



DEPARTMENT OF THE ARMY  
U.S. ARMY CORPS OF ENGINEERS  
441 G STREET, NW  
WASHINGTON, D.C. 20314-1000

07 DEC 2016

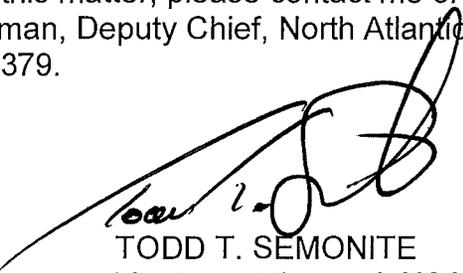
CECW-NAD

MEMORANDUM FOR ASSISTANT SECRETARY OF THE ARMY (CIVIL WORKS), 108  
ARMY PENTAGON, WASHINGTON, D.C. 20310-0108

SUBJECT: Boston Harbor Navigation Improvement Feasibility Study, MA - Final  
USACE Response to Independent External Peer Review

1. An Independent External Peer Review (IEPR) was conducted for the subject project in accordance with Section 2034 of the Water Resources Development Act of 2007, EC 1165-2-214, and the Office of Management and Budget's Final Information Quality Bulletin for Peer Review (2004).
2. The IEPR was conducted by Battelle Memorial Institute. The IEPR panel consisted of four panel members with technical expertise in dredging and dredged material management, channel deepening/navigation, estuarine ecology/coastal processes, and habitat creation/modification.
3. The final written responses to the IEPR are hereby approved. The enclosed report contains the final written responses of the Chief of Engineers to the issues raised and the recommendations contained in the IEPR report. The IEPR report and the USACE responses have been coordinated with the vertical team and are posted on the internet, as required in EC 1165-2-214.
4. If you have any questions on this matter, please contact me or have a member of your staff contact Catherine Shuman, Deputy Chief, North Atlantic Division Regional Integration Team, at (202) 761-1379.

Encl



TODD T. SEMONITE  
Lieutenant General, USA  
Chief of Engineers

**Boston Harbor Navigation Improvement Project  
Final Feasibility Report and  
Final Supplemental Environmental Impact Statement**

**U.S. Army Corps of Engineers Response to  
Independent External Peer Review  
3 August 2016**

Independent External Peer Review (IEPR) was conducted for the subject project in accordance with Section 2034 of WRDA 2007, EC 1165-2-209, EC 1105-2-410, and the Office of Management and Budget's *Final Information Quality Bulletin for Peer Review* (2004).

The goal of the U.S. Army Corps of Engineers (USACE) Civil Works program is to provide the most scientifically sound, sustainable water resource solutions for the nation. The USACE review processes are essential to ensuring project safety and the quality of the products the USACE provides to the American people. Battelle Memorial Institute (Battelle), a non-profit science and technology organization with experience in establishing and administering peer review panels for USACE, was engaged to conduct the IEPR of the Boston Harbor Navigation Improvement Project Draft Feasibility Report and Supplemental Environmental Impact Statement (EIS).

The Battelle IEPR panel conducted a preliminary review of the draft documents and produced a Peer Review Report dated 3 June 2008. The team provided one comment on plan formulation concerning utilities, four comments on the Container Cargo Economic Benefits analysis, one comment on the Bulk Cargo Benefits analysis, five comments on the SEIS, and one comment on the Engineering Design Appendix' reliance on PIANC design guidance. The District addressed the comments as it finalized the draft report presented to the Civil Works Review Board in August 2008. The Deep Draft Navigation Planning Center of Expertise (SAD) certified the peer review comments as addressed and closed in its memo of 31 July 2008.

The CWRB directed that the District conduct additional economic analysis of the main channels segment of the project (the containership benefits segment) to better define the optimization of channel depth. A Framework for Additional Economic Analysis was prepared by the Corps vertical team to further address the issues raised by the peer reviewers and by Corps headquarters. The IEPR team reviewed the scope of that Framework and stated that the additional studies would address all of their concerns. Concurrently, the IEPR team provided an addendum to its peer review report, dated 22 December 2008, providing further back checks on its comments with respect to the report as presented to the CWRB.

