

Feasibility Assessment Beneficial Reuse of Sediment Dredged from Green Harbor



April 12, 2018

What's the Fuss About?



Dredging Required for Navigation

What's the Fuss About?



Erosion and Loss of Beach Resource

What's the Fuss About?



Seawall Failure and Property Damage

Project Goal & Funding

Enhance resiliency of local beaches and dunes through beneficial reuse of sediment dredged from Green Harbor navigation channel.

Project Funding: CZM Coastal Resiliency Grant

Project Cost: \$48,000

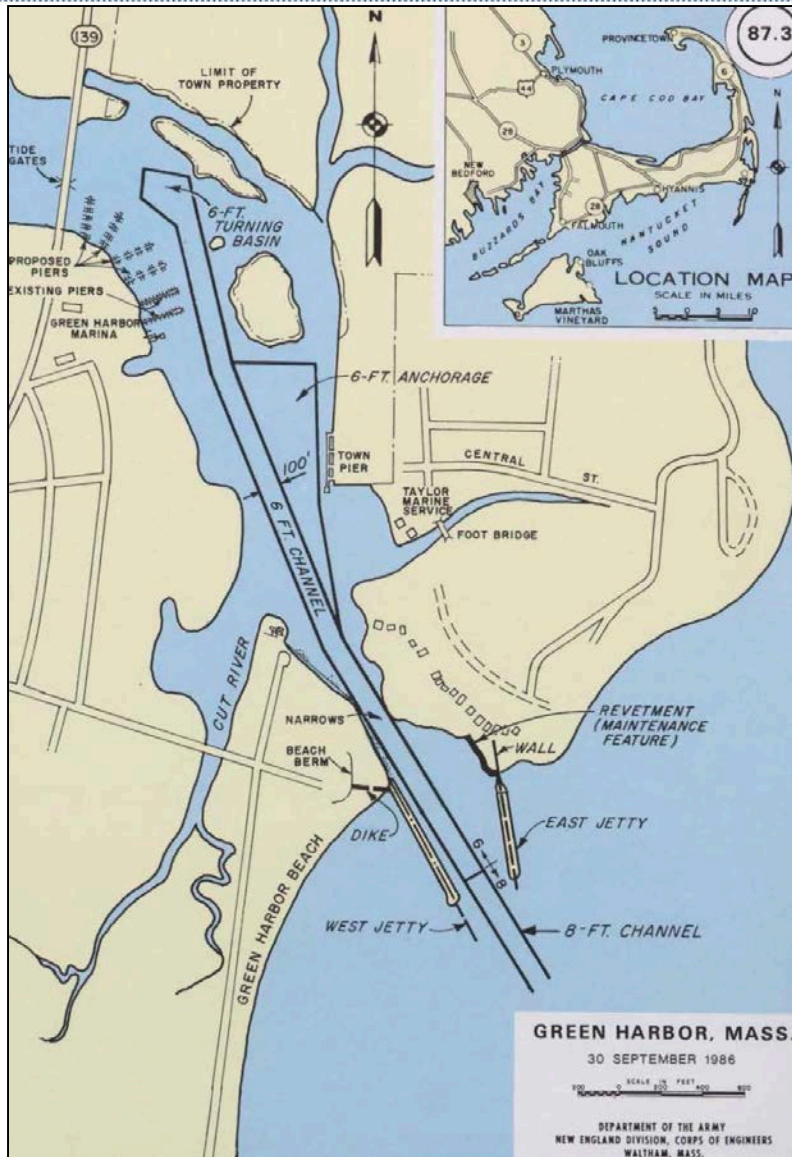
Grant Award: \$36,000

Town Match: \$12,000 (cash & in-kind services)

