

DRAFT INTEGRATED FEASIBILITY REPORT AND EIS PUBLIC HEARING

Corps of Engineers,
New England District



October 23 and 24,
2018

NON-FEDERAL SPONSORS
New Haven Port Authority
Connecticut Port Authority

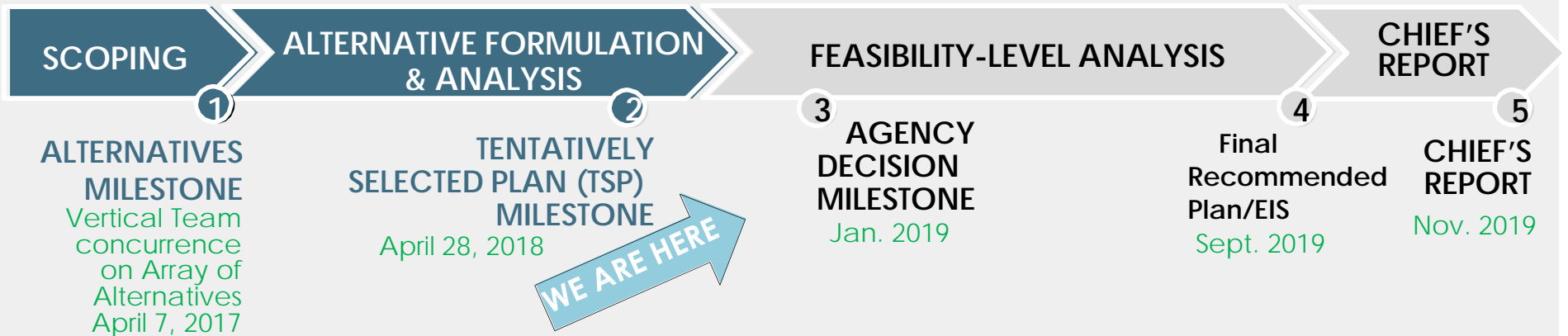


**US Army Corps
of Engineers**



U.S. ARMY

NEW HAVEN HARBOR FEASIBILITY STUDY PROGRESS



Conducting Concurrent Reviews

- IEPR
- ATR
- Public (Public Hearings October 23 and 24, Public Comments Due November 15)



NON-FEDERAL SPONSOR

- New Haven Port Authority
 - Non-Federal Sponsor for Study
- Connecticut Port Authority
 - Partner and Provided Study Funding
- Study Cost Shared 50% Federal
50% Non-Federal



STUDY AUTHORITY

- Legislative authority for the study of New Haven Harbor, Connecticut, is contained in a resolution by the United States Senate Committee on the Environment and Public Works dated 31 July 2007
- The agreement to conduct study signed in December 2015 with New Haven Port Authority



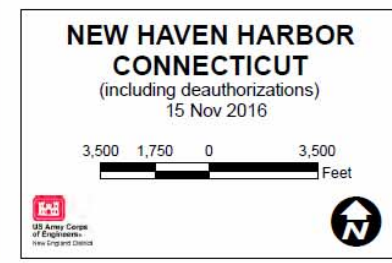
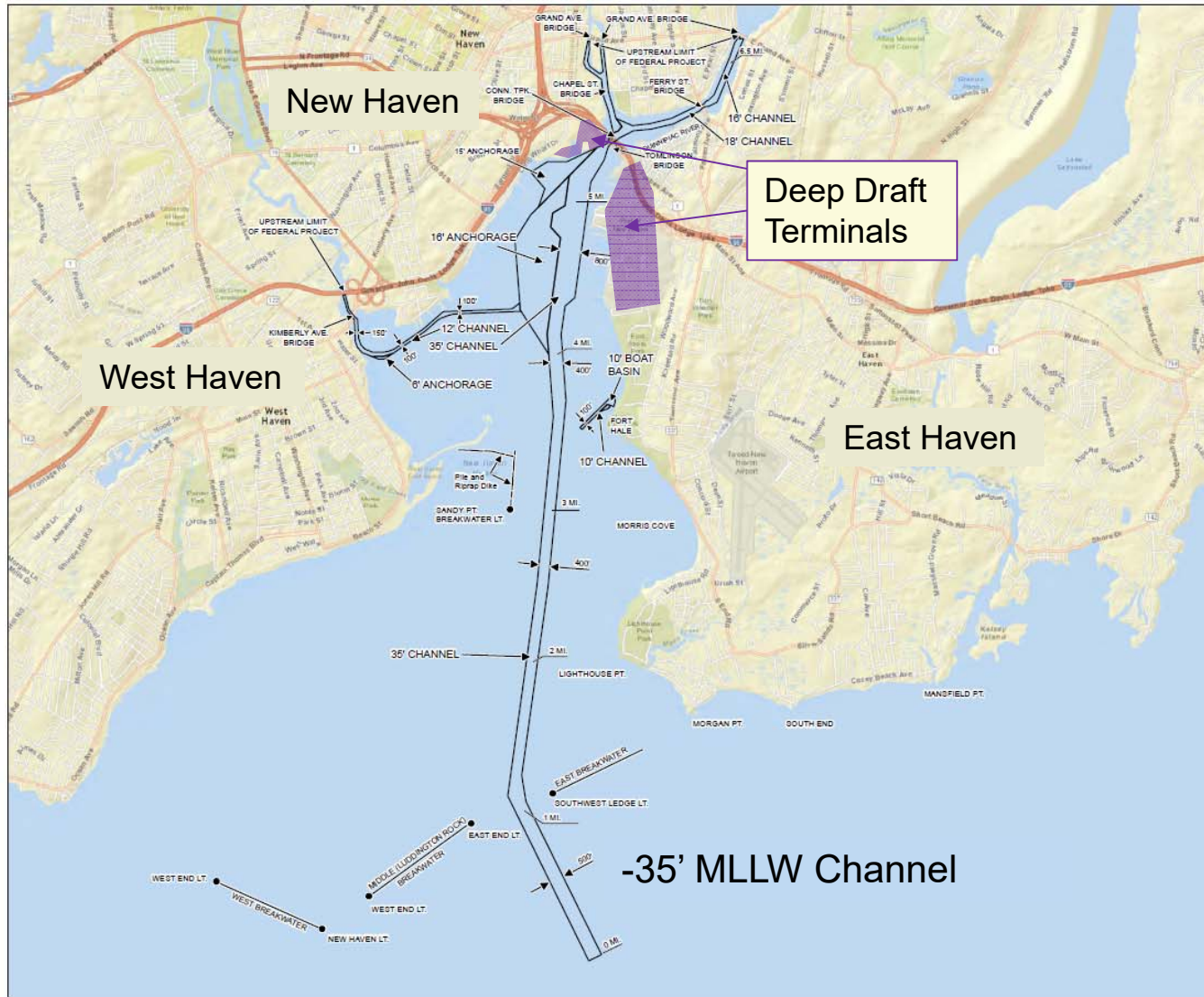
STUDY PURPOSE

The purpose of the study is to:

- Investigate improvements needed to provide a safe, reliable, efficient, and environmentally sustainable waterborne transportation system
- Determine whether navigation improvements to the existing Federal navigation project at New Haven Harbor are warranted and in the Federal interest



