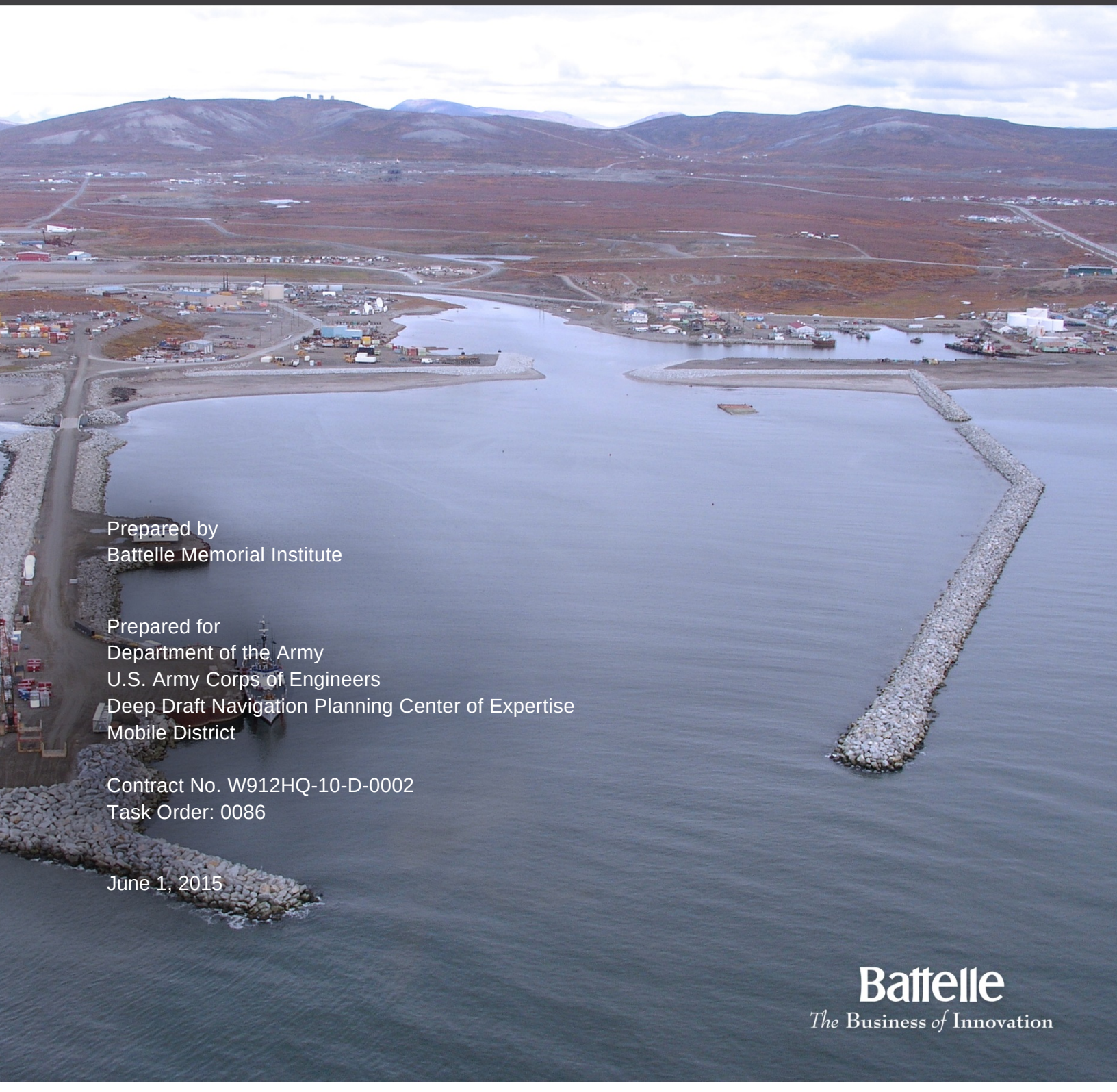
Final Independent External Peer Review Report Draft Integrated Feasibility Report, Draft Environmental Assessment, and Draft Finding of No Significant Impact Alaska Deep-Draft Arctic Port System Study



Prepared by
Battelle Memorial Institute

Prepared for
Department of the Army
U.S. Army Corps of Engineers
Deep Draft Navigation Planning Center of Expertise
Mobile District

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Task Order: 0086

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Executive Summary

PROJECT BACKGROUND AND PURPOSE

The study area is part of the Seward Peninsula on the western coast of Alaska and includes the general area of Nome/Port Clarence and Teller. Nome lies 539 air miles northwest of Anchorage, 102 miles south of the Arctic Circle, and 161 miles east of Russia. Teller is located on a spit 72 miles northwest of Nome on the eastern side of Port Clarence. Port Clarence is a bay located west of Teller on the Seward Peninsula. The Deep Draft Arctic Ports System includes a number of channel alignments and widths ranging in depths from -12.5 feet to -35 feet. The considered project also includes numerous causeway and dock modifications. The purpose of this study is to determine if there is a Federal interest in making project improvements and to evaluate the benefits, costs, and environmental impacts associated with the project modifications.

The Tentatively Selected Plan (TSP) includes a 2,150-foot (655 meters) causeway extension, a 450-foot (137 meters) long dock, and dredging to -28 feet (-8.5 meters) mean lower low water (MLLW). This selected depth was based on the projected future with-project vessel characteristics expected at the Nome location. Approximately 441,000 cubic yards of dredged material would be removed from the harbor and deposited on the project's beach down drift (to the east).

The Decision Document has been developed to meet the USACE modernized planning initiative, which is to complete investigations leading to a decision in less time by using a risk-informed assessment with less detailed information for each alternative evaluated. Although this new process has altered the milestones and evaluation procedures in a feasibility study, the way alternatives are developed from problems, opportunities, measures, and constraints remains the same.

Independent External Peer Review Process

Independent, objective peer review is a critical element in ensuring the reliability of scientific analysis. USACE is conducting an Independent External Peer Review (IEPR) of the Draft Integrated Feasibility Report (FR), Draft Environmental Assessment (EA), and Draft Finding of No Significant Impact (FONSI) Alaska Deep-Draft Arctic Port System Study (hereinafter: Alaska Deep-Draft Arctic Port System Study IEPR). As a 501(c)(3) non-profit science and technology organization, Battelle is independent, free from conflicts of interest (COIs), and meets the requirements for an Outside Eligible Organization (OEO) per guidance described in USACE (2012). Battelle is experienced in establishing and administering peer review panels for USACE and was engaged to coordinate the IEPR of the Alaska Deep-Draft Arctic Port System Study. The IEPR was external to the agency and was conducted following USACE and Office of Management and Budget (OMB) guidance described in USACE (2012) and OMB (2004). This final report presents the Final Panel Comments of the IEPR Panel (the Panel). Details regarding the IEPR (including the process for selecting panel members, the panel members' biographical information and expertise, and the charge submitted to the Panel to guide its review) are presented in appendices.

Based on the technical content of the Alaska Deep-Draft Arctic Port System Study review documents and the overall scope of the project, Battelle identified potential candidates for the Panel in the following key

technical areas: engineering, geotechnical engineering, economics, environmental, and plan formulation. Battelle screened the candidates to identify those most closely meeting the selection criteria and evaluated them for COIs and availability. USACE was given the list of final candidates to confirm that they had no COIs, but Battelle made the final selection of the five-person Panel.

The Panel received an electronic version of the Alaska Deep-Draft Arctic Port System Study review documents (916 pages in total), along with a charge that solicited comments on specific sections of the documents to be reviewed. Following guidance provided in USACE (2012) and OMB (2014), USACE prepared the charge questions, which were included in the draft and final Work Plans.

The USACE Project Delivery Team briefed the Panel and Battelle during a kick-off meeting held via teleconference prior to the start of the review to provide the Panel an opportunity to ask questions of USACE and clarify uncertainties. Other than Battelle-facilitated teleconferences, there was no direct communication between the Panel and USACE during the peer review process. The Panel produced individual comments in response to the charge questions.

IEPR panel members reviewed the Alaska Deep-Draft Arctic Port System Study documents individually. The panel members then met via teleconference with Battelle to review key technical comments and reach agreement on the Final Panel Comments to be provided to USACE. Each Final Panel Comment was documented using a four-part format consisting of: (1) a comment statement; (2) the basis for the comment; (3) the significance of the comment (high, medium/high, medium, medium/low, or low); and (4) recommendations on how to resolve the comment. Overall, 13 Final Panel Comments were identified and documented. Of these, eight have a medium significance, three have medium/low significance, and two have low significance.

Battelle received public comments from USACE on the Alaska Deep-Draft Arctic Port System Study IEPR (approximately 21 written comments within 100 pages of text) and provided them to the IEPR panel members. The panel members were charged with determining if any information or concerns presented in the public comments raised any additional discipline-specific technical concerns with regard to the Alaska Deep-Draft Arctic Port System Study IEPR review documents. After completing its review, the Panel confirmed that no new issues or concerns were identified other than those already covered in the Final Panel Comments.

Results of the Independent External Peer Review

The panel members agreed on their “assessment of the adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used” (USACE, 2012; p. D-4) in the Alaska Deep-Draft Arctic Port System Study review documents. Table ES-1 lists the Final Panel Comment statements by level of significance. The full text of the Final Panel Comments is presented in Section 4.2 of this report. The following summarizes the Panel’s findings.

Based on the Panel’s review, the report is well-written and manages the presentation of multiple objectives and site screening alternatives in a structured way that provides a logical documentation of the TSP. While the Panel did not identify any issues of High or Medium/High significance, they did identify several elements of the report that should be clarified or revised and components of the project that require additional analyses.

Plan Formulation: The Panel found that the Plan Formulation process was well done for this non-traditional and complex navigation feasibility study. The Panel has two concerns related to the cost-sharing responsibilities. First, the report has some inconsistencies in the Draft Integrated Feasibility Report/Draft Environmental Assessment/Draft Finding of No Significant Impact (DIFR/DEA/DFONSI) report surrounding the identification of the least-cost placement and cost sharing if the on, or adjacent to, beach is not the least cost disposal area option. Second, the report states that the non-Federal sponsor is responsible for 100% of a $34M breakwater. However, it appears to the Panel that the breakwater cited in the Table 39 is a general navigation feature and should be cost-shared between the federal government and local sponsor. These concerns can be addressed by evaluating whether or not the breakwater would perform as a general navigation feature, identifying the least-cost dredging and disposal plan, and stating any cost-sharing ramifications.

Engineering: The report provides adequate levels of detail for most aspects of the project, but does not (1) describe clearly the refraction and diffraction of waves into the Nome harbor entrance channel area, and (2) does not present seismic stability analyses for Alternative Plans. The first concern is focused on the lack of details on the configuration of the breakwater and Nome harbor entrance channel in the report which may constrain ships from accessing the entrance channel and possibly increase the risk of groundings due to refraction and diffraction of storm waves. This issue can be addressed by providing a clear discussion of how wave refraction and diffraction would affect navigation for the TSP in the report. The second concern is related to the lack of geotechnical analyses done at the Cape Riley and Point Spencer sites and the lack of seismic design considerations in the geotechnical analyses done at Nome. The Panel believes that preliminary geotechnical seismic analysis of soil liquefaction and seismic stability of dredged slopes, causeway, breakwater, and caisson dock structures is needed to support the TSP and benefit-cost ratio (BCR). This issue can be addressed by presenting information on the seismicity of the region and by performing liquefaction, seismic slope stability, bearing capacity, and settlement analyses of the causeway, breakwater, and caisson dock structures, as well as seismic stability for the dredged slopes.