Grant Awarded: Sept. 2017

Study Completion: June 30, 2018

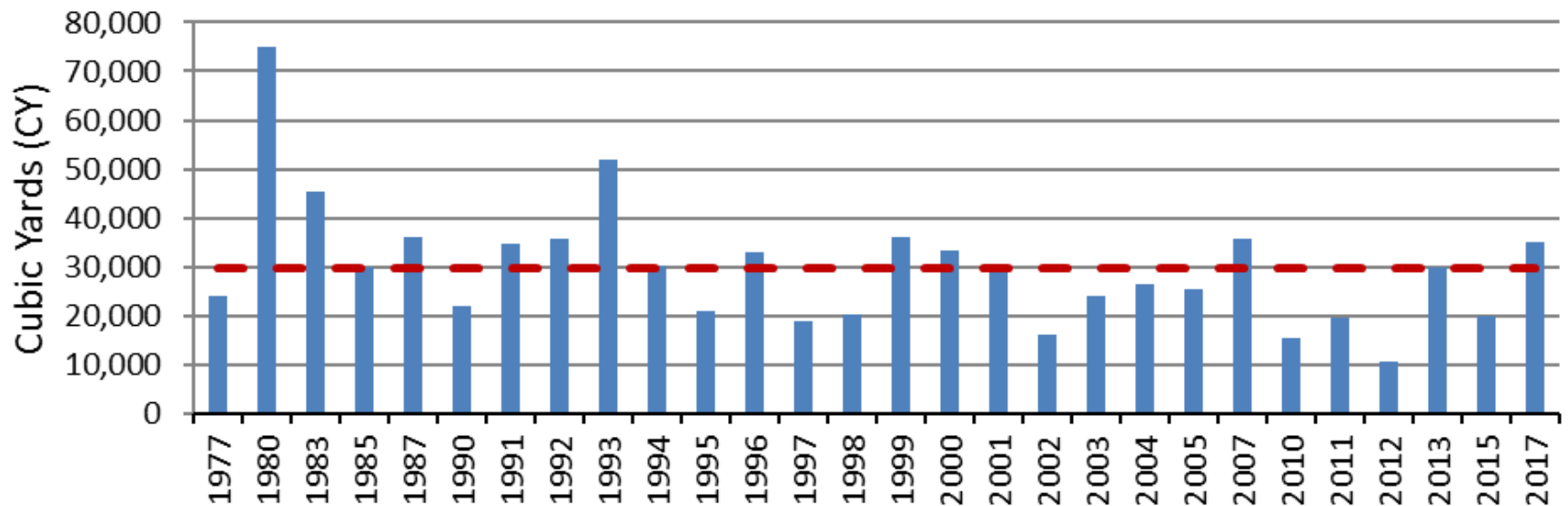
Green Harbor Dredging



- *Federal navigation project*
- *Dredged annually*
- *~25,000 to 30,000 cy/yr*
- *Offshore disposal area*
- *Removes sediment from nearshore system & dumps it offshore*
- *Source of sediment to naturally replenish the beaches is lost*

Dredging History

**History of Sediment (cy) Dredged
from Green Harbor 1977-2017**



- *Dredged 28 times since 1977*
- *Removed 834,000 cy of sediment*

Beaches



- *Erosion & lowering*
- *Seawalls failing due to increased wave energy*
- *Property damage (public and private)*
- *Loss of recreational resource*
- *Need for increased resiliency through beach restoration*

Feasibility Assessment

- *Document Existing Conditions*
- *Evaluate Economic Feasibility*
- *Evaluate Placement Alternatives*
- *Evaluate Beach Restoration Design*
- *Stakeholder Coordination*



