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CECW-NAD

29 JUN 18

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

SUBJECT: Norfolk Harbor and Channels Navigation Improvements Project, Virginia,
General Reevaluation Report – 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 five panel members with technical expertise in economics/planning, biological resources and environmental law compliance, civil/structural engineering, hydrology and hydraulic engineering, coastal engineering, economics, civil works planning, geotechnical engineering and construction engineering.
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 1165-2-217.
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

A handwritten signature in black ink, appearing to read "TODD T. SEMONITE".

TODD T. SEMONITE
Lieutenant General, USA
Chief of Engineers

**Norfolk Harbor Navigation Improvements
Hampton Roads, VA
General Reevaluation Report
and
Environmental Assessment
U.S. Army Corps of Engineers
Response to Independent External Peer Review
June 2018**

Independent External Peer Review (IEPR) was conducted for the subject project in accordance with Section 2034 of WRDA 2007, EC 1165-2-217 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 always provide the most scientifically sound, sustainable water resource solutions for the nation. The USACE review processes are essential to ensuring project safety and quality of the products USACE provides to the American people. Battelle Memorial Institute, 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 Norfolk Harbor Navigation Improvements, Norfolk, Virginia, General Reevaluation Report and Environmental Assessment.

The IEPR panel reviewed the General Reevaluation Report (GRR) and Environmental Assessment (EA) as well as supporting documentation. The Final IEPR Battelle Report was issued on March 19th, 2018. Overall, twelve (12) comments were identified and documented; (3) comments were rated as having high significance, (4) comments were rated medium/low and (5) comments were rated low. The following discussions present the USACE Final Response to the twelve (12) comments.

- 1. Comment – High Significance: The reasonableness and appropriateness of the economic assumptions cannot be assessed because details on pertinent data and model calibration results, including objective data, are missing from documents provided for review.**

The comment included one recommendation that was adopted. The comment expressed the concern that neither the report nor the appendices provide a discussion of model calibration to allow the Panel to assess the adequacy of the assumptions and data underlying the evaluation of the economic benefits of alternatives.

USACE Response: Adopted

Action Taken: The IEPR panel recommended that USACE develop and provide a model calibration discussion for Norfolk Harbor showing data comparisons (model versus actual vessel operation and performance, external sources, and expectations). In response, USACE further developed a model calibration discussion which was added to Section 4.2 of the Economics Appendix. The discussion was revised to include output data on Future Without Project (FWOP) and Future With Project (FWP) condition transportation costs. The results of the calibration were provided in tabular format in terms of cargo tonnage, operating draft, and time in system statistics that were deemed sufficient by harbor operators.

4. Comment – *Medium/Low Significance*: The exact depth of the joints (flanges) of the Thimble Shoal tunnel of the Chesapeake Bay Bridge Tunnel is not consistently defined in the report.

The comment included two recommendations, both of which were adopted. The commenter expressed concern that the exact depth of the joints of the Chesapeake Bay Bridge Tunnel (CBBT) may impact both vessel accessibility and overall project costs. The variations in the elevation for top of the tunnel flanges make it difficult to analyze the project fully. The commenter expressed that the project costs may need to be revised if the flange depth is located at elevation -61.5 feet.

USACE Response: Adopted

Action Taken: The IEPR panel recommended that USACE: 1) clarify the elevation of the tunnel flanges and 2) if the flange depth is located at elevation -61.5 feet, revise project costs based on the reduced vessel accessibility. In response, the USACE clarified the elevation of the tunnel flanges in the final report. The USACE confirmed that the record drawings provided by Chesapeake Bay Bridge Tunnel Authority (CBBTA) shows the top of flange (shallowest) at -63'. Therefore, the -63' is the most accurate information available and will allow the proposed 5' of cover. It is also noted within the document that during Preliminary Engineering and Design (PED) additional effort, including the action of coordinating with the CBBTA and their consultants, will include confirmation of recorded drawing datums on the tunnel. Appendix A was altered to reflect -63 MLLW depth. A clarification was made in Table 13, Page A-28 in the Engineering Appendix, that top of flange is -63' in the engineering appendix.

5. Comment – *Medium/Low Significance*: Maintenance dredging costs may be underestimated due to the assumption that the Craney Island Dredged Material Management Area (CIDMMA) will continue to have storage capacity throughout the 50-year maintenance dredging lifespan.

The comment included two recommendations, both were adopted. The commenter expressed concern that maintenance dredging costs may be underestimated and projected maintenance dredging costs do not appear to include additional transit costs associated with transporting dredge material from the Inner Norfolk Harbor and Newport News Channels offshore to the Norfolk ODMDS once the CIDMMA site has reached full capacity.

USACE Response: Adopted

Action Taken: The IEPR panel recommended (1) that USACE revise the maintenance dredge cost estimate to include offshore disposal using the assumption that the CIDMMA will reach full capacity prior to the end of the project's 50-year lifespan. In response, cost calculations throughout the report reflect the additional cost to take all inner harbor material to the offshore placement site (NODS) post the life of CIDMMA. The text in the Main Report, section 4.5.5 and 5.1.6 and supporting costs and engineering appendices were clarified and corrected. The IEPR panel recommended (2) that the USACE revise the report to remove discrepancies regarding the projected closure year of the CIDMMA site. In response, the report was updated in Section 9.2 of the Engineering Appendix to reflect an anticipated closure date of CIDMMA in 2038.

6. Comment – *Medium/Low Significance*: Future Federal harbor projects are not discussed in the Norfolk Harbor GRR as required under NEPA.

8. Comment – *Low Significance*: The empirical and analytical methods used to derive sedimentation rates for the TSP may underestimate maintenance dredging volumes and costs.

