



# Boston Harbor, Massachusetts

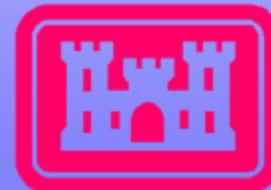
## Deep Draft Navigation Improvement Feasibility Report and Supplemental Environmental Impact Statement



**Colonel Philip T. Feir  
Commander  
New England District**

**Civil Works Review Board Presentation  
21 August 2008 Meeting**

**USACE New England District  
in Partnership with Massport**



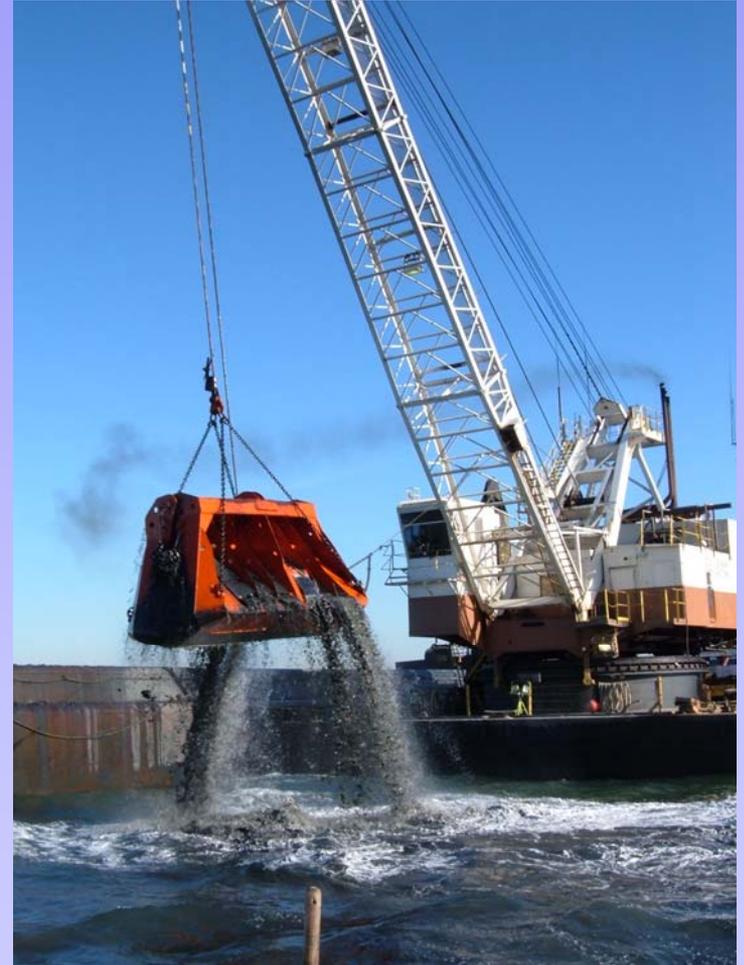
# Purpose of the CWRB Briefing



- Provide the CWRB an overview of the Boston Harbor Deep Draft Navigation Improvement Feasibility Study
- Obtain CWRB approval to proceed with release of the Final Boston Harbor Deep Draft Navigation Improvement Feasibility Report (FR) /Supplemental Environmental Impact Statement (SEIS)
- Answer questions and address comments

# Presentation Overview

- 1 Overview of Feasibility Report and Recommended Plan
  - Study Authority and Sponsor
  - Project Background & Needs
  - Planning Constraints & Formulation
  - Recommended Plan
  - Project Costs & Benefits
- 2 PGM Compliance Actions
- 3 OWPR Comments & Resolution
- 4A Independent Technical Reviews
- 4B External Peer Review
- 5 Public and Agency Comments
- 6 Environmental Operating Principles
- 7 PDT Process and Lessons Learned

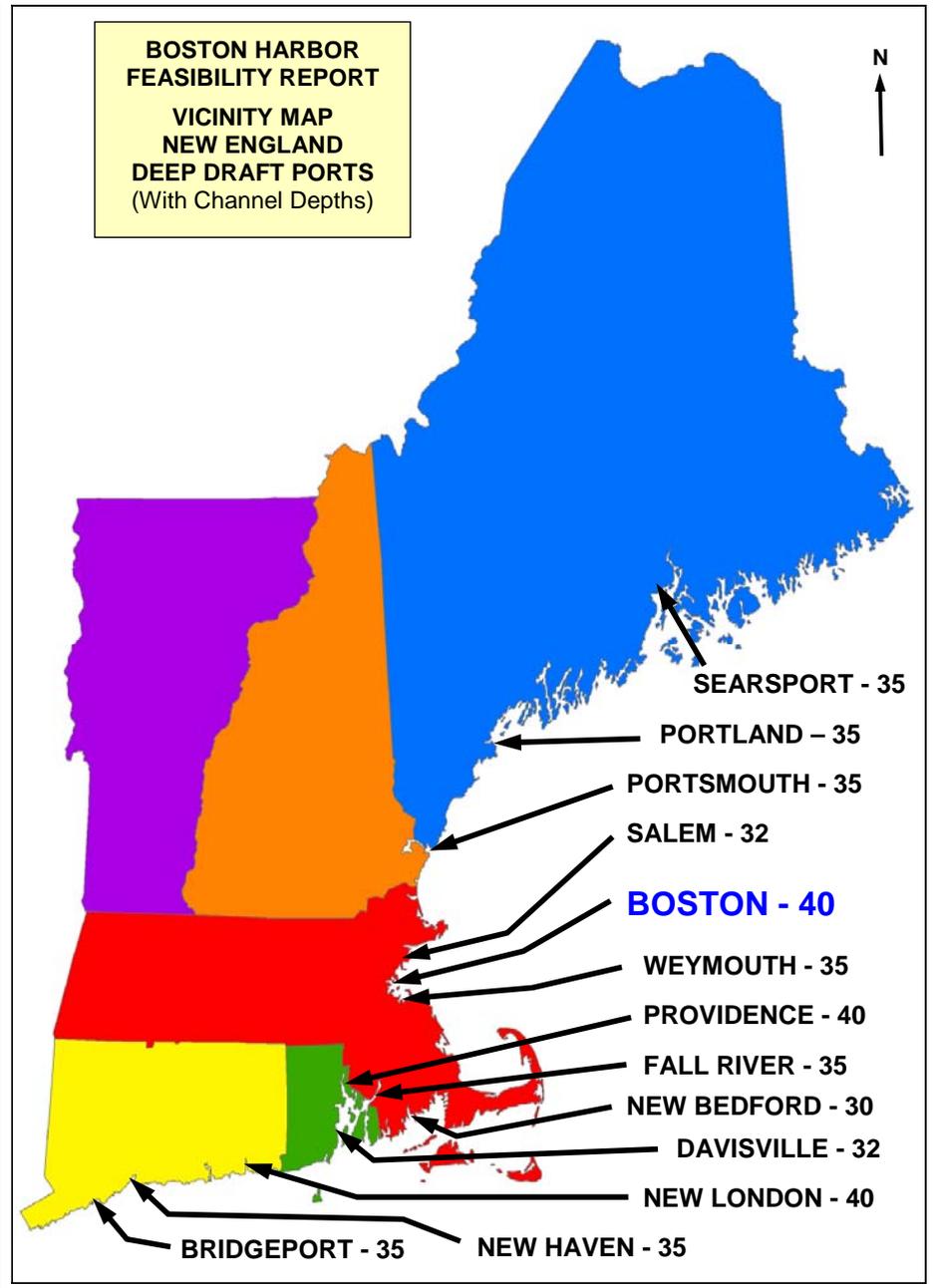




# Study Authority

Resolution of the Senate Subcommittee on Public Works dated 11 September 1969:

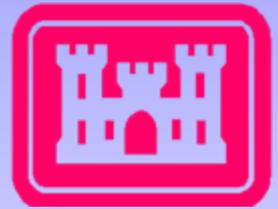
*“That the Board of Engineers for Rivers and Harbors created under Section 3 of the River and Harbor Act of June 13, 1902, be, and is hereby requested to review the report of the Chief of Engineers on Boston Harbor, Massachusetts, published as House Document Numbered 733, Seventy-ninth Congress, and other pertinent reports, with a view to determining whether any modifications of the recommendations contained therein are advisable at this time, with particular reference to modifying the project dimension of the Main Ship Channel from deep water in Broad Sound to the upstream limit of the Federal project in the Mystic River.”*





# Key Boston Harbor Dredging Technical Working Group Participants

- Massachusetts Port Authority (MASSPORT)
- US Environmental Protection Agency (USEPA), Region 1
- National Marine Fisheries Service (NMFS)
- US Fish and Wildlife Service (USFWS)
- U.S. Coast Guard (Sector Boston and First CG District)
- Massachusetts Dept of Environmental Protection (MDEP)
- Massachusetts Office of Coastal Zone Management (MCZM)
- Massachusetts Division of Marine Fisheries (MDMF)
- City of Boston – Environment Department
- Massachusetts Institute of Technology
- University of Massachusetts at Boston

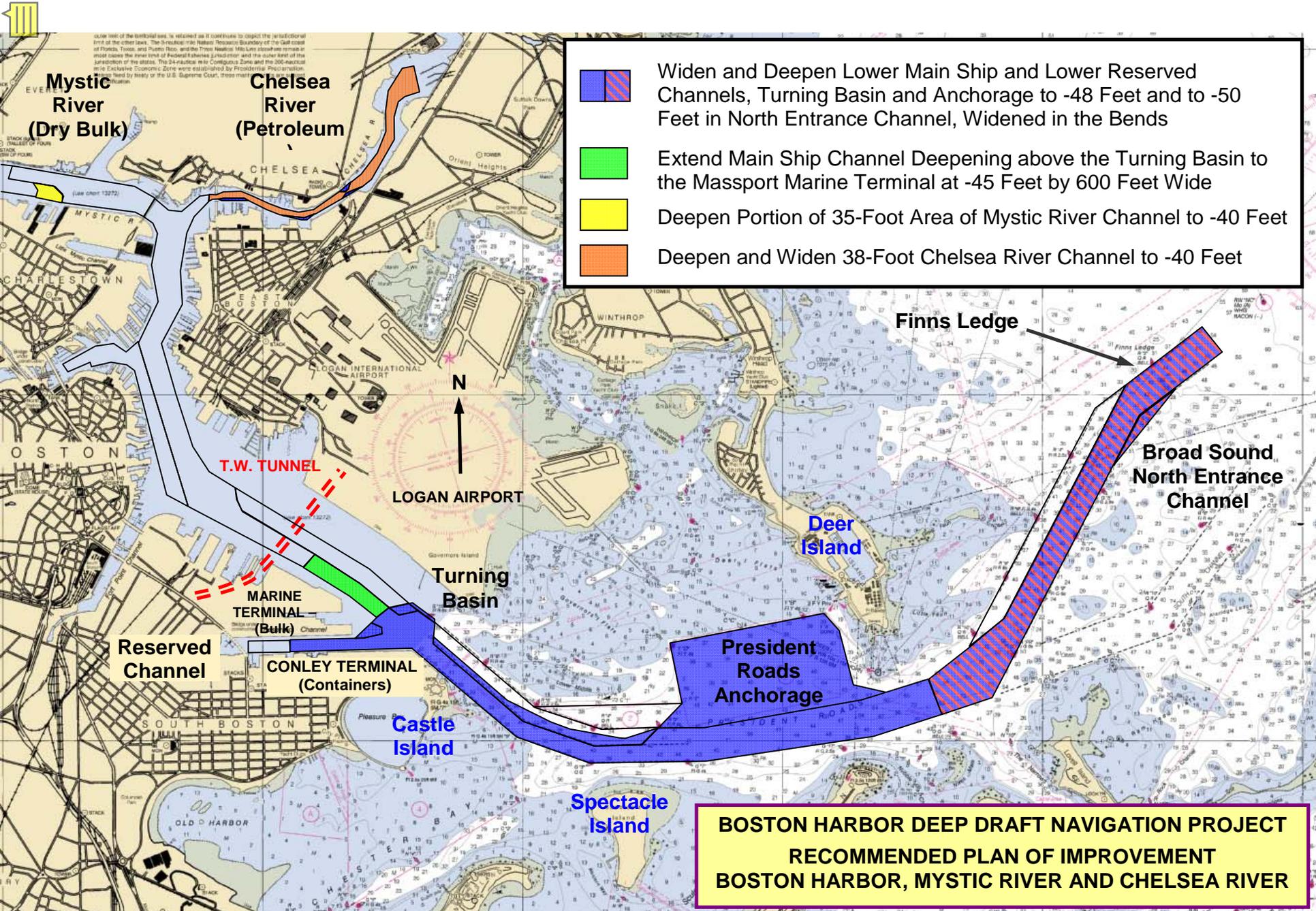




# **Project Now Under Review**

## **Deep Draft Feasibility Study and Supplemental EIS**

- **Main Channels Improvements (Container Cargo)**
  - **Main Focus of Feasibility Study - Deepening Access to Massport's Conley Terminal**
- **Study Also Examined 3 Separate Minor Improvements for Bulk Cargo Terminals at Boston**
  - **Massport Marine Terminal on Main Ship Channel (Bulk)**
  - **Medford Street Terminal on Mystic River (Bulk)**
  - **Deepening Chelsea River (Petroleum)**



