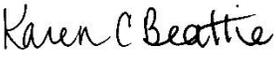
Where file sizes allow, include all supporting materials in the same, single PDF document as the progress report. In the event that file sizes for supporting materials are too large to include in a single PDF of the report, contact RAE to set up a shared cloud file.

A copy of the approved project QAPP was previously circulated and is available upon request. Photos of the Windswept site before, during, and post-restoration are included at the end of this report. Key sheets of the renderings and construction plans are also attached. Full project plans are available on request.

A compilation of media stories has also been included as a PDF.

## 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 matching fund levels established in the grant contract and reported here have been met.*

Grantee Signature: 

Name: Karen C. Beattie

Job Title: Vice President of Science & Stewardship

Date: October 8, 2024

Organization: Nantucket Conservation Foundation

# SNEP Watershed Implementation Grants Final Report: Windswept Bog Wetland Restoration NANTUCKET, MA



FUSS &  
O'NEILL



## Project Site & Problem Addressed

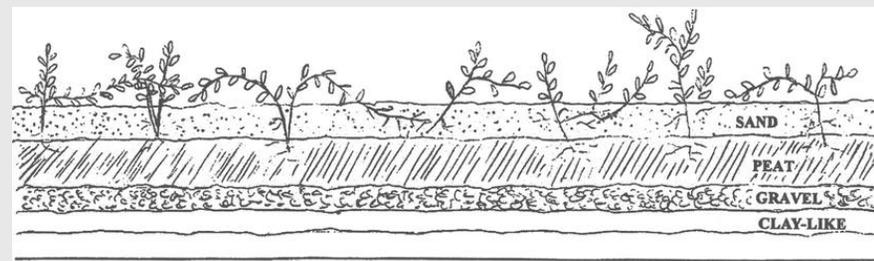
Windswept Bog is a former cranberry farm privately owned and managed by Nantucket Conservation Foundation (NCF), a non-profit dedicated to the conservation and stewardship of Nantucket's open lands. Located on the northeast end of Nantucket Island, Windswept Bog includes 40 acres of human-made former cranberry production bogs that are central to a larger assemblage of 231 acres of open space. Prior to restoration, the site was divided into 14 discrete bog cells ranging from 0.7 to 8.4 acres. Each cell was separated by a 2- to 6-foot-high berm with irrigation/drainage ditches and water control structures to manage water levels and direct flows for cranberry production.

The site is typical of retired cranberry bogs and shares many of the stressors common to these former agricultural landscapes. Historic wetlands were converted to farming and legacy impacts include: a sand fill layer placed over native wetland soils; alteration of hydrology via ditching/berms and water control structures; loss of diversity; pesticide/herbicide residues; and nutrient pollution from past fertilizer use. Cumulatively, this results in dry soils in the upper bog platform and a trajectory toward more upland plant species over time. Massachusetts Division of Ecological Restoration (DER) has repeatedly observed that without proactive restoration, abandoned cranberry farms in Massachusetts react to these legacy stressors by moving toward an alternative ecological path: more simplified and less valuable upland plant communities. This indicates a loss of functioning wetlands and the ecosystem services they provide to the coastal watershed.

In terms of its broader landscape context, the site lies within a 19.9 square mile watershed to Nantucket Harbor on the northeast end of the island bordering the Middle Moors—the largest expanse of undeveloped, protected land on-island. Currently, the bogs lie just outside of tidal influence as constricting structures limit tidal influence into the lowest reach of Millbrook Creek; however, even moderate forecasts of sea level rise through the year 2100 predict increasing tidal influence at Polpis Road and into the northwest quadrant of Windswept Bog.

Drainage to Windswept Bog includes ~1,000 acres which flows northwest through the bogs to Polpis and Nantucket Harbors. Surrounding land uses include light residential development and 3,220 acres of protected open space. The site lies upgradient of Millbrook Creek and all surface water flows through the site, ultimately discharging via a culvert under Polpis Road into Millbrook Creek about ¼ mile upstream of Polpis and Nantucket Harbors. The harbor and its surrounds are simultaneously threatened by nutrient and bacteria impairments due to inland activities, namely nutrient loading from runoff from impervious areas and septic systems. TMDL-driven water quality monitoring of Polpis Harbor identified Millbrook Creek, just downstream of the project, as the source of 60-70% of stream discharge N-load to Polpis Harbor. Agriculture has already ceased at the site and use of fertilizers at the bog are not now a concern. Decreased flow velocities post-restoration will allow sediment to settle out and wetlands to perform filtration of nutrients and other pollutants, directly benefiting these receiving waters.

The area around Polpis and Nantucket Harbors on Nantucket Island, MA contains significant salt marshes and eelgrass beds that are and will be vital to the island's climate resilience potential. As sea level rises, these areas are threatened. Loss of these habitats has been identified as one of the main coastal resilience challenges facing this area of the island, and inland salt marsh migration will need to be accommodated to preserve the ecosystem services provided by coastal wetlands (Nantucket Coastal Resilience Plan, 2021).



The overall restoration project will restore 40 acres of former cranberry bog to self-sustaining natural wetlands and integrate the restored wetlands into the broader landscape and watershed. The project has been recognized by the Massachusetts Division of Ecological Restoration (DER) as a DER Priority Project; partners have been coordinating since 2019 to develop and permit the restoration design. SWIG23 funding contributed to implementation of Phase 1 of the restoration, which restored ~14 acres to diverse wetland habitats.

## Key Objectives

There are three high-level goals for the restoration of Windswept Bog: (1) successful ecological restoration, (2) long-term conservation, and (3) continued passive recreational access. To achieve these goals, the project design focuses on restoring hydrology to support self-sustaining wetlands within the site, eliminating barriers to fish and wildlife movement, addressing farm-related physical simplification to dramatically enhance habitat and expand resident (and transient) biota, and providing opportunities for scientific research, public education, and passive recreation.

The project's process-based restoration approach will ultimately repair the natural movement and storage of water as a driver for wetland recovery and re-establishment of self-sustaining wetlands. Work across all phases of the project will remove 3,500ft+ of berms and 28 water control structures to restore wetland hydrology and connectivity and establish a self-sustaining wetland system. Roughening 14 bog cells (6 cells in Phase 2 plus 8 completed in Phase 1) will break up mats of cranberry and underlying sand, expose native peat and seed bank, and create microtopography for diverse wetland habitat. Excavation to lower ground surface elevations will establish a range of habitats (semi-permanently to seasonally flooded wetlands). Collectively, 40 acres of retired cranberry bogs will be restored to wetland habitats, providing flood dampening and improved water quality immediately upstream of Polpis and Nantucket Harbors (which are both impaired for nitrogen and bacteria). The project will preserve refugia for inland species and eventual marsh migration, in turn, reducing exposure to sea level rise and storm damage.

The project will also demonstrate and refine design and construction approaches that can be applied to other retired bogs and resilience projects across the region focused on nature-based strategies for flood protection and adaptation in coastal systems. NCF's ongoing research program at the site will track both short-term and long-term restoration success and facilitate transfer of lessons learned from the project to the broader region.

# PROCESS-BASED RESTORATION

REMOVING BERMS/  
RECONNECTING BWV



EMBRACING MESSINESS



UN-STRAIGHTENING DITCHES



MICROTOPOGRAPHY



## Phase 1 Results

The project was fully designed and permitted by the end of 2023, with bidding and contractor selection completed between October and December 2023. Phase 1 Restoration was completed in January to March 2024 with funding from DER, a grant from the Richard King Mellon Foundation, and this SNEP SWIG award. The initial phase of the project restored 8 bog cells (~14 acres) at the periphery of the site. The project used what is known as a “process-based restoration approach” – which focuses on repairing the natural movement and storage of water as a driver for wetland recovery and ultimate reestablishment of a self-sustaining wetland system. Berms and water control structures—remnants of past agricultural infrastructure—were removed to restore natural wetland hydrology, allowing water to spread out and move more slowly across the site, rather than being channelized into agricultural ditches. Roughening (essentially ‘messing up’ the surface with an excavator) throughout the bog cells was used to break up mats of cranberry plants and artificially sanded surfaces to expose and engage native peat deposits and seed bed that have been buried for decades and create microtopography for habitat. Deeper excavation in select areas was used to lower ground surfaces and establish pockets of diverse habitats including semi-permanently and seasonally flooded wetlands.