The comment included one recommendation which was not adopted. The comment expressed concern that sedimentation rates may be underestimated, which has a direct correlation to maintenance dredging volumes and operation and maintenance (O&M) costs.

USACE Response: Not Adopted

The IEPR panel recommended that USACE use a preliminary level numerical sediment transport model that incorporates hydrodynamics and wave climate to determine sedimentation rates for the TSP and update the report to include this analysis. Although noted as a “first-order” estimate, the report entitled “Desktop Assessment of Future Sedimentation Rates” contains a robust analysis method, inclusive of a review of existing data which provides for calibration of the analysis. Two different analytical methods were used in different reaches of the study area, mainly driven by the physical processes (i.e. waves and currents) considered responsible for sedimentation. The methodology used does incorporate both hydrodynamics (using a regional-scale numerical hydrodynamic model) and wave data (using measurements from the NOAA wave gage located at the Chesapeake Light station) to support the analysis. Therefore, no additional analysis is warranted as the level of analysis is sufficient to support the selection of channel alternatives and cost estimates. However, USACE added clarification to the text within paragraph 5 of the Engineering Appendix to note the analysis is beyond a first-order estimate.

9. Comment – *Low Significance*: The cost-sharing details of the berth dredging are not clearly defined and may impact the cost- share allocations.

The comment included two recommendations; one of the recommendations was adopted and one was not adopted. The commenter expressed concern that inconsistent presentation of the cost sharing affects the readability of the report, but not the total project costs or benefit-cost ratio.

USACE Response: Adopted

Action Taken: The IEPR panel recommended that USACE revise the cost sharing for the berthing area dredging, or provide a justification for the 50/50 cost sharing for the berthing area dredging. In response, USACE revised and updated table 1 of the Executive Summary and Sections 4 and 5 of the main report to indicate that the non-Federal sponsor is responsible for 100% of the cost associated with the dredging of berthing areas.

USACE Response: Not Adopted

The IEPR panel recommended that if the 50/50 cost sharing is justified, USACE should revise the conflicting text in Section 5.7 that states non-Federal interests are responsible for dredging of berthing areas. However, the original table was incorrect and was updated in the report. The non-Federal sponsor is responsible for 100% of the cost associated with the dredging of berthing areas.

10. Comment – *Low Significance*: The GRR/EA indicates seismic hazard is low, but does not provide Peak Ground Acceleration (PGA), seismic recurrence interval, or regional seismic data, including impacts related to regional oil fracking activities.

The comment included three recommendations, which were all adopted. The commenter expressed concern that the technical quality of the report would be improved by providing more detailed

1. Issue: Impacts of the proposed activities on Naval operations. The Navy comments (p. 89) have raised national security risks; like Final Panel Comment 6.

USACE Response: The letter from Rear Admiral Scorby, dated 6 Dec 2017, did not identify any national security risks. The Corps and project sponsor actively work with the Navy in regards to the Harbor and channel and commercial traffic and will continue to coordinate with the Navy, which is a cooperating agency on this study. The USACE sent a response letter to the Navy indicating our continued willingness to work with the Navy on 6 December 2017. It is expected that the US Navy will be coordinated with during the PED phase of the project and throughout project construction.

2. Issue: The project, as defined, would cause potential ship and coastal infrastructure impacts (Navy, p. 89). Based on the description of the Craney Island Eastern Expansion, it appears that these concerns would be like those raised in Final Panel Comment 6

USACE Response: No impacts to moored vessels are anticipated. A mooring analysis will be conducted during PED to verify. It is important to note that currently vessels of this size call on the port and there have been no identified impacts to infrastructure associated with the current use. Therefore such impacts are already part of the "without project conditions" and the deepening will not cause additional impacts."

3. Issue: The letter from the Elizabeth River Project (p. 109) suggests mitigation for low dissolved oxygen in the channel. It suggests that this be performed using oxygen injection systems. The letter cites the Savannah Harbor Expansion project as an example of this type of mitigation. Supersaturated water can cause mortality in fish species. The marine environments in each harbor are not equivalent (better circulation in Norfolk, lower water temperatures retain higher dissolved oxygen, etc.). The suitability of the system for the current location should be examined prior to adoption of this mitigation technique.

USACE Response: This comment was addressed by USACE, Norfolk District in a comment response letter to the Elizabeth River Project 3 March 2017 concerning the Elizabeth River Southern Branch Navigation Improvements Project. The Norfolk Harbor Navigation Improvements Project, according to the Elizabeth River Project (ERP) comment, is not the source of this recommendation. No additional responses have been received.

4. Issue: Many letters in support of the project (e.g., Agriculture Transportation Coalition, p. 7), nevertheless mention preparing for 16,000 to 18,000 twenty-foot equivalent units (TEUs) to be used in the next several years. Other letters mention that ships frequenting these navigation lanes have grown from 8,000 TEUs to 14,000 TEUs and this is larger than the 13,800 TEUs design vessel used in the study. The ship size distribution used for this study could fail to accurately reflect future conditions. If 18,000 TEU ships (Ultra Large Container Vessels [ULCV]) are expected to use the harbor, the future fleet distribution should include this vessel class.

USACE Response: The largest containership vessel sizes used in the economic analysis range between 13,600 TEU and 14,400 TEU. These are the vessels that are expected to become the workhorses of the fleet in the foreseeable future based on available information while accounting for relevant macroeconomic uncertainties. Use of design vessels are standard within the HarborSym model and utilized to represent global patterns within the diversity of the fleet that may visit the port. While it is possible that 18,000 TEU vessels could call in the future, the 13.6-14K TEU range vessels were chosen to make the economic analysis less speculative in nature with greater confidence in project benefits.