

An aerial photograph of the North Scituate coastline, showing a mix of residential areas, green spaces, and a golf course. The ocean is visible on the right side of the image. The text is overlaid on the right side of the image.

North Scituate Beach Nourishment Project

Board of Selectmen Meeting
February 7, 2023



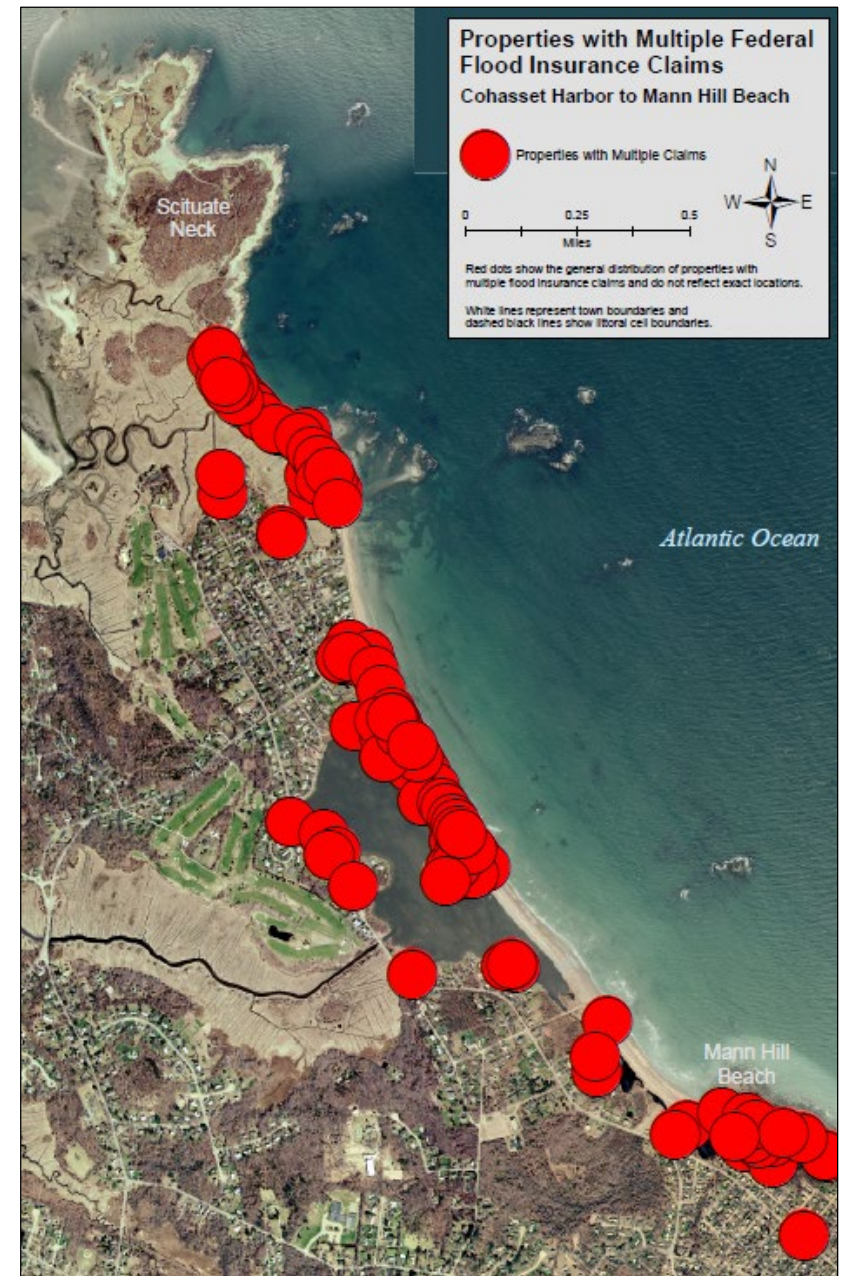
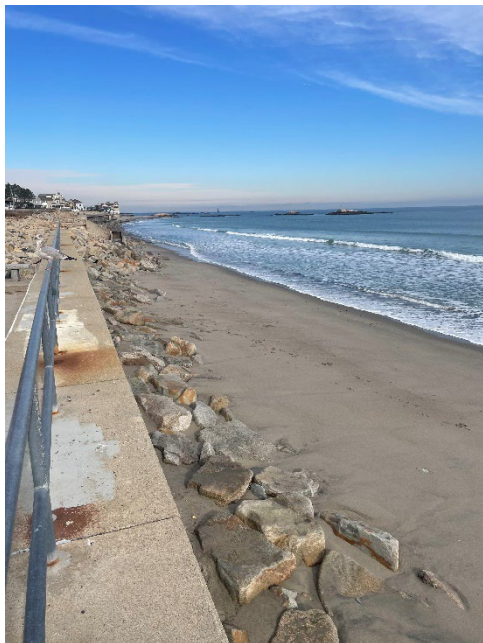
Sustainable Coastal Solutions, Inc.