STUDY AREA - NEW HAVEN HARBOR, CT EXISTING FEDERAL NAVIGATION PROJECT

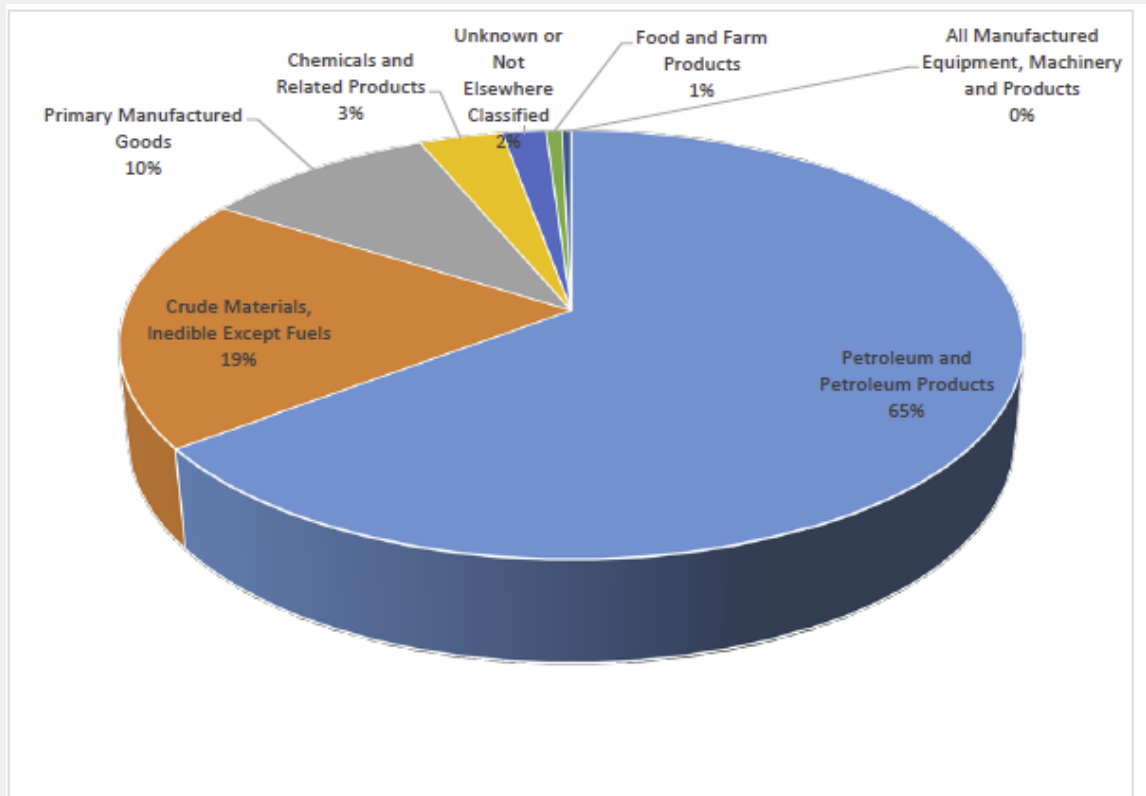


PORT - INFORMATION

- Largest Port in Connecticut
- 2nd Largest Port in New England
- Commodities:
 - Primarily Petroleum Products
 - Salt, Sand, Cement, Steel
 - Scrap metal (export)