# Need for the Project

## Container Cargo Needs – Conley Terminal



- Boston is New England's only container port
- Conley is Boston's only container terminal
- Only about one-third of all New England container cargo comes through Boston Harbor (200,000 TEUs annually - 2007)
- Majority of remaining New England container cargo is shipped through the PONYNJ
- Nearly all PONYNJ shipped containers are carried to/from New England overland by truck at an additional cost of about \$480 per TEU (November 2007 Levels)

# Need for the Project



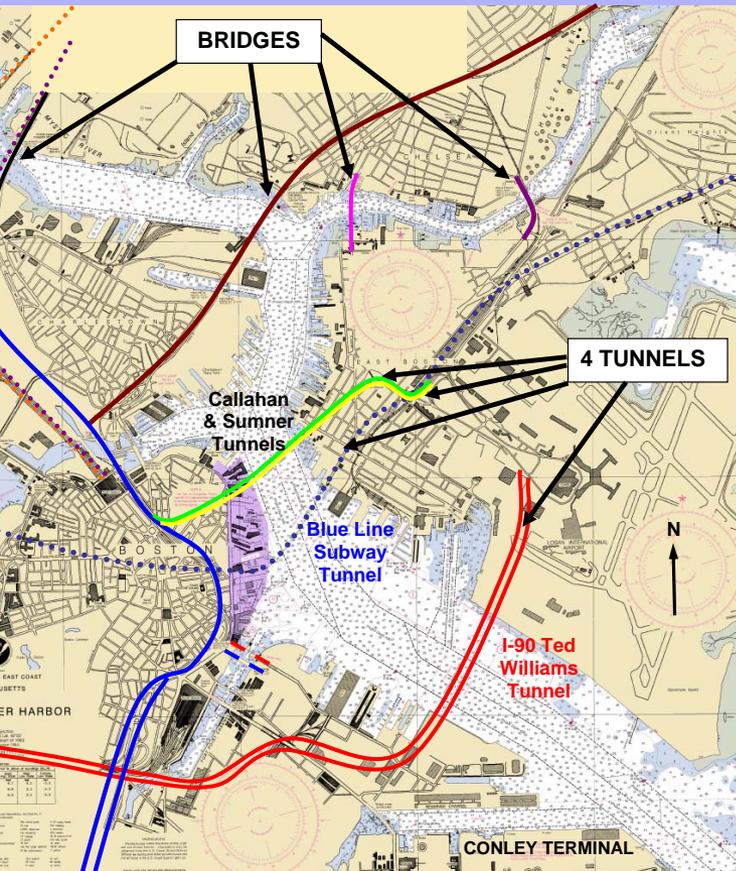
## Bulk Cargo Needs (Non-Petroleum)

- Massport and Partners Redeveloping Marine Terminal on Main Ship Channel and Medford Street Terminal) on the Mystic River
- Until recently these sites were used for highway and power plant construction staging
- No existing commerce – so cement used as general surrogate for analysis

## Bulk Petroleum Cargo Needs

- All of Port's Petroleum Terminals located on the Chelsea River (except Exxon on Mystic)
- 38-foot Project of 1990 to be Completed in 2008-2009 with Removal of Keyspan Gas Siphon and Final Dredging at that site
- Chelsea River tributary is up-harbor from tunnels – so potential depth limited to 40 feet)
- State to Replace Chelsea Street Bridge in 2008-2010.

# Planning Constraints



- The 4 harbor tunnels preclude further deepening of the upper harbor beyond 40 feet, limiting the available terminal sites for >40 feet to the South Boston waterfront downstream of the Ted Williams (I-90) Tunnel
- Port has only one container terminal – the Conley Terminal on the Reserved Channel
- With one exception (Exxon on Mystic River), the Port's petroleum terminals are all located on one tributary channel – the 38-foot Chelsea River
- Deepening of Chelsea River contingent on (1) replacement of Keyspan Gas Siphon (to be completed in August 2008) and (2) State/City/USCG replacement of the Chelsea Street Bridge (scheduled 2008-2010)

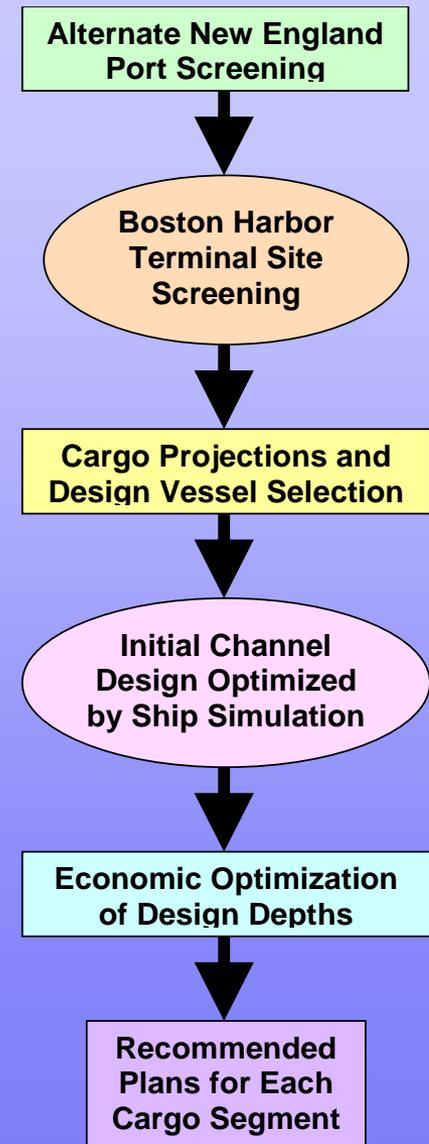


# No Action Alternative

- Base Economic Condition for Container-Shipping
  - Existing Container Lines Maintain Existing Service Levels to Boston – 3 Weekly Services
  - Growth in New England Container Cargo Largely Handled from PONYNJ Overland by Truck as at Present
  - Panama Canal Deepening Completed by 2015
- Dry and Break Bulk Cargo needs unmet except by smaller ships and barges or overland transportation
- Efficiency of Chelsea River petroleum operations declines as fleet mix shifts away from shallow draft Chelsea max vessels

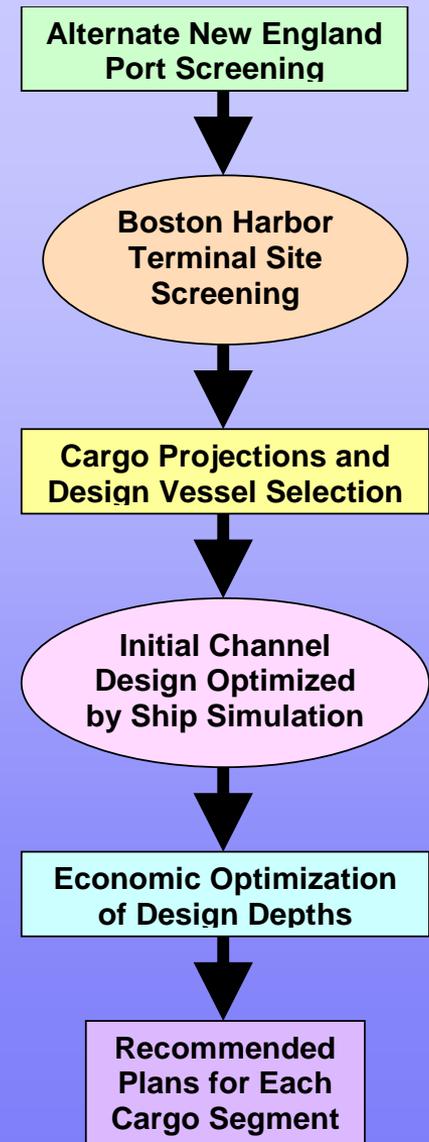
# Plan Formulation - Site Selection

- **Other New England deep draft ports examined**
  - Conley is region's only container terminal.
- **Only two other 40-foot ports in New England**
  - Providence has CAD Cell elevation and bulkhead issues – no terminal facility
  - New London deepened for Navy Sub Base only and has no terminal facilities
  - No other terminal sites in region
- **Boston waterfront sites examined. Only one other terminal site downstream of tunnels – Massport selected that site (Massport Marine Terminal) for new bulk cargo terminal. Site smaller than Conley Terminal site.**
- **Tunnels preclude up-harbor sites**



# Plan Formulation – Design & Optimization

- Cargo projections guide design vessel ID
- Economic Forecast Models used for containers
- Existing trends used to estimate bulk cargo demand
- Shippers, Pilots & USCG consulted on operating factors, transit times and conditions, underkeel needs, port safety and security requirements
- Terminals consulted as to capacity and berth depths
- ERDC developed hydrodynamic model
- Channel design adjusted with ERDC ship simulation
- Channel bends and turning area widened
- Additional depth added to entrance channel for increased sea states/vessel motion
- Economic benefits used for one-foot depth optimization with consideration of tidal advantage





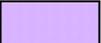
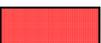
# Recommendation – 4 Improvements