Economics: The Panel's most significant finding relates to the uncertainties surrounding oil exploration and other traffic impacts on the current and future vessel fleet configurations. Documentation of the design vessel drafts chosen, which is an important source of the benefits of the project, needs to be provided. Also, the Panel notes that the risk and uncertainty associated with the commodity projections and attendant ship configurations may impact the TSP. This issue can be addressed by conducting a sensitivity analysis of the uncertainty issues identified by the Panel. This analysis is needed to support identified crucial benefits of the project. In addition, the Panel is concerned that lightering needs for some of the existing and future projected traffic do not seem to be fully considered in the TSP, which could result in unanticipated congestion costs affecting the BCR to some degree. This issue can be addressed by discussing how lightering affects the HarborSym results and by determining the expected volume of such traffic and its needs for lightering services.

Environmental: Environmental documentation is thorough and comprehensive for some environmental areas, while other areas have not been addressed. The Panel is concerned that the statement "no long term adverse effects are expected" on essential fish habitat (EFH) for affected species is not adequately supported based on the data presented in the report. In addition, the Panel notes uncertainty concerning circulation changes induced by new dredging inside the port. These changes may result in adverse impacts on EFH that are not addressed . Also, the rate of delivery of metals of concern to the nearshore during annual dredging is not addressed nor are the potential impacts to the organisms present. Finally,

the Panel is concerned with risk to marine mammals from underwater noise impacts of pile driving in the marine environment. The construction impacts from underwater noise were not analyzed to determine if a "take" of ESA-listed marine mammals could occur. The Panel believes these issues can be addressed by (1) adding details to the DIFR/DEA/DFONSI report on EFH habitat assessment and a site-specific statement of project effects on EFH, (2) conducting analyses with assumptions and methods derived from the study of circulation within coastal jetties containing river flow in low tide ranges, (3) determining and presenting the metal contaminant concentrations within the proposed dredge prism, and (4) performing and presenting the output of the noise propagation analysis.

Table ES-1. Overview of 13 Final Panel Comments Identified by the Alaska Deep-Draft Arctic Port System Study IEPR Panel

No.	Final Panel Comment
Significance – Medium	
1	Refraction and diffraction of waves into the Nome harbor entrance channel area, which may adversely affect the function and performance of the Tentatively Selected Plan (TSP), are not addressed by the TSP.
2	Both the economic and environmental assessments lack clear supporting documentation for the models used, the associated input parameters, and the derivation of assumptions.
3	The uncertainty of the impact of oil exploration and other traffic on current and future vessel fleet configurations or vessel dimensions is not fully analyzed, which could affect the BCR.
4	Lightering in the TSP is not distinguished or fully considered relative to current lightering, which may impact congestion costs.
5	Seismic stability analyses are not presented for Alternative Plans at Nome, Point Spencer, and Cape Riley, which could affect estimated construction and operation, maintenance, repair, replacement, and rehabilitation (OMRRR) costs.
6	Underwater noise propagation from construction are not analyzed to determine if a "take" of ESA-listed marine mammals could occur.
7	The rate of delivery of metals of concern to the nearshore could be higher than naturally occurring, especially in dredged material from areas that are not subject to annual dredging.
8	The effects of Snake River flow and of Norton Sound wind-induced water level changes do not appear to be addressed in predictions of new circulation patterns within inner harbor expansion and deepening of the TSP, which may affect the assessment of risks to EFH.

Table ES-1. Overview of 13 Final Panel Comments Identified by the Alaska Deep-Draft Arctic Port System Study IEPR Panel (continued)

No.	Final Panel Comment
Significance – Medium/Low	
9	The statement "no long term adverse effects are expected" relative to EFH for affected species is not supported with the level of detail presented in the report.
10	The potential direct and indirect impacts on aquatic resources, specifically eelgrass, rockweed, and existing encrusting community, cannot be determined using the data provided.
11	Potential impacts of climate change are not described with regard to design of harbor features and to analysis of associated economic benefits.
Significance – Low	
12	Engineering design criteria are applied without quantitative assessment of risk with regard to parameters such as return period and annual exceedance probability (AEP).
13	The cost-sharing details for the breakwater, and datum are not clearly defined and may impact the cost- share percentages; and the identification of the least cost dredging and disposal plan have not been stated which could impact project cost.

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LIST OF ACRONYMS

AEP	annual exceedance probability
ATR	Agency Technical Review
BCR	benefit-cost ratio
BMP	Best Management Practice
COI	Conflict of Interest
DrChecks	Design Review and Checking System
EA	Environmental Assessment
EC	Engineer Circular
EFH	essential fish habitat
ER	Engineer Regulation
ERDC	Engineer Research and Development Center
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
FR	Feasibility Report
IEPR	Independent External Peer Review
MLLW	mean lower low water
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
O&M	operations and maintenance
OEO	Outside Eligible Organization
OMB	Office of Management and Budget
OMRRR	operations, maintenance, repair, replacement, and rehabilitation
OSV	offshore service vessels
PDT	Project Delivery Team
PED	preconstruction engineering and design
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Services
TSP	Tentatively Selected Plan
WRDA	Water Resources Development Act

1. INTRODUCTION

The study area is part of the Seward Peninsula on the western coast of Alaska and includes the general area of Nome/Port Clarence and Teller. Nome lies 539 air miles northwest of Anchorage, 102 miles south of the Arctic Circle, and 161 miles east of Russia. Teller is located on a spit 72 miles northwest of Nome on the eastern side of Port Clarence. Port Clarence is a bay located west of Teller on the Seward Peninsula. The Deep Draft Arctic Ports System includes a number of channel alignments and widths ranging in depths from -12.5 feet to -35 feet. The considered project also includes numerous causeway and dock modifications. The purpose of this study is to determine if there is a Federal interest in making project improvements and to evaluate the benefits, costs, and environmental impacts associated with the project modifications.

The Tentatively Selected Plan (TSP) includes a 2,150-foot (655 meters) causeway extension, a 450-foot (137 meters) long dock, and dredging to -28 feet (-8.5 meters) mean lower low water (MLLW). This selected depth was based on the future with-project vessel characteristics expected at the Nome location. Approximately 441,000 cubic yards of dredged material would be removed from the harbor and deposited on the project's beach down drift.

The Decision Document has been developed to meet the U.S. Army Corps of Engineers (USACE) modernized planning initiative, which is to complete investigations leading to a decision in less time by using a risk-informed assessment with less detailed information for each alternative evaluated. Although this new process has altered the milestones and evaluation procedures in a feasibility study, the manner in which alternatives are developed from problems, opportunities, measures, and constraints remains the same.

Independent, objective peer review is regarded as a critical element in ensuring the reliability of scientific analysis. The objective of the work described here was to conduct an Independent External Peer Review (IEPR) of the Draft Integrated Feasibility Report (FR), Draft Environmental Assessment (EA), and Draft Finding of No Significant Impact (FONSI) Alaska Deep-Draft Arctic Port System Study (hereinafter: Alaska Deep-Draft Arctic Port System Study IEPR) in accordance with procedures described in the Department of the Army, USACE, Engineer Circular (EC) *Civil Works Review* (EC 1165-2-214) (USACE, 2012) and the Office of Management and Budget (OMB), *Final Information Quality Bulletin for Peer Review* (OMB, 2004). Supplemental guidance on evaluation for conflicts of interest (COIs) was obtained from the *Policy on Committee Composition and Balance and Conflicts of Interest for Committees Used in the Development of Reports* (The National Academies, 2003).

This final report presents the Final Panel Comments of the IEPR Panel (the Panel) on the existing engineering, geotechnical engineering, economic, environmental, and plan formulation analyses contained in the Alaska Deep-Draft Arctic Port System Study IEPR documents (Section 4). Appendix A describes in detail how the IEPR was planned and conducted. Appendix B provides biographical information on the IEPR panel members and describes the method Battelle followed to select them. Appendix C presents the final charge to the IEPR panel members for their use during the review; the final charge was submitted to USACE on March 26, 2015. Appendix D presents the organizational conflict of interest form that Battelle completed and submitted to the Institute for Water Resources (IWR) prior to the award of the Alaska Deep-Draft Arctic Port System Study IEPR.

2. PURPOSE OF THE IEPR

To ensure that USACE documents are supported by the best scientific and technical information, USACE has implemented a peer review process that uses IEPR to complement the Agency Technical Review (ATR), as described in USACE (2012).

In general, the purpose of peer review is to strengthen the quality and credibility of the USACE decision documents in support of its Civil Works program. IEPR provides an independent assessment of the engineering, geotechnical engineering, economic, environmental, and plan formulation analyses of the project study. In particular, the IEPR addresses the technical soundness of the project study's assumptions, methods, analyses, and calculations and identifies the need for additional data or analyses to make a good decision regarding implementation of alternatives and recommendations.

In this case, the IEPR of the Alaska Deep-Draft Arctic Port System Study was conducted and managed using contract support from Battelle, which is an Outside Eligible Organization (OEO) (as defined by EC 1165-2-214). Battelle, a 501(c)(3) organization under the U.S. Internal Revenue Code, has experience conducting IEPRs for USACE.

3. METHODS FOR CONDUCTING THE IEPR

The methods used to conduct the IEPR are briefly described in this section; a detailed description can be found in Appendix A. Table 1 presents the major milestones and deliverables of the Alaska Deep-Draft Arctic Port System Study IEPR. Due dates for milestones and deliverables are based on the award/effective date of February 26, 2015. Note that the work items listed under Task 6 occur after the submission of this report. Battelle anticipates submitting the pdf printout of the USACE's Design Review and Checking System (DrChecks) project file (the final deliverable) on February 26, 2015. The actual date for contract end will depend on the date that all activities for this IEPR, including Civil Works Review Board (CWRB) preparation and participation, are conducted.

Table 1. Major Milestones and Deliverables of the Alaska Deep-Draft Arctic Port System Study IEPR

Task	Action	Due Date
1	Award/Effective Date	2/26/2015
	Review documents available	2/25/2015
2	Battelle submits list of selected panel members*	3/12/2015
	USACE confirms the panel members have no COI	3/17/2015
3	Battelle convenes kick-off meeting with USACE	3/5/2015
	Battelle convenes kick-off meeting with USACE and panel members	3/31/2015
4	Panel members complete their individual reviews	4/24/2015
	Panel members provide draft Final Panel Comments to Battelle	5/8/2015
5	Battelle submits Final IEPR Report to USACE*	6/1/ 2015
6	Battelle convenes Comment-Response Teleconference with panel members and USACE	7/1/2015
	Battelle submits pdf printout of DrChecks project file*	7/24/2015
	Contract End/Delivery Date**	1/27/2016

Battelle identified, screened, and selected five panel members to participate in the IEPR based on their expertise in the following disciplines: engineering, geotechnical engineering, economics, environmental, plan formulation The Panel reviewed the Alaska Deep-Draft Arctic Port System Study document and produced 13 Final Panel Comments in response to 16 charge questions provided by USACE for the review. This charge included two overview questions added by Battelle. Battelle instructed the Panel to develop the Final Panel Comments using a standardized four-part structure:

1. Comment Statement (succinct summary statement of concern)
2. Basis for Comment (details regarding the concern)
3. Significance (high, medium/high, medium, medium/low, or low; in accordance with specific criteria for determining level of significance)
4. Recommendation(s) for Resolution (at least one implementable action that could be taken to address the Final Panel Comment).
5. Battelle reviewed all Final Panel Comments for accuracy, adherence to USACE guidance (EC 1165-2-214, Appendix D), and completeness prior to determining that they were final and suitable for inclusion in the Final IEPR Report. There was no direct communication between the Panel and USACE during the preparation of the Final Panel Comments. The Panel's findings are summarized in Section 4.1; the Final Panel Comments are presented in full in Section 4.2.

4. RESULTS OF THE IEPR

This section presents the results of the IEPR. A summary of the Panel's findings and the full text of the Final Panel Comments are provided.

4.1 Summary of Final Panel Comments

The panel members agreed on their "assessment of the adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used" (USACE, 2012; p. D-4) in the Alaska Deep-Draft Arctic Port System Study review documents. Table ES-1 lists the Final Panel Comment statements by level of significance. The full text of the Final Panel Comments is presented in Section 4.2 of this report. The following summarizes the Panel's findings.