The following outline summarizes USACE actions which addressed each recommendation for each of the comments provided. The discussion presents the USACE Final Response to the 3 June 2008 IEPR comments as expressed in the 22 December 2008 IEPR Report Addendum. Included in each response is identification of whether the Corps “Adopted” the comment. The Corps’ adoption of a comment does not mean that the agency concurs with all aspects of the comment. Overall, 14 final IEPR comments were identified and documented. Of the 14 final comments, five were identified as having high significance, two were identified as having medium significance, and seven comments were identified as having a low level of significance.

‘High’: Describes a fundamental problem with the project that could affect the recommendation or justification of the project.

‘Medium’: Affects the completeness or understanding of the reports/project

‘Low’: Affects the technical quality of the reports but will not affect the recommendation of the project.”

The following discussions present the USACE Final Response to the Comments.

**IEPR Comment #1 – *High Significance*: Mitigation of the NSTAR Cable is of concern. Mitigation will be expensive. Should mitigation not be received in a timely manner, the project could be authorized but not built for an undetermined length of time.**

The comment included two recommendations, neither of which were adopted. The comment expressed concerns that mitigation may be required as a result of the NSTAR power cable.

**USACE Response: Not Adopted.**

**Action Taken:** The comment included a recommendation that close monitoring of the U.S Attorney’s office negotiations with MWRA/NSTAR is appropriate, since if enforcement is delayed, then the project could be significantly delayed. Additionally, the panel recommended investigating NSTAR’s contention that the current cable depth was approved by permit, as remedial costs would affect project net benefits.

As described in the revised Final Feasibility Report (see page 188), the concern over potential mitigation concerning the NSTAR power cable’s non-compliance with the embedment elevation called for in its permits has been addressed. After the initial discussions between the Corps, NSTAR, and MWRA in 2003-2004, this matter was referred to the U.S. Attorney’s Office for the District of Massachusetts, and since then the parties have engaged in productive settlement discussions. These discussions have resulted in a commitment from NSTAR that it will not allow the Deer Island cable to

impede the construction of the proposed Boston Harbor Deep Draft Navigation Improvement Project. This discussion was included in the July 2008 draft Final Feasibility Report that was submitted for CWRB action in August 2008. Between the 2008 draft Feasibility Report and the 2013 Final Feasibility Report, discussions between the various parties continued, and a plan was developed by NSTAR to protect the cable in place with concrete mats, as the cable was determined to be about 10 feet shallower than required by the permit. Further surveys in 2015 showed the cable to be even shallower in some places, particularly under Massport's berths at the Conley Terminal, which are required to be 3 feet deeper than the federal channel.

In July 2016 the U.S. Attorney filed a civil complaint against NSTAR and its successors, seeking removal of the cable. Discussions between the DOJ, NSTAR, Massport and the USACE are continuing, but cable replacement at another location is the current option being pursued. With improvement work scheduled to start in the outer harbor in FY18 and progress up-harbor to the terminals over a period of 3 or more years to completion, the old cable should be removed before dredging in that project segment begins.

**IEPR Comment #2 – *High Significance*: Incremental trucking costs between Port of New York and New Jersey – New York Harbor (PONYNJ) and Boston Harbor (BH), which are presented to constitute a major proportion of the National Economic Development (NED) benefits (shipper savings) for the project, are not analytically supported. Moreover, the actual total transportation costs savings to shippers are a function of the total transportation costs, vessel, port, landside, and related inventory (transit time) costs, which are far more than land side trucking costs.**

The comment included three recommendations, all of which were adopted. The concern was in regards to the transportation costs, which are a significant proportion of the project benefits.

**USACE Response: Adopted.**

**Action Taken:** The panel included three recommendations for resolution. First, there should be an analytical truck cost model that documents the average total truck costs by major components (labor, fuel, capital, etc.) for both waiting and driving circumstances, and then computes the incremental driving costs related to the incremental driving distances between PONYNJ and BH (143 miles). Second, there should be documentation of the total transportation costs (vessel, port and landside) through PONYNJ and BH so all related components can be included rather than just landside trucking costs. Because of significant volume differences average total costs of each component, vessel, port and landside, may be distinctly different and tradeoffs between

the transportation cost components for PONYNJ and BH may exist. Lastly, shipper inventory costs for weekly services through BH should be compared with more frequent services through PONYNJ for the same trading lanes (services) to reflect the fact that there are more lines and services calling PONYNJ than BH.