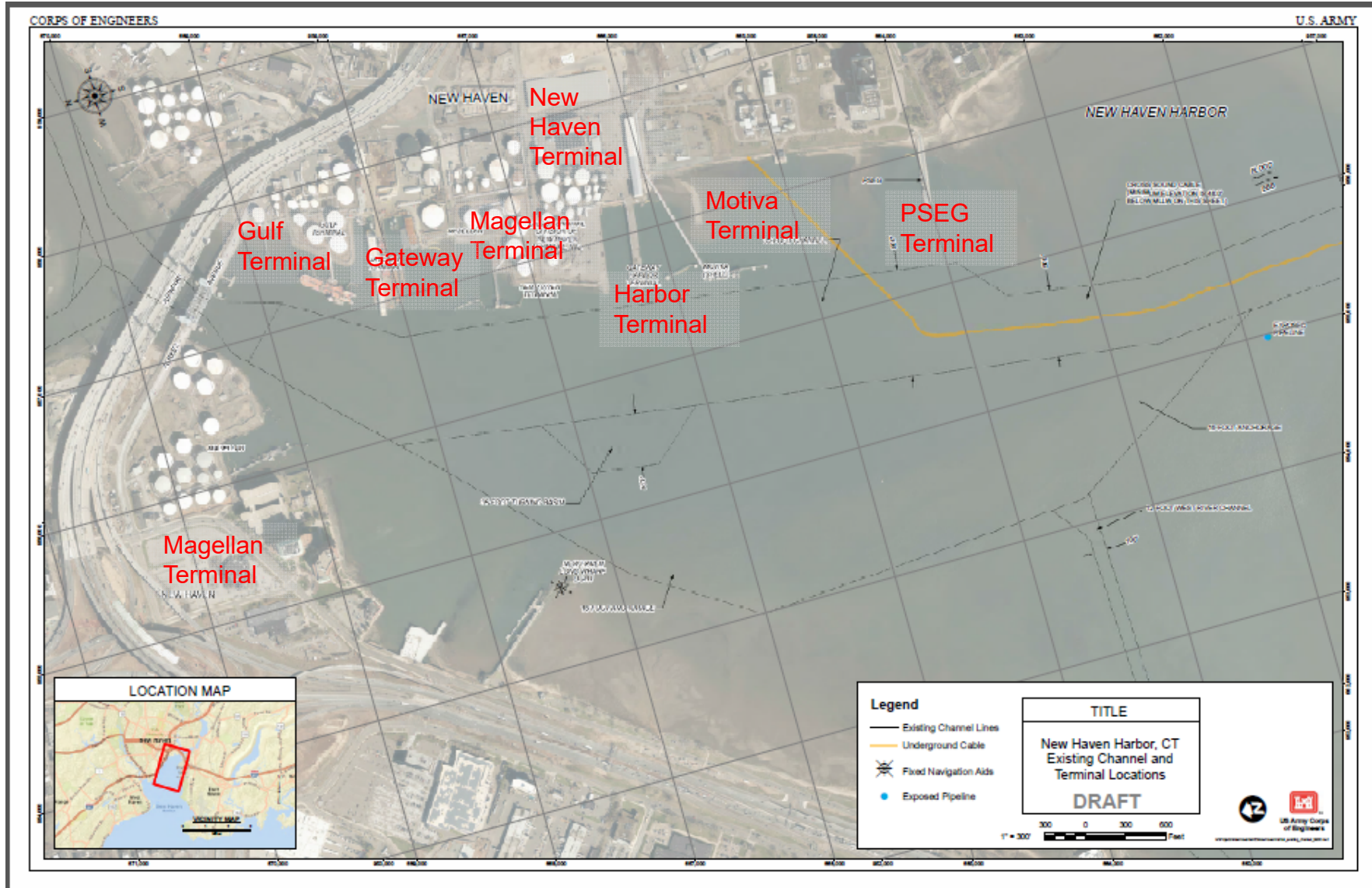
PORT - COMMODITIES



Source: Waterborne Commerce, 2016



PORT - TERMINALS

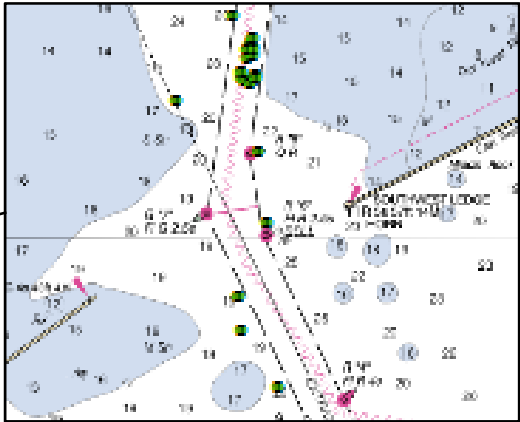


EXISTING NAVIGATION PROBLEMS

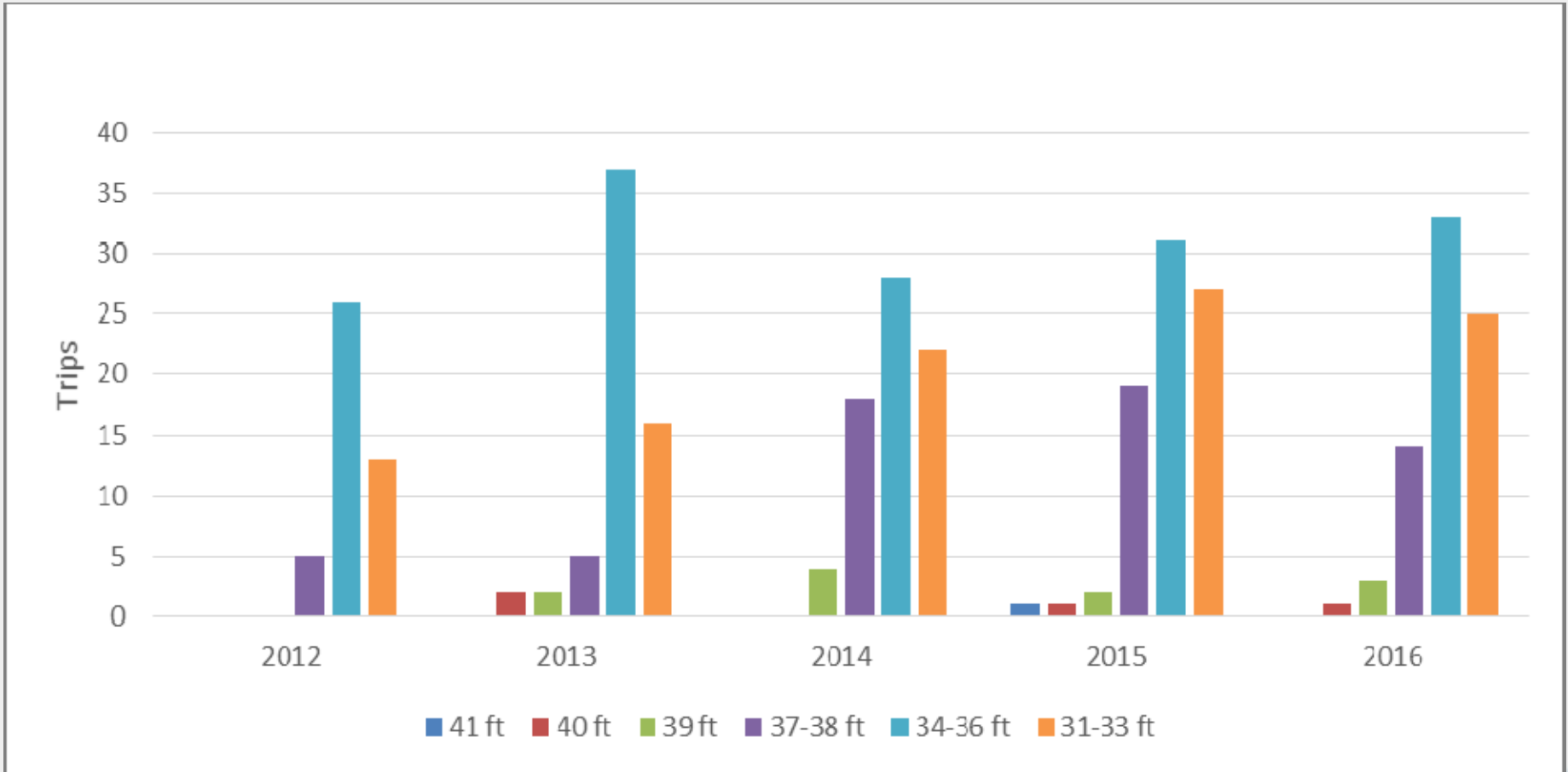


Insufficient Channel and Turning Basin Depth for Large Ships Cause Transportation Inefficiencies

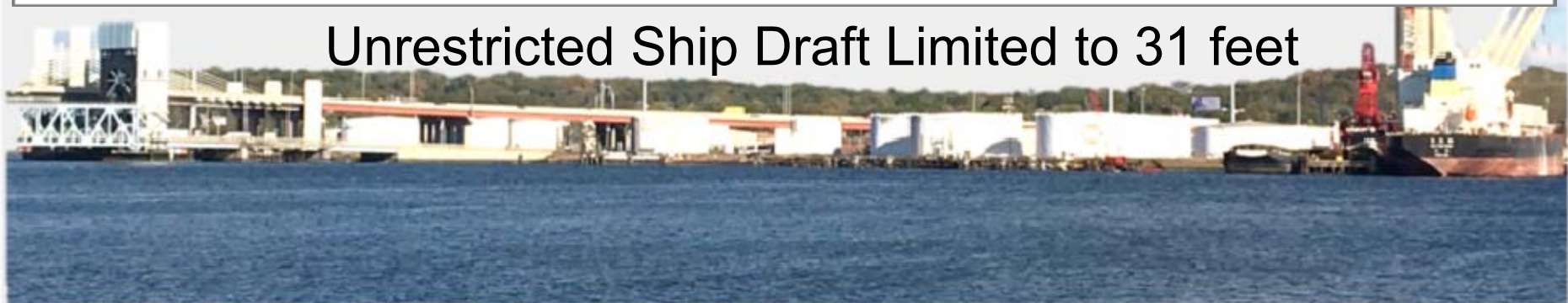
Channel Bend: Strong Bank Force Effects are Experienced



TRIPS BY DRAFT: 31 FEET OR GREATER



Unrestricted Ship Draft Limited to 31 feet



ALTERNATIVES EVALUATED

Alternative	Deepen the Channel and Turning Basin Depth (Feet MLLW)	Inner Harbor Channel Width (Feet)	Outer Harbor Channel Width (Feet)	Width in Bend at Breakwaters (Feet)
No Action	35	400	500	560
Alt. 1	37	500	600	Increase width to 700
Alt. 2	38	500	600	Increase width to 700
Alt. 3	40	500	600	Increase width to 700
Alt. 4	42	500	600	Increase width to 700



ALTERNATIVES QUANTITIES

Channel Design Depth	-37'	-38'	-40'	-42'
Rock	7,000	16,000	33,000	49,000
Sand (fine sand with silt)	121,000	170,000	351,000	475,000
Fines (Silt/Clay)	1,984,000	2,591,000	3,885,000	5,245,000
TOTALS	2,112,000	2,777,000	4,269,000	5,769,000



ECONOMIC EVALUATION

DDN PCX- Economic Production Center performed economic evaluation for study

- Transportation costs were estimated using HarborSym, a planning level model used to analyze the transportation costs of various waterway modifications within a harbor

Cost savings for each plan is calculated as an Average Annual Equivalent

Alternative	AAEQ Transportation Cost	AAEQ Transportation Cost Reduction Benefit
Future Without Project	\$64,740,000	
37-FT	\$62,033,000	\$2,707,000
38-FT	\$62,484,000	\$2,257,000
40-FT	\$57,771,000	\$6,970,000
42-FT	\$57,704,000	\$7,036,000



COMPARISONS OF COST AND BENEFITS OF ALTERNATIVES, IDENTIFICATION OF NED PLAN

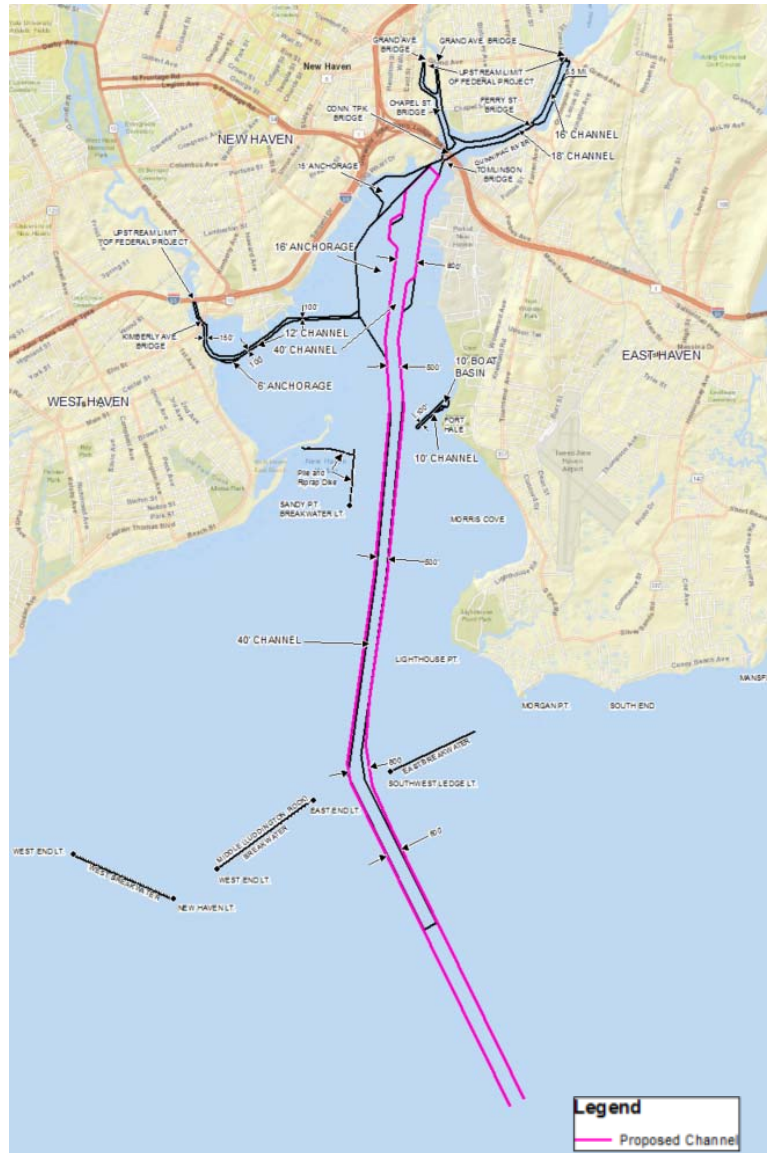
Alternative	Total AAEQ Costs	Total AAEQ Benefits	Total Net Benefits	Benefit/Cost Ratio
37-FT	\$2,432,000	\$2,707,000	\$275,000	1.1
38-FT	\$3,060,000	\$2,257,000	-\$804,000	0.7
40-FT	\$3,764,000	\$6,970,000	\$3,206,000	1.9
42-FT	\$4,610,000	\$7,036,000	\$2,427,000	1.5



SHIP SIMULATION STUDY AT ERDC TO REFINE DESIGN



TENTATIVELY SELECTED PLAN



General Navigation Features

- Deepen Channel & Turning Basin to -40 feet MLLW
- Widen the channel to 500 feet inner channel & 600 feet entrance channel
- Widen Bend at Breakwater (refined design) from 560 to 800 ft
- Turning Basin (refined design) maintain existing location and expand 200 feet to north
- Quantities:
 - 4.27 million cy of ordinary material
 - 43,500 cy of rock

TSP SUMMARY

Reduces transportation costs

- More efficient transportation of commodities: petroleum products, gas, diesel; bulk goods, salt, steel and scrap metal etc.