### Windswept, Un-Bogged? Re-Bogged? April, 2024

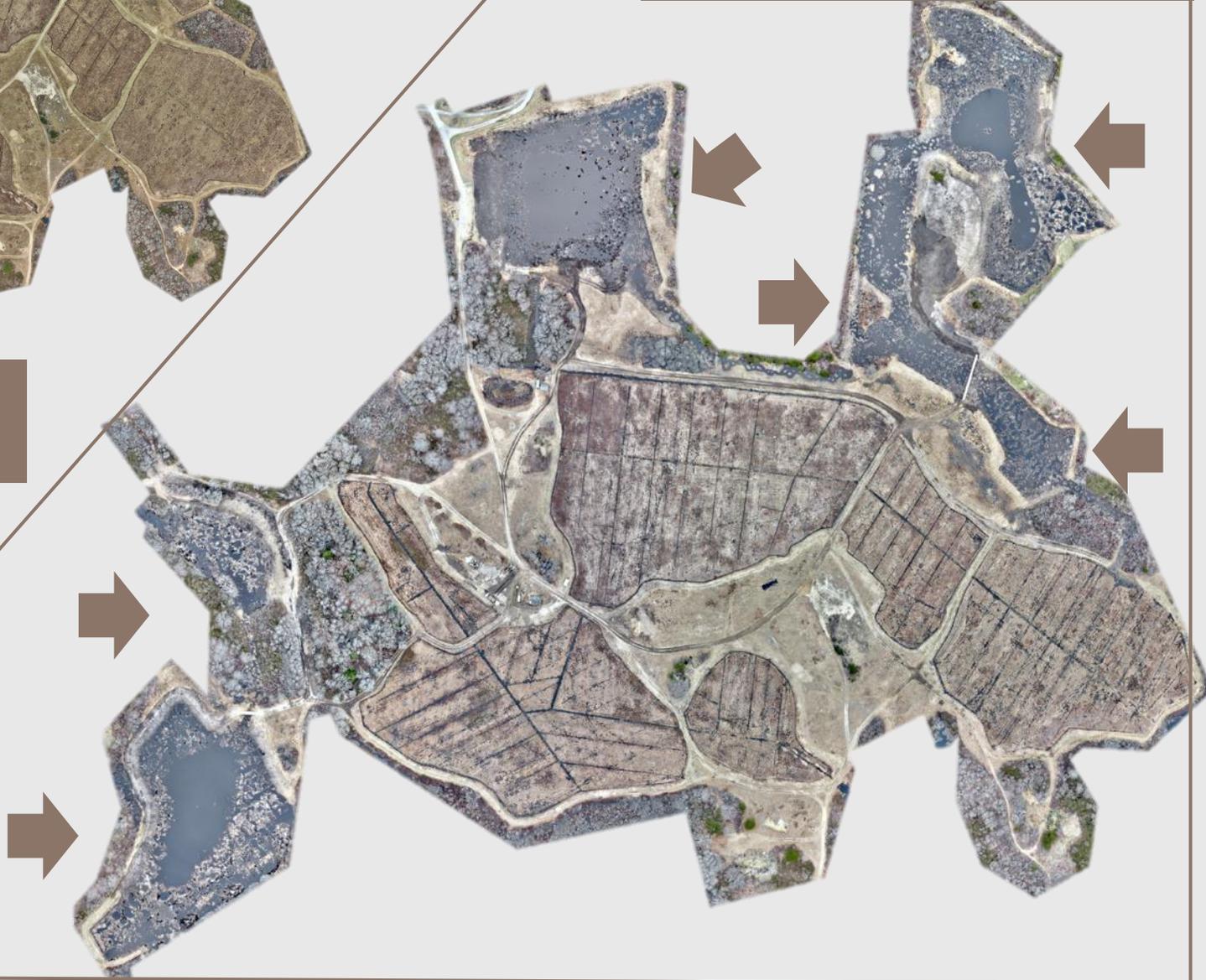




**Windswept by Drone  
January 6, 2024**

**Project Motto:  
“Wetter is Better”**

**Windswept by Drone  
March 9, 2024**

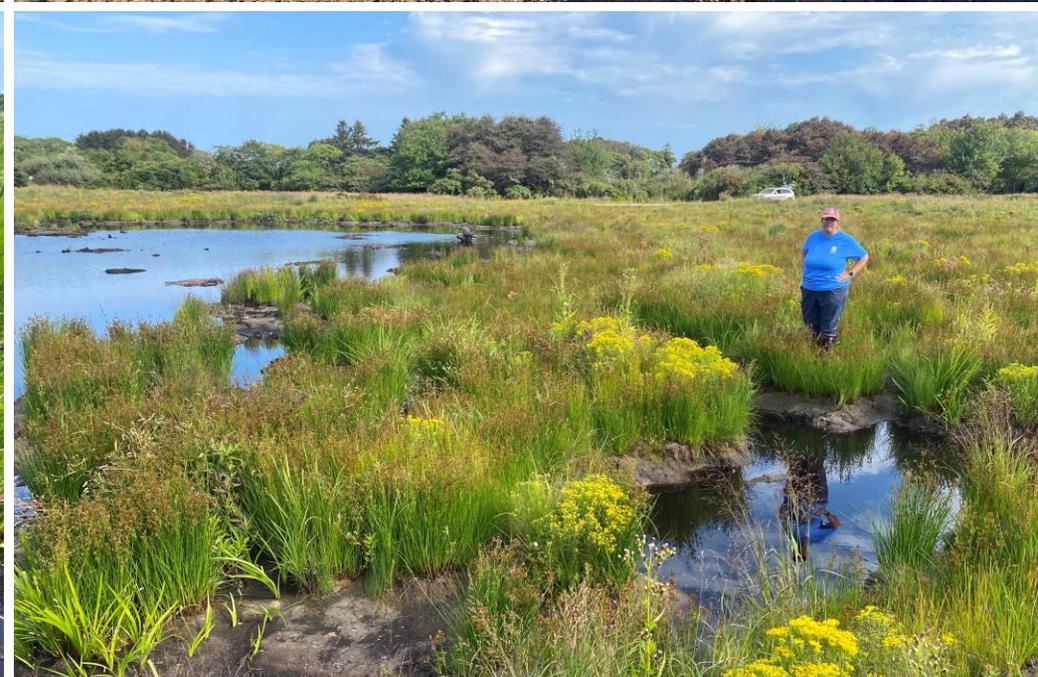




**SPREAD AND SLOW FLOWS...**



**& REMOVE INFRASTRUCTURE...**



**TO GENERATE RESTORED WETLAND HABITAT**





## MONITOR RESPONSE



- WATER LEVEL
- TIMELAPSE IMAGERY
- SOIL PROFILE DEVELOPMENT
- WATER QUALITY (NUTRIENTS)
- FLOW PATTERNS

## ITERATE/ADAPT for PHASE 2



## Next Steps

Phase 1 restoration areas were selected because they were representative of different site conditions and provided a good variety of restoration activities to observe post-restoration to gain additional information which has now been incorporated into the design for Phase 2. The Phase 1 pilot was used to confirm restoration response in diverse portions of the site before restoring the remaining bog cells. Phase 2 will then incorporate adaptive management and methodology based on the outcomes of Phase 1 to complete implementation across the entire site.

Construction of Phase 2 is required to complete restoration of the remaining 6 bog cells, creating a continuous, dispersed flow path through the site and connecting the already-restored cells to the natural adjoining wetlands. Phase 2 is also necessary to achieve restoration of the full extent of proposed restoration—the second phase encompasses roughly 2/3 of the total wetland acreage to be restored on the site.

With Phase 1 restoration and post-restoration monitoring now complete, the project is ready for Phase 2. Construction is slated to begin again on November 1, 2024 and continue through March 15, 2025. Phase 2 implementation will restore the remaining 6 bog cells (~26 acres) in the central portion of the site, for a total of approximately 40 acres of restored wetlands across phases. Along with the wetland restoration, upland areas between the bog cells will also be restored and enhanced to facilitate expansion of sandplain grassland habitats and other community types. Phase 2 construction will mirror the work performed in Phase 1, including microtopography, excavation, and construction of boardwalks for public access, resulting in completion of the entirety of the planned restoration project.

Completion of Phase 2 will complete the full extent of the restoration design to achieve the desired ecological and community benefits of the project and set the entirety of the site on a trajectory toward redevelopment of self-sustaining natural wetlands. NCF's Ecological Research, Stewardship and Restoration Department will take over from there, engaging in ongoing monitoring and research after the site is restored to track how vegetation, turtles and other wildlife, and water quality respond to the restoration work over the long-term.

In keeping with MassDER's restoration philosophy, the Windswept Bog Restoration project is built around the concept of process-based restoration. The design intent is to restore natural ecosystem processes and functions so that the system is set on a trajectory to self-sustaining natural recovery, without further ongoing human intervention. Windswept will continue to evolve and adapt over time and has been designed to allow for this adaptation to incorporate future marsh migration under sea level rise. The site is permanently preserved. NCF's Ecological Research, Stewardship and Restoration Department will have a long-term presence on the site conducting monitoring of the restoration and NCF's Land Management staff will maintain the trail network and access amenities that invite the public to explore the site and learn about the restoration project and its benefits.

## Engagement & Outreach

Along the way, NCF conducted extensive outreach using both in-house staff and through hosting a partners' tour and media interviews to provide information on the project to a wider audience. The team was fortunate to have the project featured on the front page of the Boston Globe in March, 2024.

NCF conducts many types of educational programming for the community to increase environmental awareness about Nantucket's natural resources, including ecologist-led field trips, lectures, classes, and workshops. NCF's focused several of these in-person public field trips on the Windswept project site, starting before restoration to promote project plans and help the public understand what restoration would entail. These firsthand property and project tours have provided attendees with a chance to learn and ask questions from staff prior to the restoration, and after completion of Phase 1 restoration. These programs will continue through the duration of Phase 2 construction and post-restoration phases for this project to ensure that the public is aware of and engaged with the site and the many benefits arising from restoration.



