

Nantucket Coastal Resilience Advisory Committee (CRAC)

Tuesday, September 12, 2023

Via Zoom

*Meetings are audio- and video-recorded

Members present: Gary Beller, Dr. Sarah Bois, Peter Brace, Tim Braine, Matt Fee, Christy Kickham, Joanna Roche, Doug Rose

Members Absent: Abby De Molina, Rachael Freeman, Dr. Jen Karberg

Staff present: Leah Hill, Vince Murphy

Members of the public: R.J. Turcotte, D.Anne Atherton, Rick Atherton, Helmut

Recording available here: <https://www.youtube.com/watch?v=YtaRA930ld0>

1. Call to Order – 10:02am

- the meeting was called to order by chair Peter Brace

2. Meeting announcements

- Script for remotely conducting Open Meetings
- Meeting is being audio/visually recorded

3. Public comment

- Receiving no public comments at this time, Chair Brace proposed that as an advisory committee, he believes it would be appropriate for CRAC to allow for and encourage public comment at every opportunity.
 - *There was consensus from the committee in support of this change.*

4. Discuss and solidify subcommittees

- Brace and Hill suggested that subjects that have been tentatively identified for subcommittees may be more efficiently/effectively addressed via regular agenda items.
 - *Consensus of the committee was supportive of this change, particularly with regard to topics that can be assigned to a single committee member working solo.*
 - *There was discussion over how to accelerate progress on issues that might benefit by two (i.e., less than a quorum of) committee members working together to prepare recommendations for the broader committee.*
 - ◆ *Murphy underlined the importance of avoiding serial communication. He urged that before any members work together to draft proposals for committee review, he consult with the Town Public Records Compliance Officer.*
 - *Several committee members expressed particular concern over how CRAC can best advise on the financing of CRP projects, and other budget-related issues (e.g., advocating for the hiring of a grant writer). Roche and Kickham have offered to prepare an overview for the committee on how to navigate the Town's budgeting and capital process.*
 - ◆ *Murphy argued that finance is not part of CRAC's charge.*
 - ◆ *Fee cited the CRD discussion as a recent example of Select Board asking CRAC to advise on financing matters.*

- ◆ *Roche urged CRAC to advocate on all matters related to financing of the CRP*
- ◆ *Consensus of the committee was to put a hold on this until the next meeting*

5. Update on status of Coastal Resilience Plan (CRP) strategies/projects by TON Coastal Resilience Coordinator Leah Hill

- Overall, about half of the 40 projects are either in development, under way, or have been completed:
- 1-1: Community Education & Outreach for Property Owner Best Practices
 - *Hill suggested that while this has been ongoing with staff for some time, this should be a focus area for CRAC*
- 1-2: Updates to Zoning Bylaw
 - *Subject to PLUS schedule*
- 1-3: Updates to Wetland Regulations
 - *Subject to ConCom - under way, aiming to solidify by end of year*
- 1-4: Strategic Retreat and Relocation Program
 - *In development; scope has been drafted and request for capital next fiscal year*
- 1-5: Interdepartmental Working Group
 - *Once per month meetings are ongoing*
- 1-6: Joint Staff Review of Development Proposals
 - *In development*
- 1-7: Coastal Resilience and Sustainability Program
 - *Complete*
- 1-8: Shoreline change monitoring program
 - *Complete and ongoing*
- 1-9: Sediment Sourcing & Transport Study
 - *In progress for Madaket and Nantucket Harbors*
 - *Anticipated completion date October 2024.*
- 1-10: Stormwater Management Plan
 - *Sewer Dept has taken responsibility on this*
 - *Dependent upon completion of 1-12 and 1-13*
- 1-11: Sediment Budget
 - *On hold pending completion of 1-9*
- 1-12: Stormwater Bylaws Assessment
 - *Underway by Sewer Dept*
- 1-13: Stormwater Bylaws and Regulation Update
 - *Underway by Sewer Dept*
 - *Aiming to complete by 2023*
- 1-14: Update SLR scenarios
 - *Complete as of July 2023*
- 2-5: Building Scale Resilience at 37 Washington St
 - *Not yet started due to other priorities*
- 2-6: Downtown neighborhood flood barrier Phase 1
 - *Applied for CZM grant; awaiting verdict*