Improves navigation through bend at breakwaters

- Increased safety and maneuverability for the larger ships

Promotes environmental benefits

- Dredged Material Base Plan: beneficial use of dredged material to create shellfish habitat, fill borrow pits, and cover historic disposal mounds at CLIS
- Dredged Material Beneficial Use Plan: use dredged material to create ~ 70 acres of salt marsh



Project First Cost 40 ft-Plan (Refined Design): \$65.9M

Federal Cost: \$ 49.4

Non-Federal Cost: \$ 16.5

AAEQ NET BENEFITS: \$ 2.63 M

AAEQ Benefits: \$ 6.97 M

AAEQ Costs: \$ 4.34 M

BCR: 1.6 at 2.75%

Salt Marsh Creation (~70 acres) Incremental Project First Cost adds \$4.7M

Federal Cost: \$ 3.0

Non-Federal Cost: \$ 1.7



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TSP SUMMARY FEDERAL AND NON-FEDERAL COST

New Haven Harbor Navigation Improvement Project TSP (40-FT Plan, Refined Design) Federal and Non-Federal Cost (October 2018 Price Level)			
Item	Federal Cost	Non-Federal Cost	Total Cost
General Navigation Feature (GNF) 75% Federal/ 25% Non-Federal			
Construction	\$44,863,000	\$14,954,000	\$59,817,000
Planning, Engineering and Design (PED)	\$2,283,000	\$761,000	\$3,044,000
Construction Management	\$2,283,000	\$761,000	\$3,044,000
GNF, Construction Cost	\$49,429,000	\$16,476,000	\$65,905,000
LERR	\$-	\$-	\$-
Total GNF - Project First Costs	\$49,429,000	\$16,476,000	\$65,905,000
Beneficial Use (BU) Incremental Cost (Salt Marsh) 65% Federal / 35% Non-Federal			
Construction	\$2,613,000	\$1,407,000	\$4,020,000
PED	\$213,000	\$115,000	\$328,000
Construction Management	\$133,000	\$71,000	\$204,000
LERR	\$-	\$160,000	\$160,000
Total BU - Incremental Cost	\$2,959,000	\$1,753,000	\$4,712,000
Total Project First Costs - GNF and BU	\$52,388,000	\$18,229,000	\$70,617,000
Other Items			
Non-Federal Sponsor, Additional 10% Payment	\$-	\$6,590,500	\$-
Aids to Navigation - 100% Federal – US Coast Guard	\$-	\$-	\$-
Local Service Facilities - Port Berthing Areas 100% Non-Federal	\$-	\$2,000,000	\$2,000,000
Cable Enforcement Action (Permit Compliance) 100% Non-Federal (CSC LLC)	\$-	\$32,648,000	\$32,648,000



PLACEMENT ALTERNATIVES

20

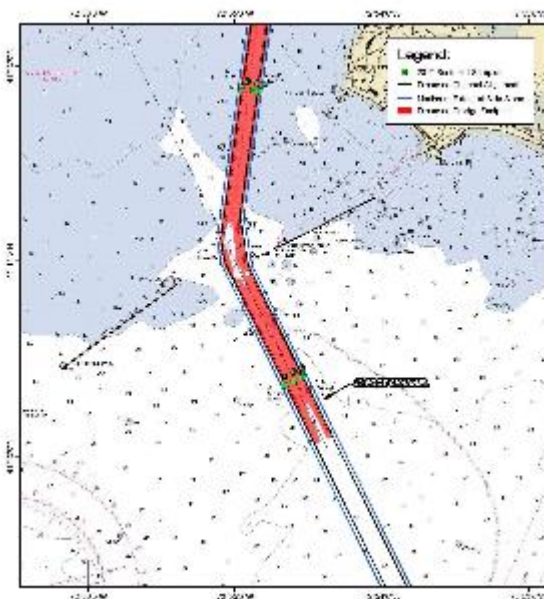
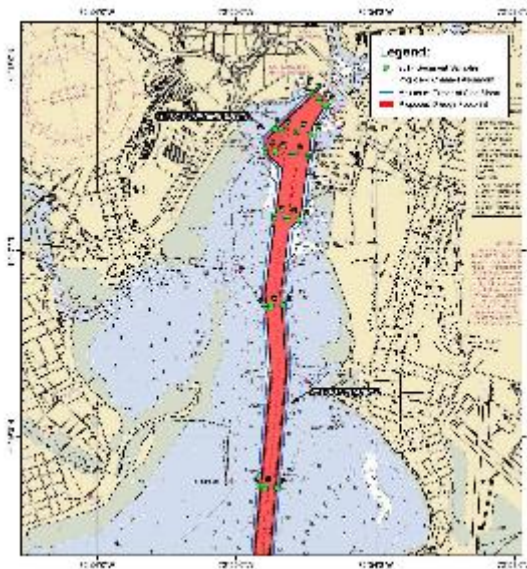
- Morris Cove Borrow Pit
- Oyster Habitat Creation behind East Breakwater
- Salt Marsh Creation at Sandy Point Dike
- Rock Placement at West Breakwater
- Cover Historic Disposal Mounds at CLDS
- Open Water Disposal at CLDS
- West River Borrow Pit
- Confined Aquatic Disposal (CAD) Cell
- Beach Placement
- Use as Fill for Coastal Resiliency Projects
- Upland Structural Fill