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Plan Formulation: The Panel found that the Plan Formulation process was well done for this non-traditional and complex navigation feasibility study. The Panel has two concerns related to the cost-sharing responsibilities. First, the report has some inconsistencies in the Draft Integrated Feasibility Report/Draft Environmental Assessment/Draft Finding of No Significant Impact (DIFR/DEA/DFONSI) report surrounding the identification of the least-cost placement and cost sharing if the on, or adjacent to, beach is not the least cost disposal area option. Second, the report states that the non-Federal sponsor is responsible for 100% of a $34M breakwater. However, it appears to the Panel that the breakwater cited in the Table 39 is a general navigation feature and should be cost-shared between the federal government and local sponsor. These concerns can be addressed by evaluating whether or not the breakwater would

perform as a general navigation feature, identifying the least-cost dredging and disposal plan, and stating any cost-sharing ramifications.

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Economics: The Panel's most significant finding relates to the uncertainties surrounding oil exploration and other traffic impacts on the current and future vessel fleet configurations. Documentation of the design vessel drafts chosen, which is an important source of the benefits of the project, needs to be provided. Also, the Panel notes that the risk and uncertainty associated with the commodity projections and attendant ship configurations may impact the TSP. This issue can be addressed by conducting a sensitivity analysis of the uncertainty issues identified by the Panel. This analysis is needed to support identified crucial benefits of the project. In addition, the Panel is concerned that lightering needs for some of the existing and future projected traffic do not seem to be fully considered in the TSP, which could result in unanticipated congestion costs affecting the BCR to some degree. This issue can be addressed by discussing how lightering affects the HarborSym results and by determining the expected volume of such traffic and its needs for lightering services.

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4.2 Final Panel Comments

This section presents the full text of the Final Panel Comments prepared by the IEPR panel members.

Final Panel Comment 1

Refraction and diffraction of waves into the Nome harbor entrance channel area, which may adversely affect the function and performance of the Tentatively Selected Plan (TSP), are not addressed by the TSP.

Basis for Comment

The alignment of the breakwater and adjacent channel for the TSP with natural bathymetric contours of -21 to -30 feet mean lower low water (MLLW) can potentially cause adverse refraction and diffraction. The TSP does not address how the configuration of the breakwater and Nome harbor entrance channel can constrain ships accessing the entrance channel and subsequently create a risk of groundings due to refraction and diffraction of storm waves. The Panel has the following concerns about this omission:

- STWAVE analyses were presented in this report for Port Clarence alternatives, but not for the more detailed design alternatives investigated for Nome. Details of wave refraction, diffraction, and breaking near the entrance channel affect access of ships. Optimization of entrance channel orientation, width, and depth, as well as analysis of ship access constraints, requires these details. Such analyses could impact the cost estimates and affect the screening process.
- Storm waves from the southwest and the southeast will refract and amplify in size in natural depths near the port entrance, such that ships entering the east-west outer channel will experience beam seas and dangerous rolling motion.
- Storm waves about 13 feet and higher will be breaking at or near the inshore margin of the dredged channel with associated risk of catastrophic grounding.
- Pilots may choose to avoid these risks by not entering the harbor during storms, thus restricting shelter to, and access by, vessels that the project intends to serve. These would be lost project benefits if they are not accounted for in HarborSym.
- Alternatives with oblique orientation are not considered.
- The report does not document consultations with pilots regarding the entrance channel orientation and ship simulator studies have been deferred until after the project has been authorized.

Significance – Medium

The risk of ship groundings during storms near the entrance channel and access constraints may be greater than reported and increase the project risk if not addressed.

Recommendation for Resolution

1. Include results of wave refraction and diffraction analyses and discuss how these results would affect navigation for the TSP.
2. Indicate in the report and appendices A and B whether these potential unfavorable navigation conditions affect the distributions used as input to HarborSym.

Final Panel Comment 2

Both the economic and environmental assessments lack clear supporting documentation for the models used, the associated input parameters, and the derivation of assumptions.

Basis for Comment

HarborSym, the USACE-certified model, is used to establish and compare transportation savings among alternatives IWR develops and maintains input data on vessel speeds, design and operating characteristics, operating costs, etc. required by HarborSym for containerships, tankers, etc., but it is not clear if they have such for the vessel types in this project. As for any model, verification and replication of prototype data and the quality of input data are what determine the value of the results. There was a reasonable discussion of these in Appendix B, but input data should be supported by documentation, of what and why the parameters in the analysis were chosen as compared to others. This was not provided, and is critical, especially with such a low BCR, these input data take on a more significant role. However, some documentation is needed to show how the assumptions were derived. The Panel identified several issues that need further clarification, which, when combined with a sensitivity analyses, could reduce the uncertainty in the DIFR/DEA/DFONSI report:

- A comparison of 2013 and 2014 vessel calls against the 2012 base to test the model's projections is missing. Reliance on McDonaghl Marine Service for specifications requires more discussion to document and reinforce the assumptions. Vessel operating costs are based on many unsupported assumptions.
- The basis for Table 20 and the values per unit shown are unclear. The regressions shown/ discussed on page 67 need clarification and possible translation into annual growth in Table 26 (p. 69).
- There is no discussion of the implications of the Forecast Summary being based on different data sets. It is unclear if the projections are decreased or increased.
- On page 71, it is not clear why the vessel call dates are evenly distributed. There is no discussion of the basis for, and the impacts of, this even distribution.
- On page 73, the route group revisions are not expressed in miles, percentages, etc., which would allow the reader to see how they fit into the analysis.
- On page 78, the basis for the reduction of 10% of rafting is not clear. There is no indication whether a brief sensitivity analysis on this assumption is planned.
- On page 94, the assumption of 4.48% annual growth for cruise ships seems unrealistic and unsustainable, but there is no support provided from interviews etc. for or against this assumption.
- On page 94, it is unclear how "additional Government vessel trips" were decided. The text only states they are "expected" without indication by whom.
- From the environmental perspective, there is a lack of modeling (analyses) for some major potential construction- related effects. Therefore, modeling from the environmental perspective is weak and maybe even inadequate. Given this, the impact statements Endangered Species Act (ESA) species come into question.

If the issues identified in these previous bullets are addressed, combined with conducting appropriate sensitivity analyses, the uncertainty in the development of the BCR will be reduced**.**

Significance – Medium

The lack of documentation of assumptions for the chosen models, lessens confidence in the model output, which is especially important since the benefit-cost ratio (BCR) is non-robust.

Recommendation for Resolution

1. Review and give sources and documentation of the assumptions utilized in the models and analysis.
2. Conduct initial sensitivity analyses to determine critical assumptions where varying the parameters causes significant changes in the BCR
3. Incorporate the sensitivity analyses' results into the report, noting the impact of the findings on the BCR.

Final Panel Comment 3

The uncertainty of the impact of oil exploration and other traffic on current and future vessel fleet configurations or vessel dimensions is not fully analyzed, which could affect the BCR.

Basis for Comment

USACE policy (ER 1105-2-100, section 10; USACE, 2000) requires planners to identify and clearly describe areas of risk and uncertainty in their analyses so that decisions can be made with knowledge of the degree of reliability of the estimated benefits and costs and of the effectiveness of alternative plans. USACE has explicitly identified various areas of risk and uncertainty for this study (DIFR/DEA/DFONSI, Section 8.6). Relevant to this concern is the area fleet characteristics. These are one of the two prime areas to minimize the risk associated with the uncertainty and USACE has chosen what they consider to be a conservative approach primarily associated with ship drafts (Section 8.6.1). These drafts are critical because they become the source of benefits of the project. Documentation of how these were chosen is not very clear. The Panel has identified several related issues of uncertainty in the report. A sensitivity analyses of the uncertainty issues would identify the critical information and assumptions below:

The potential problem for the TSP is the risk and uncertainty associated with commodity projections and attendant ship configuration. Additionally, the Shell Gulf of Mexico revised report (2014) details potential exploration and oil production. It does not appear that the drill ships noted in this report drawing about 27 feet could use Nome. The exploration effort also includes an ice management vessel drawing 27 feet and an anchor handling vessel drawing 28 feet. It is unclear if they are included the analysis.
The more numerous shallow draft vessels could use Nome, but the report states “most [vessels] will remain through season….Up to 30 round trips (combined for all OSVs [offshore service vessels]) for resupply between drilling unit and Dutch Harbor/Kotzebue during each exploration drilling season.” This is despite the 2006 changes to the Nome port, which now has a larger and deeper harbor. This information increases the uncertainty over the projected oil exploration traffic for Nome. The following summarizes the Panel’s key concerns:

- The source of the benefits, by traffic, is not fully presented. Knowing the relative importance of vessels and markets helps to determine which assumptions need further or specific analysis.
- The new routes may require patrols and response vehicles, but the volume of such new traffic is not detailed.
- The BCR is not robust. If the traffic, cost, or timing assumptions are missed, the BCR may become less than unity. This concern is mitigated somewhat by the SMART process, which allows one to balance risk against cost and information completeness. However, the following items are not fully addressed in the report:
    - Some existing Arctic vessel dimensions (length x beam x draft, in feet) are appropriate for consideration, but are not mentioned in the report or the appendices.
    - Ship owners may have keel clearance rules, perhaps imposed by insurance policies. Keel clearance policies and rules for ships projected to call at Nome are not explicitly addressed in the report.
    - The future without-project used responses or data from three of the eight firms exploring in the region (Shell Oil, Conoco Phillips, and Stat Oil), but it is unclear whether these responses are typical or drivers of the exploration.
    - The source of the level or almost level 2040 to 2070 future projections on fuel, dry cargo,

and gravel volumes is unclear. Some benefits may not be accounted for in the project.

- The exact cause of the exploration activities that "experienced issues" is unclear, as is whether they could possibly return in the future.
- Cruise ships are assumed to increase 4.8% annually until 2040, but there is no evidence that there are any interviews or data to support that growth other than historical trends.

Significance – Medium

The above uncertainties need to be addressed in the report to support the identified crucial benefits of the project.

Recommendation for Resolution

1. Analyze and summarize the traffic projections by ships expected, source of ships, ships in the harbor simulation, and timing/congestion costs.
2. Review and present ship configuration by traffic in the report.
3. Add information in the report about keel clearance rules of government and commercial vessels that will enter the improved port and discuss how these rules would constrain ship access.
4. Conduct sensitivity analyses of volume, timing, and configuration of vessels, at a minimum.
5. Indicate the impact of the varying assumptions under sensitivity analysis on the BCR.
6. Provide a review of applications for federal permits for oil exploration that could impact Nome traffic as required by ER 1105-2-100, Exhibit G-7.
7. Provide the under-keel clearances used and a basis for them.

Literature Cited

Shell Gulf of Mexico Inc. (2014). Draft Revised Outer Continental Shelf Lease Exploration Plan, Chukchi Sea, Alaska, rev 2, August 2014. Available online at: http://www.boem.gov/EP-PUBLIC-VERSION/.
USACE (2000). Planning – Planning Guidance Notebook. Engineer Regulation (ER) 1105-2-100. Department of the Army, U.S. Army Corps of Engineers, Washington, D.C. April 22.

Final Panel Comment 4

Lightering in the TSP is not distinguished or fully considered relative to current lightering, which may impact congestion costs.