- 3-2: Ames Ave Bridge Resilience and 3-4: Madaket Erosion & Ames Ave Protection
 - *Both are proceeding*
- 3-5: DPW and Landfill Resilience
 - *Reviewing Town property on Shadbush Road*
- 4-1: Polpis Road Raising and Bridge Conversion at Folger's Marsh
 - *Prep work for capital request is complete*
- 4-2: Polpis Road Raising, Culvert Expansion, Wave Attenuation at Sesachacha
 - *Wave attenuation aspect underway; partnering with abutter Mass Audubon; design by Woods Hole Group, nearshore oyster reef to be completed by December 2024*
- 4-3: Coatue Erosion Management and Dune Resilience
 - *Trustees have identified two priority areas: the Haulover and Coskata Pond*
 - *NCF has also identified locations at First and Second Points where lower cost management techniques might be appropriate; BU is studying wave and sediment dynamics in the area -- hydrodynamic modeling of breaches; NCF's initial NFWF grant application for a feasibility study was declined, but more funding has become available, and NCF anticipates an update in October. If funding is granted, study would be completed in 2024. Construction would likely not occur until 2026.*
- 4-4: Numerical Modeling Study of Coatue Breaching
 - *In development; scope has been completed*
- 5-3: Baxter Road Relocation Planning
 - *Underway: SB picked route "A"*
 - *Arcadis is developing planning designs for that, to be presented to SB in October*
- 6-2: Surfside Wastewater Treatment Plant Dune Restoration
 - *In development; Sewer Department leading that*
 - *Three erosion monitoring sites have shown losses of 30-49' of coastal bank in the last two years.*
- 6-3: Tom Nevers Field Erosion Mitigation Pilot Project
 - *Park & Recs leading, Murphy advising; Weston & Sampson doing design*
- 6-5: Sheep Pond Road Relocation Study
 - *Under way; a new route has been identified*

6. Discussion on ideas on implementing CRP high priority #1-1 Community Outreach on Property Owner Resilience Best Practices

- Chair suggested that CRAC invite presidents of area associations to survey their members
 - *Committee consensus was supportive*
 - *Hill shared her experiences meeting with area associations*
 - ◆ *Focuses on the best practices section of the CRP, and empowering homeowners that they can take proactive steps to build resilience in their own properties*
 - ◆ *Hill also mentioned a good suggestion from Freeman: creating a property resilience roadmap customized for each neighborhood*
 - ◆ *Agreed starting with a brief survey of the Civic League presidents as to what*

information their members would value could be good starting point

- *Brace offered to work with Hill to develop a property owner survey*
- *Bois suggested we allow Hill to develop a rough draft of the survey based on her experience working with area associations*
- *Rose suggested making this topic “Job 1” in CRAC’s education & outreach effort*
- ◆ *Offered to assist Hill in developing any communication materials as needed*

7. Presentation on CoastSnap and MyCoast by Town of Nantucket Coastal Resilience Coordinator, Leah Hill

- Committee members agreed to use the apps, and share with others
 - *Bois later encouraged committee members to upload photos of vulnerable areas during the upcoming weather event*

8. Discussion on continuing site visits to vulnerable coastal areas

- Committee was supportive of doing more visits in future
 - *Bois, Rose, Kickham voiced enthusiasm*
 - *Bois suggested that it would be ideal to choose locations that are the focus of upcoming agenda items*

9. Approval of Minutes from August 22, 2023

- Minor edits - motion (Fee), second (Beller), approved 7-0 (Bois abstained)
- Moved (Braine), second (Fee), approved 7-0 (Bois abstained)

10. New business, Natural Resources Dept. & Committee reports from Planning Board, Conservation Commission, Harbor and Shellfish Advisory Board, Select Board, Advisory Committee of Non-Voting Taxpayers, and other committee members.