Project Purpose and Need

- Long-term shore protection
 - Reduce (or eliminate) damages to public infrastructure and residential property landward of seawall
 - Maintain emergency access during and after storm events
 - Extend life of existing seawall
- Coastal resiliency
 - Prevent further beach lowering and erosion (wider and higher elevation beach)
 - Restore regional sediment supply (improve sediment supply to downdrift beaches)
 - Plan for sea-level rise
 - Use of compatible sediment to ensure longevity

Existing Conditions

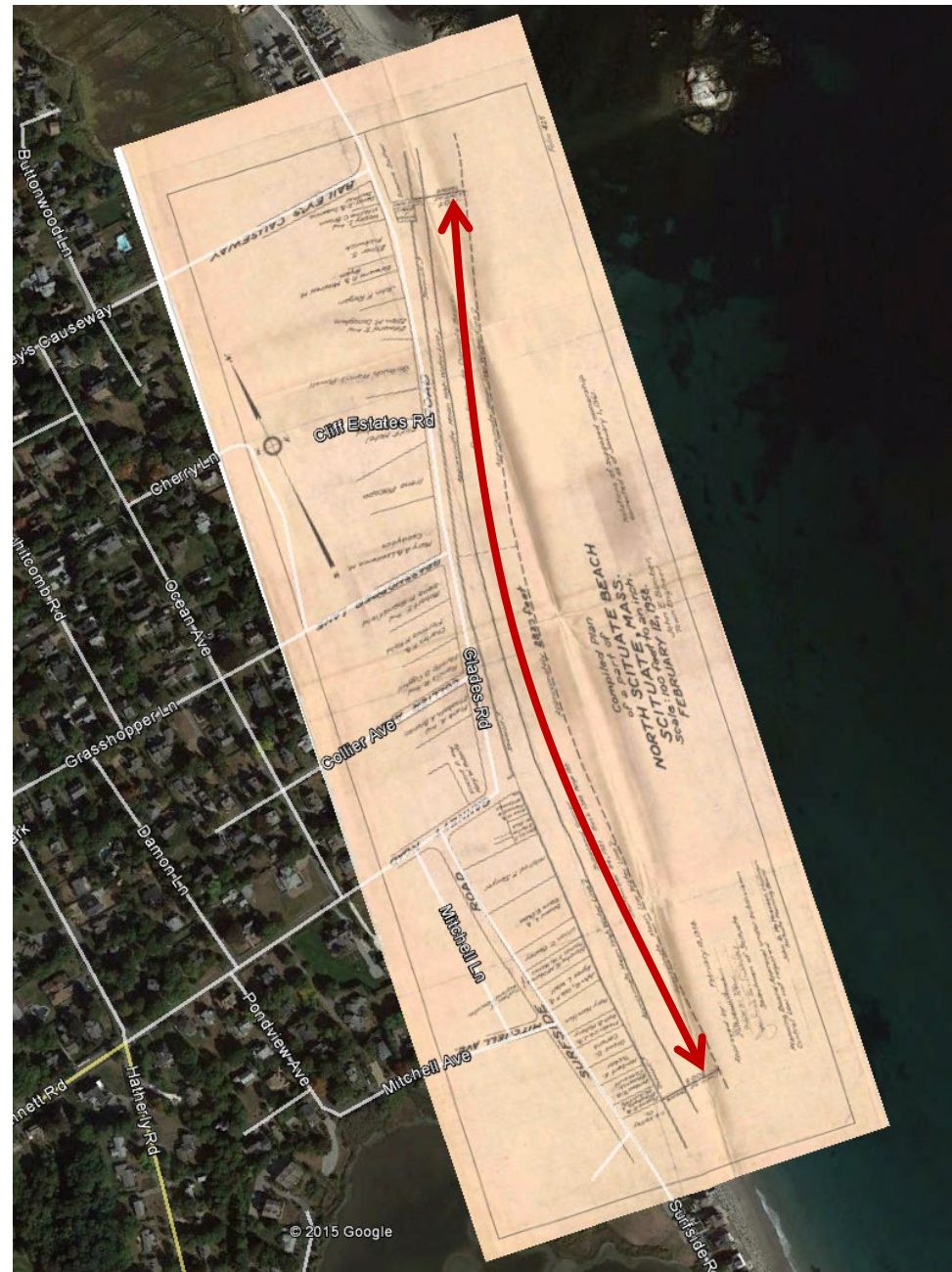
- Existing seawall and revetment requires extensive structural repairs, where foundation is exposed in many areas
- Over \$10 million in flood damages have been claimed from 75 repetitive loss homes between 1978 and 2015.
- Overtopping during storms causes damage and flooding that hinders emergency egress