SEDIMENT PHYSICAL, CHEMICAL, AND BIOLOGICAL TESTING TO DETERMINE SUITABILITY OF DREDGED MATERIAL

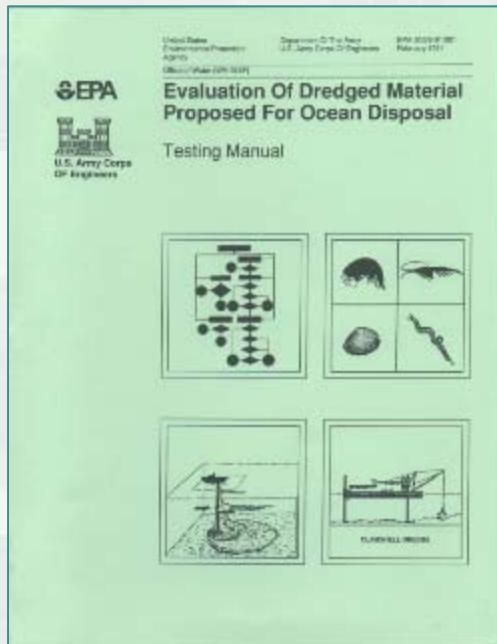
Vibaracore Sampling

- 8 transects
- 23 stations



R/V Candu - OSI

Determining Sediment Classification



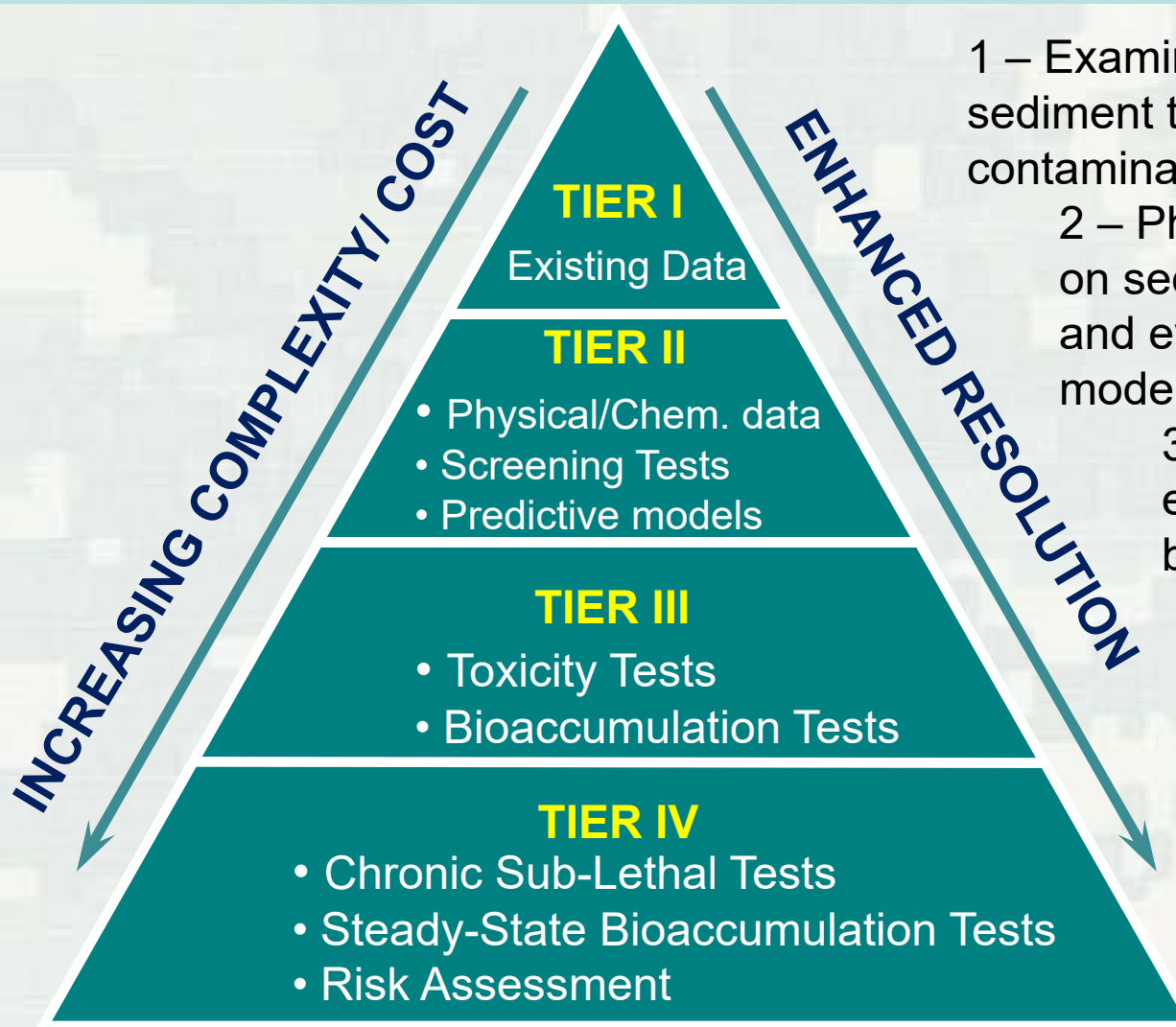
Contaminant History
Sediment Chemistry
Water Column
Toxicity
Bioaccumulation
Risk Evaluation

- Suitability for placement of dredged material follows the EPA/Corps testing Manual and the Regional Implementation Manual
- Testing Procedures examine the two pathways for contamination: impacts on the water column and impacts on benthic organisms that live in sediment and form the basis for the food chain.



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Determining Sediment Classification



1 – Examine existing data on sediment tests, harbor history, and contaminant spills

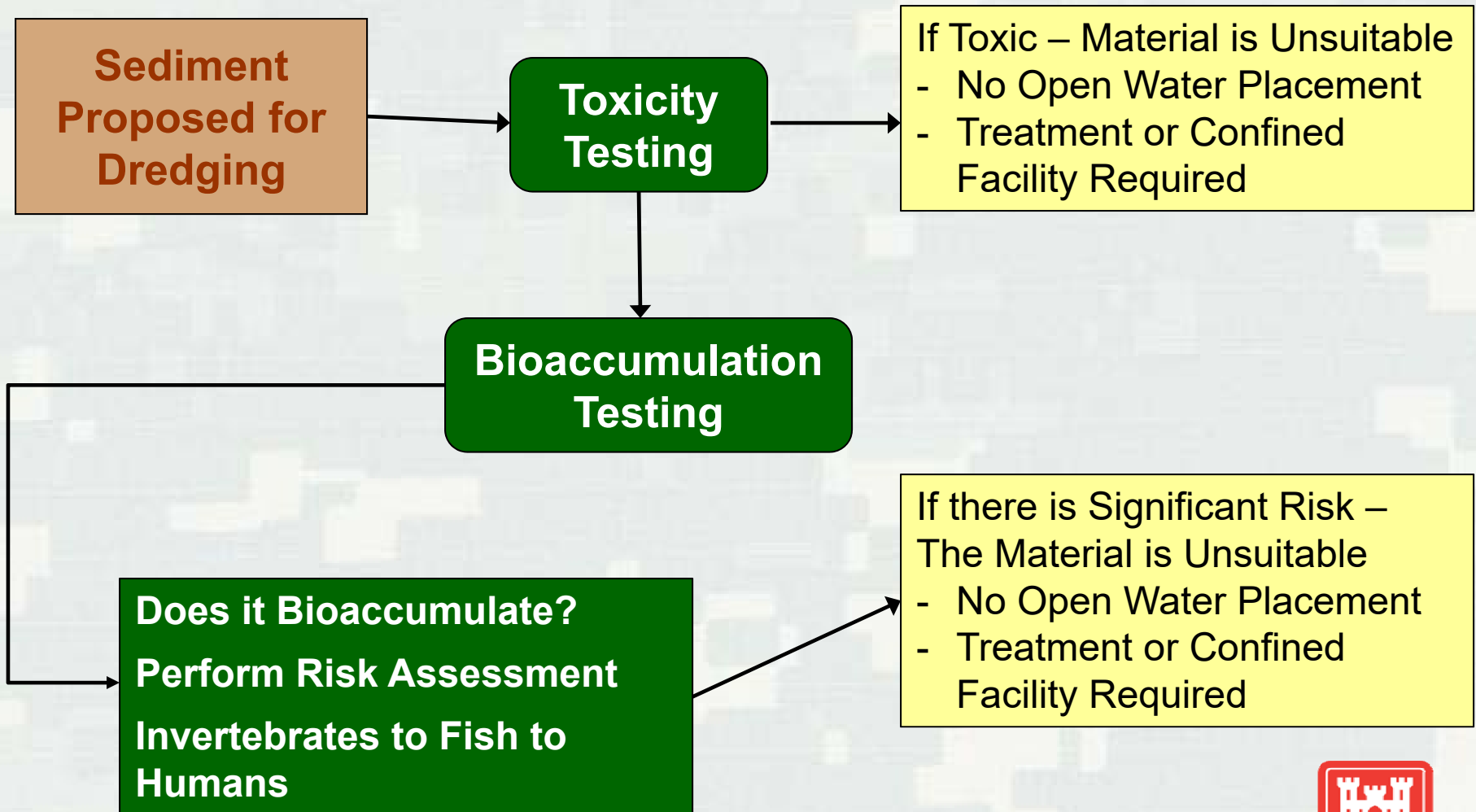
2 – Physical and chemical tests on sediment and water column and evaluation with computer models

3 – Acute toxicity testing of exposed organisms and bioaccumulation

4 – Additional bioaccumulation testing with benthic organisms followed by risk assessments