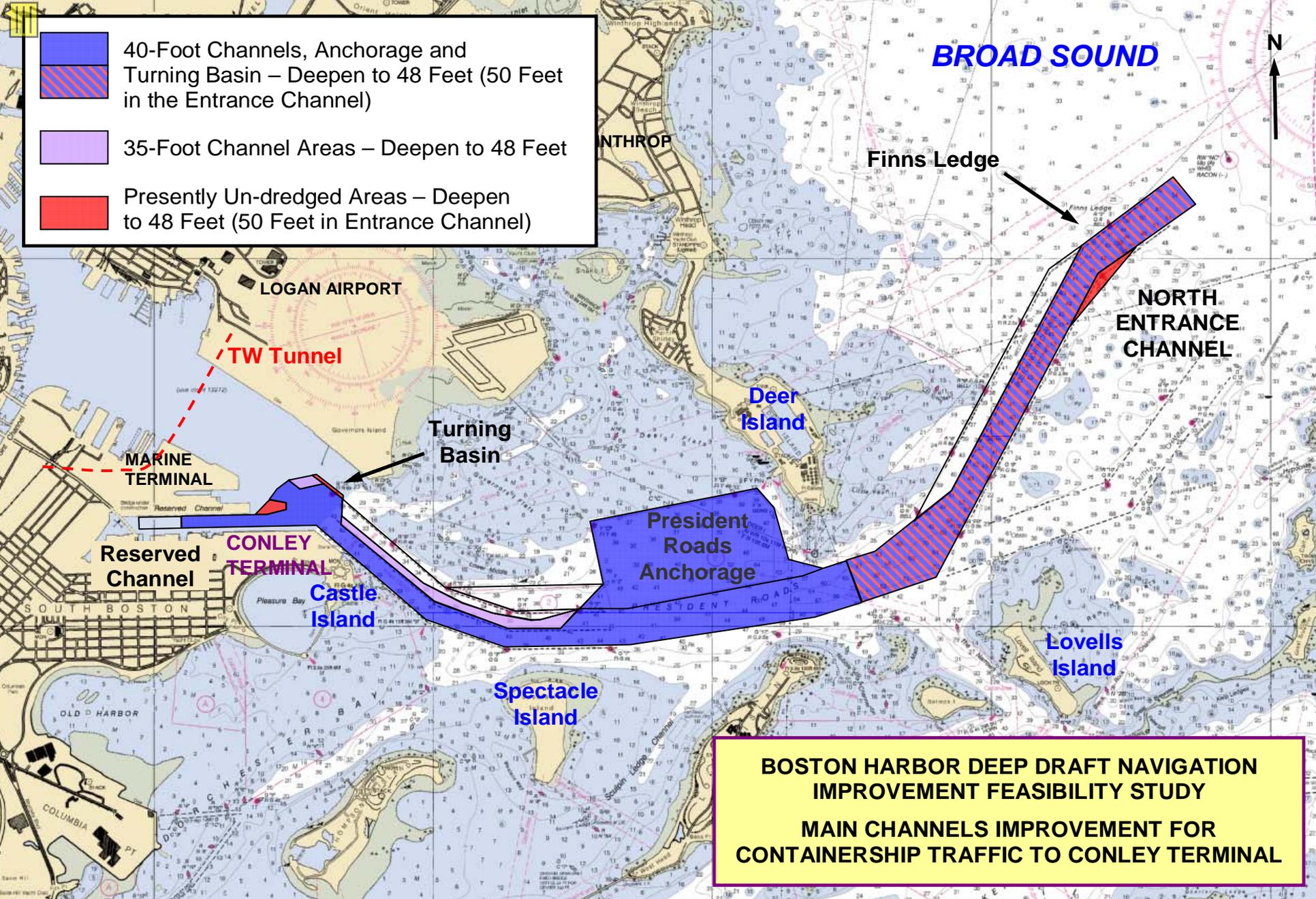
- **Main Channels Improvement:** For Containership Access to Conley Terminal
- **Main Ship Channel Deepening Extension:** For Large Dry Bulk Carrier Access to Massport Marine Terminal
- **Mystic River Channel:** Deepen for Smaller Dry Bulk Carrier Access to Massport's Medford Street Terminal
- **Chelsea River Channel:** Deepen Channel for Liquid Petroleum Carriers
- **All Disposal at the Massachusetts Bay Disposal Site**



# Main Channels Improvement Deepening for Containership Access

- Project Features
  1. North Entrance Channel to 50 feet, widened at Finns Ledge Bend
  2. Main Ship Channel from Outer Confluence to Reserved Channel to 48 feet, widened to 900 feet below Castle Island and 800 feet above. Widened further in the bends.
  3. President Roads Anchorage Area to 48 feet
  4. Lower Reserved Channel along Conley Terminal to 48 feet
  5. Reserved Channel Turning Area widened to about 1600 feet and deepened to 48 feet
- Examined incremental depths of 42 to 50 feet MLLW – Optimized at 48 feet
- Entrance Channel two feet deeper than inner channels for increased sea states and vessel motion
- Conley Terminal Berths will be deepened to 3 feet deeper than the channel by Massport for tidal navigation
- Benefits from shifting truck transport to containership transport

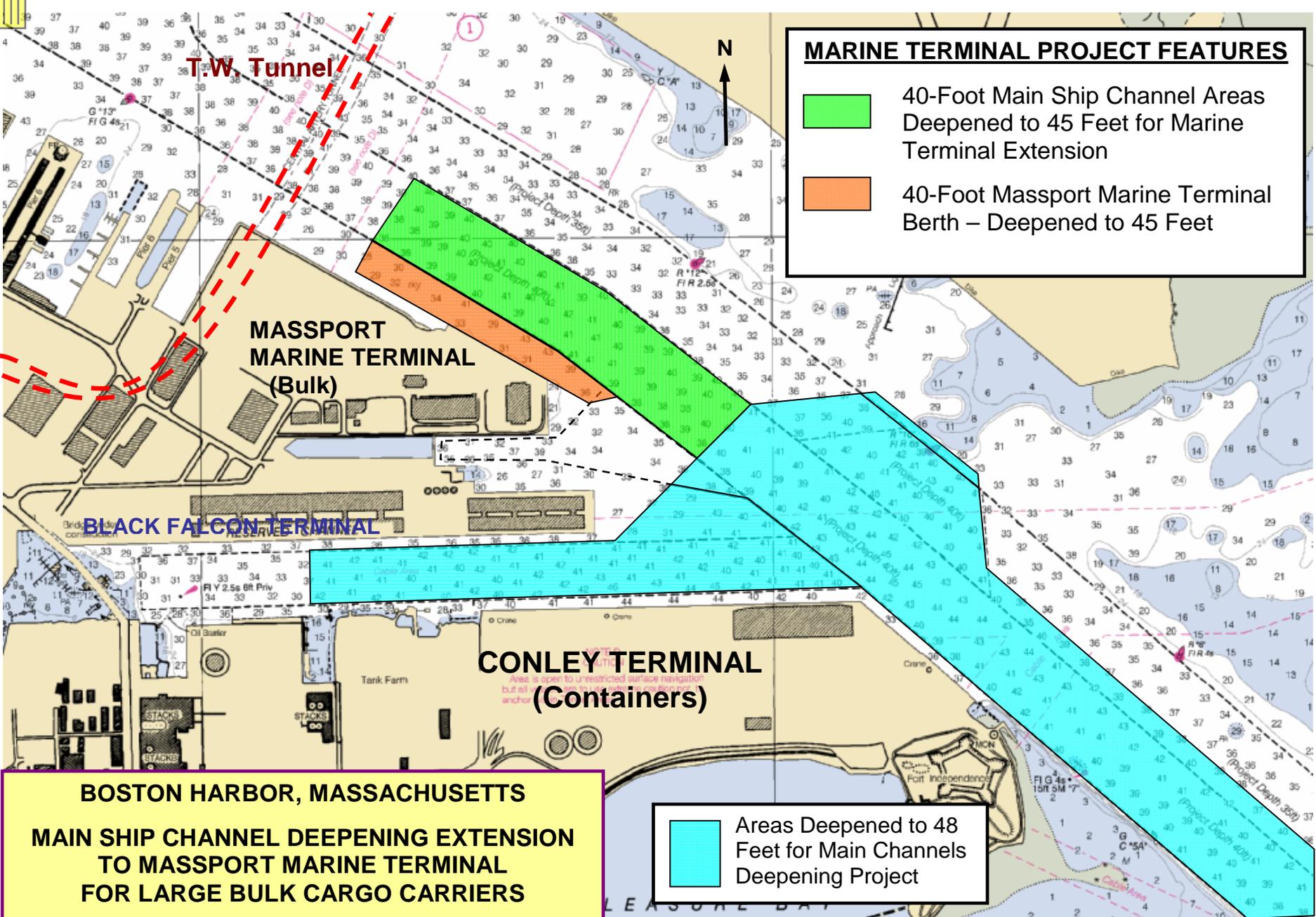
-  40-Foot Channels, Anchorage and Turning Basin – Deepen to 48 Feet (50 Feet in the Entrance Channel)
-  35-Foot Channel Areas – Deepen to 48 Feet
-  Presently Un-dredged Areas – Deepen to 48 Feet (50 Feet in Entrance Channel)
-  Presently Un-dredged Areas – Deepen to 48 Feet (50 Feet in Entrance Channel)





# Main Ship Channel Deepening to Massport Marine Terminal for Large Bulk Cargo Carriers

- Deepen existing 40-foot lane of the Main Ship Channel above the Reserved Channel Turning Area to the Massport Marine Terminal to 45 feet
- Until recently facility was site of highway construction staging
- Last terminal seaward of the tunnel restrictions
- Massport and developer on track to begin operations of new bulk cargo terminal in 2009 with existing 40-foot channel
- Cement imports used for economic analysis – benefits from shift to larger bulk carriers
- Depths increments of 42 to 45 feet examined



**MARINE TERMINAL PROJECT FEATURES**

- 40-Foot Main Ship Channel Areas Deepened to 45 Feet for Marine Terminal Extension
- 40-Foot Massport Marine Terminal Berth – Deepened to 45 Feet

**BOSTON HARBOR, MASSACHUSETTS**  
**MAIN SHIP CHANNEL DEEPENING EXTENSION TO MASSPORT MARINE TERMINAL FOR LARGE BULK CARGO CARRIERS**

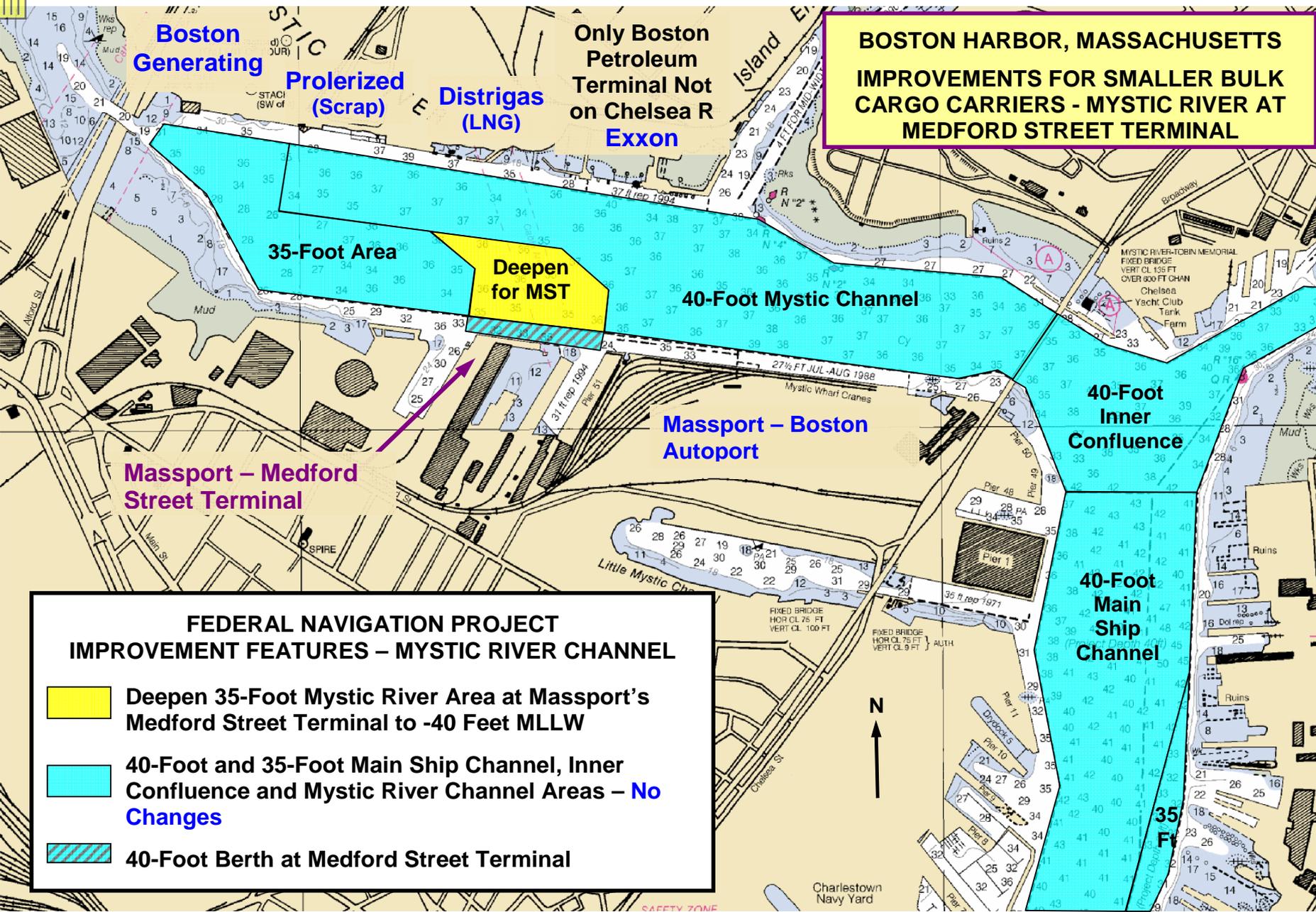
Areas Deepened to 48 Feet for Main Channels Deepening Project