**NERD OUT IN THE MUD. SHARE THE STORY**



# WINDSWEPT MAKES HEADLINES\*.

## The Boston Globe

Serving our community since 1872

THURSDAY, MARCH 14, 2024

### FOR MIGRANTS IN MASS., THE STRUGGLE GOES ON

Haitians who've left so much behind try to find their bearings in Mattapan

By Danny McDonald

Every day the cramped offices of the Immigration Family Services Institute in Mattapan Square are a whirlwind of activity, with newly arrived migrants racing to file in navigating the bewildering bureaucracy of their new world while trying to avoid the barriers that stand in their way.

One is Yveline Jean Pierre, who arrived from Haiti in 2019 through a federal humanitarian parole program. To get his work permit, he must be fingerprinted by US Customs and Immigration Services, which has closed for a month in Mattapan. He has not been able to reach them. He hopes the staff will be able to work around the problem.

Back home, Jean Pierre worked in radio broadcasting and production. But the gang violence that has gripped his country restricted his ability to move around freely more and more places because too dangerous to visit. The justice app-  
MIGRANTS, Page A7



Jacqueline Doucette poses with his one-month-old baby, Atalinda Nereyza, at the Immigration Family Services Institute.

### House lines up behind a possible TikTok ban

Critics say it's too narrow; Mass. delegation divided

By Jim Ptaszyna

WASHINGTON — A TikTok ban awaits House passage with calls opposing a bill that would ban the popular video app in the United States, Representative Jake Auchincloss said his office received 100,000 signatures in support of the legislation.

"We got a flood of mail from a young individual who is just... of the deliberation process that these apps are having on our youth," the New York Democrat said, adding that another voice must come from a person who has lived in the United States. "I mean, Congress needs to get a grip on this."

Auchincloss was part of an overwhelming bipartisan House majority on Wednesday that voted 323-69 to approve the Preventing Americans From Foreign Adversary Controlled Applications Act, which would ban TikTok in the United States unless the Chinese company, with its non-Chinese owners, can meet the mental health impact of TikTok on young people as only part of Auchincloss's motivation — he added that he also is concerned that the Chinese govern-  
TITLES, Page A6

## Doomed cranberry bogs get new life in climate fight



Jeremy Sanders worked on a walkway in Nantucket that is becoming wetlands

By Erin Douglas  
GLOBE STAFF

NANTUCKET — Sinking their boots deeper into the thick, black muck, scientists oohed and aahed among themselves. The object of their affection: a field of upturned mud.

"This is so beautiful," said Beth Lambert, director of the Massachusetts Division of Ecological Restoration.

The mess at the century-old Windswept Cranberry Bog on Nantucket could be beautiful come summer when plants return. But right now?

"It kind of looks like a bomb has gone off," said Jennifer Karberg, director of research and partnerships for the Nantucket Conservation Foundation, which owns the bog.

land of farming and restore the century to its native wetland ecosystem. Wetlands reduce the impacts of sea level rise and coastal erosion by acting as a sponge that can absorb flood waters. They can also mitigate climate change by storing carbon dioxide, a greenhouse gas. Both make them a key strategy for the state's battle to adapt to and fight climate change.

The soil at what was once a 231-acre organic cranberry bog is being upturned, removed, and jumbled as part of the wetland restoration project supported by a \$1 million grant from the US Fish and Wildlife Service. The total cost of the project will likely be more than \$3 million.

Cranberries, which are native to New England, have a deep history in

DAVID L. RYAN/GLOBE STAFF



Elias Perez of Northhill Wilkeson Security greeted a migrant family at the shelter at the Mohonk A. Cane Recreational Complex.

### Despite need, primary care harder to find

Fed up with administrative tasks, doctors moving on

By Felice J. Preyer

When Dr. Rittler first met his new primary care doctor two years ago, she asked him a string of questions. How was he feeling? Did he have any chronic conditions? How was his weight? He said he was feeling fine, he had no chronic conditions, he was 160 pounds, and he had no chronic conditions.

Rittler benefited from a primary care doctor whose expert advice helped him lose weight and feel better. But then the doctor moved to another state, and he was left with a gap in his care. He said he was feeling fine, he had no chronic conditions, he was 160 pounds, and he had no chronic conditions.

Rittler benefited from a primary care doctor whose expert advice helped him lose weight and feel better. But then the doctor moved to another state, and he was left with a gap in his care. He said he was feeling fine, he had no chronic conditions, he was 160 pounds, and he had no chronic conditions.

Primary care doctor	\$294,000
Psychiatrist	\$242,000
Cardiologist	\$544,000
Orthopedic surgeon	\$624,000

### We change the climate of any environment we're in. People feel safe.

CHER WISNACK, part of a private security team employed by the Mohonk A. Cane Recreational Complex in Mattapan

### In emotional time, security on alert at shelters

By Samantha J. Gross

Wendy Dineen and Chris Wisnack walked the perimeter of the indoor shelter at the Mohonk A. Cane Recreational Complex in Mattapan, where hundreds of migrants are staying. The shelter is a temporary measure to provide relief for the families, while the state looks for a permanent solution. The shelter is a temporary measure to provide relief for the families, while the state looks for a permanent solution.

### Doomed cranberry bogs get new life in climate fight

By Erin Douglas

NANTUCKET — Sinking their boots deeper into the thick, black muck, scientists oohed and aahed among themselves. The object of their affection: a field of upturned mud.

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The mess at the century-old Windswept Cranberry Bog on Nantucket could be beautiful come summer when plants return. But right now?

"It kind of looks like a bomb has gone off," said Jennifer Karberg, director of research and partnerships for the Nantucket Conservation Foundation, which owns the bog.

The bog is the thick of construction that will make more than a

Spring trainer  
Thursday: 5:56, Low: 40-45.  
Friday: 5:56, Low: 40-45.  
Saturday: 5:56, Low: 40-45.  
Sunday: 5:56, Low: 40-45.

In a surprise, a judge in Massachusetts has ruled against Donald Trump and his allies in the case of the state's Fish and Wildlife Service.

## Doomed cranberry bogs get new life in climate fight



PHOTO BY DAVID L. RYAN/GLOBE STAFF

commercially grown since the 1800s. A quarter of the nation's cranberries are still produced here, mostly on Cape Cod and in Plymouth County. But as the climate warmed and competitors farther north — namely, Wisconsin and Canada — began to dominate the market, cranberry dynasties across Massachusetts fell.

Rather than let the land from out-of-production bogs go fallow, several farmers across the state have agreed to massive excavation projects to uncover the native wetland ecosystems that often lie below 1 to 3 feet of artificially placed sand. Sand is used as a sort of fertilizer that encourages the cranberry vines to grow stronger and produce more fruit.

So far, the state has completed six cranberry bog restoration projects totaling more than 500 acres. But another 18 restoration projects are already planned or under construction, according to the Division of Ecological Restoration. That would total more than 800 acres.

"The seeds of grasses and shrubs that are necessary to regrow the lost wetlands are already there, lying dormant underground for more than 100 years."

"Once you bring them to the surface and bring back the right conditions, like water and sunlight, they explode back into healthy wetlands," said Jessica Cohn, ecological restoration specialist at the Division of Ecological Restoration, which is part of the state's Fish and Game agency.

Cranberry farming requires cold temperatures and ice, and both are in short supply as winters rapidly warm across New England.

Bogs are soaked and frozen for the winter to hold the plants at a consistent temperature, rather than losing their limbs and buds exposed to variable below-freezing temperatures. Many bogs are briefly flooded again in the fall to help with the harvest. (The cranberries float to the surface, making them easier to collect)

The plants need enough chilling hours each year to spark the right physiological processes for fruit production and the layer of ice to protect their buds.

With those optimal conditions becoming harder to achieve in New England, wetland restoration is an opportunity for struggling cranberry farms to do something positive with properties that have been hit hard by climate change, said Nick Larrabee, a third-generation cranberry farmer on Nantucket.

"A lot of growers haven't been able to make ends meet,"

Cranberry farming requires cold temperatures and ice, and both are in short supply as winters rapidly warm across New England.

digging up the bog, the skeleton of an ancient wetland ecosystem is beginning to emerge: The sandy dirt is gone. So are the human-made ditches that used to corral and drain water from the bog.

What Lambert called the "beautiful" part is soaking wet and contains the treasured seeds.

"Without reseeding it, we suspect that a lot of it is just going to come up on its own," said Travis Sumner, cofounder and principal scientist at an ecological construction company contracted for the project.

By his estimate, the firm has naturalized hundreds of acres of former cranberry bogs across New England. It's a growing part of their business; when the firm started in 2008, cranberry bog naturalization didn't yet exist.