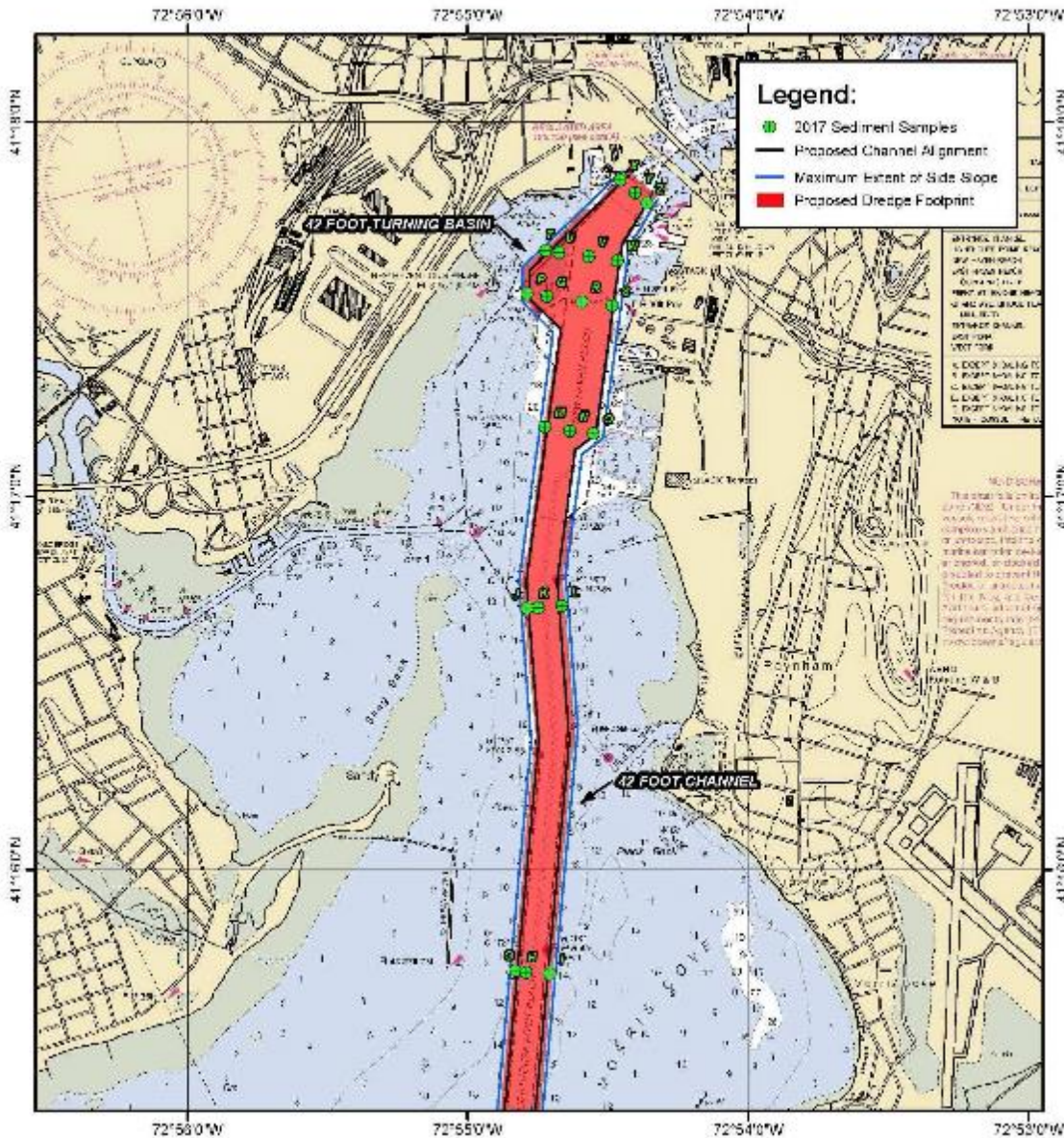
Determining Sediment Classification



Unacceptable Adverse Risk?



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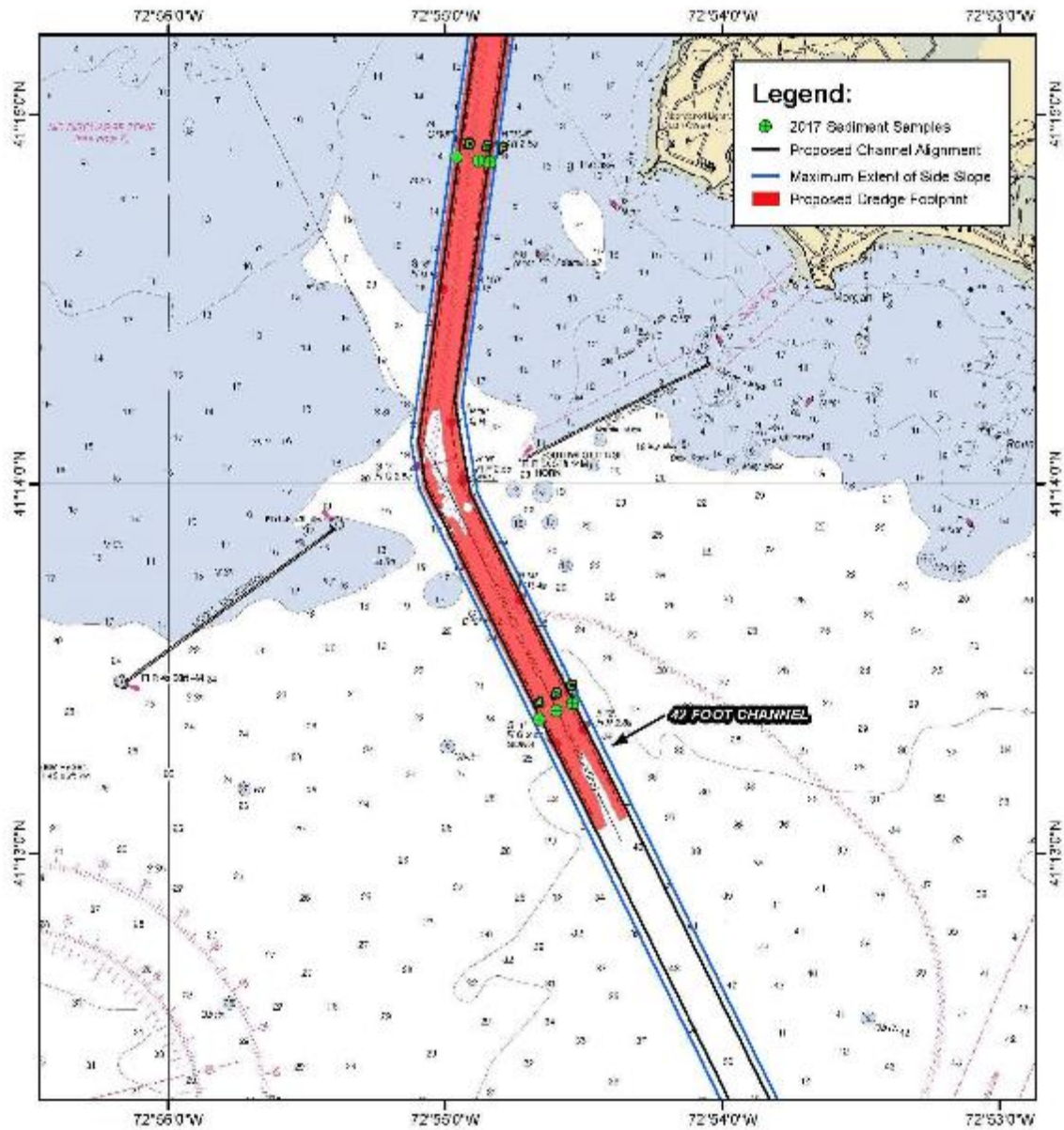


Inner Harbor

- 6 transects
- 17 Stations



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Outer Harbor

- 2 transects
- 6 stations



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New Haven Harbor Improvement Project