- Update on Nantucket’s Climate Change Summit by Dr. Bois
 - *Bois highlighted strong attendance (~130), including many new faces*
- On Wednesday September 13, 2023 the Select Board will be discussing Coastal Resilience Districts (*update: the topic postponed to Select Board meeting potentially on Sept27, 2023*)

11. Discussion of upcoming meeting dates and topics: Next Meeting is Sept 26, 2023, on Zoom.

- Among topics discussed for future agenda(s):
 - *Murphy to provide update from Public Records Compliance Officer regarding offline work sessions between 2 committee members*
 - *Rose volunteered to present homework on developing an annual education & outreach calendar, key messages, etc.*
 - *Roche suggested that CRAC send a letter advocating completion of Stormwater Management Plan & regulations*

12. Motion to adjourn: moved (Fee), seconded (Roche) and approved unanimously (8-0).



Presentation to the Coastal Resilience Advisory Committee: Update on CRP recommendations, MyCoast, and CoastSnap

Tuesday, September 12, 2023

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ISLAND-WIDE

(section 06)

Project Priority

01

02

03

Up to date as of 9-12-23						
Strategy ID	Strategy or Project Title	Near-Term Strategy Project Description	Type	Estimated Cost	Estimated Benefits	Target Implementation Date
 1-1	Community Outreach on Property Owner Resilience Best Practices	Comprehensive outreach program to at risk home and business owners to raise risk awareness and provide guidance on best practices for reducing coastal risks for private properties.	Non-structural	Staff and Volunteer Time	N/A	2023, Ongoing 
 1-2	Updates to Zoning By-Law	Updates to the zoning by-law to encourage resilient design and limit investment in areas of high coastal risk.	Non-structural	Staff and Volunteer Time	N/A	2025 
 1-3	Updates to Wetland Ordinance and Regulations	Updates to the Nantucket wetlands by-law and regulations to encourage resilient and low impact design in resource adjacent areas while limiting impacts on resource areas.	Non-structural	Staff and Volunteer Time	N/A	2025
 1-4	Strategic Retreat and Relocation Program	Develop and administer island-wide approach for pursuing strategic retreat and relocation in areas of priority coastal risks with an ongoing focus on risk communication and property owner outreach and education.	Non-structural	Staff and Volunteer Time	N/A	2024, Ongoing
 1-5	Coastal Resilience & Sustainability Interdepartmental Working Group	Governance approach to encourage inter-departmental collaboration and coordination on issues related to coastal resilience and sustainability.	Non-structural	Staff and Volunteer Time	N/A	2022, Ongoing
 1-6	Joint Staff Review of Development Proposals	Governance approach to maximize opportunities for coordinated decision-making and consistent customer communication by Town staff, particularly for projects located in or impacting coastal areas.	Non-structural	Staff and Volunteer Time	N/A	2022, Ongoing
 1-7	Coastal Resilience and Sustainability Program	Governance approach to establish a formal program with necessary resources for managing coastal resilience and sustainability projects and programs across the island.	Non-structural	Staff and Volunteer Time	N/A	2023, Ongoing
 1-8	Shoreline Change Monitoring Program	Employ mobile technology and other tools to engage community members in the process of monitoring shoreline change at pilot projects and across the island.	Non-structural	Staff and Volunteer Time	N/A	2024, Ongoing
 1-9	Sediment Sourcing and Transport Study	Island-wide data collection and planning approach to identify sediment sources and define sediment movement across the island at various spatial and temporal scales in order to inform the design and planning of future sediment management projects.	Non-structural	High: \$1M Low: \$800K O&M: NA	N/A	2024
1-10	Stormwater Management Plan	Planning step to evaluate stormwater management issues across the island and identify recommendations for reducing stormwater flooding and improving water quality.	Non-structural	High: \$650K Low: \$400K O&M: NA	N/A	2025 
1-11	Sediment Budget	Planning step to develop an operational sand budget for recommended shoreline projects.	Non-structural	High: \$250K Low: \$100K O&M: NA	N/A	2024 
 1-12	Stormwater By-Laws Assessment	Planning step to conduct an assessment of existing by-laws for opportunities to encourage stormwater management best management practices (BMPs).	Non-structural	High: \$50K Low: \$20K O&M: NA	N/A	2025
 1-13	Stormwater By-Law and Regulations Update	Updates to stormwater management by-law and regulations to encourage best management practices (BMPs) that address water quality and quantity issues.	Non-structural	Staff and Volunteer Time	N/A	2025
 1-14	Update locally-adopted sea level rise scenarios and Best Available Flood Hazard Data	Adopt sea level rise scenarios provide by the Commonwealth of Massachusetts and Massachusetts Coastal Flood Risk Model as the best available local flood hazard data.	Non-structural	Staff and Volunteer Time	N/A	2022