After this bog on Nantucket transforms back into a wetland, scientists hope it will also set the stage for a nearby salt marsh to migrate inland as the ocean rises. The ocean waters off the coast of New England are among the fastest warming on the planet, and Massachusetts is experiencing among the fastest rates of sea level rise in the world.

Construction in the Windswept Cranberry Bog is expected to be complete by next year. Even before then, researchers think the lush carpet of vegetation may begin to emerge.

Lambert said, "That's the building block of the wetland."

"We have the opportunity to actually see nature heal in real time."

Erin Douglas can be reached at erin.douglas@globe.com. Follow her @erinmdouglass23.

\* front page

# BY THE NUMBERS: WINDSWEPT BOGS

**14** Acres of Wetland Restored (Phase 1)

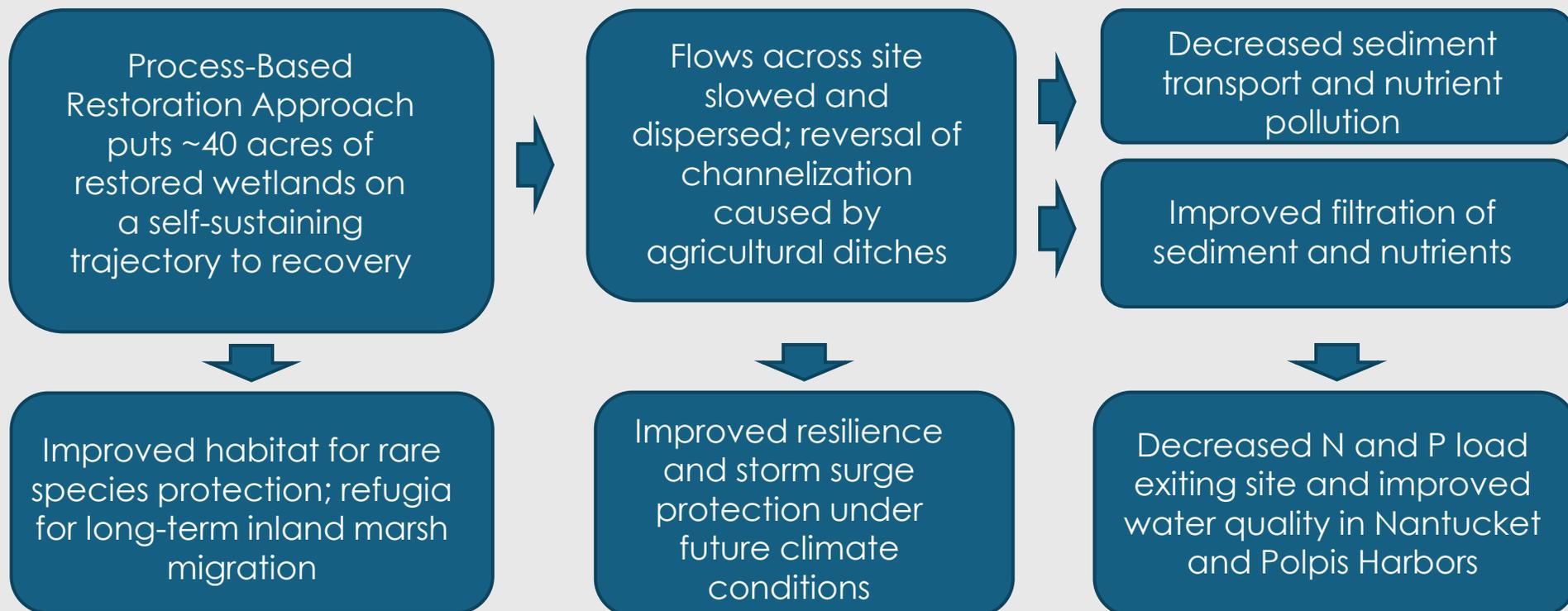
Phase 1 Implementation Cost: **\$821,535**

Value of NCF Staff Time  
contributed to the project: **\$116,438**

Projected Total Implementation Cost  
(all phases): **\$2.9million**



## WATERSHED HEALTH OUTCOMES/BENEFITS





FUSS & O'NEILL, INC.

Remit to:	For EFT/ACH:
Fuss & O'Neill, Inc.	Bank of America
P. O. Box 412889	ABA 011900254
Boston, MA 02241-2889	Acct 385016029253
† 860.646.2469	FEIN: 06-0845648
accounting@fando.com	<b>INVOICE</b>
(Invoice # Reference Required)	

Ms. Karen Beattie  
 Nantucket Conservation Foundation, Inc.  
 118 Cliff Road  
 P.O. Box 13  
 Nantucket, MA 02554-0013

February 07, 2024  
 Invoice No: 0258005  
 Due Date: March 08, 2024

<b>Invoice Total</b>	<b>,050.00</b>
----------------------	----------------

**A/R over 60 days  
 from due date**

Project Manager: Julianne Busa

**Purchase Order: WINDSWEP**

Project 20180319.B28 Nantucket Conservation - Windswept Bogs Fundraising/Grant Writing Support  
Professional Services through January 26, 2024

Task	Fee	Percent Complete	Total Earned	Current Fee Billing
Task 1 - Funding Opportunities Research	4,800.00	100.00	4,800.00	4,800.00
Task 2 – SNEP Letter of Intent	5,000.00	100.00	5,000.00	0.00
Task 3 – NFWF Pre-Proposal	2,500.00	100.00	2,500.00	0.00
Task 4 – SNEP Full Proposal	3,800.00	100.00	3,800.00	0.00
Task 5 - QAPP Development	5,000.00	85.00	4,250.00	4,250.00
Task 6 - SWPPP Development	2,750.00	100.00	2,750.00	0.00
Total Fee	23,850.00		23,100.00	9,050.00
		Previous Fee Billing	14,050.00	
	<b>Total Fee</b>			<b>9,050.00</b>
		<b>Total this Invoice</b>		<b><u><u>\$9,050.00</u></u></b>

Billings to Date	Current	Prior	Total
	9,050.00	14,050.00	23,100.00

Net 30 days unless otherwise agreed-1.5% service charge on invoice balance over 30 days (18% per year). All applicable sales tax included.



FUSS & O'NEILL, INC.

Remit to:	For EFT/ACH:
Fuss & O'Neill, Inc.	Bank of America
P. O. Box 412889	ABA 011900254
Boston, MA 02241-2889	Acct 385016029253
† 860.646.2469	FEIN: 06-0845648
accounting@fando.com	<b>INVOICE</b>
(Invoice # Reference Required)	

Ms. Karen Beattie  
 Nantucket Conservation Foundation, Inc.  
 118 Cliff Road  
 P.O. Box 13  
 Nantucket, MA 02554-0013

March 19, 2024  
 Invoice No: 0259299  
 Due Date: April 18, 2024

**Invoice Total - \$3,570.00**

**A/R over 60 days  
 from due date**

Project Manager Julianne Busa

**Purchase Order: WINDSWEPT**

Project 20180319.B28 Nantucket Conservation - Windswept Bogs Fundraising/Grant Writing Support  
Professional Services through February 23, 2024

Task	Fee	Percent Complete	Total Earned	Current Fee Billing
Task 1 - Funding Opportunities Research	4,800.00	10.00	480.00	-4,320.00
Task 2 – SNEP Letter of Intent	5,000.00	100.00	5,000.00	0.00
Task 3 – NFWF Pre-Proposal	2,500.00	100.00	2,500.00	0.00
Task 4 – SNEP Full Proposal	3,800.00	100.00	3,800.00	0.00
Task 5 - QAPP Development	5,000.00	100.00	5,000.00	750.00
Task 6 - SWPPP Development	2,750.00	100.00	2,750.00	0.00
Total Fee	23,850.00		19,530.00	-3,570.00
		Previous Fee Billing	23,100.00	
	<b>Total Fee</b>			<b>-3,570.00</b>
		<b>Total this Invoice</b>		<b><u><u>-3,570.00</u></u></b>

Billings to Date	Current	Prior	Total
	-3,570.00	23,100.00	19,530.00

Net 30 days unless otherwise agreed-1.5% service charge on invoice balance over 30 days (18% per year). All applicable sales tax included.