As a result of the IEPR comments, and concerns raised by the USACE Office of Water Project Review, additional economic studies were conducted from 2009 to 2012 under a scope agreed to by USACE, the non-Federal sponsor and the IEPR reviewers. Shipper surveys, additional carrier interviews, and other analyses were conducted. The Container Cargo Benefits analysis was substantially rewritten on the basis of this re-analysis (see Appendix C-1).

The re-analysis includes a linear regression model developed from the data provided through the trucking firm interviews in 2010 which was used to compute the landside transportation costs for each New England TEU identified in the data that had sufficient origin or destination information (i.e., city, town or zip code). A weighted average trucking cost for all New England TEUs using the PONYNJ in 2007 and alternative trucking costs through BH were calculated. The re-analysis also includes results of carrier interviews conducted in 2004, 2007, 2010 and 2011 concerning current and projected future vessel operations at BH.

**IEPR Comment #3 – *High Significance*: The assumption that the International Longshoremens Association (ILA) fee (which has a history of being reduced) will perpetuate in the next 50 years is not justified. The ILA fee is a transfer payment (“tax”) and should not be included as a benefit to the nation (resource saving).**

The comment expressed concern that including the ILA Guaranteed Annual Income fee assessed to boxes landed in the PONYNJ in computing the transportation cost difference between PONYNJ-landed boxes and BH-landed boxes had several weaknesses. The comment outlined three specific concerns relative to the ILA GAI fees. The comment was adopted through removing the ILA GAI fee from the computation.

**USACE Response: Adopted.**

**Action Taken:** The first recommendation from the panel was that the analysis needs to demonstrate the resource cost basis for the value added services of GAI that can be apportioned to individual boxes and for the resource cost distinctions between one geographic grouping of local (less regional port competitive) NYH boxes (up to 260 miles which pays \$110) and a second geographic grouping of regional (more regional port competitive) PONYNJ boxes (beyond 260 miles which pays \$20). How are “resource costs” reflected by GAI assessments indicative of the competitive hinterland distance conditions? In other words how does a box terminated in Hoboken, NJ “cost”

\$110 and a box terminated in Columbus, Ohio “cost” \$20? How are the resources consumed differently?

The second recommendation was for the analysis to demonstrate that the GAI component that may be related to resource costs will persist for the next fifty years given that the purpose of the assessment is to fund a GAI for longshoremen for the next fifty years. What will the supply and demand for GAI eligible longshore labor be in PONYNJ over the future that would require a GAI assessment compared to the number of loaded boxes expected to be handled through PONYNJ? Might not the GAI assessment drop to \$50 in the future compared to \$110 now (or \$20) depending on distance and a much larger nominal and real amount in the past?

Lastly, the panel recommended that the analysis needs to address that if there are GAI resource costs and boxes are shifted from PONYNJ to BH, the fixed costs of GAI at NY that are resource related would not be allocated to fewer boxes, effectively raising the assessment for other containers while containers shifted to BH avoid the assessment (tax). In principle the number of shifted BH boxes is small, but resource costs are being allocated on a total PONYNJ box basis this has “cost” implications for the other containers not shifted to BH.

The IEPR comment included a recommendation that the ILA fee be removed as a project benefit and described several rationales for that removal. As a result of the IEPR comments, additional economic studies were conducted from 2009 to 2012. In response to this comment and the concerns raised with the future of the regional ILA fees, the revised report presents benefits with the PONYNJ’s ILA fees removed from the analysis of container transportation cost differences between PONYNJ and BH (Appendix C-1, page C-1-69 and Table 7-12).

**IEPR Comment #4 – *High Significance*: 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.**

The comment included five recommendations for resolution, all of which were adopted. The comment expressed concern for the projected shift of service and lines from PONYNJ to BH, as it did not mirror historic trends.