Basis for Comment

- Lightering needs for some of the existing and future projected traffic do not seem to be fully considered in the TSP, which could result in unanticipated congestion costs affecting the BCR to some degree. The black box nature of HarborSym requires the Panel to look at the following outcomes and assumptions in the report:
- The source of the benefits or problems by specific traffic types is not fully presented. Knowing the relative importance of specific vessels and markets within the HarborSyms model helps determine which assumptions need further or specific analysis.
- The recommended channel depth at -28 feet MLLW, (which conventionally considered medium-draft by the shipping industry and analysts of the industry), excludes all but the smallest offshore oil and gas vessels, most Coast Guard ships (including medium and heavy ice breakers and national security patrol cutters), oil tankers, and most long-distance cruise ships. These deep draft vessels may require lighterage service while anchored offshore, but an intensive lightering operation is not addressed in the TSP. Lighterage service from the TSP is not distinguished from lighterage service available from the existing port.
- The report states that savings from reduced lightering were not considered at this time, but does not give a reason. It appears the deeper channel would result in fewer lightering trips but longer unloading times. It is unclear whether, in terms of congestion, the longer unloading time per trip would be offset by the extra number of lightering trips in the present condition. It is also unclear whether the impact on potential cost savings would be a small percentage of the projected overall cost savings.

Significance – Medium

The lack of detail on lightering, caused by lack of detail on traffic type projections, increases the uncertainty surrounding the BCR.

Recommendation for Resolution

1. Determine the volume of differing traffic types over time.
2. Investigate and discuss the expected needs of such traffic for lightering services and the volume of those needs.
3. Determine if congestion can be expected as a result of this lightering.
4. Discuss how lightering affects the HarborSym results in terms of transportation savings associated with larger loads and the impact of potential congestion associated with higher, future traffic and longer barge unloading times.
5. Estimate congestion costs and benefits in the with-project situation.

Final Panel Comment 5

Seismic stability analyses are not presented for Alternative Plans at Nome, Point Spencer, and Cape Riley, which could affect estimated construction and operation, maintenance, repair, replacement, and rehabilitation (OMRRR) costs.

Basis for Comment

DIFR/DEA/DFONSI, Section 2.3.2, Other Planning Considerations, assumes that subsurface and sub-bottom conditions are not a constraint to the plan formulation. This effectively assumes that subsurface and sub-bottom conditions, which are known at Nome, represent conditions at the Cape Riley and Point Spencer sites. Geotechnical engineering analyses were done for the Nome site only and were based on work by TAMS in 1982, but did not include seismic design considerations, particularly soil liquefaction, seismic slope stability, bearing capacity, and settlement of the causeway, breakwater, dredge slope, and caisson dock structures. There is sufficient sub-bottom information at Nome to perform preliminary geotechnical seismic analyses. If it is determined that seismic design considerations are an issue, then it would result in additional construction costs and/or future maintenance costs to repair the structures and dredge the harbor, thereby reducing the BCR. The data seem to indicate that seismic issues may not significantly affect the cost estimate for Nome and the TSP, but preliminary geotechnical seismic analysis of soil liquefaction and seismic stability of dredged slopes, causeway, breakwater, and caisson dock structures is needed.

Significance – Medium

A description of seismicity and the results of preliminary seismic analyses for the Nome facility are needed to support the TSP and BCR.

Recommendation for Resolution

1. Present information on the seismicity of this region in DIFR/DEA/DFONSI, Section 4.2, Physical Environment.
2. Perform liquefaction, seismic slope stability, bearing capacity, and settlement analyses of the causeway, breakwater, and caisson dock structures.
3. Perform seismic stability analyses for dredged slopes.
4. Include any additional construction and/or maintenance costs to mitigate seismic impacts in the Nome project cost.

Literature Cited

TAMS (1982). Port of Nome, Alaska, Design Memorandum. Tippetts-Abbett-McCarthy-Stratton (TAMS) Engineers.

Final Panel Comment 6

Underwater noise impacts from construction are not analyzed to determine if a “take” of ESA-listed marine mammals could occur.

Basis for Comment

The DIFR/DEA/DFONSI report acknowledges (sec. 9.2.2.2 pg. 127) that there will be piles driven in the marine environment as a component of the proposed development of a deep water port in Nome. This will impart underwater noise into the marine environment where marine mammals have been documented, some of which are ESA-listed. Guidance from the National Marine Fisheries Service (NMFS) under the Marine Mammal Protection Act has dictated thresholds for varying levels of “take” based on the intensity of the sound field. To determine if a “take” is likely to occur, noise propagation analysis is typically undertaken to determine the size of the “take” area for each of the threshold levels. The report supplies some information that would have been generated by this type of analysis, but the full output of the analysis is not presented. Therefore, the “take” analysis for marine mammals is incomplete and the finding of “no effect” cannot be reasonably supported.

Significance – Medium

Risk to marine mammals cannot be fully determined without performing the noise propagation analysis and studying its output.

Recommendation for Resolution

1. Evaluate noise propagation due to pile driving activities using an appropriate model (at minimum, the practical spreading model available from NMFS). Analysis should include each pile type (i.e., diameter) and driving method (vibratory and/or impact driving).
2. Determine the project’s “take” area based on the Harassment thresholds put forth by NMFS. The 120dB area should be adopted as the “project area.”
3. Determine the average density of marine mammals by species that may co-occur within designated “take” areas.
4. Determine if a “take” is likely to occur and, if so, revise the report’s “take” statement.
5. Modify construction Best Management Practices (BMPs) to reduce or eliminate marine mammal “takes” due to noise impacts.

Final Panel Comment 7

The rate of delivery of metals of concern to the nearshore could be higher than naturally occurring, especially in dredged material from areas that are not subject to annual dredging.

Basis for Comment

The DIFR/DEA/DFONSI report suggests (sec 9.2, pg. 125) that naturally occurring particle-bound contaminants (e.g., arsenic) and legacy contamination from historical mining activities (e.g., mercury) can be associated with sediments in the area. There are no chemical characterization data presented for the proposed dredge areas. While there is a maintenance-dredging program in place, the previously dredged areas only make up a portion of the much larger proposed area to be dredged for the construction of the expanded navigation basin. The beneficial reuse of this sediment as beach nourishment could potentially re-suspend sediments with an unknown contaminant load at a rate that is an order of magnitude greater than current maintenance dredging efforts. This creates a pathway for these contaminants to directly affect essential fish habitat (EFH) of juvenile salmon, juvenile king crab, and other fisheries, as well as indirectly affect marine mammals that use these as prey species.

Significance – Medium

Risk to essential fish habitat (EFH) and marine mammals that use the project area cannot be determined without adequate documentation of contaminant concentrations and determining if these contaminants will be mobilized first by construction activities and later by maintenance dredging of the proposed project.

Recommendation for Resolution

1. Determine and present the concentration of metal contaminants within the proposed dredge prism.
2. Determine if these metals of concern will be mobilized during construction and operations and maintenance (O&M) activities.
3. Determine the realm of influence of potentially mobilized contaminants through modeling of the mixing zone. A typical approach would be to use CORMIX or other models endorsed by the U.S. Environmental Protection Agency.
4. Should mobilization of contaminants in the nearshore have an adverse effect on marine mammals or EFH species, modify construction BMPs to reduce or eliminate spread of potentially contaminated particles.

Final Panel Comment 8

The effects of Snake River flow and of Norton Sound wind-induced water level changes do not appear to be addressed in predictions of new circulation patterns within inner harbor expansion and deepening of the TSP, which may affect the assessment of risks to EFH.

Basis for Comment

The DIFR/DEA/DFONSI acknowledges that tidal circulation is weak (Appendix A, Section 9.1.3) and that river flow and wind-induced water level changes dominate forces of circulation in the deepened and expanded inner harbor of the TSP. The report further acknowledges that physical and numerical simulations are appropriate tools to assess circulation, but instead applies aspect ratio rules-of-thumb derived for enclosed small boat harbors subject only to tidal circulation to discount concerns for altered sedimentation patterns and potential delivery of contaminants. Uncertainty concerning circulation changes induced by new dredging inside the port imposes risks of adverse impacts on EFH that are not addressed in the report.

Significance – Medium

Risk to EFH through incorrectly predicted sediment delivery and increased need for maintenance dredging is affected by the accuracy of predicted circulation changes within inner harbor expansion and deepening of the TSP.

Recommendation for Resolution

1. Conduct analyses with assumptions and methods derived from the study of circulation within coastal jetties containing river flow in low tide ranges.
2. Alternatively, conduct physical or numerical simulations that accurately predict circulation changes in potential sedimentation, concentration of contaminants, or other changes to EFH.

Final Panel Comment 9

The statement “no long term adverse effects are expected” relative to EFH for affected species is not supported with the level of detail presented in the report.

Basis for Comment

Under the Magnuson-Stevens Act, projects with a marine nearshore component are required to be evaluated for the effects on the long-term biological and economic sustainability of our nation's marine fisheries out to 200 nautical miles from shore. The proposed project will modify EFH for the five species of Pacific salmon, red king crab, and potentially other ground fish and forage fish species. The report does not adequately describe how the action might affect EFH for these species. Both modification of soft sediment habitat and liberation of sediment-bound contaminants are pertinent to this discussion. The determination of “the action will temporarily affect areas designated as EFH, however, no long term adverse effects are expected” cannot be supported with the level of detail presented in the DIFR/DEA/DFONSI report in Sections 4 and 9.

Significance – Medium/Low

Risk to EFH cannot be determined with the information provided in the report.

Recommendation for Resolution

1. Provide in the main report much of the detail provided in Appendix I, Essential Fish Habitat Assessment.
2. Provide site-specific statements of project effects on EFH in the DIFR/DEA/DFONSI .
3. Add text to Section 4.3.4 on red king crab.
4. Delete superfluous descriptions of species that are not relevant to the project area.
5. Revise the special aquatic habitat section(s) (4.3.3 and 9.2.4) to address occurrence of eelgrass and/or rockweed in the vicinity of the proposed project.

Final Panel Comment 10

The potential direct and indirect impacts on aquatic resources, specifically eelgrass, rockweed, and existing encrusting community, cannot be determined using the data provided.

Basis for Comment

The DIFR/DEA/DFONSI report makes assertions on gains and losses of aquatic resources (Sec. 9.1.2) due to project construction and operations. There is little documentation of these types of habitats and their associated functions within the report. The report proposes that the displacement of soft sediment habitat and associated loss of function is offset by the creation of hardened habitat and the associated encrusting community, of which the largest component is the extension of the breakwater. Based on the proposed project elements, the loss of soft sediment habitat is larger than what would be replaced by hard substrate (based on a two-dimensional area alone). Therefore, the three-dimensional aspect of the breakwater is counted in total area gained. With this assumption, area gained seems more than adequate, but overall habitat quality (function) cannot be determined with the information presented. There is no clear description of either soft or hard habitat communities that would be displaced or created or the potential functions provided. Therefore, the direct or indirect net benefit/impact to the project area cannot be determined for these habitat types. If “no net loss” of habitat function cannot be determined, then compensatory mitigation for the loss of habitat function may be required.

Significance – Medium/Low

The evidence presented to confirm “no net loss” of habitat area/function associated with the proposed project design is minimal; therefore, the need for compensatory mitigation cannot be determined for the project.

Recommendation for Resolution

1. Provide more site-specific information for soft sediment habitat that occurs within the project area.
2. Provide more site-specific information for the existing encrusting community that currently exists on the breakwater.
3. Perform a functional assessment to quantitatively determine if the functions lost by displacing the soft sediment community are gained through enhancing the encrusting community through the addition of hard substrate that can be colonized.

Final Panel Comment 11

Potential impacts of climate change are not described with regard to design of harbor features and to analysis of associated economic benefits.

Basis for Comment

USACE policy (USACE, 2014) calls for integrated climate change adaptation planning and actions in investigations of this type. The Alaska Deep-Draft Arctic Port System Study discusses sea level change predictions, but makes no explicit application of sea level change to harbor features such as jetty crest elevation, channel depth, or freeboard of inner harbor facilities. These critical dimensions that affect cost of construction and efficiency of port operations. Other aspects of climate change are neither quantitatively predicted nor applied to designs and associated economic analyses, such as extended ice-free seasons, increase in frequency and intensity of storms, and related wind, wave, and storm surge exposures. These conditions control access of ships to the port and affect the risk of damages to port features such as the jetty extension.

Significance – Medium/Low

Climate change adaptation planning has not been incorporated into the project to the degree required by USACE policy.