# APPLICATION AND CERTIFICATE FOR PAYMENT

# PAYMENT APPLICATION DOCUMENT

TO OWNER: Nantucket Conservation Foundation  
P.O. Box 13  
Nantucket, Ma 02554-0013

APPLICATION NO: 02  
PERIOD TO: 01/31/24  
PROJECT NOS.: N2375

Distribution to:  
 OWNER  
 ENGINEER  
 CONTRACTOR

FROM CONTRACTOR: SumCo Eco-Contracting, LLC  
2 Centennial Drive Suite 4D  
Peabody, MA 01960

ENGINEER: Fuss & O'Neill, Inc.  
1550 Main St suite 400  
Springfield, MA 01103

CONTRACT FOR: Windswept Bog Wetland Restoration

CONTRACT DATE: December 18, 2023

## CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the contract. Continuation Sheet is attached.

1. ORIGINAL CONTRACT SUM.....	\$776,572.00
2. Net change by Change Orders.....	\$57,058.04
3. CONTRACT SUM TO DATE (Line 1 ± 2).....	\$833,630.04
4. TOTAL COMPLETED & STORED TO DATE.....	\$364,789.48
(Column G, attached)	
5. RETAINAGE:	
a. <u>5</u> % of Completed Work (Column G)	\$18,239.47
b. ___ % of Stored Material (not billed)	
Total Retainage (Line 5a + 5b).....	\$18,239.47
6. TOTAL EARNED LESS RETAINAGE.....	\$346,550.01
(Line 4 less Line 5 Total)	
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT	
(Line 6 from prior Certificate).....	\$185,573.00
8. CURRENT PAYMENT DUE.....	\$160,977.01
9. BALANCE TO FINISH, INCLUDING RETAINAGE	
(Line 3 less Line 6)	\$487,080.03

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	\$0.00	
Total approved this month	\$57,058.04	
TOTALS	\$57,058.04	\$0.00
NET CHANGES by Change Order		\$57,058.04

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR: SumCo Eco-Contracting, LLC



Date: 1/31/24

The review and acceptance of this estimate does not attest to the correctness of the quantities shown or that the work has been performed in accordance with the contract documents.

OWNER: Nantucket Conservation Foundation



Date: 1/31/2024

## ENGINEER'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Engineer certifies to the Owner that to the best of the Engineer's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED

\$160,977.01

(Attach explanation if amount certified differs from the amount applied for. Initial all figures on this Application and on the Continuation Sheet that are changed to conform

ENGINEER: Fuss & O'Neill, Inc.



Date: 1/31/24

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

CONTINUATION SHEET

AIA Document G702, APPLICATION AND CERTIFICATE FOR PAYMENT, containing Contractor's signed Certification is attached.

APPLICATION NUMBER: 02  
 APPLICATION DATE: 1/31/2024  
 PERIOD FROM: 1/10/2024  
 TO: 1/31/2024  
 PROJECT NUMBER: N2375

Project Name: Windswept Bog Wetland Restoration

A ITEM No.	B DESCRIPTION OF WORK	UM	C VALUE / UNIT	D # UNITS	E TOTAL VALUE	G WORK COMPLETED				I BALANCE TO FINISH (E - H)		
						F PREVIOUS APPLICATIONS		H TOTAL COMPLETED AND STORED TO DATE				
						# Units	Total	# Units	Total		Value (F + G)	% (H / E)
1	Mobilization / Demobilization	ca	\$162,500.00	1	\$162,500.00	60%	\$97,500.00	15%	\$24,375.00	\$121,875.00	75%	\$40,625.00
2	Water Control	LS	\$3,500.00	1	\$3,500.00		\$0.00	0.5	\$1,750.00	\$1,750.00	50%	\$1,750.00
3	Removal/Disposal of Irrigation Piping	Days	\$2,300.00	3	\$6,900.00		\$0.00	3	\$6,900.00	\$6,900.00	100%	\$0.00
4	Berm Earthwork (cut/fill)	CY	\$16.00	1,860	\$29,760.00		\$0.00	887	\$14,192.00	\$14,192.00	48%	\$15,568.00
5	Bog Earthwork (cut/fill)	CY	\$17.00	8,320	\$141,440.00		\$0.00	2,990	\$50,830.00	\$50,830.00	36%	\$90,610.00
6	Microtopography Grading	AC	\$3,100.00	12	\$37,200.00		\$0.00	5.01	\$15,531.00	\$15,531.00	42%	\$21,669.00
7	Water Control Structure Removal	EA	\$550.00	14	\$7,700.00		\$0.00	3	\$1,650.00	\$1,650.00	21%	\$6,050.00
8	Erosion Control (Silt Fence, etc.)	LS	\$102,000.00	1	\$102,000.00	50%	\$51,000.00	25%	\$25,500.00	\$76,500.00	75%	\$25,500.00
9	Boardwalks - 8 foot, light-duty	LF	\$1,060.00	54	\$57,240.00		\$0.00		\$0.00	\$0.00	0%	\$57,240.00
9.5	Boardwalks - 6 foot, Pedestrian	LF	\$910.00	118	\$107,380.00		\$0.00		\$0.00	\$0.00	0%	\$107,380.00
10	Helical Pier Extensions	EA	\$325.00	40	\$13,000.00		\$0.00		\$0.00	\$0.00	0%	\$13,000.00
11	Seeding Labor	Days	\$1,745.00	2	\$3,490.00		\$0.00		\$0.00	\$0.00	0%	\$3,490.00
12	Restoration of Access Areas	LS	\$3,322.00	1	\$3,322.00		\$0.00		\$0.00	\$0.00	0%	\$3,322.00
13	Woody Material (Install)	Days	\$2,500.00	1	\$2,500.00		\$0.00		\$0.00	\$0.00	0%	\$2,500.00
14	Erosion Control Blanketing	SF	\$1.80	1,000	\$1,800.00		\$0.00		\$0.00	\$0.00	0%	\$1,800.00
15	Fencing/Staking of Property Boundary	LS	\$16,500.00	1	\$16,500.00	1	\$16,500.00		\$0.00	\$16,500.00	100%	\$0.00
16	Rare Species Exclusionary Areas	LF	\$8.20	3,700	\$30,340.00	3,700	\$30,340.00		\$0.00	\$30,340.00	100%	\$0.00
ALLOW I.	Disposal of Construction Waste Material	ALL	\$50,000.00	1	\$50,000.00		\$0.00		\$0.00	\$0.00	0%	\$50,000.00
COR 1-3	Removal/Disposal of Irrigation Piping (equip w/ operator)	Days	\$2,300.00	11	\$25,300.00		\$0.00	2.50	\$5,750.00	\$5,750.00	23%	\$19,550.00
COR 1-3a	Removal/Disposal of Irrigation Piping (labor)	Hours	\$137.29	96	\$13,179.84		\$0.00	32	\$4,393.28	\$4,393.28	33%	\$8,786.56
COR 1-5	Bog Earthwork (cut/fill)	CY	\$17.00	200	\$3,400.00		\$0.00	200	\$3,400.00	\$3,400.00	100%	\$0.00
COR 1-16	Rare Species Exclusionary Areas	LF	\$8.20	1,851	\$15,178.20		\$0.00	1,851	\$15,178.20	\$15,178.20	100%	\$0.00
<b>TOTALS =</b>					\$833,630.04		\$195,340.00		\$169,449.48	\$364,789.48	44%	\$468,840.56



**APPLICATION AND CERTIFICATE FOR PAYMENT**

**PAYMENT APPLICATION DOCUMENT**

TO OWNER: Nantucket Conservation Foundation  
 P.O. Box 13  
 Nantucket, Ma 02554-0013

APPLICATION NO: 03  
 PERIOD TO: 02/29/24  
 PROJECT NOS.: N2375

Distribution to:  
 OWNER  
 ENGINEER  
 CONTRACTOR

FROM CONTRACTOR: SumCo Eco-Contracting, LLC  
 2 Centennial Drive Suite 4D  
 Peabody, MA 01960

ENGINEER: Fuss & O'Neill, Inc.  
 1550 Main St suite 400  
 Springfield, MA 01103

CONTRACT FOR: Windswept Bog Wetland Restoration

CONTRACT DATE: December 18, 2023

**CONTRACTOR'S APPLICATION FOR PAYMENT**

Application is made for payment, as shown below, in connection with the contract. Continuation Sheet is attached.

1. ORIGINAL CONTRACT SUM.....	\$776,572.00
2. Net change by Change Orders.....	\$119,881.24
3. CONTRACT SUM TO DATE (Line 1 ± 2).....	\$896,453.24
4. TOTAL COMPLETED & STORED TO DATE.....	\$675,838.74
(Column G, attached)	
5. RETAINAGE:	
a. <u>5</u> % of Completed Work (Column G)	\$33,791.94
b. _____ % of Stored Material (not billed)	_____
Total Retainage (Line 5a + 5b).....	\$33,791.94
6. TOTAL EARNED LESS RETAINAGE.....	\$642,046.80
(Line 4 less Line 5 Total)	
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT	
(Line 6 from prior Certificate).....	\$346,550.01
8. CURRENT PAYMENT DUE.....	\$295,496.80
9. BALANCE TO FINISH, INCLUDING RETAINAGE	
(Line 3 less Line 6)	\$254,406.44

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	\$57,058.04	
Total approved this month	\$62,823.20	
TOTALS	\$119,881.24	\$0.00
NET CHANGES by Change Order		\$119,881.24

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR: SumCo Eco-Contracting, LLC

*[Signature]*

Date: 3/2/24

The review and acceptance of this estimate does not attest to the correctness of the quantities shown or that the work has been performed in accordance with the contract documents.

OWNER: Nantucket Conservation Foundation

By: *Karen C Beattie*

Date: 3/5/2024

**ENGINEER'S CERTIFICATE FOR PAYMENT**

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Engineer certifies to the Owner that to the best of the Engineer's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED

\$295,496.80

*(Attach explanation if amount certified differs from the amount applied for. Initial all figures on this Application and on the Continuation Sheet that are changed to conform*

ENGINEER: Fuss & O'Neill, Inc.