DOWNTOWN

(section 07)

Up to date as of 9-12-23						
Strategy ID	Strategy or Project Title	Near-Term Strategy Project Description	Type	Estimated Cost	Estimated Benefits	Target Implementation Date
2-1	Steamboat Wharf Resilience	Work with the Steamship Authority to develop adaptation plan for Steamboat Wharf with the preferred option of elevating the pier above future mean monthly high water. Building scale measures can be implemented on the wharf over time to reduce risk from coastal storms. The strategy should be integrated with the design of the Downtown Coastal Flood Barrier System (Strategy 2-2) to maintain access from Broad Street onto the Wharf. Final approach will need to be planned and design by the Steamship Authority but close coordination with Town resilience planning will be critical to a successful resilience strategy.	Structural	High: \$120M Low: \$110M O&M: \$1.3M	\$19,000,000	2030
2-2	Downtown Neighborhood Flood Barrier - Later Project Phases	The barrier system, which includes the first phase project described as Strategy 2-6, includes a number of elements to be implemented over time to provide comprehensive effective flood risk reduction against future mean monthly high water. The elements include raised roadways, raised bulkheads, reinforced dunes, and flood walls. The overall approach recommends passive measures that are integrated with the existing built environment, while maintaining access to key waterside facilities such as the Children's Beach Boat Ramp, Steamboat Wharf, Straight Wharf, and the Town Pier. Implementation of the approach can be phased over a period of 10 to 15 years, focusing on the lowest lying areas first, such as Easy Street (Strategy 2-6). As the project is implemented, stormwater management needs will need to be studied and addressed via new drainage infrastructure.	Structural	High: \$170M Low: \$150M O&M: \$1.9M Note that these cost estimates include costs for the Phase 1 project (Project 2-6)	\$320,000,000	2050
2-3	Easton Street and Hulbert Avenue Road Raising	Road raising project to prolong service life of Easton Street and Hulbert Avenue for emergency and everyday access in Brant Point	Structural	High: \$140M Low: \$130M O&M: \$1.6M	Not quantified; qualitative benefits include prolonging emergency and everyday access for Brant Point	2050
2-4	Washington Street Extension and Consue Springs Walkway Raising	Road raising to prolong service life of Washington Street Extension and public access in Consue Springs	Structural	High: \$65M Low: \$58M O&M: \$720K	Not quantified; qualitative benefits include prolonging public access to Consue Springs natural area	2050
2-5	Building Scale Resilience at 37 Washington Street	Pilot project to showcase building-scale resilience best practices on a Town-owned facility, including potentially elevation of critical systems, protection of sensitive equipment and documents, and deployable flood risk reduction measures. The first step in this recommendation is a site-specific study to determine the appropriate risk mitigation approaches for this structure.	Structural	High: \$150K Low: \$50K O&M: NA	Not quantified; benefits are dependent on risk mitigation strategy developed through recommended site-specific study.	2024
2-6	Downtown Neighborhood Flood Barrier - Phase 1 Project	Phase 1 project to advance through feasibility and design a near-term project focused on the most vulnerable location along the planned extent of the Downtown Neighborhood Flood Barrier. The Phase 1 project should focus on the coastal segment located along Easy Street from Straight Wharf to Steamboat Wharf and may include raised bulkheads, sidewalks,	Structural	High: \$13M Low: \$12M O&M: \$150K Note that these cost estimates	\$120,000,000	2025

-  In development
-  Underway
-  Complete

NANTUCKET

HARBOR & COATUE

(section 07)