Map from MCZM South Shore Coastal Hazards Characterization Atlas

Existing Public Easement

- Approximate limits from the beach access parking lot south of Bailey's Causeway to 350 feet south of Mitchell Avenue



Plan from the Town of Scituate

Proposed Project Permitted in 2016

Project Length

- 2,900 feet

Nourishment Material Required

- 240,000 cubic yards (12,000 truckloads or 80 trucks/day)

Construction Time

- Approximately 6 months (November 2 – April 30)

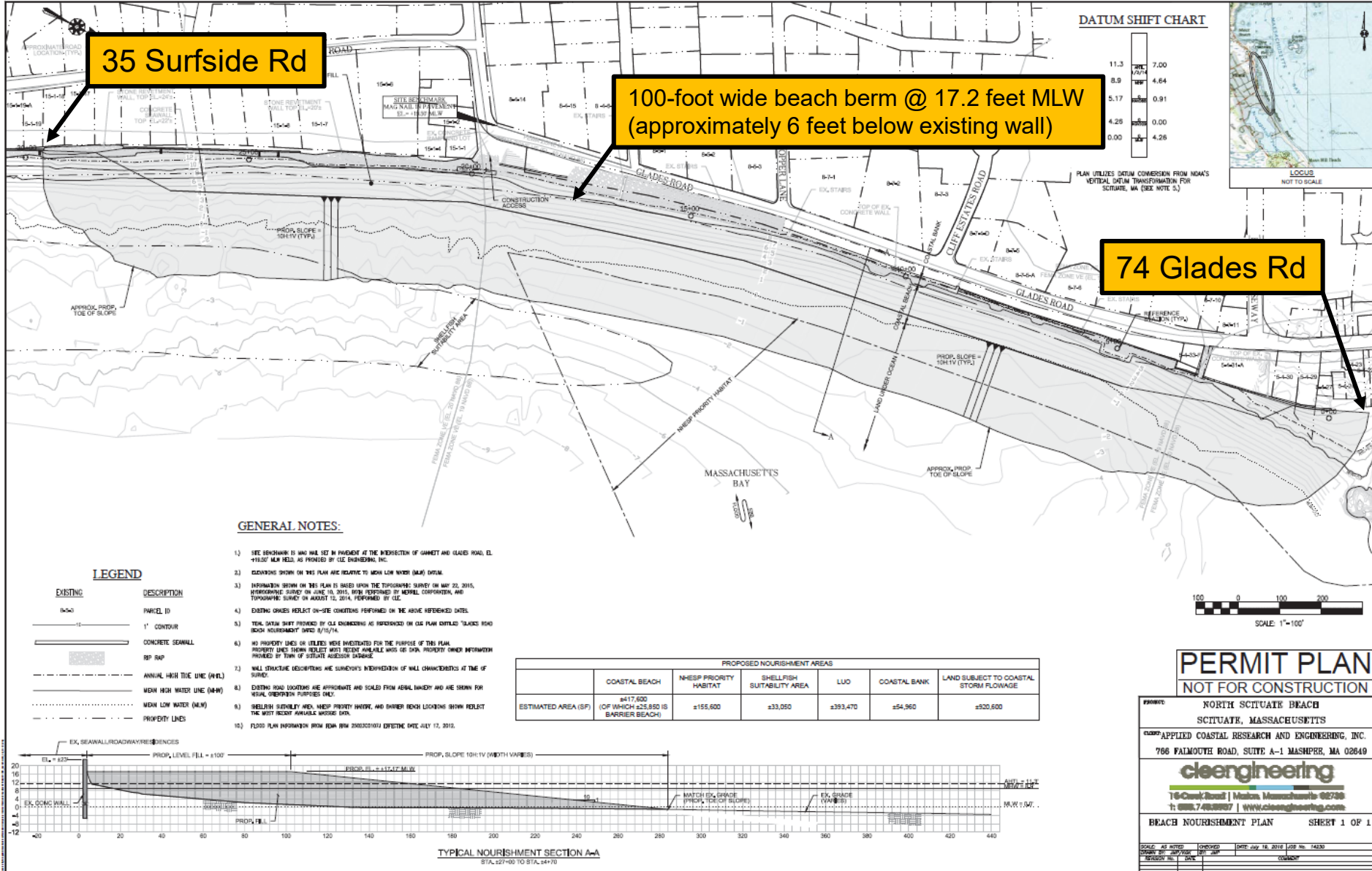
Estimated Cost (2015)