**USACE Response: Adopted.**

**Action Taken:** The first recommendation was to show the history of major container lines calling and ceasing to call BH, e.g., Maersk and related container volumes for a minimum of ten years. As a result, additional economic studies were conducted from 2009 to 2012. Surveys of shippers handling New England cargo through the PONYNJ were conducted by questionnaire and follow-up contact. Carrier interviews were

conducted in 2004, 2007, 2010 and 2011 concerning current and projected future vessel operations at BH. The interviews included those lines now calling at BH, and lines carrying New England cargo into the PONYNJ that do not presently call at BH. The survey and interviews covered the recommendations raised by the review panel, which included indicating why a few container lines have a history of leaving BH when it had a 40-foot channel depth (same as PONYNJ) and chose to call PONYNJ and either absorb the trucking cost differential and ILA GAI assessment (unless the barge was used) or pass the trucking costs to shippers unable to receive container service directly at BH, and also explaining the lines' prevailing commercial practices during the last decade to service BH through PONYNJ by issuing a Boston bill of lading (meaning the line will pay to deliver the cargo to BH or its hinterland) or a NY bill of lading (meaning the "shipper" pays the trucking cost to BH hinterland). The shipper and carrier-specific information developed through these surveys and interviews are confidential (and so the appendices to the container cargo benefits analysis that contain that information were not published), but this information was used to develop and perform the analysis of industry practices and project benefits in the final report (Appendix C-1).

Another recommendation by the panel was to indicate the contractual commitments and time frames of the two major container lines calling BH. Although inquiries were made, neither the carriers nor the Massport were willing to discuss contractual commitments. However, the carrier interviews consistently indicated the carrier's willingness to continue and improve operations at the port. In addition, the increase in vessel size and vessel loading between 2007 and 2010 indicate the carrier's operations at the port are increasing. This trend has continued to the present, as 2015 was a record year for container landings at BH.

The panel also recommended computing benefits for the loss of one or both benefitting container lines and services. As a result, sensitivity analyses were conducted on vessel sizes and number of benefitting services. The final report contains an entire section (Appendix C-1, Section 3) devoted to a qualitative and quantitative description of containerized cargo, carriers, and vessel operations.

**IEPR Comment #5 – *High Significance*: 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.**

The comment contained six recommendations for resolution, all of which were adopted. The comment expressed concern regarding the projected development of terminals and associated benefits that were not based on supporting documentation.

**USACE Response: Adopted.**

**Action Taken:**

The first recommendation from the panel was to identify what are the foreign sources of cement used for vessel voyage costs and the domestic destinations and the total delivered prices for both BH and other ports or domestic suppliers, including data on the volumes, markets, and displacement of existing domestic suppliers or other ports is needed to support this facility. Second, supply data and documentation should be provided on the total costs of cement imports that would show how the additional handling costs at BH would be absorbed into competitive margins of existing suppliers of these markets. The panel also recommended that the report provide details on the calculation of benefits in terms of total expected vessel voyage and related port costs, etc. Additionally, the report should indicate why cement vessels would not incur tidal delays as is common in bulk trades. The size of the cement vessels should be substantiated and a basis should be provided for the assumption that larger vessels (50,000 to 60,000 dwt) will be used for cement, particularly if self-unloading vessels are to be engaged. Lastly, supporting details should be provided for the sensitivity analysis of using foreign flag vessels (Fleet Forecast Medford Street Terminal) and longer distances.

In response to the comment and recommendations, as described throughout the revised Final Feasibility Report, Appendix C-2, Bulk Cargo Benefits Evaluation, the USACE agrees that the benefits for channel deepening to both bulk terminals are speculative because neither terminal is operational at this time, and the benefits are presented as such in the report. A Limited Re-evaluation Report (LRR) will be prepared during the design phase, prior to constructing these project elements, to confirm justification and depth optimization for these two elements.

**IEPR Comment #6 – *Medium Significance*: Water quality impacts on biological resources could be significantly higher than the report implies given the likely timing of dredging and the potential quantity of fine-grained sediment.**

The comment included three recommendations, all of which were adopted. The comment expressed concerns that project impacts were not fully considered and may have been underestimated.

**USACE Response: Adopted.**

**Action Taken:** The first recommendation was to provide the total estimated quantity of fine-grained sediment to be removed. In response, as described in the revised Final Supplemental Environmental Impact Statement/Environmental Impact Report (SEIS/EIR) (see Section 1.3), dates displayed in Table 1-1 of the FSEIS/EIR of past maintenance and improvement dredging projects in BH, show that much of the

maintenance material (silty material at or above authorized depth of the navigation channel) has already been removed from the project area prior to construction of the proposed Deep Draft project. See Section 2.9.3 and Table 2-6 for a list of the remaining associated maintenance dredging that could be dredged concurrent with the Deep Draft Project.