# **Mystic River Channel Deepen Small Area to Access Massport's Medford Street Terminal for Small Bulk Cargo Carriers**

- Deepening Small 35-Foot Area of Federal Channel to 40 Feet to Remove Restriction between 40-Foot Channel and 40-Foot Berth
- Massport Deepened Berth to 40 Feet in 1998
- Massport Developing former Sugar Terminal to Support Dry Bulk and Break Bulk Cargo. Benefits from shift to larger bulk carriers.
- Depths of 37 to 40 Feet Examined (40 Recommended)

**BOSTON HARBOR, MASSACHUSETTS  
IMPROVEMENTS FOR SMALLER BULK  
CARGO CARRIERS - MYSTIC RIVER AT  
MEDFORD STREET TERMINAL**



**FEDERAL NAVIGATION PROJECT  
IMPROVEMENT FEATURES – MYSTIC RIVER CHANNEL**

- Deepen 35-Foot Mystic River Area at Massport's Medford Street Terminal to -40 Feet MLLW
- 40-Foot and 35-Foot Main Ship Channel, Inner Confluence and Mystic River Channel Areas – **No Changes**
- 40-Foot Berth at Medford Street Terminal

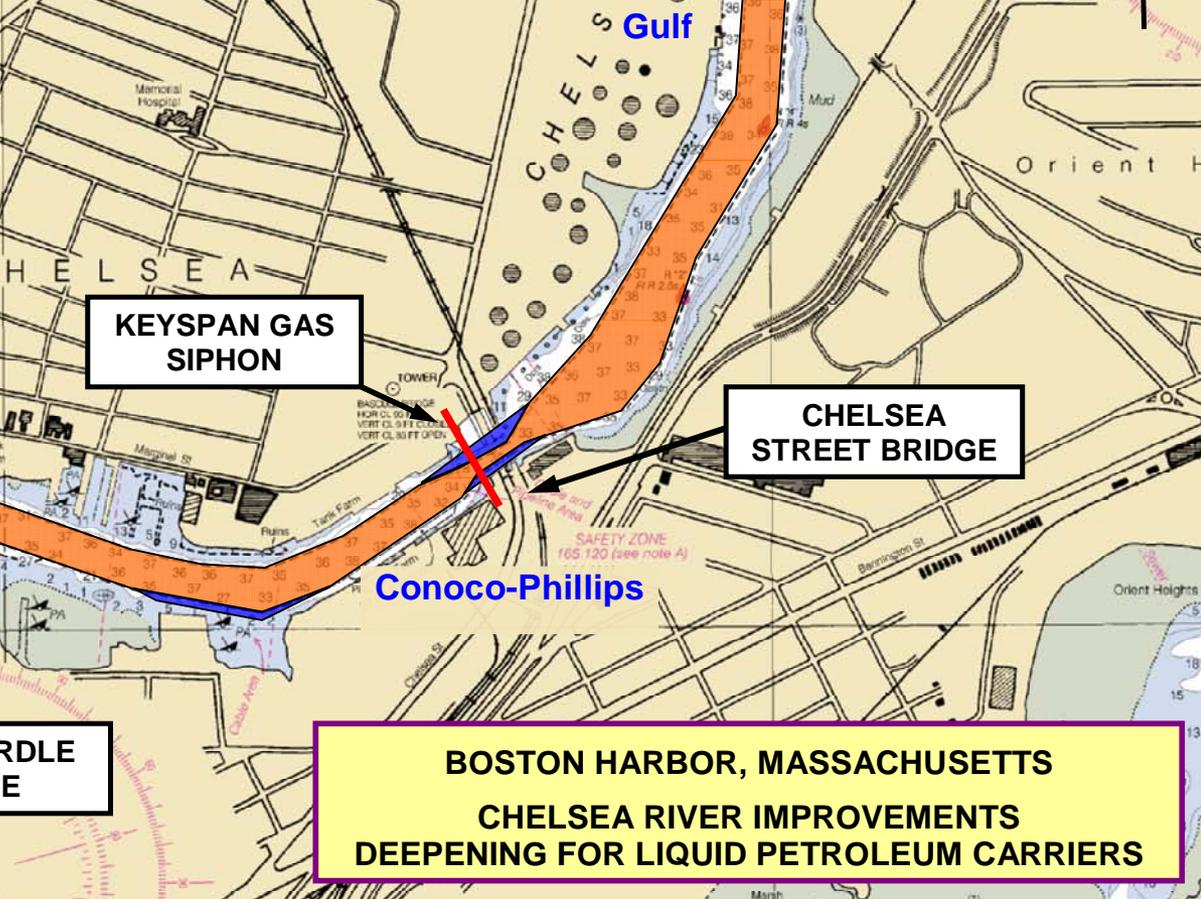
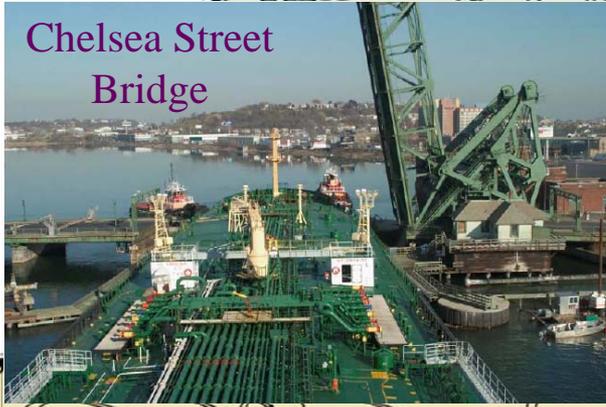


# Chelsea River Channel Deepen for Liquid Petroleum Cargo

- Without Project Condition Requires:
  - Removal of Keyspan Gas Siphon – Planned as Part of Inner Harbor Maintenance 2008-2009. Replacement Line Completed August 2008 – Old Line to be Removed by Nov 08.
  - Replacement of Chelsea Street Bridge by USCG, State & City
    - Solicitation has been Issued for Work to be Completed in Two Years (2008-2010)
- Examined 39 and 40-Foot Depths – 40 Feet Recommended
- 5 Beneficiaries – 4 Petroleum and 1 Mineral Terminal
- Eastern Minerals and Conoco between Bridges
- 3 Petroleum Terminals at Head of Channel
- All Tankers Must use Turning Basin at Head of Channel

**FEDERAL NAVIGATION PROJECT  
IMPROVEMENT FEATURES  
CHELSEA RIVER CHANNEL**

-  Deepen Existing 38-Foot Chelsea River Channel and Turning Basin to -40 Feet MLLW
-  Widen Chelsea River Channel at New Chelsea Street Bridge and in Approaches to Both Bridges at -40 Feet MLLW
-  40-Foot Main Ship Channel and Inner Confluence – **No Change**



**BOSTON HARBOR, MASSACHUSETTS  
CHELSEA RIVER IMPROVEMENTS  
DEEPENING FOR LIQUID PETROLEUM CARRIERS**

# BOSTON HARBOR IMPROVEMENT PROJECT DREDGING QUANTITY ESTIMATES (1000s of CY)

	CY Ordinary Material	CY Rock	Acres of Subtidal Impact
<b>Main Channels Improvement to 48 Feet for Conley Terminal. Entrance Channel to 50 Feet</b>	<b>11,096</b>	<b>953</b>	<b>1,097</b>
<b>Extend Deepening of MSC to Marine Terminal at 45 Feet</b>	<b>246</b>	<b>78</b>	<b>41</b>
<b>Deepen Portion of 35-Foot Mystic Channel to 40 Feet</b>	<b>67</b>	<b>0</b>	<b>9</b>
<b>Deepen 38-Foot Chelsea River Channel to 40 Feet</b>	<b>342</b>	<b>1</b>	<b>78</b>
<b>TOTAL PROJECT</b>	<b>11,752</b>	<b>1,032</b>	<b>1,225</b>

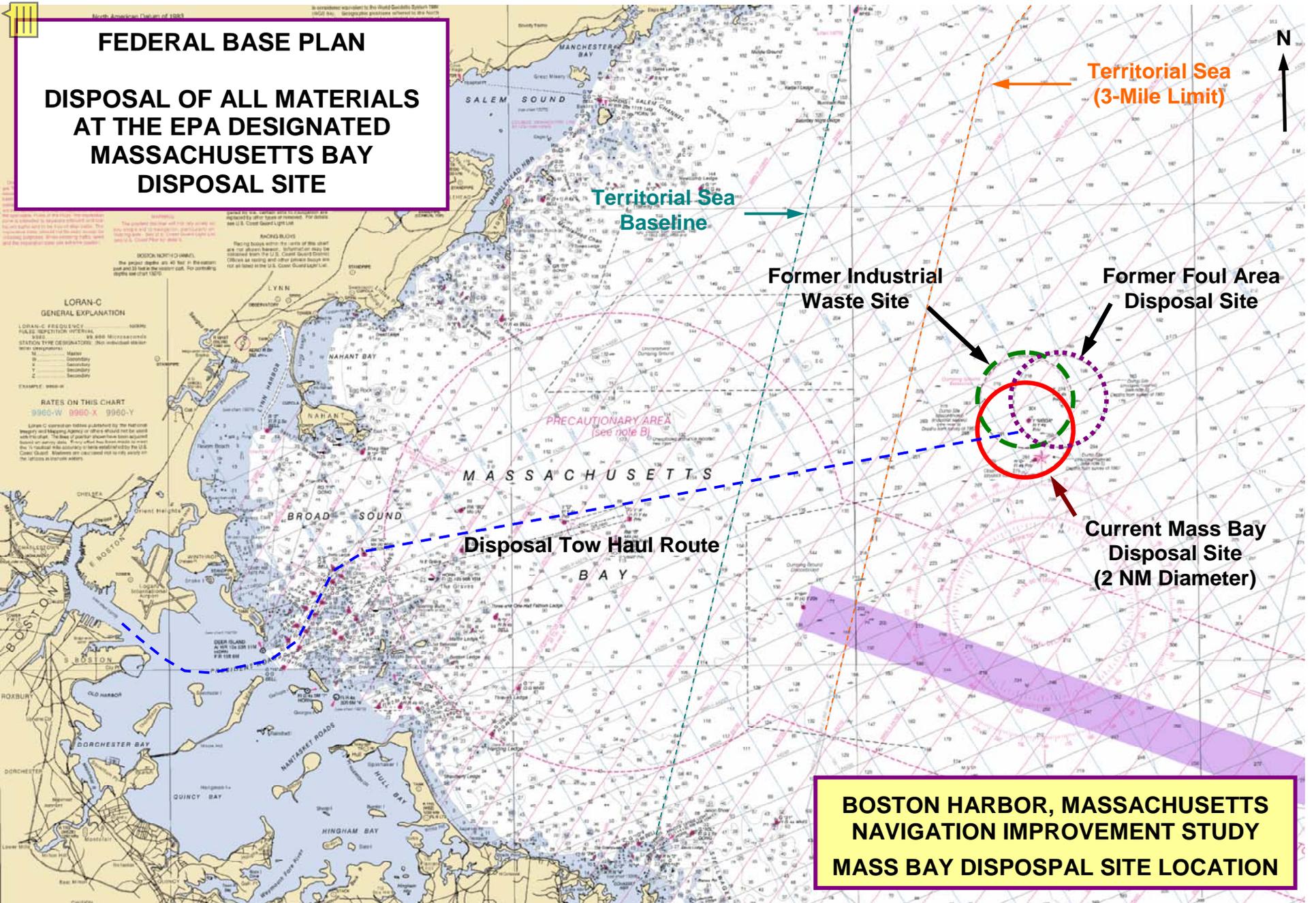


# Disposal of Dredged Material

- All Improvement Materials Tested and Determined Suitable for Unconfined Ocean Disposal by US EPA
- Massachusetts Bay Disposal Site Located about 20 Miles East of Harbor outside Territorial Sea
- Site used Since at Least the 1940s
- Site Designated for Permanent use by EPA in 1992
- Site in 300± Foot Deep Basin
- Site has Indefinite Future Capacity
- Corps and EPA Monitor Site Regularly