Recommendation for Resolution

1. Conduct and incorporate analyses of climate change impacts on sea ice, wind, wave, and storm surge applying the results to engineering design and economic benefit analyses in the report.

Literature Cited

USACE (2014). Climate Change Adaptation Plan. U.S. Army Corps of Engineers, USACE Climate Change Preparedness and Resilience Steering Committee. Available online at: http://www.usace.army.mil/Portals/2/docs/Sustainability/Performance_Plans/2014_USACE_Climate_Change_Adaptation_Plan.pdf

Final Panel Comment 12

Engineering design criteria are applied without quantitative assessment of risk with regard to parameters such as return period and annual exceedance probability (AEP).

Basis for Comment

Discussions of design criteria in the DIFR/DEA/DFONSI report (Appendix A 7.6.1) imply that the probability of a 50-year return period event is no more than 2% throughout an assumed 50-year life of the project. The probability that a 50-year return period event will be exceeded sometime during a 50-year life is 63% (Liu and Burcharth, 1998). The probability that a 100-year event will be exceeded sometime during a 50-year life is 39% (Liu and Burcharth, 1998).

Given the emphasis on risk assessment in USACE SMART planning procedures, risk should be quantitatively assessed as the product of the probability of adverse consequences and the cost of those consequences for engineering design criteria, where return period or corresponding AEP values are applied. In the context of this design, the cost of a jetty failure would include cost of damages to protected infrastructure and ships plus cost of jetty repair. A 100-year event-based design might have a lower risk. No such risk analysis is presented in the report.

Significance – Low

Risk will not be adequately addressed without quantitative assessment in development of design criteria, since the SMART planning process emphasizes assessment of risk.

Recommendation for Resolution

1. Apply quantitative risk assessment in development of engineering design criteria and discuss associated implications to project costs and economic benefits.

Literature Cited

Liu, Z., and Burcharth, H. F. (1998). Encounter Probability of Significant Wave Height. Aalborg: Department of Mechanical Engineering, Aalborg University, Denmark.

Final Panel Comment 13

The cost-sharing details for the breakwater and datum are not clearly defined and may impact the cost-share percentages; and the identification of the least cost dredging and disposal plan have not been stated which could impact project cost.

Basis for Comment

Table 39 (DIFR/DEA/DFONSI, p. 118) lists the cost-sharing responsibilities. Three items in the table need further explanation to ensure that the least cost alternative and responsibilities of the non-Federal sponsor are properly identified.

The first item is listed under the local service facilities category. It states that the non-Federal sponsor is responsible for 100% of a $34M breakwater. Engineer Regulation (ER) 1105-2-100 (USACE, 2000) states (p. 3-1), “General navigation features of harbor or waterway projects are channels, jetties or breakwaters….” It further states (p. E-25), “Measures resulting in increases in net income of commercial navigation activities or in decreases in commercial transportation costs will be evaluated and cost shared as navigation measures (harbor). This includes measures to prevent wave induced damages to berthed commercial vessels and to docks, piers and slips used in commercial navigation activities.” It therefore appears to the Panel that breakwater cited in the table should probably be a general navigation feature and cost-shared on the basis of the depth of the channel.

The second item of concern involves identification of the base plan, which is the least-cost dredging plan. While USACE policy allows this to be addressed in preconstruction engineering and design (PED), the inconsistencies in the DIFR/DEA/DFONSI report and its appendices involve identification of the least cost placement and cost sharing if on, or adjacent to, beach is not the least-cost disposal area option. The report does not mention using open water disposal or whether it is less costly, but notes that in the past an open water disposal site was used. The report claims that dredged material placed on the beach constitutes a beneficial use in providing an undefined storm damage risk reduction function. ER 1105-2-100 states (p. E-67), “Construction and maintenance dredging of Federal navigation projects shall normally be accomplished in the least costly manner possible.” It adds (p. E-72), “Where a beneficial use is part of the Base Plan, it shall be treated as a general navigation O&M component. Beneficial uses which are not part of the Base Plan shall be considered separable elements of the management plan, and will be pursued in accordance with guidance implementing other available authorities.”

The third and final item is a minor issue because of the minor difference in dredging depth involved, but the depth increments for cost sharing are set at a datum reference of mean low water in Exhibit E-1 of ER 1105-2-100 and not mean lower low water. Thus the location of the -20 foot depth, which is the breakpoint in cost-sharing percentage, is affected by the choice of datum. In the case of Nome, mean low water and mean lower low water are practically the same depth, but if ER 1105-2-100 is to be taken literally, the cost share amount would change slightly.

Significance – Low

The understanding and accuracy of the project as described in the report is unclear because the breakwater cost share and the datum reference appear to be mislabeled or incorrect, and because the disposal base cost is not clearly described or presented.

Recommendation for Resolution

1. Identify the breakwater cited in Table 39 and evaluate whether it would perform as a general navigation feature. If it does, modify Table 39 to achieve the correct cost-share percentages.
2. Identify in the report the least-cost dredging and disposal plan. Further, specify in the report if the project is to employ a nearshore or on shore placement as a beneficial use and whether this constitutes the base plan. State any cost-sharing ramifications associated with such beneficial use if they exist.
3. Acknowledge in the report whether USACE policy allows mean lower low water as the datum for cost sharing. If not, modify the cost-shared amounts to reflect the appropriate datum.

Literature Cited

USACE (2000). Planning – Planning Guidance Notebook. Engineer Regulation (ER) 1105-2-100. Department of the Army, U.S. Army Corps of Engineers, Washington, D.C. April 22.

5. REFERENCES

Liu, Z., and Burcharth, H. F. (1998). Encounter Probability of Significant Wave Height. Aalborg: Department of Mechanical Engineering, Aalborg University, Denmark.

OMB (2004). Final Information Quality Bulletin for Peer Review. Executive Office of the President, Office of Management and Budget, Washington, D.C. Memorandum M-05-03. December 16.

Shell Gulf of Mexico Inc. (2014). Draft Revised Outer Continental Shelf Lease Exploration Plan, Chukchi Sea, Alaska, rev 2, August 2014. Available online at: http://www.boem.gov/EP-PUBLIC-VERSION/.

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USACE (2012). Water Resources Policies and Authorities: Civil Works Review. Engineer Circular (EC) 1165-2-214. Department of the Army, U.S. Army Corps of Engineers, Washington, D.C. December 15.

USACE (2000). Planning – Planning Guidance Notebook. Engineer Regulation (ER) 1105-2-100. Department of the Army, U.S. Army Corps of Engineers, Washington, D.C. April 22.

APPENDIX A

IEPR Process for the Alaska Deep-Draft Arctic Port System Study Project

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A.1 Planning and Conduct of the Independent External Peer Review (IEPR)

Table A-1 presents the schedule followed in executing the Draft Integrated Feasibility Report (FR), Draft Environmental Assessment (EA), and Draft Finding of No Significant Impact (FONSI) Alaska Deep-Draft Arctic Port System Study Independent External Peer Review (hereinafter: Alaska Deep-Draft Arctic Port System Study IEPR). Due dates for milestones and deliverables are based on the award/effective date of February 26, 2015. The review documents were provided by U.S. Army Corps of Engineers (USACE) on February 26, 2015. Note that the work items listed under Task 6 occur after the submission of this report.

Battelle will enter the 13 Final Panel Comments developed by the Panel into USACE's Design Review and Checking System (DrChecks), a Web-based software system for documenting and sharing comments on reports and design documents, so that USACE can review and respond to them. USACE will provide responses (Evaluator Responses) to the Final Panel Comments, and the Panel will respond (BackCheck Responses) to the Evaluator Responses. All USACE and Panel responses will be documented by Battelle. Battelle will provide USACE and the Panel a pdf printout of all DrChecks entries, through comment closeout, as a final deliverable and record of the IEPR results.

Table A-1. Alaska Deep-Draft Arctic Port System Study IEPR Schedule

Task	Action	Due Date
1	Award/Effective Date	2/26/2015
	Review documents available	2/26/2015
	Public comments available	4/3/2015
	*Battelle submits draft Work Plan	3/12/2015
	USACE provides comments on draft Work Plan	3/19/2015
	*Battelle submits final Work Plan	3/26/2015
2	Battelle requests input from USACE on the conflict of interest (COI) questionnaire	3/5/2015
	USACE provides comments on COI questionnaire	3/9/2015
	*Battelle submits list of selected panel members	3/16/2015
	USACE confirms the panel members have no COI	3/18/2015
	Battelle completes subcontracts for panel members	3/26/2015
3	Battelle convenes kick-off meeting with USACE	3/5/2015
	Battelle sends review documents to panel members	3/27/2015
	Battelle convenes kick-off meeting with panel members	3/30/2015
	Battelle convenes kick-off meeting with USACE and panel members	3/31/2015

Table A-1. Alaska Deep-Draft Arctic Port System Study IEPR Schedule (continued)

Task	Action	Due Date
4	Panel members complete their individual reviews	4/27/2015
	Battelle sends public comment to Panel	4/28/2015
	Panel completes their review of the public comments	5/1/2015
	Battelle provides panel members with talking points for Panel Review Teleconference	5/1/2015
	Battelle convenes Panel Review Teleconference	5/4/2015
	Battelle provides Final Panel Comment templates and instructions to panel members	5/5/2015
	Panel members provide draft Final Panel Comments to Battelle	5/12/2015
	Panel drafts Final Panel Comment on public comments, if necessary	5/14/2015
	Battelle provides feedback to panel members on draft Final Panel Comments; panel members revise Final Panel Comments	5/13-5/20/2015
	Panel finalizes Final Panel Comments	5/21/2015
5	Battelle provides Final IEPR Report to panel members for review	5/21/2015
	Panel members provide comments on Final IEPR Report	5/28/2015
	Battelle submits Final IEPR Report to USACE*	6/1/2015
6	Battelle inputs Final Panel Comments to the Design Review and Checking System (DrChecks) and provides Final Panel Comment response template to USACE	6/1/2015
	Battelle convenes teleconference with USACE to review the Post-Final Panel Comment Response Process	6/1/2015
	Battelle convenes teleconference with Panel to review the Post-Final Panel Comment Response Process	6/1/2015
	USACE Project Delivery Team (PDT) provides draft Evaluator Responses to USACE Planning Center of Expertise (PCX) for review	6/15/2015
	USACE PCX reviews draft Evaluator Responses and works with USACE PDT regarding clarifications to responses, if needed	6/19/2015
	USACE PCX provides draft PDT Evaluator Responses to Battelle	6/22/2015
	Battelle provides the panel members the draft PDT Evaluator Responses	6/24/2015
	Panel members provide Battelle with draft BackCheck Responses	6/29/2015
	Battelle convenes teleconference with panel members to discuss draft BackCheck Responses	6/30/2015
	Battelle convenes Comment-Response Teleconference with panel members and USACE	7/1/2015
	USACE inputs final PDT Evaluator Responses to DrChecks	7/9/2015
	Battelle provides final PDT Evaluator Responses to panel members	7/13/2015

Table A-1. Alaska Deep-Draft Arctic Port System Study IEPR Schedule (continued)

Task	Action	Due Date
6	Panel members provide Battelle with final BackCheck Responses	7/16/2015
	Battelle inputs the panel members' final BackCheck Responses to DrChecks	7/23/2015
	Battelle submits pdf printout of DrChecks project file*	7/24/2015

a Deliverable.

b Task 6 occurs after the submission of this report

***c** The CWRB meeting was listed in the Performance Work Statement under Task 3 but was relocated in this schedule to reflect the chronological order of activities.*

At the beginning of the Period of Performance for the Alaska Deep-Draft Arctic Port System Study IEPR, Battelle held a kick-off meeting with USACE to review the preliminary/suggested schedule, discuss the IEPR process, and address any questions regarding the scope (e.g., clarify expertise areas needed for panel members). Any revisions to the schedule were submitted as part of the final Work Plan. The final charge consisted of 16 charge questions provided by USACE, two overview questions added by Battelle (all questions were included in the draft and final Work Plans), and general guidance for the Panel on the conduct of the peer review (provided in Appendix C of this final report). Battelle added two questions that seek summary information from the IEPR Panel.