- Project Priority
- 01
- 02
- 03

Strategy ID	Strategy or Project Title	Near-Term Strategy Project Description	Type	Estimated Cost	Estimated Benefits	Target Implementation Date
 4-1	Polpis Road Raising and Bridge Conversion at Folger's Marsh	Road raising project with conversion of existing culverts with bridges, with goal of prolonging service life of Polpis Road, while advancing ecological restoration objectives for Folger's Marsh.	Structural	High: \$21M Low: \$18M O&M: \$230K	\$5,800,000 – \$14,250,000	2035
 4-2	Polpis Road Raising, Culvert Expansion, and Wave Attenuation at Sesachacha Pond	Road raising, expansion of culverts or replacement with bridge, and installation of living breakwaters to reduce wave exposure, with goal of prolonging service life and maintaining emergency roadway access along Polpis Road, while advancing ecological restoration objectives for Sesachacha Pond.	Structural, Nature-Based	High: \$45M Low: \$40M O&M: \$500K	\$3,000,000 – \$11,000,000	2035
  4-3	Coatue Erosion Management and Dune Resilience	Dune restoration and wetland creation/enhancement to reinforce narrow low-lying sections of barrier island, between Five Fingered Point and Bass Point and between First Point and Second Point, to prevent washover and/or breaching into the harbor. Monitor performance of approach to assess need for ongoing nourishment and/or adaptation to higher design elevations.	Nature-Based	High: \$41M Low: \$36M O&M: \$450K	Not quantified; qualitative benefits include ecological restoration and potential for reduced long-term flooding impacts in the Harbor as well as reduced impacts to fisheries, habitat, and navigation.	2025
 4-4	Numerical Modeling Study of Coatue Breaching	Numerical modeling study to evaluate the likelihood and consequences of Coatue breaching for the Harbor and surrounding communities, including impacts to habitat and navigation, in order to inform decisions about future adaption measures on Coatue.	Non-structural	High: \$250K Low: \$100K O&M: NA	NA	2026

 In development

 Underway

 Complete

SCONSET
(section 07)

Project Priority

- 01
- 02
- 03

Strategy ID	Strategy or Project Title	Near-Term Strategy Project Description	Type	Estimated Cost	Estimated Benefits	Target Implementation Date
5-1	Sconset Bluff Dune Restoration	Dune restoration and construction to mitigate bluff erosion and increase resiliency. Natural dunes with vegetation are appropriate. Project includes need for ongoing nourishment and maintenance of the dune at an interval determined through the design process.	Nature-Based	High: \$16M Low: \$14M O&M: \$180K	Not quantified; qualitative benefits include reduced long-term risk of erosion impacts to private residences and public infrastructure in Sconset.	2030
5-2	Codfish Park Dune Restoration	Dune restoration and construction to manage and slow bluff erosion. Natural dunes with vegetation are appropriate. Project includes need for ongoing nourishment and maintenance of the dune at an interval determined through the design process.	Nature-Based	High: \$21M Low: \$19M O&M: \$240K	\$7,000,000	2030
 5-3	Baxter Road Relocation Planning	Planning for and implementation of road relocation, including acquisition of easements, access and maintenance agreements, finalization of road alignment, and development of final designs for construction.	Structural	High: \$30M Low: \$25M O&M: \$600K	N/A	2030
5-4	Sconset Bluff Nearshore Breakwaters Feasibility Study	Conduct detailed feasibility study to assess technical constraints, potential impacts, and benefits and costs of nearshore breakwaters along the Sconset Bluff. [No Title]	Non-Structural	High: \$800K Low: \$600K O&M: NA	N/A	2025 

 In development

 Underway

 Complete

SOUTH SHORE
(section 07)

Project Priority

01

02

03

Strategy ID	Strategy or Project Title	Near-Term Strategy Project Description	Type	Estimated Cost	Estimated Benefits	Target Implementation Date	
 6-1	Nantucket Memorial Airport Dune Restoration	Dune restoration and construction to reduce risk of erosion to critical infrastructure. Hard core dunes are appropriate in this location given risk to critical facilities. Project includes need for ongoing nourishment or installation of near-shore underwater sand berm.	Nature-Based	High: \$28M Low: \$25M O&M: \$310K	Not quantified; qualitative benefits include long-term mitigation of risk to airport infrastructure and assets, which could result in loss of service at the airport.	2035	
 6-2	Surfside Wastewater Treatment Plant Dune Restoration	Dune restoration and construction to reduce risk of erosion to critical infrastructure. Hard core dunes are appropriate in this location given risk to critical facilities. Project includes need for ongoing nourishment or installation of near-shore underwater sand berm. Strategic relocation alternatives for settling tanks closest to the coast at the wastewater treatment facility should be pursued in parallel.	Nature-Based	High: \$38M Low: \$33M O&M: \$420K	Not quantified; qualitative benefits include long-term mitigation of risk to infrastructure and assets, which could result in loss of service for the WWTF.	2025	
 6-3	Tom Nevers Field Erosion Mitigation Pilot Project	Pilot program of dune restoration, sand fencing, and beach nourishment. Monitoring program to evaluate how well the pilot project performs to inform future investment in Tom Nevers Park, as well as erosion management elsewhere on the island.	[No Title] Nature-Based	High: \$18M Low: \$16M O&M: \$200K	\$7,100,000	2025	
 6-4	Surfside Emergency Access Planning	Develop emergency access and service plan for Surfside Neighborhood to ensure access to coastal areas in event of loss of service along Nonantum and Nobadeer Avenues, particularly near Lovers Lane.	Non-structural	Staff and Volunteer Time	N/A	2025	
 6-5	Sheep Pond Road Relocation Study	Planning step to work with property owners and Nantucket Conservation Foundation to develop and implement plan for relocation of public infrastructure on Sheep Pond Road.	Non-structural	Staff and Volunteer Time	N/A	2023	