The second recommendation was to estimate the geographic extent of the fine-grained sediment to be removed and the distance between dredging these sediments and the nearest significant concentration of biological resources. In response, only the maintenance material above Massport's Marine Terminal is expected to be fine-grained and unsuitable for open water disposal. This material would be disposed into a Confined Aquatic Disposal (CAD) cell. The remaining maintenance material is expected to be coarser grained and suitable for open water disposal at the Massachusetts Bay Disposal Site.

Lastly, the panel recommended that the report provide a qualitative chemical description of the fine-grained sediments focusing particularly on which compound (e.g., polycyclic aromatic hydrocarbons and/or heavy metals) they contain. In response, as determined by physical tests and subsurface explorations, all improvement materials to be dredged are parent materials composed of glacial tills, marine clays, and rock. These materials are excluded from further testing by EPA and were determined suitable for ocean placement. Therefore no chemical testing of improvement materials was required. Only maintenance materials that were removed prior to the final report, or would be removed independently of the improvement project from other harbor areas were subjected to chemical and biological testing. In association with those prior BH maintenance actions, extensive water quality monitoring was conducted during removal of the silty maintenance materials. That monitoring showed no Water Quality Certification violations. The dredge plume generally stays confined to the navigation channel; also, it is not expected to impede the passage of fish (see final SEIS Section 4.2). The rate of benthic recolonization is expected to be dependent on the new material exposed after dredging, and time of year disturbance ceases (see SEIS Section 4.2.4.2).

**IEPR Comment #7 – *Medium Significance*: Additional details are needed to clarify the measures to prevent mortalities of marine mammals and fishes with respect to the roles of marine mammal observers and the fish detection system.**

The comment included four recommendations for resolution, all of which were adopted. The comment expressed concern over potential impacts to marine mammals and fishes, and the associated mitigation measures that are meant to lower the risk of possible negative effects.

## **USACE Response: Adopted.**

**Action Taken:** The first two recommendations were in regards to the fish mortality and fish detection system. The panel recommended that the 2007 fish mortality events should be described in greater detail. Greater detail will allow the reader to judge the importance of each of these four events for themselves. It was recommended that at least an estimate of total number of fish killed and a list of species observed be provided for the reader. Additionally, the fish detection system must be more completely described. Particular emphasis should be placed on the total number of systems to be deployed (e.g. # vessels), the approximate proximity and any other related information.

In response to the recommendations, additional discussion was provided in the final SEIS/EIR (see Sections 4.2.5.3 and 4.6.2). It was concluded that the Deep Draft Project would not be expected to have significant underwater blasting impacts to fish nor would the blasts likely adversely affect listed species (see Appendix A-Coordination). Lessons learned from the four fish mortality events during underwater blasting in the fall of 2007 for the Inner Harbor Maintenance Dredging Project (IHMDP) were used to adapt fish startle process and systems used to reduce potential blast impacts from rock removal in September of 2012. Most notably, the fish startle system originally located on the stationary blast barge for the 2007 work was relocated to a separate boat for the rock removal project in 2012. By having the fish startle system on a smaller, more mobile boat, the startle system could be employed until seconds before the blast, thereby significantly reducing the time for fish to re-enter the blast area. No fish kills were reported for any of the six separate blast events in September of 2012. These systems and their methods of use are continually adapted in consultation with the National Marine Fisheries Service (NMFS) and state agencies to ensure impacts are limited and the process improved with each action. Additionally, blasting may not be required for some or most of the rock, as hammering and other mechanical means of fracturing the rock may prove preferable from both a cost and impact standpoint. All of these considerations are coordinated and resolved as the design phase of the project progresses.

Two additional recommendations were made in regards to marine mammal mitigation measures. One was to describe in greater detail the total responsibilities of “approved marine mammal observers” with emphasis on how they can prevent ship strikes from occurring. Additionally, the panel recommended that the study justify using “approved marine mammal observers” for only a small portion of the year, even though marine mammals and reptiles (e.g. sea turtles) will be in the Gulf of Maine and potentially the area of operations.