Prior to beginning their review and within 2 days of their subcontracts being finalized, all the members of the Panel attended a kick-off meeting via teleconference planned and facilitated by Battelle in order to review the IEPR process, the schedule, communication procedures, and other pertinent information for the Panel. Battelle planned and facilitated a second kick-off meeting via teleconference during which USACE presented project details to the Panel. Before the meetings, the IEPR Panel received an electronic version of the final charge, as well as the Alaska Deep-Draft Arctic Port System Study review documents and reference materials listed below. The documents and files in bold font were provided for review; the other documents were provided for reference or supplemental information only.

- Alaska Deep-Draft Arctic Port System Feasibility Study (179 pages)
- Appendix A- Hydraulic and Hydrology (108 pages)
- Appendix B- Economics (252 pages)
- Appendix C- Cost Engineering (12 pages)
- Appendix D – Real Estate (15 pages)
- Appendix E- General Correspondence (10 pages)
- Appendix F-NEPA Correspondence (28 pages)
- Appendix G- Coordination Act Report (148 pages)
- Appendix H-CWA Section 404(b)(1) (20 pages)
- Appendix I-EFH Evaluation (34 pages)
- Decision Management Plan (5 pages)
- Public Comments (100 pages)
- Nome Harbor O&M Dredging EA and FONSI (70 pages)
- Navigation Improvement Final Interim FR and EA- Nome Alaska (205 pages)
- Risk Register (5 pages)
- USACE guidance, *Civil Works Review* (EC 1165-2-214), December 15, 2012

- Office of Management and Budget, *Final Information Quality Bulletin for Peer Review,* December 16, 2004.

About halfway through the review of the Alaska Deep-Draft Arctic Port System Study IEPR documents, a teleconference was held with USACE, the Panel, and Battelle so that USACE could answer any questions the Panel had concerning either the review documents or the project. Prior to this teleconference, Battelle submitted 16 panel member questions to USACE. USACE was able to provide responses to all the questions during the teleconference or the next day via email.

In addition, throughout the review period, USACE provided documents at the request of panel members. These documents were provided to Battelle and then sent to the Panel as additional information only and were not part of the official review. A list of these additional documents requested by the Panel is provided below.

- Alaska Deep Draft Arctic Ports Study – Multi-Criteria Decision Analysis (MCDA) Deep Draft Port Site Selection Analysis
- Jewett, 1999. Assessment of Red King Crabs Following Offshore Placer Gold Mining in Norton Sound, Vol 6, No 1.
- Jewett, 2013. Mining and Storm Induced Benthic Disturbances in Norton Sound, Alaska.
- Nome Base Drawing Plan 1a 1-450
- Nome Navigation Improvement Final Interim Feasibility Report Appendices.
- Ocean Discharge Criteria Evaluation for the Alaska Pollutant Discharge Elimination System-Norton Sound Large Dredge Placer Miners General Permit – Final
- Port of Nome Design Memo, TAMS 1982 – Armor Size Section, Breakwater Section, Geotechnical Figures and Geotechnical Sections
- Shell Gulf of Mexico Inc, Draft Revised Outer Continental Shelf Lease Exploration Plan, Chukchi Sea, Alaska, rev 2, August 2014.

A.2 Review of Individual Comments

The Panel was instructed to address the charge questions/discussion points within a charge question response table provided by Battelle. At the end of the review period, the Panel produced individual comments in response to the charge questions/discussion points. Battelle reviewed the comments to identify overall recurring themes, areas of potential conflict, and other overall impressions. At the end of the review, Battelle summarized the individual comments in a preliminary list of 18 overall comments and discussion points. Each panel member's individual comments were shared with the full Panel in a merged individual comments table.

A.3 IEPR Panel Teleconference

Battelle facilitated a four-hour teleconference with the Panel so that the panel members could exchange technical information. The main goal of the teleconference was to identify which issues should be carried forward as Final Panel Comments in the Final IEPR Report and decide which panel member should serve

as the lead author for the development of each Final Panel Comment. This information exchange ensured that the Final IEPR Report would accurately represent the Panel's assessment of the project, including any conflicting opinions. The Panel engaged in a thorough discussion of the overall positive and negative comments, added any missing issues of significant importance to the findings, and merged any related individual comments. At the conclusion of the teleconference, Battelle reviewed each Final Panel Comment with the Panel, including the associated level of significance, and confirmed the lead author for each comment.

At the end of these discussions, the Panel identified 14 comments and discussion points that should be brought forward as Final Panel Comments.

A.4 Preparation of Final Panel Comments

Following the teleconference, Battelle prepared a summary memorandum for the Panel documenting each Final Panel Comment (organized by level of significance). The memorandum provided the following detailed guidance on the approach and format to be used to develop the Final Panel Comments for the Alaska Deep-Draft Arctic Port System Study IEPR:

- Lead Responsibility: For each Final Panel Comment, one Panel member was identified as the lead author responsible for coordinating the development of the Final Panel Comment and submitting it to Battelle. Battelle modified lead assignments at the direction of the Panel. To assist each lead in the development of the Final Panel Comments, Battelle distributed the merged individual comments table, a summary detailing each draft final comment statement, an example Final Panel Comment following the four-part structure described below, and templates for the preparation of each Final Panel Comment.
- Directive to the Lead: Each lead was encouraged to communicate directly with the other panel member as needed and to contribute to a particular Final Panel Comment. If a significant comment was identified that was not covered by one of the original Final Panel Comments, the appropriate lead was instructed to draft a new Final Panel Comment.
- Format for Final Panel Comments: Each Final Panel Comment was presented as part of a four-part structure:
    1. Comment Statement (succinct summary statement of concern)
    2. Basis for Comment (details regarding the concern)
    3. Significance (high, medium/high, medium, medium/low, and low; see description below)
    4. Recommendation(s) for Resolution (see description below).
- Criteria for Significance: The following were used as criteria for assigning a significance level to each Final Panel Comment:

1. **High:** Describes a fundamental issue with the project that affects the current recommendation or justification of the project, and which will affect its future success, if the project moves forward without the issue being addressed. Comments rated as high indicate that the Panel determined that the current methods, models, and/or analyses contain a "showstopper" issue.

2. **Medium/High:** Describes a potential fundamental issue with the project, which has not been evaluated at a level appropriate to this stage in the SMART Planning process. Comments rated

as medium/high indicate that the Panel analyzed or assessed the methods, models, and/or analyses available at this stage in the SMART Planning process and has determined that if the issue is not addressed, it could lead to a “showstopper” issue.

3. **Medium:** Describes an issue with the project, which does not align with the currently assessed level of risk assigned at this stage in the SMART Planning process. Comments rated as medium indicate that, based on the information provided, the Panel identified an issue that would raise the risk level if the issue is not appropriately addressed.

4. **Medium/Low:** Affects the completeness of the report at this time in describing the project, but will not affect the recommendation or justification of the project. Comments rated as medium/low indicate that the Panel does not currently have sufficient information to analyze or assess the methods, models, or analyses.

5. **Low:** Affects the understanding or accuracy of the project as described in the report, but will not affect the recommendation or justification of the project. Comments rated as low indicate that the Panel identified information that was mislabeled or incorrect or that certain data or report section(s) were not clearly described or presented..

- Guidelines for Developing Recommendations: The recommendation section was to include specific actions that USACE should consider to resolve the Final Panel Comment (e.g., suggestions on how and where to incorporate data into the analysis, how and where to address insufficiencies, areas where additional documentation is needed).

Battelle reviewed and edited the Final Panel Comments for clarity, consistency with the comment statement, and adherence to guidance on the Panel’s overall charge, which included ensuring that there were no comments regarding either the appropriateness of the selected alternative or USACE policy. During the Final Panel Comment development process, the Panel determined that one of the Final Panel Comments no longer met the criteria for at least a low-level of significance. At the end of this process, 13 Final Panel Comments were prepared and assembled. There was no direct communication between the Panel and USACE during the preparation of the Final Panel Comments. The Final Panel Comments are presented in the DIFR/DEA/DFONSI report.

A.5 Conduct of the Public Comment Review

Battelle received public comments on the Alaska Deep-Draft Arctic Port System project (approximately 21 written comments equating to100 total pages of comments) from USACE on April 21, 2015. Battelle then sent the public comments to the panel members on April 25 in addition to one charge questions:

1. **Does information or concerns raised in the public comments raise any additional discipline-specific technical concerns with regard to the overall report?**

The panel members were charged with responding to the charge question above.

The Panel produced individual comments in response to the charge question. Battelle reviewed the comments to identify any new technical concerns that had not been previously identified during the initial IEPR. Upon review, Battelle determined and the Panel confirmed that no new issues or concerns were identified other than those already covered in the Final Panel Comments.

APPENDIX B

Identification and Selection of IEPR Panel Members
for the Alaska Deep-Draft Arctic Port System Study Project

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B.1 Panel Identification

The candidates for the Draft Integrated Feasibility Report (FR), Draft Environmental Assessment (EA), and Draft Finding of No Significant Impact (FONSI) Alaska Deep-Draft Arctic Port System Study (hereinafter: Alaska Deep-Draft Arctic Port System Study IEPR) Panel were evaluated based on their technical expertise in the following key areas: engineering, geotechnical engineering, economics, environmental and plan formulation. These areas correspond to the technical content of the Alaska Deep-Draft Arctic Port System Study IEPR review documents and overall scope of the Alaska Deep-Draft Arctic Port System Study project.

To identify candidate panel members, Battelle reviewed the credentials of the experts in Battelle's Peer Reviewer Database, sought recommendations from colleagues, contacted former panel members, and conducted targeted Internet searches. Battelle evaluated these candidate panel members in terms of their technical expertise and potential conflicts of interest (COIs). Of these candidates, Battelle chose the most qualified individuals, confirmed their interest and availability, and ultimately selected five experts for the final Panel. The remaining candidates were not proposed for a variety of reasons, including lack of availability, disclosed COIs, or lack of the precise technical expertise required.

The candidates were screened for the following potential exclusion criteria or COIs.[1] These COI questions serve as a means of disclosure and to better characterize a candidate's employment history and background. Providing a positive response to a COI screening question did not automatically preclude a candidate from serving on the Panel. For example, participation in previous USACE technical peer review committees and other technical review panel experience was included as a COI screening question. A positive response to this question could be considered a benefit.

- Previous and/or current involvement by you or your firm[2] in the Alaska Deep-Draft Arctic Port System Study project, including the project's PDD
- Previous and/or current involvement by you or your firm[2] in deep draft navigation projects in Alaska.
- Previous and/or current involvement by you or your firm[2] in the Alaska Deep-Draft Arctic Port System Study -related projects.
- Previous and/or current involvement by you or your firm[2] in the conceptual or actual design, construction, or O&M of any projects in the Alaska Deep-Draft Arctic Port System Study -related projects.
- Current employment by the U.S. Army Corps of Engineers (USACE).
- Previous and/or current involvement with paid or unpaid expert testimony related to the Alaska Deep-Draft Arctic Port System Study.
- Previous and/or current employment or affiliation with the non-Federal sponsors (State of Alaska Department of Transportation and Public Facilities) or any of the following cooperating Federal,

[1] Battelle evaluated whether scientists in universities and consulting firms that are receiving USACE-funding have sufficient independence from USACE to be appropriate peer reviewers. See OMB (2004, p. 18), "….when a scientist is awarded a government research grant through an investigator-initiated, peer-reviewed competition, there generally should be no question as to that scientist's ability to offer independent scientific advice to the agency on other projects. This contrasts, for example, to a situation in which a scientist has a consulting or contractual arrangement with the agency or office sponsoring a peer review. Likewise, when the agency and a researcher work together (e.g., through a cooperative agreement) to design or implement a study, there is less independence from the agency. Furthermore, if a scientist has repeatedly served as a reviewer for the same agency, some may question whether that scientist is sufficiently independent from the agency to be employed as a peer reviewer on agency-sponsored projects."