By: *Julie Bourne*

Date: 3-4-2024

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

CONTINUATION SHEET

AIA Document G702, APPLICATION AND CERTIFICATE FOR PAYMENT, containing Contractor's signed Certification is attached.

APPLICATION NUMBER: 03  
 APPLICATION DATE:  
 PERIOD FROM: 2/1/2024  
 TO: 2/29/2024  
 PROJECT NUMBER: N2375

Project Name: Windswept Bog Wetland Restoration

A ITEM No.	B DESCRIPTION OF WORK	C UM	D VALUE / UNIT	E # UNITS	F TOTAL VALUE	G WORK COMPLETED				H TOTAL COMPLETED AND STORED TO DATE Value (F + G) % (H / E)	I BALANCE TO FINISH (E - H)	
						PREVIOUS APPLICATIONS		THIS APPLICATION				
						#	Total	#	Total			
						Units		Units				
1	Mobilization / Demobilization	ea	\$162,500.00	1	\$162,500.00	75%	\$121,875.00	15%	\$24,375.00	\$146,250.00	90%	\$16,250.00
2	Water Control	LS	\$3,500.00	1	\$3,500.00	1	\$1,750.00	50%	\$1,750.00	\$3,500.00	100%	\$0.00
3	Removal/Disposal of Irrigation Piping	Days	\$2,300.00	3	\$6,900.00	3	\$6,900.00	0	\$0.00	\$6,900.00	100%	\$0.00
4	Berm Earthwork (cut/fill)	CY	\$16.00	1,860	\$29,760.00	887	\$14,192.00		\$0.00	\$14,192.00	48%	\$15,568.00
5	Bog Earthwork (cut/fill)	CY	\$17.00	8,320	\$141,440.00	2,990	\$50,830.00	5,000	\$85,000.00	\$135,830.00	96%	\$5,610.00
6	Microtopography Grading	AC	\$3,100.00	12	\$37,200.00	5	\$15,531.00	6.99	\$21,669.00	\$37,200.00	100%	\$0.00
7	Water Control Structure Removal	EA	\$550.00	14	\$7,700.00	3	\$1,650.00	10	\$5,500.00	\$7,150.00	93%	\$550.00
8	Erosion Control (Silt Fence, etc.)	LS	\$102,000.00	1	\$102,000.00	75%	\$76,500.00		\$0.00	\$76,500.00	75%	\$25,500.00
9	Boardwalks - 8 foot, light-duty	LF	\$1,060.00	54	\$57,240.00	0	\$0.00	50%	\$28,620.00	\$28,620.00	50%	\$28,620.00
9.5	Boardwalks - 6 foot, Pedestrian	LF	\$910.00	118	\$107,380.00	0	\$0.00	50%	\$53,690.00	\$53,690.00	50%	\$53,690.00
10	Helical Pier Extensions	EA	\$325.00	40	\$13,000.00	0	\$0.00		\$0.00	\$0.00	0%	\$13,000.00
11	Seeding Labor	Days	\$1,745.00	2	\$3,490.00	0	\$0.00	0	\$0.00	\$0.00	0%	\$3,490.00
12	Restoration of Access Areas	LS	\$3,322.00	1	\$3,322.00	0	\$0.00	0	\$0.00	\$0.00	0%	\$3,322.00
13	Woody Material (Install)	Days	\$2,500.00	1	\$2,500.00	0	\$0.00	0	\$0.00	\$0.00	0%	\$2,500.00
14	Erosion Control Blanketing	SF	\$1.80	1,000	\$1,800.00	0	\$0.00	0	\$0.00	\$0.00	0%	\$1,800.00
15	Fencing/Staking of Property Boundary	LS	\$16,500.00	1	\$16,500.00	1	\$16,500.00	0	\$0.00	\$16,500.00	100%	\$0.00
16	Rare Species Exclusionary Areas	LF	\$8.20	3,700	\$30,340.00	3,700	\$30,340.00	0	\$0.00	\$30,340.00	100%	\$0.00
ALLOW 1	Disposal of Construction Waste Material	ALL	\$50,000.00	1	\$50,000.00	0	\$0.00	1	\$10,800.00	\$10,800.00	22%	\$39,200.00
COR 1-3	Removal/Disposal of Irrigation Piping (equip w/ operator)	Days	\$2,300.00	11	\$25,300.00	2.5	\$5,750.00	8.50	\$19,550.00	\$25,300.00	100%	\$0.00
COR 1-3a	Removal/Disposal of Irrigation Piping (labor)	Hours	\$137.29	96	\$13,179.84	32	\$4,393.28	14	\$1,922.06	\$6,315.34	48%	\$6,864.50
COR 1-5	Bog Earthwork (cut/fill)	CY	\$17.00	200	\$3,400.00	200	\$3,400.00	0	\$0.00	\$3,400.00	100%	\$0.00
COR 1-16	Rare Species Exclusionary Areas	LF	\$8.20	1,851	\$15,178.20	1,851	\$15,178.20	0	\$0.00	\$15,178.20	100%	\$0.00
COR 2-3	Removal/Disposal of Irrigation Piping (equip w/ operator)	Days	\$2,300.00	4.7	\$10,810.00	0	\$0.00	4.7	\$10,810.00	\$10,810.00	100%	\$0.00
COR 2-4	Berm Earthwork (cut/fill) (Bog 8)	CY	\$16.00	222	\$3,552.00	0	\$0.00	222	\$3,552.00	\$3,552.00	100%	\$0.00
COR 2-5	Bog Earthwork (cut/fill) (Bog 9)	CY	\$17.00	1,690	\$28,730.00	0	\$0.00	1,690	\$28,730.00	\$28,730.00	100%	\$0.00
COR 2-6	Microtopography Grading (Bog 9)	AC	\$3,100.00	3.5	\$10,850.00	0	\$0.00	2.0	\$6,200.00	\$6,200.00	57%	\$4,650.00
COR 2-7	Water Control Structure Removal	EA	\$550.00	1	\$550.00	0	\$0.00	1	\$550.00	\$550.00	100%	\$0.00
COR 2-16	Rare Species Exclusionary Areas	LF	\$8.20	1,016	\$8,331.20	0	\$0.00	1,016	\$8,331.20	\$8,331.20	100%	\$0.00
TOTALS =					\$896,453.24		\$364,789.48		\$311,049.26	\$675,838.74	75%	\$220,614.50



**Photo 1.** *Before restoration* – a retired cranberry bog (Bog 6). Looking east.



**Photo 2.** *After restoration* – roughened bog surface (Bog 10), exposing underlying peat deposits. Looking southeast.



**Photo 3.** *Before restoration* – a retired cranberry bog (Bog 1). Looking northwest.



**Photo 4.** *After restoration* – roughened bog surface (Bog 1), exposing underlying peat deposits. Looking southwest.



**Photo 5.** *Before restoration* – a retired cranberry bog (Bog 14). Looking south.



**Photo 6.** *After restoration* – roughened bog surface (Bog 14), exposing underlying peat deposits. Looking southeast.



**Photo 7.** *Before restoration* – earthen berm separating between scrub-shrub wetland (right) and retired cranberry bog (left, Bog 4). Looking east.



**Photo 8.** *After restoration* – location of earthen berm that has been removed to connect scrub-shrub wetlands to restored bog (Bog 1). Looking northeast.



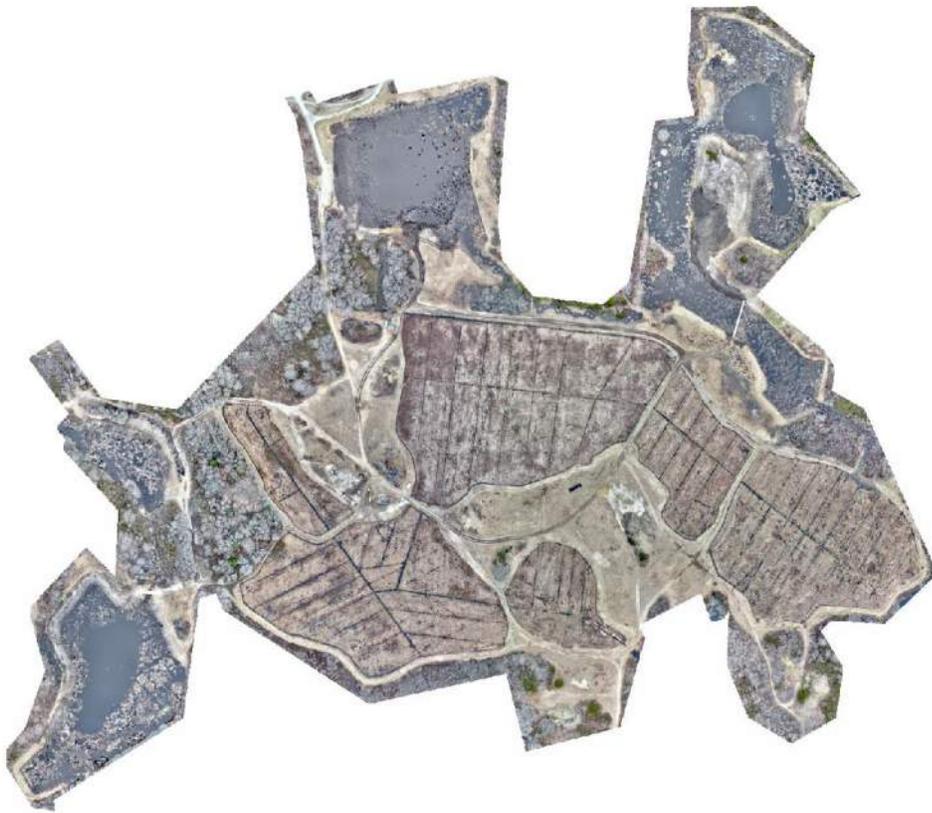
**Photo 9.** *Before restoration* – external ditch conveying surface water from Bog 13 to Bog 9. Looking west.