In response, additional detail was provided in the final SEIS/EIR (see Sections 4.2.5.3 and 4.6.2). These sections describe the remaining multiple mitigation measures to reduce potential injury or mortality to the above biological resources from underwater

blasting, including the role of the marine mammal and fish observer(s). Most marine mammals and sea turtles are seasonal inhabitants of the New England coastal waters due to the severe winter weather in the North Atlantic. So marine mammal observers and turtle observers are not needed year-round. For each project, coordination with the NMFS and state agencies is conducted during design to determine the most appropriate measures to employ for mammal, fisheries, and turtle observers including times of year when each is needed, and avoidance measures. These requirements are then included in the project's specifications when warranted.

**IEPR Comment #8 – *Low Significance*: The potential for impacts to localized air quality is not addressed sufficiently.**

The comment included two recommendations, which were both adopted. Concerns were expressed regarding the accuracy of the assessment of changes in air quality effects in the New England versus Boston areas.

**USACE Response: Adopted.**

**Action Taken:**

The first recommendation included a request for more information regarding indirect emissions, particularly factors that will negatively impact air quality in the greater Boston area. More information should be provided information about the numbers of trucks, their size, time a truck may spend in the BH operational area. Second, the report should provide better demographic data to compare the total number of people living, working and transiting the area of BH.

In response, as described in the revised Final SEIS/EIR (see Section 4.12.3 and Table 4-21), calculations were accomplished regarding the increase in truck traffic (about 30 percent under the base case, up to 90% under the larger scenario) in the immediate area. The trucks would travel about one mile west of the terminal, mostly through the industrial seaport area before entering the ramp for interstate I-90 or I-93. The estimated NO<sub>x</sub>, CO, and Volatile Organic Compound emissions from cargo trucking would increase by 1.91, 0.51 and 0.24 tons respectively; however, these increases would be more than offset by the emissions reductions estimated for changes in shipping activities associated with the project. Planned without-project condition improvements at the terminal will enhance ground transport to and from the terminal area by providing a dedicated freight corridor to remove truck traffic from East First Street and Summer Street.

Massport is well along as of July 2016 in completing the new freight corridor and is beginning to implement dockside power generation at the cruise ship terminal across

from the container terminal. The newer ships that will be accommodated by the deeper channels and expanded terminal will have reduced emissions compared to the older vessels in use without the project. These improvements and other measures will contribute to improved air quality in the seaport area. Inclusion of additional demographic information for the metropolitan area was determined unnecessary in view of the details on the other improvements being made or planned.

**IEPR Comment #9 – *Low Significance*: The reviewers support the use of rock rubble for lobster habitat enhancement, but the lobster life stages for which habitat is being created are not specified and neither are potential negative impacts to the original habitat with respect to Essential Fisheries Habitat (EFH) considerations.**

The comment included two recommendations, both of which were adopted. Concerns were expressed in regards to the suitability of the sites for habitat creation, and any potential negative ecological effects.

**USACE Response: Adopted.**

**Action Taken:** The first recommendation from the panel suggested that the purpose of the habitat enhancement component of this project should be more explicitly stated, and that decision criteria may need to be adjusted. The potential negative impact of the enhancement sites to original habitat is never mentioned. The second recommendation suggested that the report describe the quantitative impact (if any) to these impacted populations of benthic epifauna (crabs and fish).

In response to the recommendations, additional discussion on the species intended to benefit from the proposed rock placement was included in the final SEIS/EIR (see Sections 4.3 and 5.3). More than one life stage of the lobster is expected to benefit from the hard bottom habitat creation as well as life stages of other species that prefer this type of habitat. Sections 4.3 indicates that approximately 365 acres of soft bottom habitat would be impacted by the creation of hard bottom habitat. Sections 4.3 and 5.3 also describe how EFH would be affected and which EFH species may use the hard bottom habitat, such as American plaice, Atlantic halibut, summer flounder, winter flounder, windowpane flounder, witch flounder, red and white hake, and yellowtail flounder may be present in the finer sediments at the proposed enhancement sites.