Deepen from 35' to 40' MLLW



Water

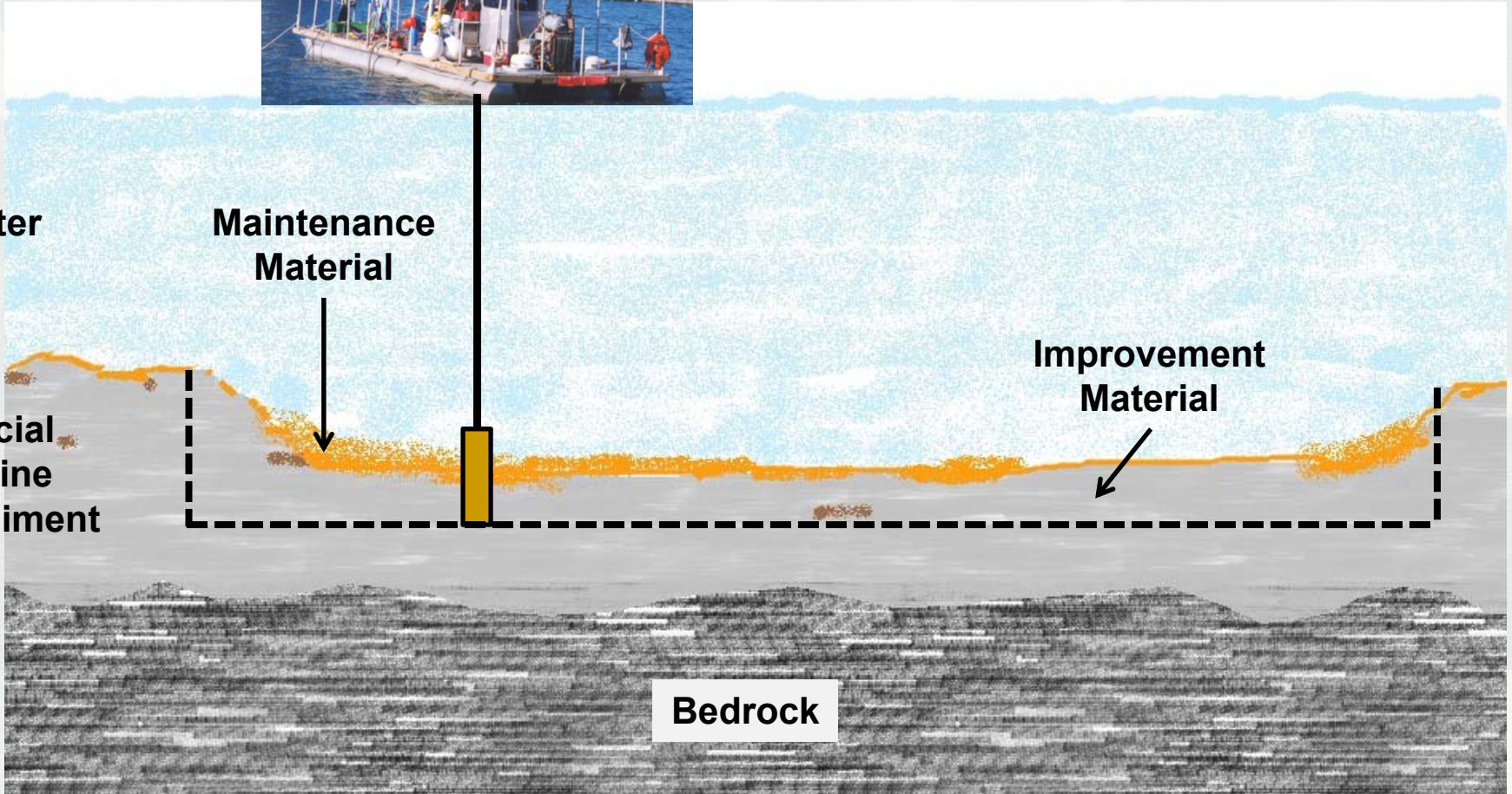
Maintenance
Material

Improvement
Material

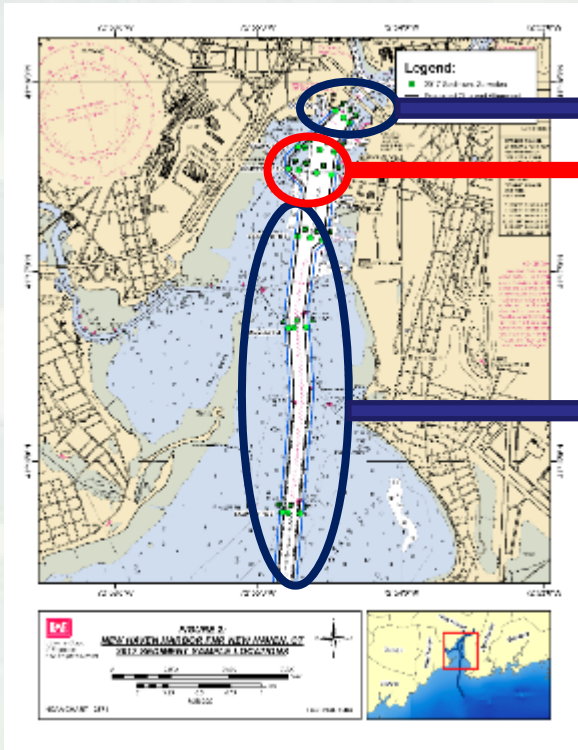
Glacial
Marine
Sediment

Bedrock

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	Whole Sediment Toxicity		Suspended Particulate Phase Toxicity (LC ₅₀)			Water Column Modeling	Bioaccumulation Risk Modeling	Stations	Determination
	<i>L. plumulosus</i>	<i>A. bahia</i>	<i>A. bahia</i>	<i>M. berylina</i>	<i>A. punctulata</i>	STFATE Result	B.E.S.T. Result		
Composite 1	PASS	PASS	>100%	>100%	>100%	PASS	No Unacceptable Risk	ABC	Suitable
Composite 2	PASS	PASS	>100%	>100%	21%	PASS	No Unacceptable Risk	DEF	Suitable
Composite 3	PASS	PASS	>100%	>100%	18%	PASS	No Unacceptable Risk	GHI	Suitable
Composite 4	PASS	PASS	>100%	>100%	18%	PASS	No Unacceptable Risk	JKL	Suitable
Composite 5	PASS	PASS	>100%	78%	23%	PASS	No Unacceptable Risk	MNO	Suitable
Composite 6	PASS	FAIL	68%	46%	9%	FAIL	No Unacceptable Risk	PQRS	Unsuitable
Composite 7	PASS	PASS	65%	48%	35%	FAIL	No Unacceptable Risk	TUVW	Unsuitable
Composite 8	PASS	PASS	84%	72%	35%	PASS	No Unacceptable Risk	XYZ	Suitable