Existing Conditions

Erosion

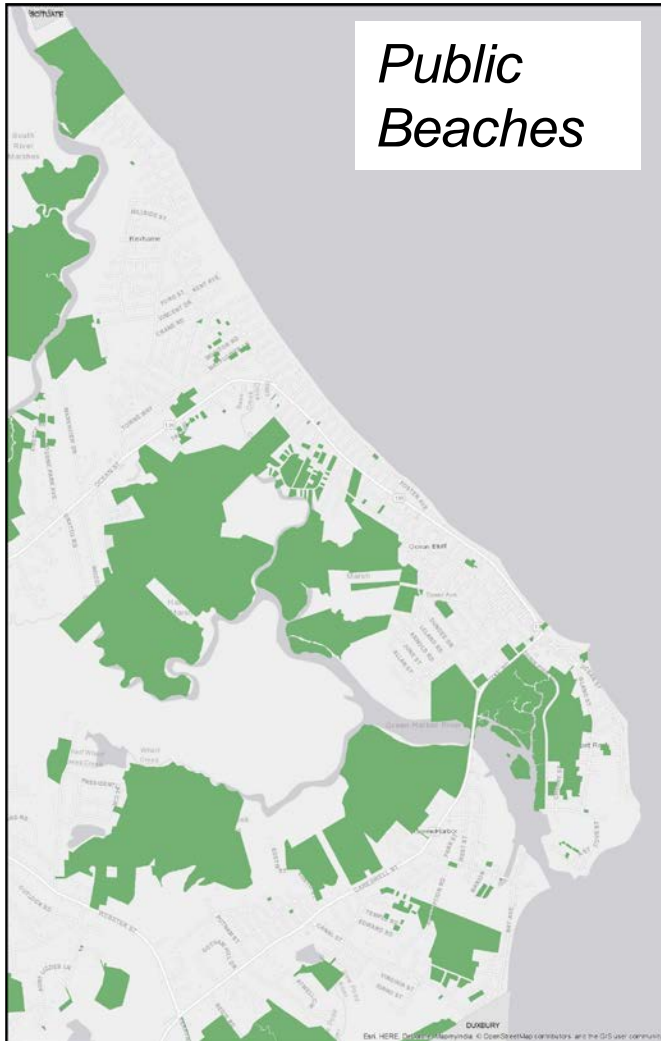


Sensitive Resources

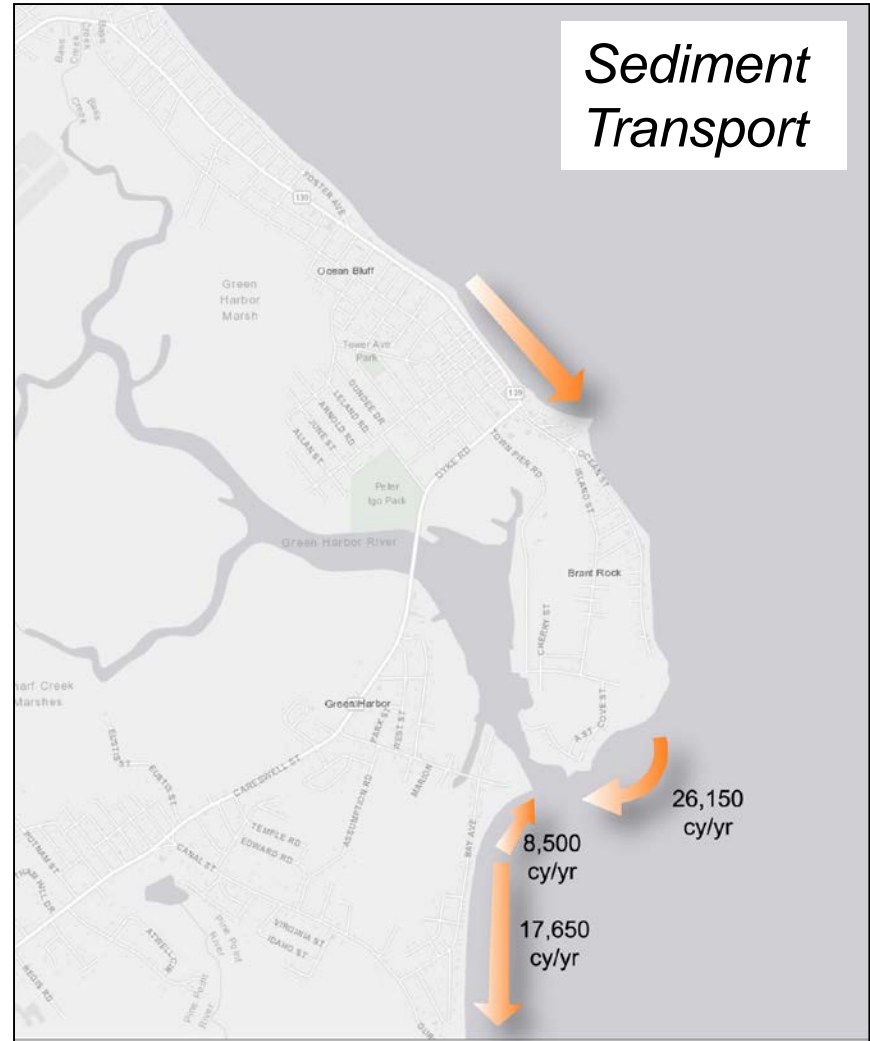


Existing Conditions

*Public
Beaches*



*Sediment
Transport*

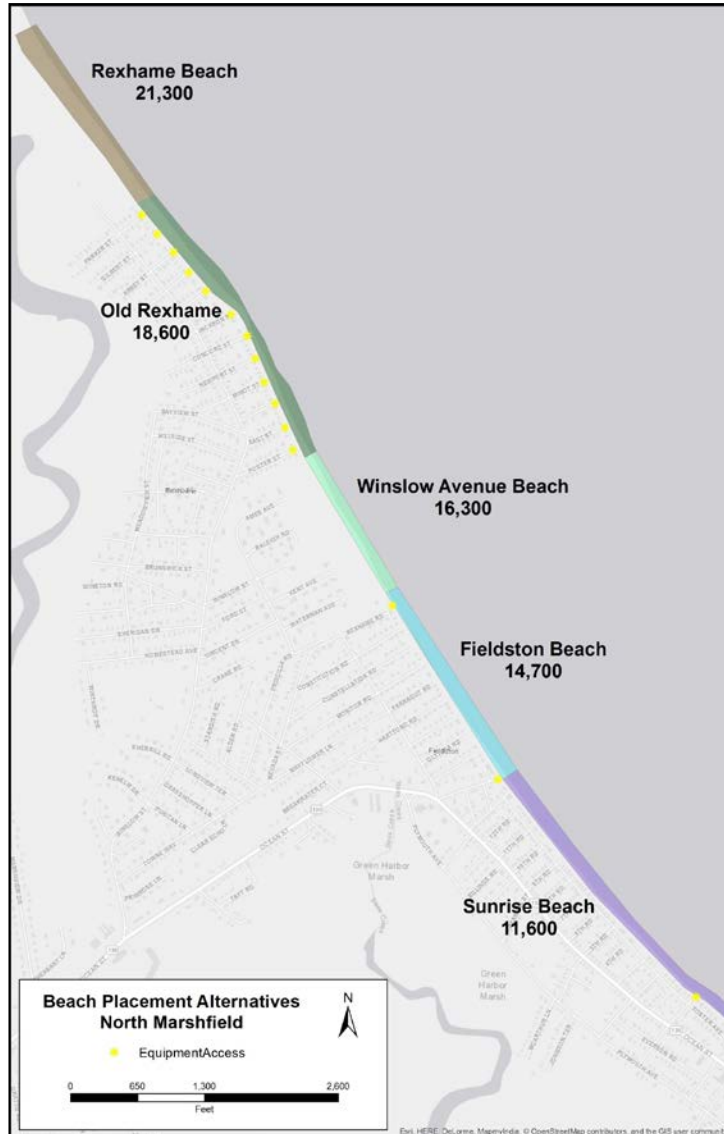


Economic Feasibility

- *ID alternate construction methods for dredging and sand placement*
- *USACE base project: Currituck → offshore*
- *Town responsible for \$ above base cost*
- *ID associated costs to the Town*

Alternative Method	Findings
Hydraulic dredge w/ pipeline to beach	Sediment not suitable for pipeline pump
Mechanical/hydraulic dredge to pumpout hopper w/ pipeline to beach	Pumpout hoppers scarce in NE; Sediments not suitable for pipeline pump
Mechanical dredge to stockpile & truck to beach	Feasible; would require ROEs for north side beach to stockpile & truck
Mechanical dredge directly to beach	Beach not in reach of excavator arm
Hydraulic dredge from offshore disposal site w/ pipeline to beach	Sediment disperses quickly and not suitable for pipeline pump

Placement Alternatives



Placement Assessment

	Green Harbor Beach	Bluefish Cove	Ocean Street Area	Brant Rock South	Brant Rock North	Sunrise Beach	Fieldston Beach	Winslow Avenue Beach	Old Rexhame	Rexhame Beach
Basic Logistics										
Distance from Green Harbor/Trucking Cost										
Benefits/Function										
Current erosion rate (1978-2008; ft/yr)	-1	-0.4	NA	-0.7	-1.9	-2.6	-0.8	1.4	-0.4	-2
Restoration (beach/dune)	Beach & possible dune	Beach & possible dune	Beach only	Beach only	Beach only	Beach only	Beach only	Beach & possible dune/berm	Beach only	Beach & dune
Sediment transport (+/- impacts)	Positive	Negative to Green Harbor	Potential negative to RIS	Potential negative to RIS	Positive	Positive	Positive	Positive	Positive	Positive
Permitting/Regulatory Feasibility										
Sediment compatibility										
Sensitive Resources	NHESP habitat offshore	RIS & NHESP habitat offshore	RIS & NHESP habitat offshore	RIS (south end)	RIS (minor)	NA	NA	NA	NHESP habitat	NHESP habitat
Ownership					Part public					Public
Overall Ranking										