**Photo 10.** *After restoration* – external ditch from Bog 13 to Bog 9. Restoration entailed widening the flow path, adding diversity (“islands,” multi-thread flow), and terracing upland to repair incision and relax bank slopes.



**Photo 11.** Aerial image of the project area, taken on January 6, 2024. Stars indicate the bogs restored in this phase of work.



**Photo 12.** Aerial image of the project area, taken on March 9, 2024.



# WINDSWEPT BOG WETLAND RESTORATION

## EXISTING CONDITIONS

### LEGEND

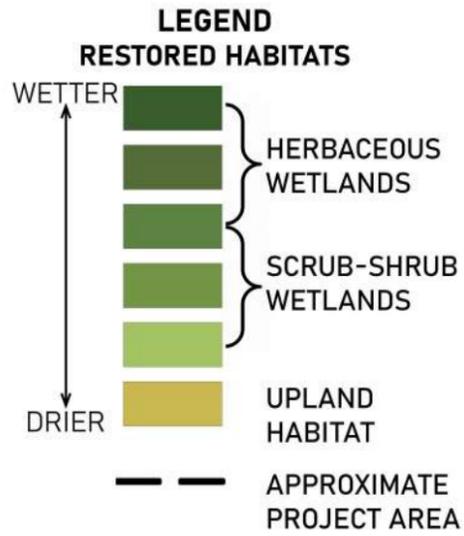
#### EXISTING CONDITIONS

-  EXISTING VEGETATED WETLANDS
-  RETIRED CRANBERRY BOGS
-  APPROXIMATE PROJECT AREA
-  EXISTING TRAIL NETWORK



# WINDSWEPT BOG WETLAND RESTORATION

## PROPOSED RESTORATION AND WETLAND HABITAT



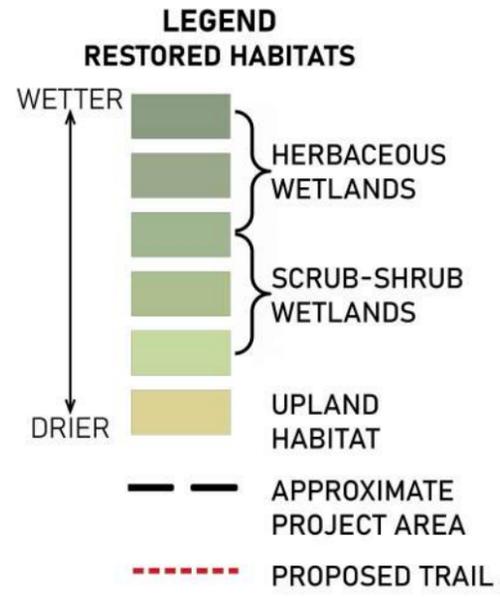
**PLAN LEGEND**

- 1 EXISTING VEGETATED WETLANDS
- 2 WET MEADOW
- 3 BERMS REMOVED/PERFORATED TO CONNECT RESTORED BOGS TO EXISTING WETLANDS
- 4 IRRIGATION DITCHES MODIFIED TO CREATE BROAD, VEGETATED FLOW PATH
- 5 IRRIGATION DITCH DISCONNECTED FROM BOG TO PREVENT BYPASS FLOW OF SURFACE WATER
- 6 POCKETS OF DEEP MARSH HABITAT
- 7 BERMS REMOVED TO CONNECT BOG CELLS
- 8 FLUMES REPLACED BY "COBBLE RIFFLE" TO DISPERSE FLOW AND MAINTAIN STUMP POND'S WATER LEVEL
- 9 UPLAND HABITAT "ISLANDS" CREATED FROM SECTIONS OF BERM
- 10 STUMP POND (TO BE MAINTAINED)
- 11 EASTERN RESERVOIR (TO BE MAINTAINED)



# WINDSWEPT BOG WETLAND RESTORATION

## PROPOSED TRAIL NETWORK AND ACCESS

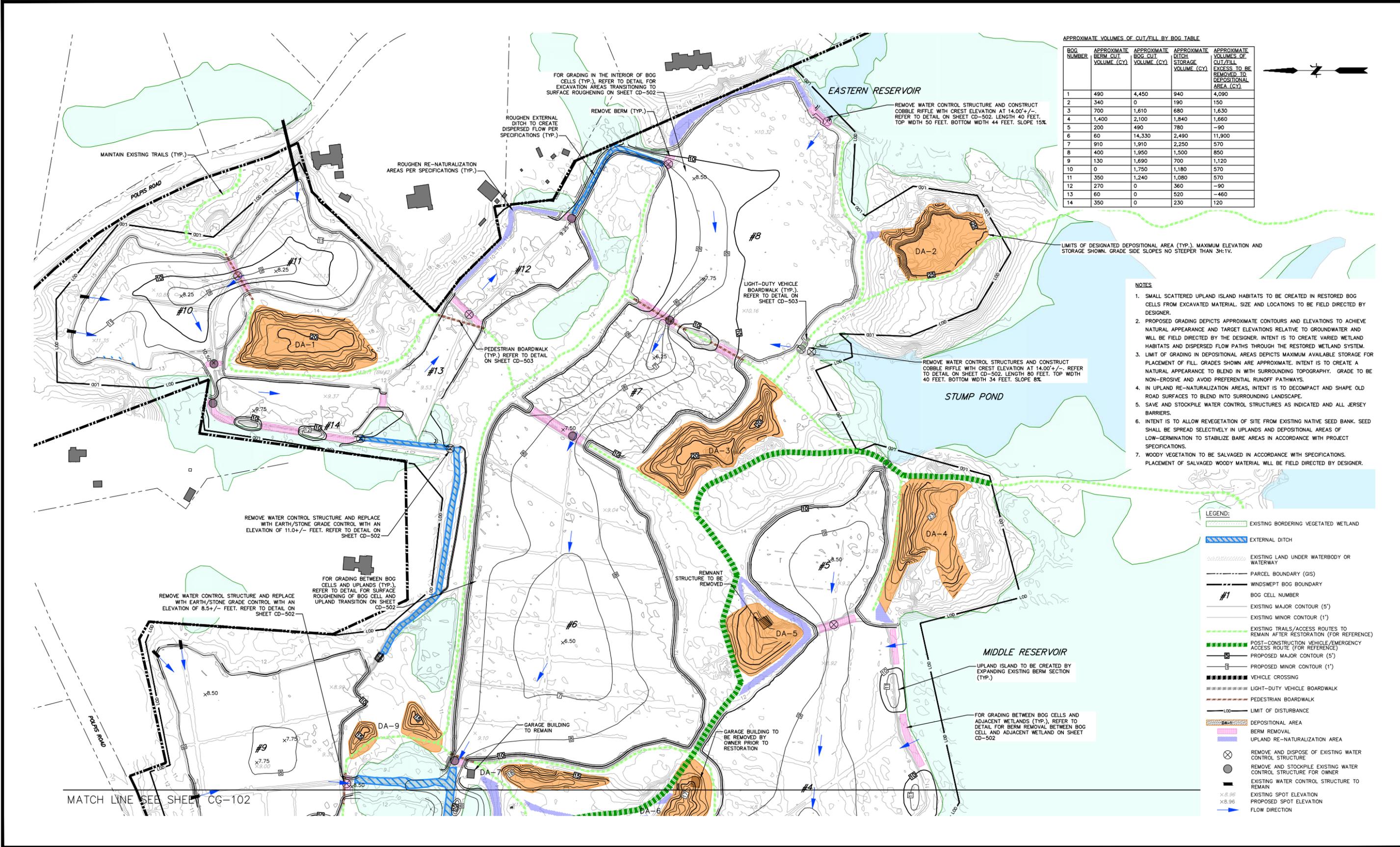


**PLAN LEGEND**

- 1** ACCESS FROM POLPIS ROAD AND POLPIS ROAD BIKE PATH
- 2** PARKING AREA
- 3** PEDESTRIAN ONLY ACCESS FROM POLPIS ROAD
- 4** POTENTIAL VIEWING PLATFORMS
- 5** CONNECTIONS TO STUMP POND AND MIDDLE MOORS TRAILS NETWORK
- 6** PEDESTRIAN ONLY ACCESS FROM ALMANACK POND ROAD