- \$8.2 million

Renourishment Interval

- Approximately every 10 years

Proposed Project



PERMIT PLAN
NOT FOR CONSTRUCTION

PROJECT: NORTH SCITUATE BEACH
SCITUATE, MASSACHUSETTS

CLIENT: APPLIED COASTAL RESEARCH AND ENGINEERING, INC.
706 FALMOUTH ROAD, SUITE A-1 MASHPEE, MA 02649

cleengineering
16 Canal Road | Mashpee, Massachusetts 02638
T: 508.749.8907 | www.cleengineering.com

BEACH NOURISHMENT PLAN SHEET 1 OF 1

SCALE: AS SHOWN
DESIGNED BY: [redacted]
CHECKED BY: [redacted]
DATE: July 18, 2016
JOB No.: 14330
DRAWN BY: [redacted]
DATE: [redacted]

Partial Project Based Upon Available Funding

Available Funding from '23/'24 MCZM Coastal Resilience Grant

- \$2 million

Project Length

- Likely on the order of 1,000 feet

Volume of Nourishment Material

- Likely on the order of 60,000 cubic yards (2,500 truckloads or 60-to-80 trucks/day)

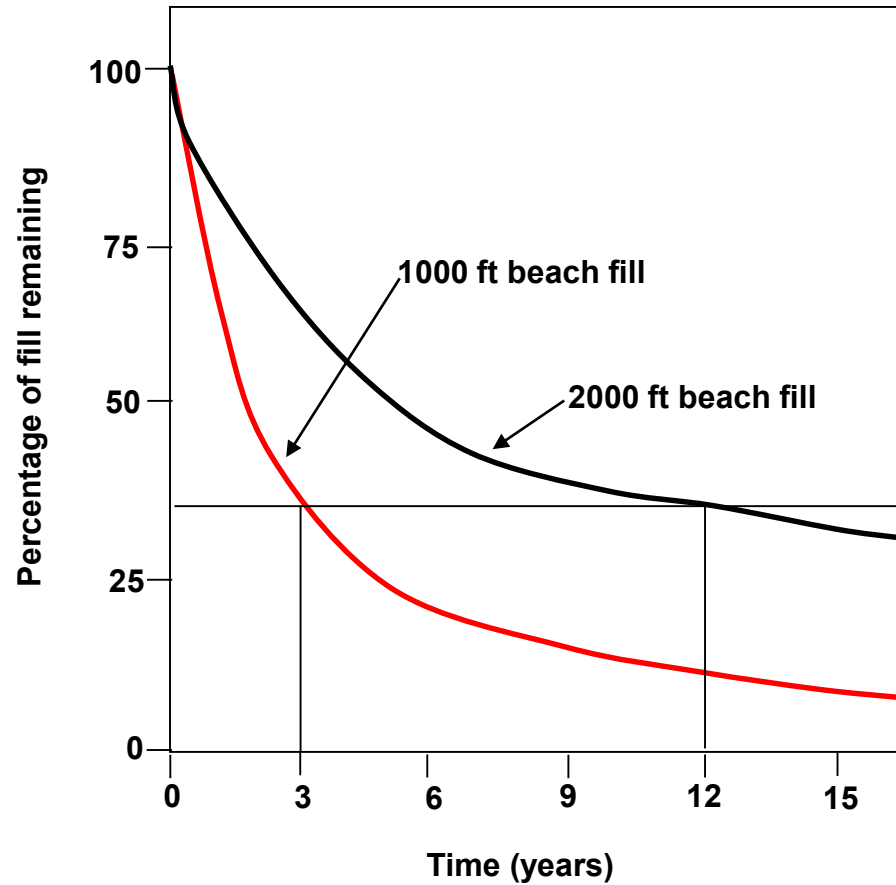
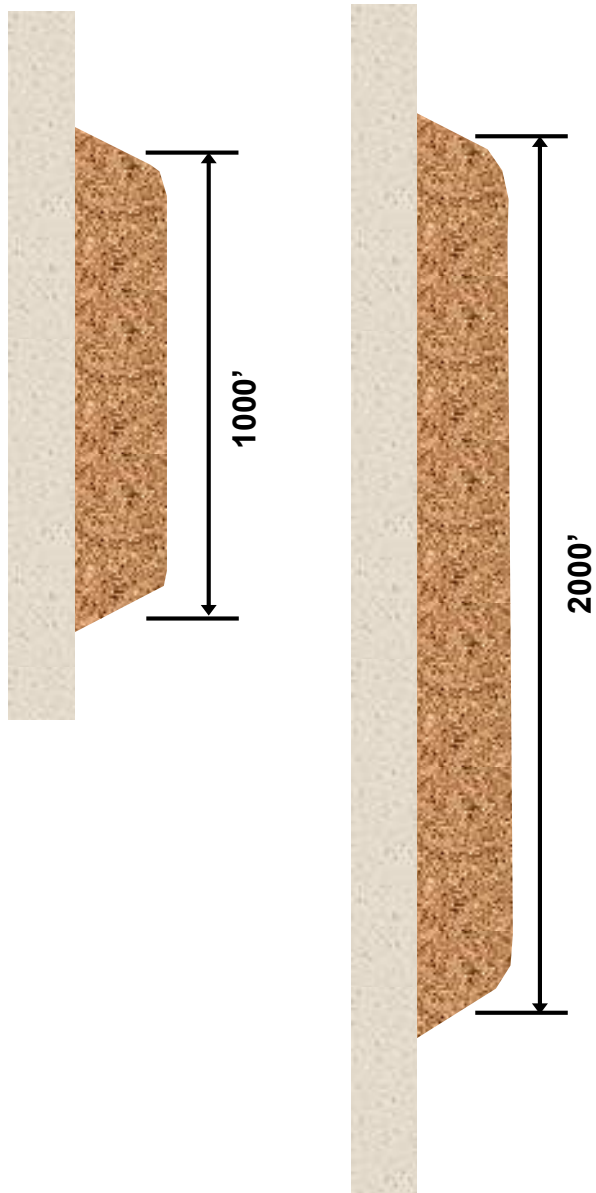
Construction Time

- Approximately 2-3 months (February to April, 2024)

Nourishment Material

- 75% Sand and 25% rounded gravel (**no cobble**)