-  In development
-  Underway
-  Complete

About **half** of the projects are in development, underway, or complete since the plan was completed 1.5 years ago, but no structural projects are underway or completed yet.

NORTH SHORE
(section 07)

Project Priority

010203

Strategy ID	Strategy or Project Title	Near-Term Strategy Project Description	Type	Estimated Cost	Estimated Benefits	Target Implementation Date
7-1	North Shore Dune Restoration and Nourishment	Targeted dune restoration and construction to reduce risk of erosion along the North Shore, building on dune restoration strategies adopted by existing private property owners in area. Project includes need for ongoing nourishment or installation of near-shore underwater sand berm at key locations.	Nature-Based	High: \$38M Low: \$34M O&M: \$420K	\$16,000,000	2035
7-2	Sand Pumping Feasibility Study	Study the feasibility and impacts of a sand pumping and by-pass systems to connect sand sources from inlet to the North Shore.	Non-structural	High: \$250K Low: \$100K O&M: NA	N/A	2027

[No Title]



- Coastal community monitoring program app used by a number of states to document:
 - ★ • Coastal storm damage
 - ★ • King Tides
 - Coordinate beach clean-ups
 - Track abandoned vessels to help state remove them
 - ★ • Coastal Resilience projects (i.e. Monitor living shorelines)
- Used by MA Coastal Zone Management and MEMA (MA Emergency Management Agency) to:
 - Collect and share photos of coastal flooding, storm impacts, shoreline adaptation to help state make informed decisions
 - Leah and Vince part of MA Rapid Response Coastal Storm Damage Assessment Team
- Can upload my CoastSnap pics to MyCoast to have tide and weather data

Nantucket, MA (Easy street)

Nantucket County

Storm Report

03/14/2023 | 7:47 am

Impacts Reported



03/14/2023 | 7:47 am

Tidal Overview

2 hours 11 minutes after high tide

Data from **NANTUCKET** (0.1 miles away)

Water Level (at time of report): 7:47 am, 4.5

High Tide (Predicted): 5:42 am, 5.4

High Tide (Observed): 5:36 am, 5.1

■ Observed ■ Predicted water level ● Report time

[\(Click here for full tide details from NOAA Tides & Currents\)](#)

Weather Overview



Wind Speed: 18.5 MPH

Wind Direction: E (80°)

Temperature: 44°F

Rainfall (Calendar Day): 0.021"

Rainfall (Past 24 Hours): 0.17"

[\(Click here for full weather details\)](#)

Roads

Specific Impacts:

- Impacted, but passable



- Developed in Australia and world-wide now
 - In Martha's Vineyard, Sandwich, a few in RI
- Community shoreline monitoring app to track how coast changes over time
- Uses
 - Shoreline mapping
 - Monitoring erosion/accretion= dune change
 - Education
 - Pre-post projects such as dredging or nourishment
 - Monitoring beach traffic, wildlife, vegetation growth
- Cradle set up on a fixed post, pictures uploaded to MyCoast app, and creates a timelapse to monitoring coastal changes
- Can also analyze volumetrics of sandy beach
- [WHOI SeaGrant](#) offered to donate one





Looking East towards Cisco from proposed post location

Proposed Location: End of Hummock Pond Rd.