However, as of 2016 consideration of rock reef development may no longer be relevant to the project. State and federal resources agencies could not agree on a defined set of criteria for placement and design of rock reefs. Accordingly, USACE left further consideration of beneficial use opportunities for rock to the State and other members of the MA state dredging team to determine during design. These agencies, under The

Nature Conservancy's leadership, formed a rock use working group and have been investigating various options, but have as of yet achieved no consensus. Reefs, wave breaks (to protect eelgrass beds), and some shore protection applications have been considered by the group. But as of July 2016 no agreement has been reached among the agencies. USACE is thus proceeding on a course to place the rock at the Mass Bay ocean site in an area we have used in the past for rock disposal within that site.

**IEPR Comment #10 – *Low Significance*: Multiple beneficial uses of dredge rock should be considered to enhance the total use of this natural resource in the Boston Harbor deepening project, or a justification that additional beneficial uses (e.g., shore protection) are not economical should be included.**

The comment included one recommendation that was adopted. The panel expressed a concern that the dredged rock could be utilized to create a debris field, hard bottom habitat, or other beneficial uses.

**USACE Response: Adopted.**

**Action Taken:** The IEPR panel recommended that the Boston Harbor Deepening Project sponsors be encouraged to find ways to overcome obstacles preventing the beneficial use of all the rock from the deepening project. In response to the recommendation, as described in our letter to the Massachusetts Coastal Zone Management Office (MA CZM) dated October 26, 2012 (located in Appendix A-2-75), we have committed to pursuing viable options regarding alternatives for beneficial reuse of rock beyond the creation of rock reefs, including both shore protection and upland use. Once the volume and nature of the hard material to be removed is identified during subsurface exploration in the Design Phase, that information will be shared with the MA CZM and others in the beneficial rock sub-group of the working group. We will work with State and Federal agencies to investigate potential beneficial uses and users of the rock material, including making the material available for other parties to transport and use in their own projects.

**IEPR Comment #11 – *Low Significance*: Economic benefits which will accrue to foreign flag carriers may not be fully passed on to U.S. shippers, and the report does not provide any recognition of this.**

The comment included one recommendation that was adopted.

**USACE Response: Adopted.**

**Action Taken:** The comment included a recommendation to provide documentation that shows that the PONYNJ ILA GAI assessment avoided by direct calls at BH (MSC

and COSCO) is passed to U.S. shippers in lower rates than for similar services by these lines at PONYNJ. As a result of the IEPR comments, additional economic studies were conducted from 2009 to 2012, and the Container Cargo Benefits analysis was substantially rewritten on the basis of this re-analysis (see Appendix C-1). In this revised analysis there are no benefits to foreign carriers included as a project benefit. Transportation cost savings are defined as the difference in total origin to destination costs between the without-project and with-project conditions. There are three categories of transportation costs that may be affected by alternative channel depths at BH: landside transportation costs; waterborne vessel operating costs, and in-port vessel operating costs. The analysis used vessel operating costs developed by USACE as an estimate of resource costs utilized in maritime transport. Trucking costs are based on a survey of rates charged for actual routes addressed in the analysis. Trucking industry rates are assumed to follow the standard paradigm for a competitive industry.

**IEPR Comment #12 – *Low Significance*: Further detail is needed on the frequency and impact of re-routing Logan Airport airplanes and other aviation-related restrictions on vessels in the container terminal berthing or at work in Boston Harbor.**

The comment included one recommendation that was adopted. Concerns were expressed in regards to vessel and facility heights and the corresponding actions that may be necessary to prevent conflict with flights at Logan National Airport.

**USACE Response: Adopted.**

**Action Taken:** The comment included a recommendation with a four-part question: 1) How often will Logan Airport flights be impacted and what will be their delay? 2) What will be the impact – in terms of delay – of other flights affected by the rerouting? 3) Are there air safety implications associated with rerouting Runway 4R flights to other runways? 4) What are the likely height restrictions on construction vessels and vessels at berth, and how might these restrictions affect port operations?