# FEDERAL BASE PLAN

## DISPOSAL OF ALL MATERIALS AT THE EPA DESIGNATED MASSACHUSETTS BAY DISPOSAL SITE



**BOSTON HARBOR, MASSACHUSETTS  
NAVIGATION IMPROVEMENT STUDY  
MASS BAY DISPOSAL SITE LOCATION**



# ALTERNATIVE DREDGED MATERIAL MANAGEMENT OPTIONS – BENEFICIAL USE

- Federal Base Plan - All Materials Found Suitable for Unconfined Ocean Disposal at Mass Bay Disposal Site by US EPA and Corps
  - 300-Foot Deep Basin Site has Indefinite Capacity
- Beneficial Use Potential for Rock and Till
  - Rock Reef and Hard Bottom Habitat in Mass Bay
  - Upland Commercial Use – Transfer at Dredge
  - State may Process Ashore for Use in Shore Protection Work
- Beneficial Use Potential for Clay and Unconsolidated
  - One-Time Opportunity for Using Dredged Material as Clean Cap Material for Old Industrial Waste Site
  - US EPA Monitored Former Ocean Waste Site Contains Barrel Fields of Chemical and Radiological Waste from 1930s to 1970s

**Legend**

-  Potential Sites
-  Navigation Channels

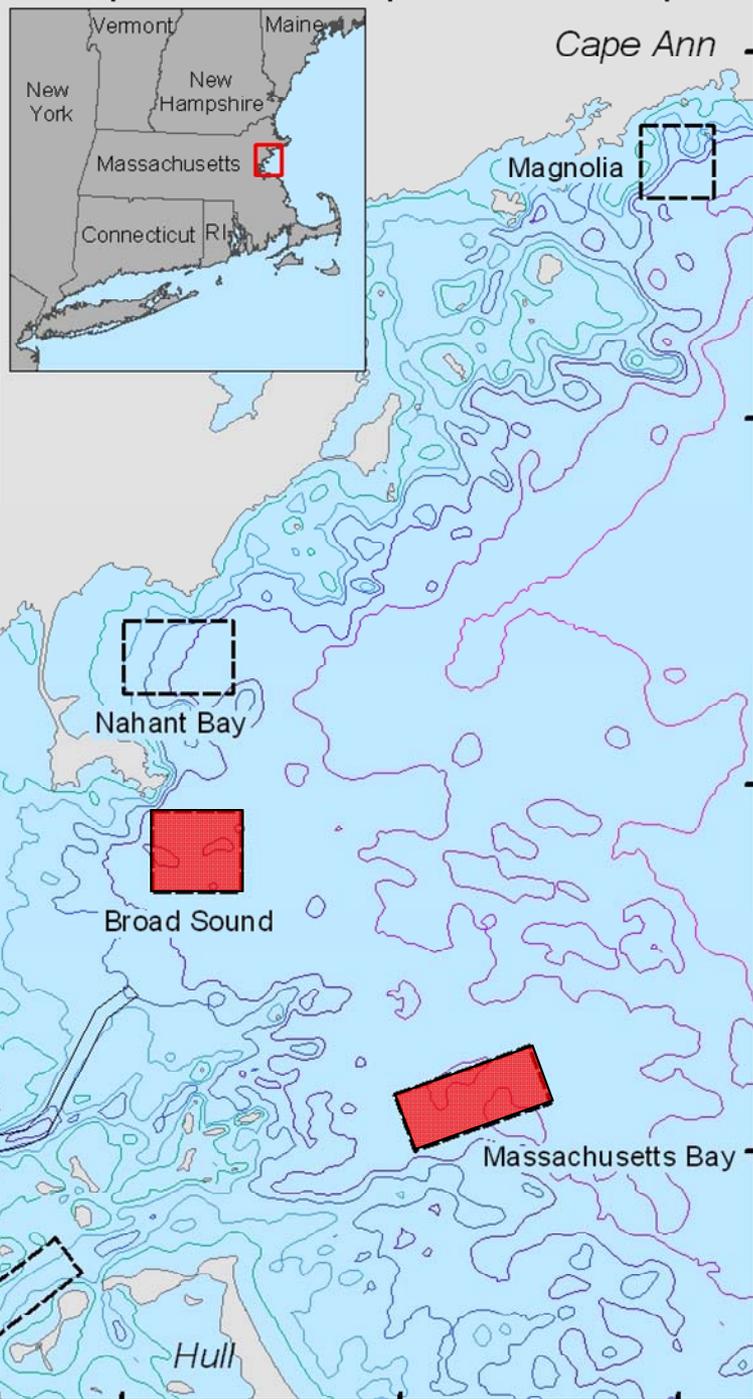
**Depth Contours**

-  16 ft
-  33 ft
-  49 ft
-  66 ft
-  98 ft
-  131 ft

**Nautical Miles**

0 1 2 3 4

N



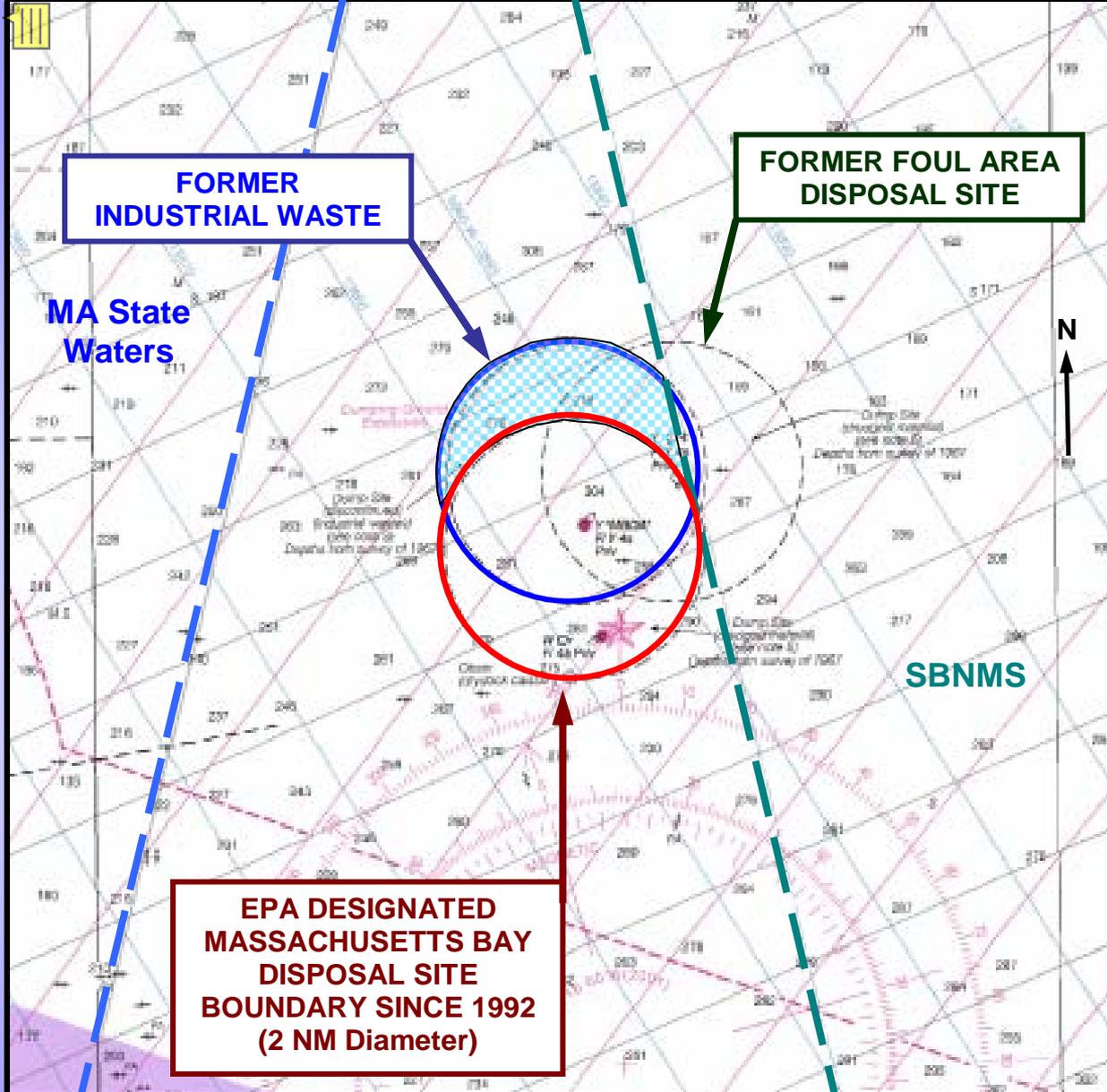
**BENEFICIAL USE  
OF ROCK AND TILL  
MATERIAL**

**0.6 to 1.4 Million CY**

**Creation of Rock  
Reefs and Hard  
Bottom Habitat in  
Broad Sound or  
Elsewhere in  
Massachusetts Bay**

**Most Likely Sites**





**FORMER INDUSTRIAL WASTE**

**FORMER FOUL AREA DISPOSAL SITE**

**MA State Waters**

**SBNMS**

**EPA DESIGNATED MASSACHUSETTS BAY DISPOSAL SITE BOUNDARY SINCE 1992 (2 NM Diameter)**

- 3-Mile Limit
- Stellwagen Bank NMS Boundary
- Area of IWS to be Added To MBDS Designation

## BENEFICIAL USE OF DREDGED MATERIAL

To be Determined in Design Phase

## CAPPING WASTE BARREL FIELDS IN THE FORMER INDUSTRIAL WASTE SITE

Up to 11.7 Million CY Will form Cap Thickness  
 2.3 SNM at 5-Feet  
 1.4 SNM at 8-Feet

EPA Would Need to Modify MBDS Site Designation to Permit this Use



# NEPA Compliance

- Draft Feasibility Study/SEIS was released in April 2008
- Base Plan (except for blasting) received highest rating (lack of objections) from US Environmental Protection Agency as did IWS capping option
- Section 7 Endangered Species Act (ESA) consultation complete
  - US Fish and Wildlife Service: determination of no effect
  - National Marine Fisheries Service: No effect. Blasting noise impacts for North Entrance Channel were investigated
- Section 106 consultation with State Historic Preservation Office (SHPO) is complete, except for Chelsea River widening areas
- Final Coastal Zone Consistency Determination and State WQC processes to be completed at end of Design Phase
- Project is in compliance with all other applicable Federal and State regulations and pertinent Executive Orders