Nourishment Design – Influence of Project Length



Construction Impacts

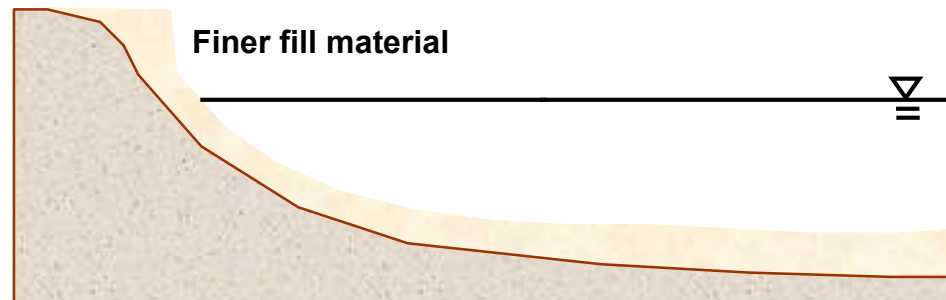
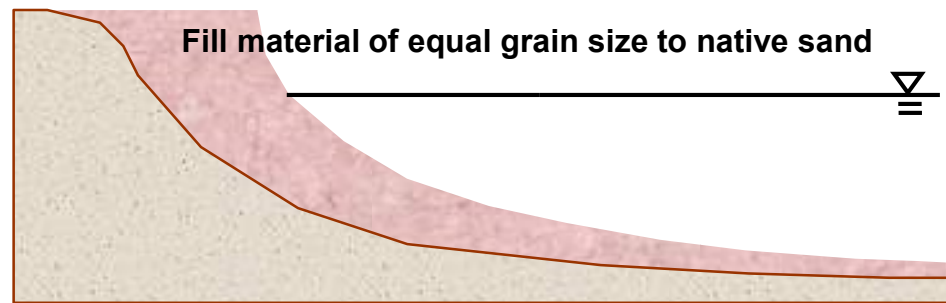
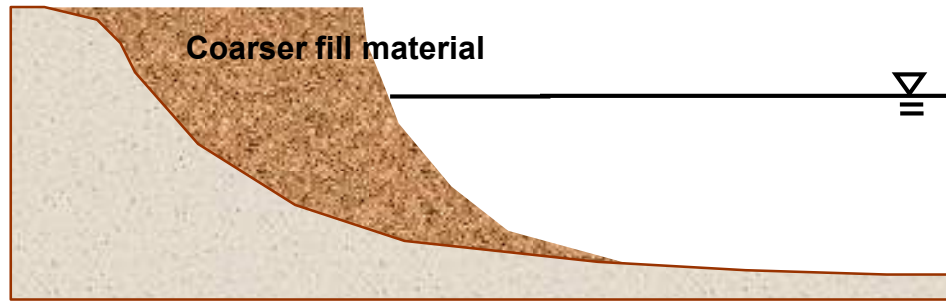
Impact	Mitigation Measure	Description
Air Quality	Air pollution controls	Contractor will participate in DEP's Clean Air Construction Initiative (CACI) to retrofit all on-site diesel-powered equipment with after-engine emission controls and use of Low Sulfur Diesel Fuel.
	Dust control	Use of dust control during earthwork.
Noise	Noise control	Contractor shall modify heavy equipment "back-up alarms" to reduce noise impacts.
	Truck mufflers	Maintain mufflers on construction equipment.
	Minimize idling	Keep truck idling to a minimum.
	Pneumatic exhaust silencer	Fit any air-powered equipment with pneumatic exhaust silencers.
Traffic	Optimize truck route	Restrict trucks to state highways and Town of Scituate roadways. All damage will be mitigated by the Town.
Hazardous Materials and Solid Waste	Special management procedures	Implement special management procedures for any hazardous, contaminated or special waters generated during construction.
	Health and Safety Plan	Prepare a site-specific Health and Safety Plan.
Fisheries	Seasonal limitations on placement at beach	No fill will be placed between May 1st and November 1st of any year to protect near shore fish habitat.



Beach Sediment



Nourishment Design – Influence of Grain Size



Beach Sediment

No Cobble

**Less than 25%
Gravel**

Remainder Sand

- Nothing greater than 3"
- Less than 25% by weight greater than 1" (25 mm)
- Less than 10% by weight passing the #60 sieve (0.25 mm)
- Less than 3% by weight passing the #200 sieve (0.075 mm)

Construction Access and Truck Route



Expectations

Project Performance

- Volume for FY23-24 will be about 25% of full design
- The beach will rapidly ‘adjust’ or equilibrate to form a more natural slope, which appears to be a rapid ‘loss’ in dry beach width
- Also, north and south ends of beach will erode more quickly as beach fill spreads in the alongshore direction
- Both alongshore spreading and cross-shore equilibration are expected – **THE BEACH MATERIAL IS STILL PROVIDING PROTECTION**

Future Nourishment Possibilities

- Future MCZM Resilience Grant funding may be available for next phase
- Original design assumed a “phased approach”

An aerial photograph of the North Scituate coastline, showing a mix of residential areas, golf courses, and agricultural fields along the shore. The ocean is visible on the right side of the image.

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QUESTIONS?



Sustainable Coastal Solutions, Inc.