[2] Includes any joint ventures in which a panel member's firm is involved and if the firm serves as a prime or as a subcontractor to a prime.

State, County, local and regional agencies, environmental organizations, and interested groups: Alaska Mining Association, Alaska Railroad Corporation, Alaska Department of Natural Resources, Alaska Department of Commerce and Economic Development, Alaska Industrial Development and Export Authority, Alaska Partnership for Economic Development, U.S Coast Guard, Alaska Sea Grant, and the U.S. Arctic Research Commission (for pay or pro bono).

- Past, current, or future interests or involvements (financial or otherwise) by you, your spouse, or your children related to the Nome, Alaska region.
- Current personal involvement with other USACE projects, including whether involvement was to author any manuals or guidance documents for USACE. If yes, provide titles of documents or description of project, dates, and location (USACE district, division, Headquarters, ERDC, etc.), and position/role. Please highlight and discuss in greater detail any projects that are specifically with the Alaska District.
- Previous or current involvement with the development or testing of models that will be used for or in support of the Alaska Deep-Draft Arctic Port System Study, including ADCIRC, STWAVE, HarborSym, and Cost Effectiveness/Incremental Cost Analysis (CE/ICA).
- Current firm[2] involvement with other USACE projects, specifically those projects/contracts that are with the Seattle District. If yes, provide title/description, dates, and location (USACE district, division, Headquarters, ERDC, etc.), and position/role. Please also clearly delineate the percentage of work you personally are currently conducting for the Alaska District. Please explain.
- Any previous employment by the USACE as a direct employee, notably if employment was with the Alaska District. If yes, provide title/description, dates employed, and place of employment (district, division, Headquarters, ERDC, etc.), and position/role.
- Any previous employment by the USACE as a contractor (either as an individual or through your firm[2]) within the last 10 years, notably if those projects/contracts are with the Alaska District. If yes, provide title/description, dates employed, and place of employment (district, division, Headquarters, ERDC, etc.), and position/role.
- Previous experience conducting technical peer reviews. If yes, please highlight and discuss any technical reviews concerning deep draft navigation, and include the client/agency and duration of review (approximate dates).
- Pending, current or future financial interests in Alaska Deep-Draft Arctic Port System Study -related contracts/awards from USACE.
- A significant portion (i.e., greater than 50%) of personal or firm[2] revenues within the last 3 years from USACE contracts.
- A significant portion (i.e., greater than 50%) of personal or firm[2] revenues within the last 3 years from contracts with the non-federal sponsor (State of Alaska Department of Transportation and Public Facilities).
- Any publicly documented statement (including, for example, advocating for or discouraging against) related to the Alaska Deep-Draft Arctic Port System Study.
- Participation in relevant prior and/or current Federal studies relevant to this project and/or the Alaska Deep-Draft Arctic Port System Study.
- Previous and/or current participation in prior non-Federal studies relevant to this project and/or the Alaska Deep-Draft Arctic Port System Study.
- Is there any past, present, or future activity, relationship, or interest (financial or otherwise) that could make it appear that you would be unable to provide unbiased services on this project? If so, please describe.

Other considerations:

- Participation in previous USACE technical review panels
- Other technical review panel experience.

B.2 Panel Selection

In selecting the final members of the Panel, Battelle chose experts who best fit the expertise areas and had no COIs. The five final reviewers were either affiliated with consulting companies or were independent engineering consultants. Battelle established subcontracts with the panel members when they indicated their willingness to participate and confirmed the absence of COIs through a signed COI form. USACE was given the list of candidate panel members, but Battelle selected the final Panel.

Table B-1 presents an overview of the credentials of the final five members of the Panel and their qualifications in relation to the technical evaluation criteria. More detailed biographical information regarding each panel member and their area of technical expertise is given in Section B.3.

Table B-1. Alaska Deep-Draft Arctic Port System Study IEPR Panel: Technical Criteria and Areas of Expertise

Technical Criterion	Perrone	Bastian	Stutes	Casavant	Smith
Geotechnical Engineer					
Minimum 10 years' experience in geotechnical engineering	X				
Experience in:	X				
soil analysis and stability	X				
causeway and dock modifications	X				
channel dredging	X				
Experience in Alaska or the Arctic region (preferred)	X				
Active participation in related professional societies	X				
M.S. degree or higher in civil, hydraulic, or related engineering field	X				
Registered Professional Engineer	X				
Plan Formulation					
Minimum 10 years' experience in deep draft navigation analysis		X			
Experience evaluating and comparing alternative plans for USACE		X			
Experience evaluating and conducting National Economic Development (NED) analyses of deep draft navigation or inland navigation transportation-related projects		X			
Experience working directly for or with USACE in applying Principles and Guidelines (P&G) to civil works project evaluations		X			
Experience in Alaska or Arctic region (preferred)		X			
Active participation in related professional societies		X			
Minimum M.A. or M.S. degree		X			

Table B-1. Alaska Deep-Draft Arctic Port System Study IEPR Panel: Technical Criteria and Areas of Expertise (continued)

Technical Criterion	Perrone	Bastian	Stutes	Casavant	Smith
Environmental					
Minimum 10 years' experience in environmental, estuarine, and coastal processes			X		
Understanding of ecological responses to navigation channel improvements			X		
Understanding of environmental impacts associated with dredging			X		
Experience in the preparation of National Environmental Policy Act (NEPA) compliance documents			X		
Experience in Alaska or Arctic region (preferred)			X		
Active participation in related professional societies			X		
M.S. degree or higher in an appropriate field of study			X		
Economics					
Minimum 10 years' experience in deep draft navigation economic analysis				X	
Experience evaluating and comparing alternative plans for USACE				X	
Experience evaluating and conducting National Economic Development (NED) analyses of deep draft navigation or inland navigation transportation-related projects				X	
Experience working directly for or with USACE in applying Principles and Guidelines (P&G) to civil works project evaluations				X	
Experience in Alaska or Arctic region (preferred)				X	
Active participation in related professional societies				X	
Minimum M.A., M.S., or M.B.A. degree				X	
Engineer (Civil or Hydraulic)					
Minimum 10 years' experience in hydraulic or civil engineering					X
Experience in:					X
deep draft navigation channel design					X

Table B-1. Alaska Deep Draft Navigation Arctic Port System IEPR Panel: Technical Criteria and Areas of Expertise (continued)

Technical Criterion	Perrone	Bastian	Stutes	Casavant	Smith
channel dredging					X
currents					X
channel modifications					X
Experience in Alaska or Arctic region (preferred)					X
Knowledge of preparation and/or evaluation of cost estimates is encouraged					X
Active participation in related professional societies					X
M.S. degree or higher in civil, hydraulic, or related engineering field					X
Registered Professional Engineer					X

B.3 Panel Member Qualifications

Vincent J. Perrone, P.E., Ph.D.

Role: Geotechnical engineering expert.
Affiliation: Perrone Consulting, Inc., P.S.

Dr. Perrone is the owner of Perrone Consulting, Inc., P.S. on Bainbridge Island, Washington. He holds a B.S. in civil engineering from Tufts University, an M.S. in geotechnical engineering from the Massachusetts Institute of Technology, and a Ph.D. in geotechnical engineering from Virginia Polytechnic Institute. He is also a registered professional engineer in Washington, Oregon, and Montana. Dr. Perrone has more than 40 years of professional geotechnical engineering experience on a wide variety of projects, primarily in the Pacific Northwest and including Alaska.

Dr. Perrone has demonstrated experience in soil behavior and stability analyses. Soil behavior was an early research interest: he wrote his Ph.D. thesis on soft clay behavior and his M.S. thesis on sand behavior for Cold Regions Research Lab. His expertise in soil behavior and experience in waterfront construction will be a key aspect in assessing appropriate dredging methods and dredge slope performance. His experience allows him to evaluate alternative approaches not only from a geotechnical engineering standpoint, but also to incorporate aspects of other project disciplines.

Dr. Perrone has been lead geotechnical engineer for numerous slope stability and embankment design projects. On the U.S. Navy Fuel Pier Slope Stabilization project, Whidbey Island Naval Air Station in Washington, he was project engineer for repair of riprap slopes, resulting in geotechnical recommendations for slope protection and stabilization of existing structure foundations at the top of the slope. He has also conducted slope stability analyses on numerous Puget Sound shoreline properties and projects. On the Gibraltar Road Landslide project on Fidalgo Island, Washington, as lead geotechnical engineer he investigated a 40-acre landslide adjacent to Similk Bay, conducting detailed site investigations and engineering analyses.

Dr. Perrone has also been involved in causeway and dock modification projects. Examples include the Port of Seattle Terminal 5 Dock Modifications project, where standard penetration tests and cone penetration tests were completed as a basis for geotechnical design of the new pier, bulkhead, and dredge slopes. Another example is the Blair Waterway Pier 23 Bulkhead Evaluation in Tacoma, Washington, where geotechnical explorations and engineering analyses were conducted to evaluate the stability and structural capacity of an existing sheetpile bulkhead adjacent to the new U.S. Army Reserve Center during removal of slag from the Blair Waterway. Construction options were provided that included staged construction, existing bulkhead modifications, or bulkhead replacement.

Dr. Perrone has done work on channel dredging projects including Akutan Boat Harbor in Akutan, Alaska, where he was principal engineer on an investigation of dredging methods and slope failures during construction of a 1000 foot diameter boat harbor. Excavation and dredging depths varied from about 25 to 30 feet. At Skagit River, Washington, he was lead geotechnical engineer for design of a pump station on the river, immediately adjacent to South Skagit highway. Pump station recommendations were provided for temporary excavation support, foundations, and river bank slope stabilization and protection. He was also project engineer for design of a new 1000 foot long Marine Power & Equipment Pier in the Duwamish River Waterway, Seattle, Washington. The project included dredging and installation of pile foundations consisting of 16-1/2 inch octagonal precast concrete piles to support 120 ton loads.

Dr. Perrone has conducted several projects in Alaska, including an evaluation of subbottom conditions in the Beauforte Sea, and a study of the airport expansion in Unalaska, which required 3.7 acres filled in at both ends, with 1.8 acres on the Unalaska Bay side, and 1.9 acres on the Dutch Harbor side.

Dr. Perrone is a member of the American Society of Civil Engineers (ASCE), the International Soil Mechanics and Foundation Engineers, and the Associated Soil and Foundation Engineers. He is past president of ASCE, Kitsap Branch, and has served as a technical paper reviewer for the American Society of Testing Materials.

David Bastian, P.E.

Role: Plan formulation expert.
Affiliation: Independent Consultant

Mr. Bastian is an independent consultant specializing in USACE plan formulation and cost analysis, compliance and policy review and hydraulic and river engineering. He earned a B.S. in civil engineering in 1968 from the Georgia Institute of Technology and a M.S. in river engineering in 1972 from Delft University, Holland. He has more than 35 years of previous experience both with USACE and as an independent consult. A registered professional engineer in Mississippi, he has managed interdisciplinary reviews of more than 70 feasibility reports and has participated as an economics expert on several USACE IEPR panels.

Mr. Bastian's experience in plan formulation and economic analysis for deep-draft navigation projects includes the development of economic input databases for deep-draft navigation studies at the Institute for Water Resources (IWR) (1980–1987); evaluation of deep-draft economic feasibility for enlarging the Panama Canal (1987–1993); review of deep-draft feasibility studies for economic justification in HQUSACE (1993–1998); and participation as a reviewer and/or author of deep-draft navigation studies (2001–present) for USACE districts, their architect-engineer (A/E) firms, and non-Federal sponsors. He has also provided review for non-Federal sponsors of IWR's HarborSym model.