# MITIGATION MEASURES

- **Air Emission Reductions**
  - Efficient Engines Required
  - Construction Shutdown Periods or Credits/Offsets
- **Turbidity Reduction**
  - Closed Bucket in Silty Materials (Minimal Volume)
  - No Scow Overflow
- **Blast Impact Reduction**
  - Inserted Delays and Stemming to Reduce Shock Wave
  - Fish Finder/Fish Startle System and Observers
  - Other Recommendations to be Determined
- **Lobster Gear in and Around Channel**
  - Notification to Lobstermen to Move Gear Ahead of Dredge
  - Short Tow Line used in Harbor to Avoid Snags
- **Marine Mammals/Sea Turtles**
  - MBDS/IWS Observers and Blasting Observers
  - Use of NOAA Whale Monitoring Buoy System

# BOSTON HARBOR IMPROVEMENT PROJECT COSTS

## (\$1000s – January 2008 Price Levels)

	MAIN CHANNELS	MSC EXTENSION	MYSTIC RIVER	CHELSEA RIVER	TOTAL COST
<b>Terminal</b>	<b>Conley</b>	<b>Marine Terminal</b>	<b>Medford Street</b>	<b>4 Petroleum 1 Minerals</b>	
<b>Federal GNF Share</b>	<b>\$153,204</b>	<b>\$11,449</b>	<b>\$1,743</b>	<b>\$7,568</b>	<b>\$173,967</b>
<b>Massport GNF Share</b>	<b>118,354</b>	<b>6,139</b>	<b>933</b>	<b>4,046</b>	<b>129,472</b>
<b>LERR</b>	<b>125</b>	<b>17</b>	<b>4</b>	<b>19</b>	<b>165</b>
<b>LSF - Berths</b>	<b>494</b>	<b>1,248</b>	<b>0</b>	<b>2,055</b>	<b>3,797</b>
<b>Buoys</b>	<b>211</b>	<b>27</b>	<b>0</b>	<b>52</b>	<b>290</b>
<b>Total Cost</b>	<b>\$272,391</b>	<b>\$18,880</b>	<b>\$2,680</b>	<b>\$13,740</b>	<b>\$307,691</b>
<b>Percent of Total Project</b>	<b>89%</b>	<b>6%</b>	<b>1%</b>	<b>4%</b>	<b>100%</b>

# Economic Justification

## Main Channels Improvement

### FOOT-BY-FOOT DEPTH OPTIMIZATION FIRST COSTS, ANNUAL COSTS AND BENEFIT-COST ANALYSIS (In \$1,000s at 4-7/8% Rate)

	42 Feet	43 Feet	44 Feet	45 Feet	46 Feet	47 Feet	48 Feet	49 Feet	50 Feet
First Cost	\$82,791	\$112,542	\$140,847	\$166,646	\$188,855	\$218,494	\$248,499	\$286,543	\$326,790
Investment Cost	\$85,386	\$116,546	\$148,295	\$172,657	\$199,669	\$231,488	\$264,376	\$310,647	\$362,584
Annual Cost	\$4,788	\$6,465	\$8,163	\$9,475	\$10,930	\$12,648	\$14,420	\$16,921	\$19,724
BENEFITS AND BENEFIT-COST ANALYSIS – BASE ECONOMIC CASE									
Annual Benefit	\$5,540	\$8,317	\$11,079	\$14,223	\$17,366	\$20,501	\$23,635	\$23,635	\$23,635
BCR	1.16	1.29	1.36	1.50	1.59	1.62	1.64	1.40	1.20
Net Benefit	\$752	\$1,852	\$2,916	\$4,748	\$6,436	\$7,853	\$9,215	\$6,714	\$3,911

Analysis Optimizes at 48 Feet



# Economic Justification

## Channels to Bulk Cargo Terminals

FIRST COST, ANNUAL COST AND BENEFIT-COST ANALYSIS BULK CARGO TERMINAL SEGMENTS			
4-7/8% Rate	Main Ship Channel Extension to Massport Marine Terminal	Mystic River Channel Deepening	Chelsea River Channel Deepening
Recommended Depth	45 Feet	40 Feet	40 Feet
First Cost GNF (January 2008)	\$15,705,000	\$2,495,000	\$10,872,000
Cost with IDC	\$15,802,000	\$2,495,000	\$10,962,000
Annual Cost of GNF and NF Berths	\$927,000	\$145,000	\$857,000
Annual Benefits (December 2007)	\$1,970,000	\$230,000	\$2,536,000
Benefit Cost Ratio	2.13	1.59	2.96
Net Benefits	\$1,043,000	\$85,000	\$1,679,000

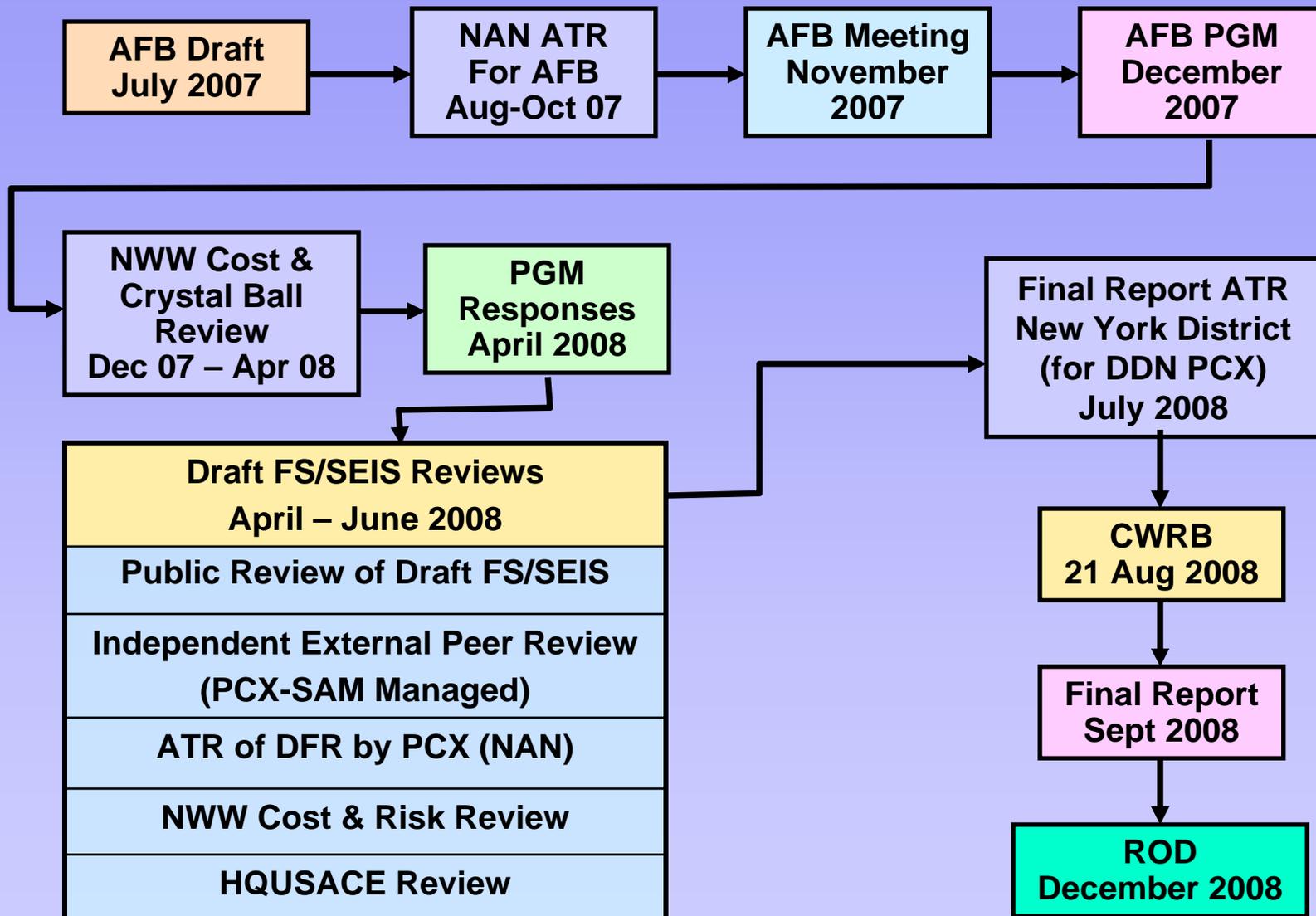
# Cost-Sharing by Project Phase

**TABLE 3  
BOSTON HARBOR NAVIGATION IMPROVEMENT – COST SHARING (\$1000s – Escalated Costs)**

	Total Cost	Federal Up-Front Cost Share	Massport Up-Front GNF Cost Share	Massport 10 Percent Reimbursement (Post-Construction)	Non-Federal Funded Items (LSF & RE)	U.S. Coast Guard (ATON)
PED (Design Phase for GNF)	\$5,634	\$4,226	\$1,408	\$563		
Berth Design	\$307				\$307	
Construction - GNF	\$297,805	\$199,920	\$97,885	\$29,781		
Berth Deepening	\$3,490				\$3,490	
Real Estate	\$165			-\$165	\$165	
Aids to Navigation	\$290					\$290
<b>TOTAL</b>	<b>\$307,691</b>	<b>\$204,146</b>	<b>\$99,293</b>	<b>\$30,179</b>	<b>\$3,962</b>	<b>\$290</b>

Note: All costs in this table are based on January 2008 price levels, and include cost escalation to the period of design or construction, as applicable. Massport's initial up-front share of design costs is 25%. The Non-Federal up-front cost share equals 25% of the cost for the General Navigation Features (\$74,452) plus and additional 25% (50% total) of the cost of dredging beyond 45 feet to a 48-foot project (\$23,291), plus the remaining non-Federal design phase cost proportionate to a second 25% (50% total) of the design cost allocated to deepening beyond 45 feet (\$142) for a total of \$97,885. The non-Federal reimbursement includes 10% of the total cost of design and construction of the General Navigation Features (\$563 for design and \$29,781 for construction). Massport's Real Estate costs (\$165) are creditable against its 10% post-construction reimbursement of GNF costs, for a net reimbursement of \$30,179.

# Review Process





# PGM Compliance

## **Policy Guidance Memo (PGM) issued 11 December 2007 following AFB Meeting. Significant comment topics:**

B1 District investigate the need for and size needed for the anchorage with input from USCG and harbor pilots. Feasibility pages 143-148.

C1 District revisited the air quality compliance issue to determine if credits could were available in lieu of construction shutdowns. No available credits were identified. District and Massport will revisit issue in design with assistance of EPA and State, and incorporate the least costly method.

C3a District included more in-depth discussion of rail, barge feeder, and small containership use in its economic analysis and determined them disadvantageous compared to transportation by larger container ships

C3b District and Massport conferred with cement importer on rationale for bulk cargo projections and the fleet used in this trade for use in Marine Terminal and Medford Street Terminal analysis.

E1 District performed a cost risk analysis to determine appropriate contingencies with assistance and review by Walla Walla District.

G2 District submitted economic model to Planning Center of Expertise for certification.