In response, as described in the revised Final Feasibility Report (pages 80 to 82), for the last three major dredging projects in BH, the USACE has worked with Massport and the Federal Aviation Administration (FAA) to develop means to avoid conflict with airport operations. Specifically, the FAA has developed limits on dredging construction equipment (crane heights) when working in the runway approach zones, and has adjusted hours of operation on the runways crossing the Main Ship Channel during dredging activities. USACE and Massport (Maritime) have also worked with Massport (Aviation) and FAA to schedule dredging operations in the approach zones at times when airport use is lower (night and early morning). Dredging contractors have adjusted to these requirements without difficulty. The post-Panamax cranes at the Conley Terminal have been modified per agreement between Massport and the FAA to

limit their extended height. Even so these cranes are still capable of servicing the classes of post-Panamax vessels included in the design and economic evaluations. No additional impact on airport operations is anticipated. The deepest berths, highest cranes and largest ships will be located furthest from the airport runways and Massport has acquired land upstream of the Conley Terminal for that expansion and purpose.

**IEPR Comment #13 – *Low Significance*: The discussion of the Permanent International Association of Navigation Congresses (PIANC) design methodology for channel width is poorly written/illustrated.**

The comment included two recommendations for resolution, both of which were adopted. The comment expressed concern in regards to the design conditions and what assumptions were made in regards to the channel design.

**USACE Response: Adopted.**

**Action Taken:** The comment included two recommendations. First, the PIANC illustration beginning at the bottom of pg D1-6 should be reworked with consistent inputs/assumptions. Second, the design conditions leading to the suggested channel widths of Table D1-8 should be both specified and justified. As contained in the revised Final Feasibility Report, Appendix D1, Engineering Design, the entire design discussion was re-written in response to the comment. Specifically, pages D1-7 and D1-8 address concerns about channel width adjustments; Table D1-7 Channel Design by Reach was inserted into the appendix on pages D1-15 thru D1-18; and, Table D1-8 was inserted on pages D1-20 and D1-21.

**IEPR Comment #14 – *Low Significance*: Has sufficient consideration been given to the potential shockwave effects of blasting in the vicinity of the Ted Williams Tunnel?**

The comment included two recommendations for resolution, both of which were adopted. The comment expressed concern in regards to whether blasting would be required, which could have potential to damage the nearby tunnel.

**USACE Response: Adopted.**

**Action Taken:** The comment included two recommendations. First, as reported (see DFR, pg. 166), a detailed program of subsurface investigation should be conducted in this area during the design phase of the project to determine the extent of ledge to be removed and whether blasting will be required. Second, should blasting be required in the northern reaches of the Massport Marine Terminal channel deepening extension, blasting charges should be applied incrementally while monitoring and assessing their

shockwave effects (in the vicinity of the Ted Williams Tunnel) before full-scale blasting is undertaken. As a result of the comment and recommendations, as described in the revised Final Feasibility Report (pages 281-283), the design phase of the project includes an extensive boring and probing program to supplement and refine the results of the acoustic surveys and historic boring data. Once that work is completed the division between rock and glacial till, and the exact nature of the rock to be removed will be understood. The Blasting section of the Feasibility Report (page 193-195) details the considerations that will be taken and the coordination that will occur to ensure that blasting will not impact the tunnel.

**IEPR December 2008 Comments on the scope of the Framework for Additional Economic Analysis:**

On the basis of the IEPR review comments, and in consideration of other comments received during review of the project by the Office of Water Project Review, the Civil Work Review Board directed (in the Video-Teleconference of September 18, 2008), that additional studies be conducted of the economic justification for project. USACE then prepared a Framework for Responding to IEPR, OWPR and CWRB comments (hereafter the Framework). The Framework represented a reasonable and thorough scoping of the issues, data and expected outputs to correctly redress the economics issues that are not currently addressed by the Draft Feasibility Report (DFR) April 2008. The Framework notes the major categorical deficiencies of the DFR in terms of the lack of detailed assessment of existing conditions, requirements for a broader more comprehensive and discerning formulation and analysis of real alternatives, and necessity for a sailing draft and fleet mix analyses in order to arrive at an optimum project depth. The Framework was reviewed by the EIPR panel, which concluded that the studies and evaluations scoped would address the comments and concerns raised by the EIPR panel.

**USACE Response: Adopted.**

**Action Taken:** This Framework Re-analysis was completed as presented and the re-analysis was incorporated into the final Feasibility Report (Appendix C-1).