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APPROXIMATE VOLUMES OF CUT/FILL BY BOG TABLE

BOG NUMBER	APPROXIMATE BERM CUT VOLUME (CY)	APPROXIMATE BOG CUT VOLUME (CY)	APPROXIMATE DITCH STORAGE VOLUME (CY)	APPROXIMATE VOLUMES OF CUT/FILL EXCESS TO BE REMOVED TO DEPOSITIONAL AREA (CY)
1	490	4,450	940	4,090
2	340	0	190	150
3	700	1,610	680	1,630
4	1,400	2,100	1,840	1,660
5	200	490	780	-90
6	60	14,330	2,490	11,900
7	910	1,910	2,250	570
8	400	1,950	1,500	850
9	130	1,690	700	1,120
10	0	1,750	1,180	570
11	350	1,240	1,080	570
12	270	0	360	-90
13	60	0	520	-460
14	350	0	230	120

- NOTES
- SMALL SCATTERED UPLAND ISLAND HABITATS TO BE CREATED IN RESTORED BOG CELLS FROM EXCAVATED MATERIAL. SIZE AND LOCATIONS TO BE FIELD DIRECTED BY DESIGNER.
  - PROPOSED GRADING DEPICTS APPROXIMATE CONTOURS AND ELEVATIONS TO ACHIEVE NATURAL APPEARANCE AND TARGET ELEVATIONS RELATIVE TO GROUNDWATER AND WILL BE FIELD DIRECTED BY THE DESIGNER. INTENT IS TO CREATE VARIED WETLAND HABITATS AND DISPERSED FLOW PATHS THROUGH THE RESTORED WETLAND SYSTEM.
  - LIMIT OF GRADING IN DEPOSITIONAL AREAS DEPICTS MAXIMUM AVAILABLE STORAGE FOR PLACEMENT OF FILL. GRADES SHOWN ARE APPROXIMATE. INTENT IS TO CREATE A NATURAL APPEARANCE TO BLEND IN WITH SURROUNDING TOPOGRAPHY. GRADE TO BE NON-EROSIVE AND AVOID PREFERENTIAL RUNOFF PATHWAYS.
  - IN UPLAND RE-NATURALIZATION AREAS, INTENT IS TO DECOMPACT AND SHAPE OLD ROAD SURFACES TO BLEND INTO SURROUNDING LANDSCAPE.
  - SAVE AND STOCKPILE WATER CONTROL STRUCTURES AS INDICATED AND ALL JERSEY BARRIERS.
  - INTENT IS TO ALLOW REVEGETATION OF SITE FROM EXISTING NATIVE SEED BANK. SEED SHALL BE SPREAD SELECTIVELY IN UPLANDS AND DEPOSITIONAL AREAS OF LOW-GERMINATION TO STABILIZE BARE AREAS IN ACCORDANCE WITH PROJECT SPECIFICATIONS.
  - WOODY VEGETATION TO BE SALVAGED IN ACCORDANCE WITH SPECIFICATIONS. PLACEMENT OF SALVAGED WOODY MATERIAL WILL BE FIELD DIRECTED BY DESIGNER.

- LEGEND:
- EXISTING BORDERING VEGETATED WETLAND
  - EXTERNAL DITCH
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  - PARCEL BOUNDARY (GIS)
  - WINDSWEPT BOG BOUNDARY
  - BOG CELL NUMBER
  - EXISTING MAJOR CONTOUR (5')
  - EXISTING MINOR CONTOUR (1')
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  - PROPOSED MAJOR CONTOUR (5')
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  - LIGHT-DUTY VEHICLE BOARDWALK
  - PEDESTRIAN BOARDWALK
  - LIMIT OF DISTURBANCE
  - DEPOSITIONAL AREA
  - BERM REMOVAL
  - UPLAND RE-NATURALIZATION AREA
  - REMOVE AND DISPOSE OF EXISTING WATER CONTROL STRUCTURE
  - REMOVE AND STOCKPILE EXISTING WATER CONTROL STRUCTURE FOR OWNER
  - EXISTING WATER CONTROL STRUCTURE TO REMAIN
  - EXISTING SPOT ELEVATION
  - PROPOSED SPOT ELEVATION
  - FLOW DIRECTION

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
1.				

SEAL	SEAL		
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 HORZ.: 1" = 100'  
 VERT.:  
 DATUM:  
 HORZ.: NAD83  
 VERT.: NAVD88  
 GRAPHIC SCALE

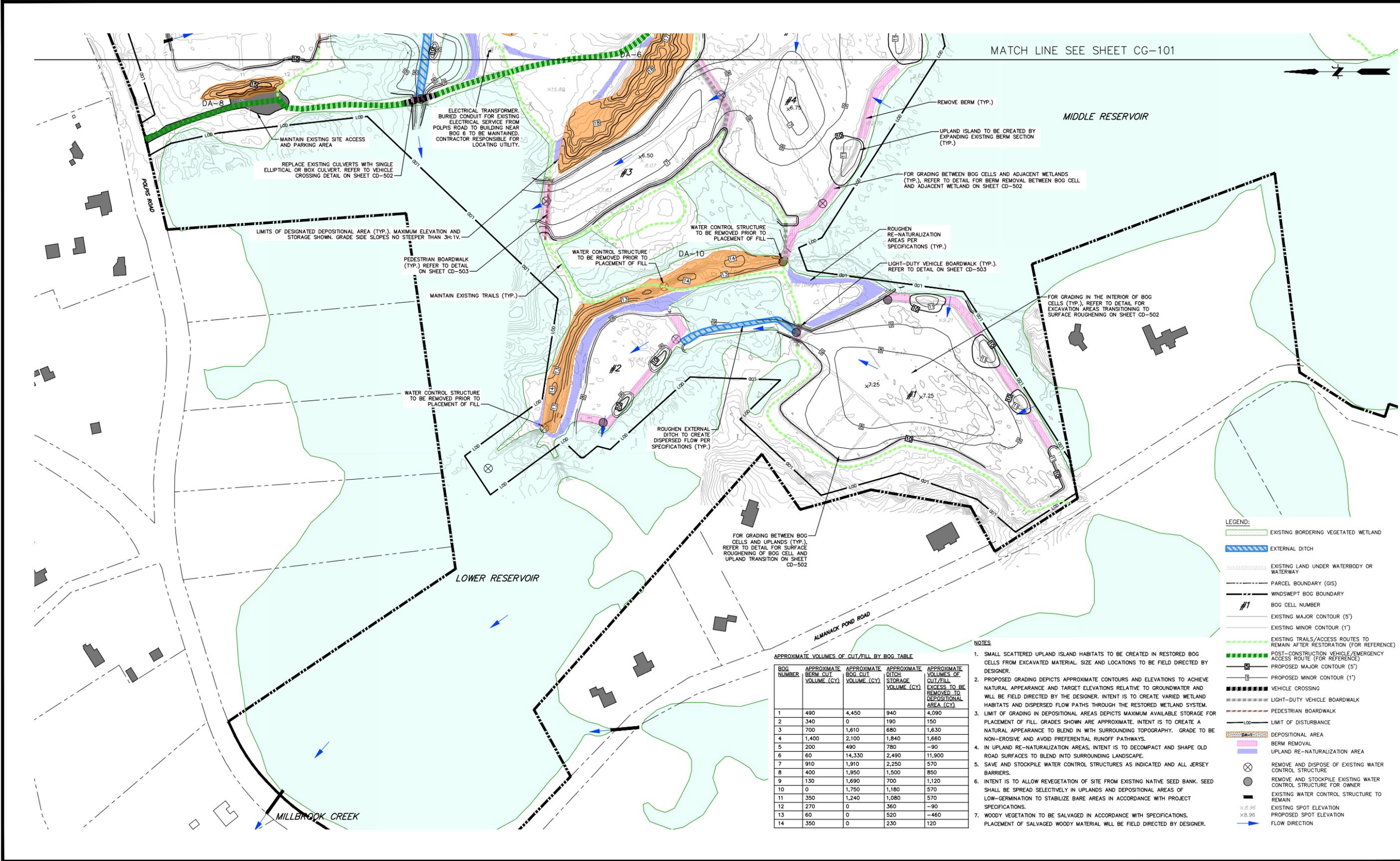
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 SPRINGFIELD, MA 01103  
 413.452.0445  
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MASSACHUSETTS DIVISION OF ECOLOGICAL RESTORATION  
 RESTORATION DESIGN (1 OF 2)  
 WINDSWEPT BOG WETLAND RESTORATION  
 NANTUCKET MASSACHUSETTS

PROJ. No.: 20180319.B29  
 DATE: OCTOBER 2023  
**CG-101**

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MASSACHUSETTS DIVISION OF ECOLOGICAL RESTORATION  
 RESTORATION DESIGN (2 OF 2)  
 WINDSWEPT BOG WETLAND RESTORATION  
 NANTUCKET MASSACHUSETTS

PROJ. No.: 20180319.B29  
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**CG-102**