# Office of Water Project Review

## Comments and Resolution

**HQ Comments Focused on Economic Analysis with comments also from Cost Engineering and Counsel. Principal Topics:**

- Examine use of smaller containerships as alternative to trucking or larger containerships. *Resolution – smaller ships are not used now as they are more expensive than trucking.*
- Examine use of barge service as alternative to containerships. *Resolution – only one barge service now. Others have failed. Re-handling costs make trucking less expensive.*
- Value Engineering review – *Deferred to Design Phase*
- Commodity Forecast – *Shift to Boston is only 86,000 TEUs annually – or only about 14% of current PONYNJ New England boxes*
- Was full origin to Destination Pricing used – *Yes but only change was in land-side leg of transport (shift from trucks to ships)*



# Agency Technical Review

- Agency Technical Review (ATR – formerly ITR) was conducted by the New York District under direction of Deep Draft Navigation PCX as managed by the Mobile District (SAM)
- Walla Walla District (NWW) Conducted ATR of Cost Estimates, Schedules & the Contingency Risk Analysis
- ATR Comments were Addressed, Back-Checked and Resolution was Incorporated into the draft Final Report
- All ATR Issues were Resolved
- Highlights of ATR Comments on Draft Report included:
  - **Provide additional discussion of barge and rail alternatives**
  - **Provide greater detail and documentation of design analysis**
  - **Provide greater background and justification for dry bulk cargo alternatives formulation and benefits development**
  - **Blasting and Rock Removal rates required additional support and detail and adjustment**
  - **Contingency risk analysis adjusted to achieve 80 percent confidence level that estimate would not be exceeded**



# Independent External Peer Review

## Managed by the Deep Draft Navigation PCX - Significant IEPR Comments:

1. The NSTAR Power Cable is a concern. Replacement or protection would be expensive, and should it not be achieved in a timely manner, the project could be authorized but not built for an undetermined length of time. **Armoring of the cable is part of the without project condition. Planning is proceeding with the owner and Justice Department.**
2. Incremental truck costs savings not analytically supported. **The basis for trucking costs is provided in the revised Economic Assessment.**
3. International Longshoreman Association fee savings should not be included. **The District disagreed, but added a sensitivity analysis with this scenario – there was no impact to the recommendation.**
4. The risk of losing current business (i.e. two lines and three services) at Boston Harbor with or without the project has not been adequately considered. **A sensitivity analysis of this scenario was developed – benefits would increase.**
5. The benefits to the cement industry are entirely speculative and pending contractual commitments, and there is no supporting documentation relative to vessel costs, markets served, delivered prices, etc. in competition with other ports and existing domestic suppliers. **District agrees, however, as terminals haven't been completed, analysis remains limited.**

# Agency and Public Comments/Issues

## The Following Provided Comments on the Draft FS/EIS

- US Environmental Protection Agency
  - National Marine Fisheries Service
  - Department of Interior (Regional)
  - City of Boston
  - Town of Winthrop
  - Save the Harbor Save the Bay
  - MA Executive Office of E&EA
  - US Fish and Wildlife Service
  - Mass Department of Environ Protection
  - Boston Marine Society
  - Boston Harbor Association
  - Boston Harbor Pilots
  - Mass Coastal Zone Management Office
- Only Four Commenters other than Agencies

### Comments were Focused on the Following Issues:

- Appropriate Placing, Size and Design of Rock Reef Habitat Sites
- Development of Blasting Plan to Minimize Fisheries Impacts
- Development of Construction Sequencing Plan to Minimize Fisheries Impacts
- Investigation of Additional Air Quality Mitigation Measures beyond Shutdowns
- Avoidance of Blasting Impacts on Marine Mammals (Shock & Noise)
- Investigate other Beneficial Uses of Rock (Shore Protection)
- Continuation of the Technical Working Group in PED and Construction
- Developing Resource Studies and Monitoring of Post-Dredging Recovery



# Planning Engineering and Design Phase Commitments to Resource Agencies

PED Phase will require additional investigations and commitments to secure ultimate support from State and Federal resource agencies

- Additional channel area resource assessments to measure recovery since maintenance dredging completed in 2009
- Develop blasting plan to include measures and adaptive management to minimize fisheries impacts
- Include invasive species surveys of contractor plant in specifications
- Develop construction sequencing plan to minimize resource impacts while enabling dredging to progress year-round
- Further pursue on-shore beneficial use of rock with State
- Develop post-construction recovery monitoring plan with TWG for channels and any rock reef creation areas
- Further investigate potential savings from Air Quality credits and offsets as an alternative to construction period shut-downs
- EPA to modify disposal site boundary to include capping of adjacent IWS



# Project Schedule

<b>Draft Feasibility Report to Agencies, State and Public</b>	<b>4/11/08</b>	<b>✓</b>
<b>Public Hearing for Draft SEIS</b>	<b>5/20/08</b>	<b>✓</b>
<b>Comment Period Closes</b>	<b>6/2/08</b>	<b>✓</b>
<b>Civil Works Review Board</b>	<b>8/21/08</b>	
<b>Chief's Report to Congress</b>	<b>Dec 08</b>	
<b>Authorization</b>	<b>2009?</b>	
<b>Construction</b>	<b>2011 TO 2014</b>	



# Environmental Operating Principles

## Key Points

Plan limits action to existing channels, existing terminals and existing disposal sites to the extent possible.

Project would shift New England container cargo from New Jersey to Boston, saving millions of regional truck-miles annually. Beyond NED benefits, air quality and highway safety are improved throughout the transportation system.

Proposals for beneficial use of the dredged rock and clay to, respectively, build lobster habitat nearshore (or State shore protection work), and cap an old industrial waste disposal site in the Bay will be examined further in the design phase and incorporated into the project plan if found feasible and acceptable.

The Boston Harbor Technical Working Group provides frequent opportunity for a diverse set of agencies and other stakeholders to provide input to project planning and hear and understand the views of each other.

Opportunities to adapt project plans to address agency and NGO views on matters such as construction sequencing to minimize resource impacts and beneficial use to synergize this project with other needs and opportunities were raised, discussed and adopted where practicable.



# RECAP

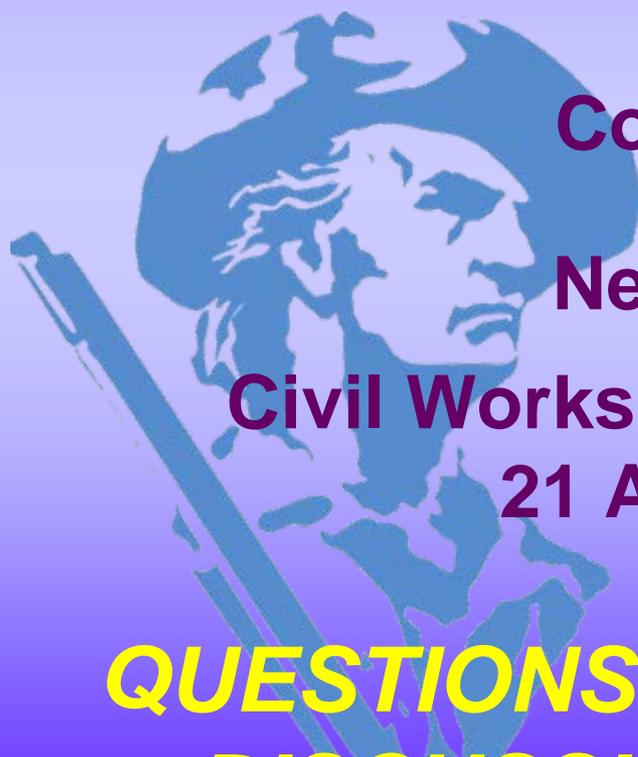
## Recommendation – 4 Improvements

- **Main Channels Improvement:** For Containership Access to Conley Terminal – 48 Foot System with 50 Feet in the Entrance Channel
- **Main Ship Channel Deepening Extension:** For Dry Bulk Carrier Access to Massport Marine Terminal – at 45 Feet
- **Mystic River Channel:** Deepen Section of 35-Foot Lane for Dry Bulk Carrier Access to Massport's Medford Street Terminal – at 40 Feet
- **Chelsea River Channel:** Deepen to 40 Feet with Minor Widening in the Bridge Approaches and Bend between the Bridges for Liquid Petroleum Carriers
- **All Disposal at the Massachusetts Bay Disposal Site**



# Boston Harbor, Massachusetts

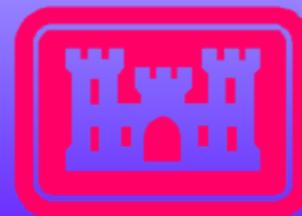
## Deep Draft Navigation Improvement Feasibility Report and Supplemental Environmental Impact Statement



**Colonel Philip T. Feir  
Commander  
New England District**

**Civil Works Review Board Presentation  
21 August 2008 Meeting**

**QUESTIONS AND  
DISCUSSION**



# Boston Harbor Navigation Improvement Project Presentation to Civil Works Review Board August 21, 2008



**Michael Leone**  
**Port Director**  
**Massachusetts Port Authority**

# Overview of Massachusetts Port Authority

- Independent State Authority
- Governor appoints Board
- Self-financing
- Primary Massport facilities:
  - Logan International Airport
  - Conley Terminal
  - Other key port facilities
  - Tobin Bridge
  - Major waterfront land holdings



# Overview of the Port of Boston

## ■ New England's only full service port:

- Handles 22M tons of cargo worth >\$9B/yr
- Provides infrastructure and value-added services to enhance competitiveness of New England trade-dependent companies
- Economic benefit → 34,000 jobs and \$2.4B annual benefit
- Environmental benefit → fewer trucks on roads and reduced emissions

## ■ Key port cargos:

- Containerized cargo
- Petroleum products/LNG
- Dry Bulk - autos, cement, road salt, gypsum and scrap metal
- Cruise passengers



# Massport's Maritime Facilities



Conley Container Terminal



Black Falcon Cruise Terminal



Boston Autoport



Boston Fish Pier



Massport Marine Terminal



# Massachusetts Port Authority's Strategic Vision for the Port of Boston

- Increase the amount of foreign and domestic water-borne commerce (primarily containers) through the Port of Boston
- Develop facilities and related access infrastructure to support growth in key business lines
- Develop other Maritime properties to support core businesses and provide financial return to make capital investments in port facilities
- Operate in a fiscally, environmentally and socially sustainable manner



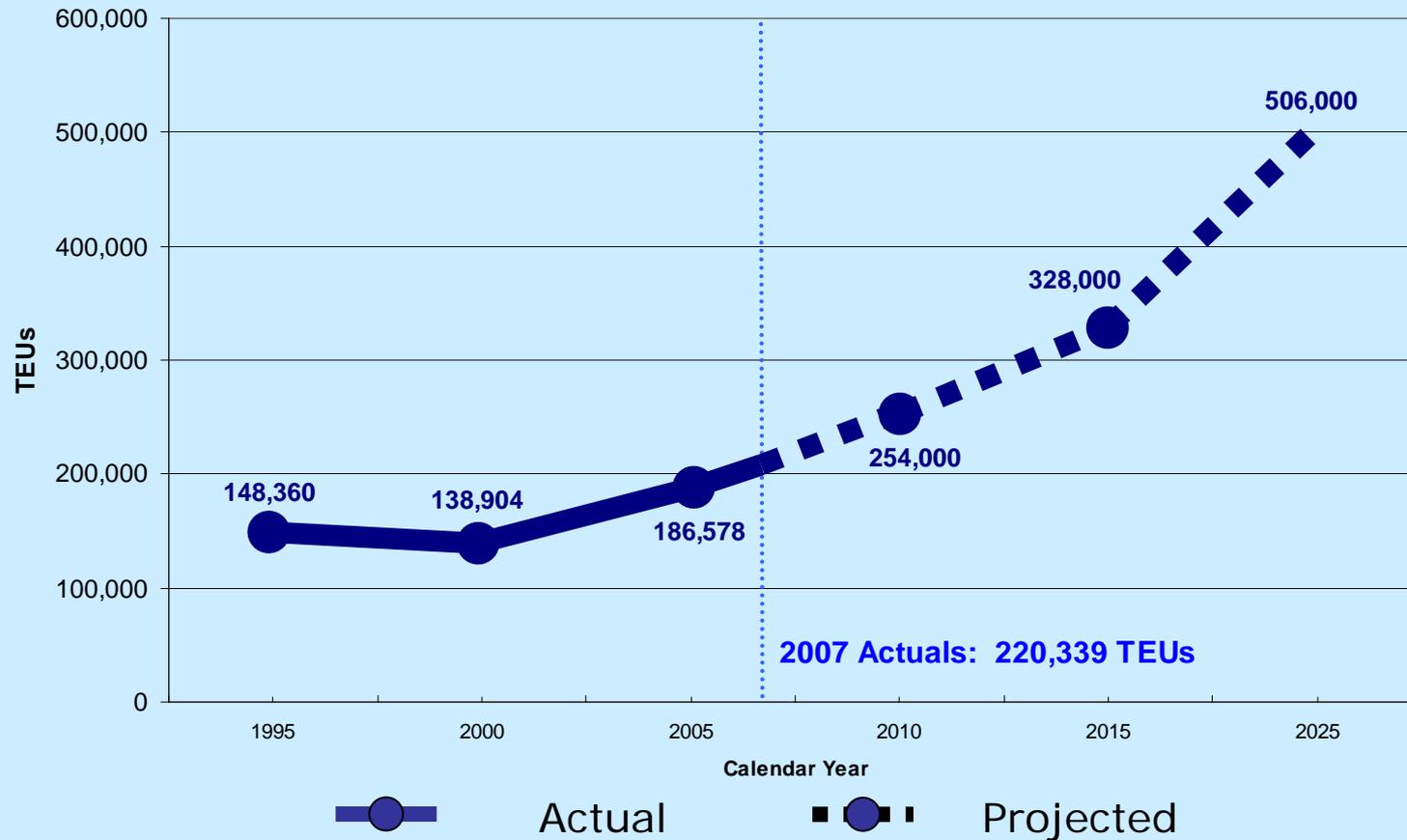
# Massport's Commitment

- Massport supports the four key Boston Harbor Deep Draft Navigation Improvements recommended in the Final Feasibility Report, and is committed to working with the Corps of Engineers to bring this project to fruition.
- Massport is committed to pursue development (by private entities) of the Massport Marine Terminal and Medford Street Terminal as bulk cargo facilities
- Deepening of the federal navigation channels to Conley Container Terminal is of particular importance....
  - Conley Terminal container volumes increased >70% since 2001
  - Container volumes expected to more than double by 2025