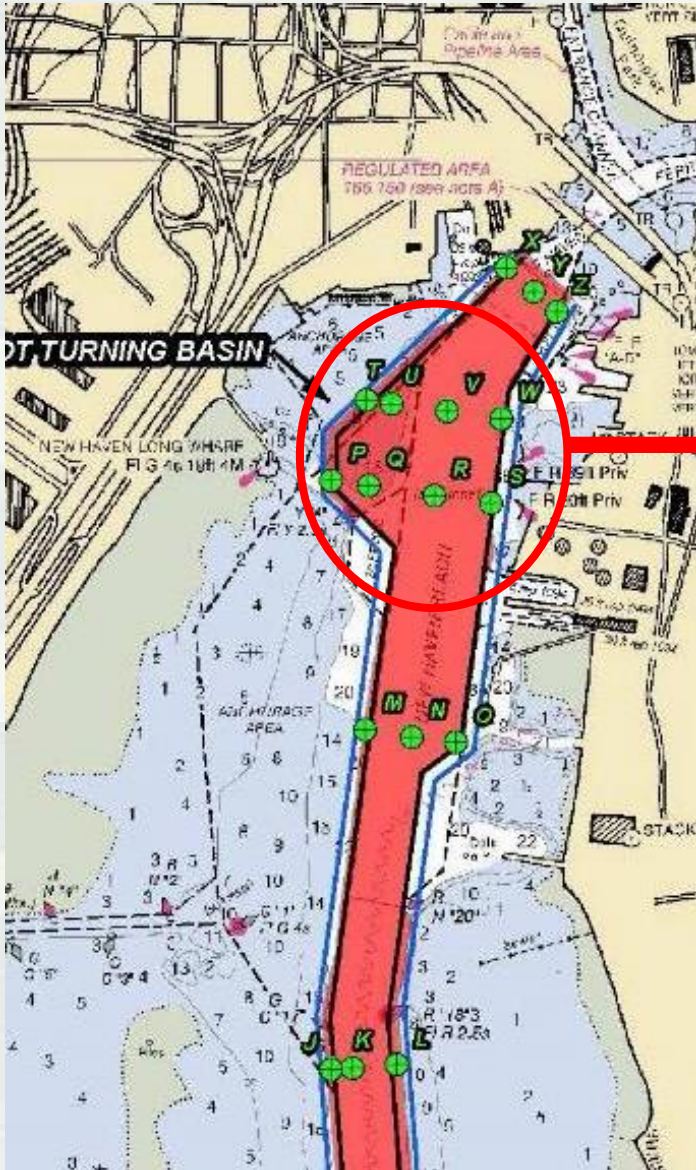
Suitable Material

Additional Evaluation Underway

Suitable Material



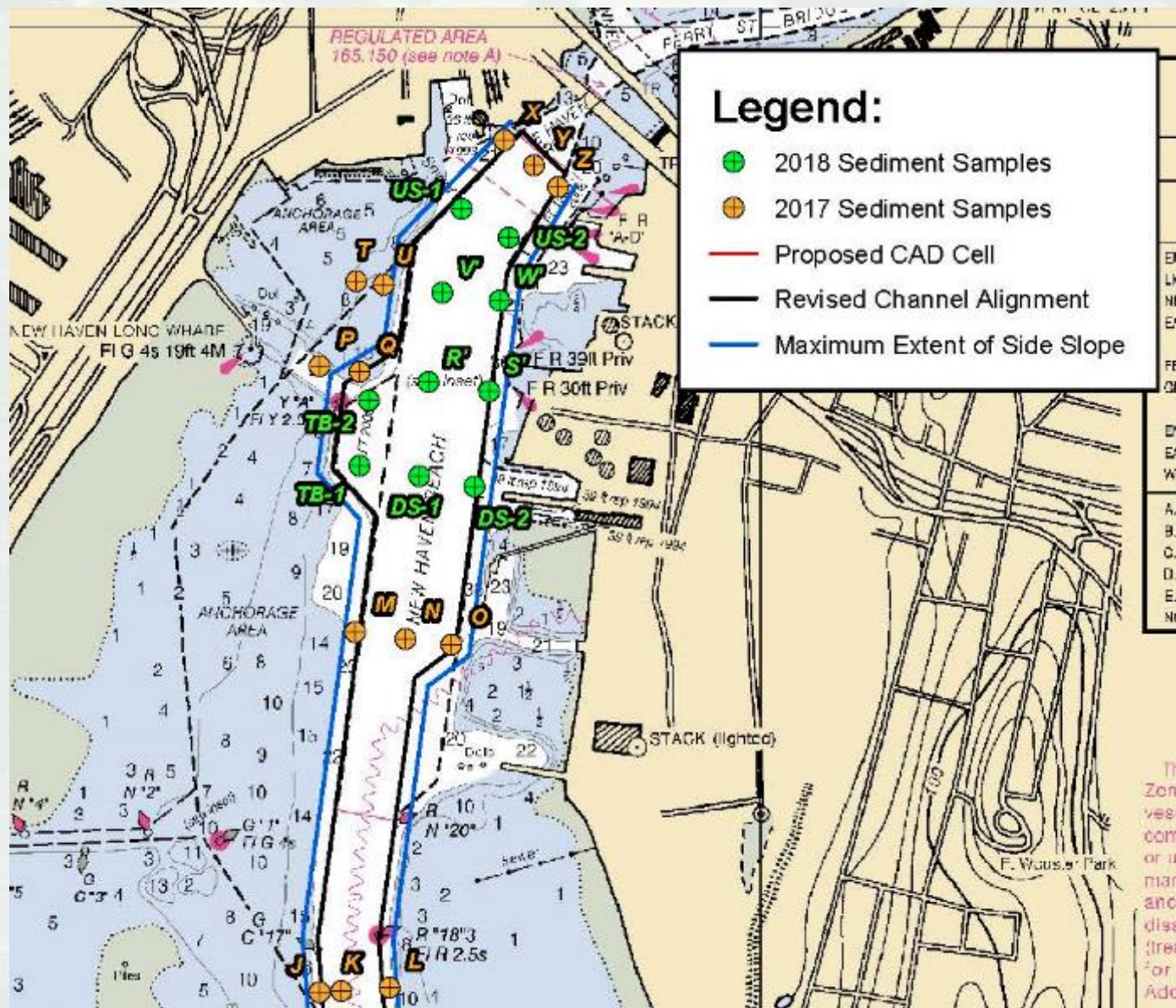
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**Additional Evaluation Underway
(see next slide)**



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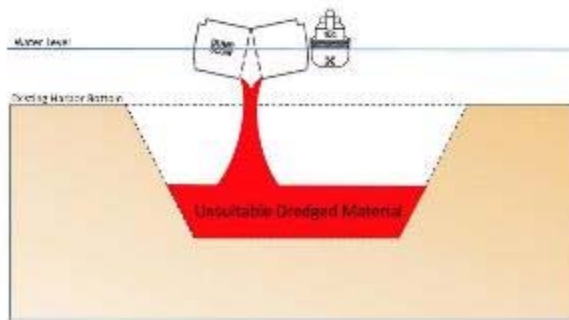
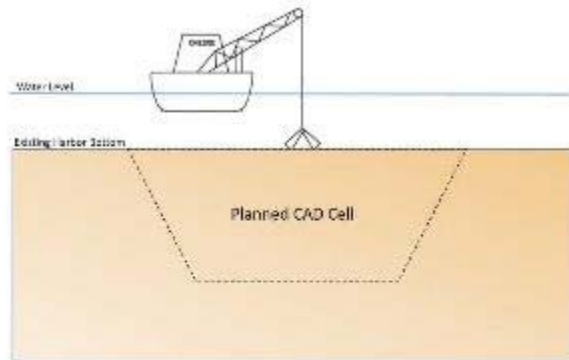
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Confined Aquatic Disposal Cell

Excavation of CAD cell

Filling of CAD cell with unsuitable material

Completed CAD cell with cap of suitable material



*Not to scale



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DREDGED MATERIAL PLACEMENT



Base Plan for Placement

- Morris Cove and West River Borrow Pits
- Create Oyster Habitat
- Rock Reef near West Breakwater
- CLDS: Targeted to Cover Historic Disposal Mounds at CLDS

Beneficial Use Plan For Placement

- Create Salt Marsh at Sandy Point
~70 acres

Contingency Placement Alternative

- Confined Aquatic Disposal Cell



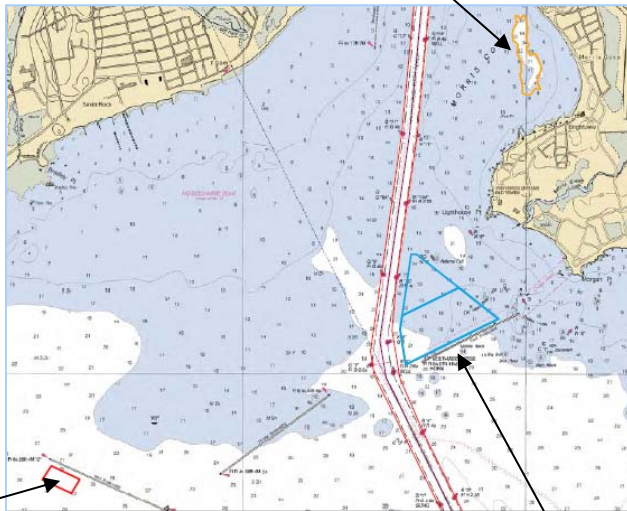
BASE PLAN PLACEMENT SITES (CY)

- Quantities:
 - 4.27 million cy of ordinary material
 - 43,500 cy of rock



West River
Borrow Pit

Morris Cove Borrow Pit



Rock Reef

Oyster Habitat



CLDS



BENEFICIAL USE PLAN - SALT MARSH CREATION OPPORTUNITY



Opportunity for Salt Marsh Creation at Sandy Point ~70 acres, ~ 840,000 cy of Dredged Material



ENVIRONMENTAL SUMMARY

- Construction windows will be used during dredging to protect essential fish habitat species and shellfish resources
- Blasting window for rock will be coordinated with NMFS to protect marine mammals and anadromous fish
- Cultural resources – studies did not indicate the presence of targets within the project footprint



ENVIRONMENTAL COMPLIANCE STATUS

- Public Involvement: on-going
- Environmental Impact Statement (NEPA): Sept 2018 (45-day review period)
- Endangered Species Act Coordination (NMFS): On-going, Informal
- Essential Fish Habitat (EFH) Coordination (NMFS): EFH Assessment in EIS
- Coastal Zone Management Consistency Determination: to be submitted to NYDOS and CTDEEP for concurrence
- Clean Water Act (Section 404(b)(1): draft with EIS
- Clean Water Act (Section 401): conditional until PED
- National Historic Preservation Act (SHPO): Initiated & On-going,
- USFWS Coordination Act Report and Endangered Species Act Coordination: On-going, Informal

Public Involvement

NEPA Scoping Public and Agency Meetings Jan 2017

Public Information Meeting Alternatives including Disposal and Field Studies Jan 2018

Public Involvement: Public Review of Draft Documents and Public Hearings October 2018

Project Website:

<http://www.nae.usace.army.mil/Missions/Projects-Topics/New-Haven-Harbor>



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MILESTONE SCHEDULE

Sign FCSA	December 2015
Alternatives Milestone	April 2017
Tentatively Selected Plan Milestone	April 2018
Release Draft IFR/EIS for Concurrent Review	September 28, 2018
Comments Due	November 15, 2018
Agency Decision Milestone (ADM)	January 2019
Notice of Availability of FINAL IFR/EIS	September 2019
Chief's Report	November 2019



THANK-YOU

[http://www.nae.usace.army.mil/
Missions/Projects-Topics/New-
Haven-Harbor](http://www.nae.usace.army.mil/Missions/Projects-Topics/New-Haven-Harbor)