# Container Volumes at Conley Terminal Continue to Grow

## Actual and Projected Container Activity in the Port of Boston



Source: Massport Maritime Department statistics; draft Norbridge



Boston Harbor Deep Draft Navigation Improvement Project  
CWRB Presentation  
August 21, 2008

# Deeper Channels to Conley are Urgently Needed!

- Containerized and other cargo imported by water to Boston and region continues to increase
- Shipping lines will bring larger ships onto East Coast services
  - Trans-Atlantic services include services through the Suez Canal are not restricted by vessel draft
  - Panama Canal expansion will result in larger vessels calling East Coast ports
- ***If Boston cannot accommodate the larger ships, shipping lines will not call Boston***
  - More cargo will come to region by truck → increased road congestion, increased air emissions and increased highway and bridge maintenance
  - Higher transportation costs → higher costs to consumers; New England companies less competitive in global marketplace; loss of jobs; economic impact



# What is Massport doing to accommodate growth?

Massport has (or will by 2010, with or without deepening project):

- Completed \$25M repaving and equipment purchasing project to increase terminal capacity by 50%
- Increase productivity and efficiency and lower cost/lift by:
  - Purchasing yard equipment and 3 additional dockside cranes
  - Implementing terminal productivity improvement program
  - Implementing upgraded terminal operating system
- Purchase abutting former oil terminal to provide location for chassis pool/M&R for short term and future construction of a deep water berth capable of handling larger Post-Panamax vessels and cranes.



# What is Massport doing? (cont'd)

- Implemented a comprehensive ISO 14001 Certified Environmental Management System in 2003 → first terminal in U.S. to achieve this milestone and model for other ports
- Retrofitted existing yard equipment and purchased new “greener” equipment to reduce air emissions
- Converted all yard equipment to Ultra Low Sulfur Diesel to reduce air emissions



# In Conclusion...

- Massport supports the four key Boston Harbor Deep Draft Navigation Improvements recommended in the Final Feasibility Report, and is committed to working with the Corps of Engineers to bring this project to fruition.
- Massport intends to serve as the non-federal sponsor for the design and construction of these improvements, contingent on approval by our Board and appropriation of adequate funds
- Massport is committed to continued growth in the container business in Boston and to making the necessary improvements to accommodate this growth
- Massport is committed to pursuing development (by private entities) of the Massport Marine Terminal and Medford Street Terminal as bulk cargo facilities





# North Atlantic Division Position

- **Concurrence with NAE District Commander's findings & recommendations.**
- **Confirm that the report complies with all applicable policy & laws in place at this time.**
- **Anticipate favorable response to the draft Chief's Report recommending implementation for all four recommended navigation improvements.**
- **Boston Harbor improvements support National Economic Development, Regional Economic Development and Environmental Quality.**
- **Project is a showcase for strong agency coordination reflecting a collaborative process with USACE in early plan formulation and evaluation continuing on throughout the duration of this study.**



# North Atlantic Division

## Agencies/Stakeholders who strongly support the project:

- Massachusetts Port Authority (MASSPORT)
- US Environmental Protection Agency (USEPA), Region 1
- National Marine Fisheries Service (NMFS)
- US Fish and Wildlife Service (USFWS)
- U.S. Coast Guard (Sector Boston and First CG District)
- Massachusetts Dept of Environmental Protection (MDEP)
- Massachusetts Office of Coastal Zone Management (MCZM)
- Massachusetts Division of Marine Fisheries (MDMF)
- City of Boston – Environment Department
- Massachusetts Institute of Technology
- University of Massachusetts at Boston

## Agencies/Stakeholders who oppose the project:

- Town of Winthrop, MA



# Quality Assurance Briefing: North Atlantic Division

- **NAN – Agency Technical Review (ATR) Certification and findings dated July 2008.**
- **DDN–PCX led quality assurance with NAD and approved of NAN staff for ATR team.**
- **Review Certification Signatures for entire study team and QC team members are included.**



# Certification of Legal & Policy Compliance

- Legal certification of Final Feasibility Report & SEIS made by NAE District Counsel on 30 July 2008.
- Policy Compliance: Agency Technical Review (ATR) conducted by NAN. ATR certification includes signatures of review team. All comments have been resolved coordinated and accepted by DDN-PCX.
- DDN-PCX endorsed Final IEPR report and confirmed that it was conducted in accordance with EC1105-2-408. Memo dated 31 July 2008.
- DDN-PCX confirmed ITR conducted (SAM) on economic models used for this study and approved their use. Memo dated 31 July 2008.
- Walla Walla District, Cost Engineering Center CX, ITR certification and completion of Cost Risk Analysis. Total Project Cost certified in accordance with ER 1110-2-1150 and ER 1110-2-1302. Memo dated 30 June 2008.



# North Atlantic Division Recommendation

- **Approve Final Report.**
- **Release for State and Agency Review.**
- **Complete Chief's Report.**





# Boston Harbor

*Policy Review Concerns*

## **Boston Harbor Boston, Chelsea and Revere Massachusetts Deep Draft Navigation Improvement**

Thomas Hughes  
Office of Water Project Review  
Planning and Policy Compliance Division

Washington, DC – August 21, 2008

**Boston Harbor**  
**Boston, Chelsea and Revere, MA**  
**Deep Draft Navigation Improvement**

*Areas of Policy Concern:*

- *Assessment of Existing Conditions*
- *Formulation and Analysis of Alternatives*
- *Sailing Drafts/Fleet Mix*
- *Speculative Bulk Terminal Benefits*

# Boston Harbor

## Boston, Chelsea and Revere, MA

### Deep Draft Navigation Improvement

#### Assessment of Existing Conditions

**Concern:** The study needs to provide more detailed information on the existing condition that will help to explain why trucking is more cost effective than waterborne transportation.

**Reason:** The report needs to determine what movements are sensitive to depth constraints and what movements are not. This analysis will identify the volume of movements that are sensitive to draft constraints as well as the destination of these movements. Both the demand for waterborne movements as well as the value of transportation savings for these movements will be more clearly defined. Project optimization could be impacted by the results of this information.

**Proposed Resolution:** The district needs to evaluate in more detail the existing commodity movements. Compare commodities that are being trucked under existing conditions to those that are moving by ship and the final destination of both movements.

**Resolution Impact:** Delay S&A review until a more detailed analysis of existing movements is complete.

# Boston Harbor

## Boston, Chelsea and Revere, MA

### Deep Draft Navigation Improvement

#### Formulation and Analysis of Alternatives

**Concern:** The study needs to formulate and evaluate other alternatives that may achieve a reduction in transportation cost.

**Reason:** The study's depth optimization considers the current shipping lines to Boston only. Considering alternative vessel mix to achieve the estimated shift of only 86,000 TEUs may lead to a different optimized depth.

**Proposed Resolution:** The district needs to analyze all current movements of New England containers through NY and Boston. This should include "analysis of current tonnage size and type of vessel, annual volume of movements, frequency of movements, and volume of individual shipments"( ER-1105-2-100). This information will help define potential movements that may occur due to various deepening alternatives.

**Resolution Impact:** Delay S&A review until a more detailed analysis of all alternatives can be completed.

# Boston Harbor

## Boston, Chelsea and Revere, MA

### Deep Draft Navigation Improvement

#### Sailing Drafts/Fleet Mix

**Comment:** The analysis for each channel depth, including the future without project condition, should use a realistic distribution of sailing drafts. Under existing conditions with constrained channel depths the distribution of sailing drafts may be very narrow. However, as channel depth increases and the constraint is removed this distribution should approach what is seen in other ports.

**Reason:** The distribution of sailing draft may effect channel optimization.

**Resolution:** The resolution of the prior comment should also provide the necessary data to resolve this issue.

**Resolution Impact:** Because channel optimization could effect the NED, delay S&A review until a further analysis of the projected fleet mix.

# Boston Harbor

## Boston, Chelsea and Revere, MA

### Deep Draft Navigation Improvement

#### Speculative Bulk Terminal Benefits

**Concern:** Benefits associated with the two bulk terminals, Massport Marine Terminal and Medford Street Terminal are very speculative in nature.

**Reason:** Without more information on the commodities to benefit from the deeper channel it is difficult to assess the expected benefit that will accrue from the project.

**Resolution:** The district provided more information on the regional demand for concrete. The tenant of the Massport Marine Terminal would import concrete for regional distribution. The Medford Terminal is currently without a tenant and benefits remain speculative. Construction on these elements would not begin until a Limited Reevaluation Report evaluates the benefits associated with tenants in place.

**Resolution Impact:** Resolved. Further coordination with ASA, if needed, can occur during S&A review.

# Boston Harbor

## Boston, Chelsea and Revere, MA

### Deep Draft Navigation Improvement

#### HQUSACE Policy Compliance Review Team RECOMMENDATION

Release the report and EA for S&A Review  
Subject to the following:

1. More detailed analysis of existing conditions.
2. Further evaluation of alternative waterborne opportunities
3. Develop a fleet mix that considers the more detailed analysis associated with previous comments.

# Lessons Learned

# Lessons Learned

- Helpful to incorporate information and lessons from prior and ongoing dredging actions in Boston Harbor – the 1998-2001 Improvement work and the most recent 2004-2009 Maintenance operations
- The Technical Working Group process is effective in soliciting input from key stakeholders and in reaching consensus on project issues
- Agreement by the PCX and HQ to allow all the reviews of the draft report to occur concurrently enabled the team to “buy-back” some of the time lost to new review requirements, but delays still resulted.
- Districts with recent actual field experience in the technical matters proposed (here marine dredging and blasting) should be tasked with the required technical reviews, specifically with design and cost reviews.



# Lessons Learned:

## North Atlantic Division

- **NAE command change two months before CWRB required full briefing of project to NAD CG by both outgoing and incoming District Commanders for seamless transition and consistent project direction.**
- **Early involvement of DDN-PCX (pre-AFB) with vertical team and sponsor surfaced major issues and concerns, established professional relationships and dialogue, and provided additional time for issue resolution.**
- **Establishment and continual collaboration with the Technical Working Group throughout the study provided sense of overall project ownership among team and resulted in issue avoidance, early resolution, and opportunities**
- **Sponsor was very instrumental in accessing container shipping lines for interviews to gather information which would have been difficult to fully accomplish without their established relationships and cooperative team spirit.**