Since 1993, Mr. Bastian has reviewed USACE studies evaluating and comparing alternative plans. He authored the navigation section of the USACE Planner's Workshop Manual; was co-editor of the USACE National Waterway Study; served a term as technical director of the tri-national Commission for the Study of Alternatives to the Panama Canal; and served as navigation expert in the Washington Level Review Center. He has participated in the economic analysis of channel enlargements on several major ports such as New York-New Jersey, Baltimore, Charleston, Houston, and Sabine-Neches for USACE feasibility reports. Mr. Bastian also has reviewed and judged dozens of deep- and shallow-draft feasibility studies for compliance in identifying the National Economic Development (NED) plan and evaluating NED costs and benefits. Additionally, he is intimately familiar with the National Economic Development Procedures Manual, Deep Draft Navigation, IWR report 10-R-4. In addition, as both an HQUSACE reviewer and a consultant, he has applied ER 1105-2-100 (Principles and Guidelines) to projects subject to Civil Works project evaluations.

With regard to Alaska, Mr. Bastian has reviewed the DeLong Mountain Harbor deepening study (2003) and has reviewed the feasibility study for deepening the Port of Anchorage Federal channels. He also reviewed a number of Alaskan small boat harbor studies in the late 1990s and served as co-author for the IWR Alaska Small Boat Harbor manual.

Mr. Bastian actively participates in the American Association of Port Authorities and the Western Dredging Association.

Jason P. Stutes, Ph.D.

Role: Environmental expert.
Affiliation: Hart Crowser, Inc.

Dr. Stutes is a nearshore ecologist and academic researcher with the consulting firm Hart Crowser, Inc., in Anchorage, Alaska. He has more than 14 years of experience in the areas of marine and estuarine biology and benthic ecology, with an emphasis on nearshore/stream habitat issues and cross-habitat connectivity. He earned his Ph.D. (2007) and M.S. (2000) in marine sciences from the University of South Alabama. His specific expertise focuses on the analysis of project-level effects (e.g., dredging, shading, and other habitat modifications) on nearshore ecosystems under the Endangered Species Act (ESA) and the National Environmental Policy Act (NEPA).

Dr. Stutes's diverse technical expertise includes characterizing nearshore habitat, conducting long-term monitoring, characterizing food webs, constructing carbon and nitrogen budgets for estuarine settings, and sampling /processing water quality parameters. Dr. Stutes has been involved in several projects where dredging has been used to improve navigation for channels, as well as ports and marinas, including the Alaska Pipeline Project, Point Thomson Project, and the Jetty Island Beneficial Reuse of Dredge Spoils. He has evaluated the impacts and recovery of these systems based on the existing infauna assemblage, size/depth of the proposed dredge, and level of intermittent disturbance due to boat traffic and scour. He has also been involved in permitting (including pre-dredge baseline studies and impact and recovery assessment) on multiple nearshore infrastructure projects (including dredging projects) in Alaska (Cook Inlet, Beaufort Sea, Sitka Sound, Lynn Canal) and in the State of Washington (Puget Sound). He has also conducted several studies on the acoustic and water quality effects of dredging on nearshore ecosystems.

Dr. Stutes has prepared marine biological sections of numerous NEPA environmental impact statements (EISs) and environmental assessments (EAs) in Alaska (Sitka Runway expansion/fill project, Point Thomson project, Donlin Mine project) and in Washington State. He has supported coastal projects in Alaska stretching from the southeast region (Ketchikan and Sitka airport expansions) to south-central Alaska (Knik/Turnagain Arm fisheries studies, 2004–2006; Kamishak Bay port baseline studies, 2004–2013), to the Aleutians (False Pass airport baseline studies; Dutch Harbor Dock expansion project) and the Arctic (Endicott Island dredge characterization and design).

Dr. Stutes is an active member of the Pacific Estuarine Research Society and the Coastal and Estuarine Research Federation (CERF). He has presented scientific results to regional (Alaska Marine Science Symposium) and international/national scientific meetings and conferences (CERF, Benthic Ecology Meeting Society).

Ken Casavant, Ph.D.

Role: Economics expert.
Affiliation: Independent Consultant

Dr. Casavant is a professor and agricultural economist at the School of Economic Sciences at Washington State University, Director of the Freight Policy Transportation Institute, and adjunct professor at North Dakota State's Upper Great Plains Transportation Institute since 2002. He earned his Ph.D. in agricultural economics from Washington State University in 1971. During his 47-year career, he has gained extensive experience as an economist, planner, university professor, and consultant, with specific

expertise in transportation economics and planning, Civil Works planning, and National Environmental Policy Act (NEPA) compliance.

Dr. Casavant has at least 10 years of active experience in economic analysis and plan formulation, including the evaluation and comparison of alternative plans for USACE projects, often on projects with deep draft navigation analysis. Some of his work with USACE has dealt with those plans and subsequent evaluation/rewriting. Two recent work efforts for the Institute for Water Resources (IWR) focused on determining procedures for derivation of deep draft vessel operating costs, then extending this into shallow draft vessel operating costs. He has applied this past and current expertise into USACE projects, reviewing the Upper Mississippi and Illinois Navigation Study, the Lower Columbia River Channel Deepening Project, the Port of Iberia Channel Deepening Project, the Savannah Harbor Improvement Project, and others where costing underlays comparisons among alternatives. He has served as the Civil Works planning and plan formulation expert for eight previous USACE IEPRs and as the economics expert on four others; for several other reviews, he fulfilled both roles. The earlier mentioned navigation projects all included detailed analyses of alternative plans and the assumptions underlying each alternative, all leading to sensitivity analyses of the benefit-cost ratios.

For these reviews, Dr. Casavant tested assumptions, examined alternatives, replicated and corroborated analyses, and requested changes using USACE's Planning Principles and Guidelines (P&G) framework. In addition, he evaluated projects against the USACE six-step planning process governed by ER 1105-2-100. He has worked as an independent technical reviewer, as well as a member of technical peer reviews, on numerous projects that demonstrate his experience working with USACE P&G as applied to Civil Works projects. In addition to the projects already mentioned, they include, among other, Barataria Basin Shoreline Restoration Project, Delaware River Main Channel Deepening Project, Upper Mississippi River Gulf Outlet Ecosystem Restoration Plan, Freeport Harbor Project, Donaldsonville to Gulf Hurricane and Flooding Protection Project, Morganza Study, Port Everglades Project, Upper Des Plaines Project, and West Slope Lake Ponchartrain Project. The focal point of many of the activities mentioned above is the determination of the NED benefits for each project. Whether it is the Delaware River Deepening Project or the Savanah Harbor Improvement Project, the benefit-to-cost ratio that measures the public interest in supporting the improvement is the focus and is based not on Regional Economic Development (RED), but on National Economic Development (NED) benefits. At least five of these projects have this focus. Dr. Casavant was also a member of the team that conducted an external independent economic opinion on identifying and measuring NED benefits for navigation shipping.

Orson Smith, P.E., Ph.D.

Role: Civil engineering expert.
Affiliation: Independent Consultant

Dr.Smith is a an engineering consultant in private practice, as well as a Professor Emeritus at the University of Alaska, Anchorage (UAA), College of Engineering, and Director of Integrated Education at UAA Arctic Center of Excellence. He specializes in civil engineering and physical oceanography, specifically analyses and publications related to Coastal Erosion Responses for Alaska, Climate Change Impacts on Alaska Infrastructure, Alaska ice studies, tidal influences and circulation in Alaska waterways, and Arctic Coastal Dynamics. He earned his M.S. in civil engineering from Mississippi State University in 1986 and his Ph.D. in physical oceanography from North Carolina State University in 1989. He has been a registered professional engineer (civil) since 1983 in Alaska.

Dr. Smith has more than 44 years of experience, including 20 years with USACE serving as a hydraulic/civil engineer completing planning, design, operations, and research. From 1973 to 1983, he was employed at the USACE Alaska District, Anchorage, Alaska, and held multiple positions during this time including as mechanical engineer (1973-1975); Chief, Navigation and Flood Control Branch (1975-1980); and Chief of Navigation and Coastal Planning (1980-1983). After spending time as a private consultant and completing his doctorate degree between 1983 and 1991, he returned to Alaska District as a project manager until 1997. During this time, he led interdisciplinary teams of USACE, university, and contract specialists to investigate public works at Anchorage (Knik Arm Shoal), Cook Inlet, Barrow, Wainwright, McGrath, Whittier, Seward, Williamsport, the Northern Sea Route, the Kuskokwim River, and Unalaska/Dutch Harbor. He also negotiated and supervised contracts related to hydrographic and geophysical surveys, economic analyses, ice and weather statistics, and wind, wave, tide, commercial ship track measurements. From 1997 to 1998, Dr. Smith was a research engineer with U.S. Army Cold Regions Research and Engineering Laboratory (CRREL), Anchorage. As a research engineer, he led teams of specialists to investigate ice properties and ice navigation in Cook Inlet and other coastal areas of Alaska and to support the Alaska District with project management and technical analyses for projects such as Knik Arm shoal dredging, Whittier harbor expansion, Kivalina coastal erosion and relocation, and environmental infrastructure improvements in the Northwest Arctic Borough. From 1998 to June 2014, he was a professor at the UAA, where he taught civil engineering courses and conducted research.

Dr. Smith's port and coastal engineering experience includes projects in most Arctic coastal villages along the Alaska coast. He has experience in deep draft navigation channel design, channel dredging, currents, and channel modifications from his time at the Alaska District, as well as through his work at CRREL and UAA. At UAA, he taught courses in Fluid Mechanics, Water Resources Engineering, Dynamics, Waves, Tides, and Ocean Processes, Coastal Engineering, Design of Ports and Harbors, Coastal Measurements, Hydrographic Surveying, and Arctic Engineering. In addition, his dissertation research focused on ocean circulation. Since 1991, he has been conducting research on tidal currents within Alaska port projects for coastal research at UAA and as a private consultant. His research has included analyses and publications related to Cook Inlet IceAtlas, Alaska Sea Ice Atlas, Cook Inlet Beach Ice studies, Tidal Influences on the Lower Kenai River, Arctic Coastal Dynamics at Elson Lagoon, Barrow, Tidal Circulation in Tongass Narrows at Ketchikan, Tidal Circulation in Seward Harbor, Beach Stability at Nikiski, Alaska, and Wave Measurements and Analysis at Seward, Alaska, Knik Arm Bridge Conceptual Engineering, Coastal Erosion Responses for Alaska, and Climate Change Impacts on Alaska Infrastructure, design of automated coastal monitoring stations with Alaska SeaLife Center, and development of ice navigation curriculum using AVTEC ship simulator.

Dr. Smith has knowledge of the preparation of cost estimates through his 20 years of experience at USACE, which involved preparation of construction cost estimates, as well as through his teaching and consulting experiences since leaving USACE. During his time with USACE, he managed port and harbor projects at St. Paul Island, Kodiak, Whittier, Ninilchik, and Dillingham.

Dr. Smith is a member of the Academy of Coastal, Ocean, Port, & Navigation Engineers, serving as a diplomate in coastal and in port engineering. He is also a member of the American Society of Civil Engineers Technical Council on Cold Regions Engineering, and the Coasts, Oceans, Ports, and Rivers Institute. He has numerous publications including "Estimating future costs for Alaska public infrastructure at risk from climate change" published in 2008.

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APPENDIX C

Final Charge to the IEPR Submitted to USACE on March 26, 2015 for the Alaska Deep-Draft Arctic Port System Study Project

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CHARGE QUESTIONS AND GUIDANCE TO THE PANEL MEMBERS FOR THE IEPR OF THE Draft Integrated Feasibility Report (FR), Draft Environmental Assessment (EA), and Draft Finding of No Significant Impact (FONSI) Alaska Deep-Draft Arctic Port System Study

BACKGROUND

The study area is part of the Seward Peninsula on the western coast of Alaska and includes the general area of Nome/Port Clarence and Teller. Nome lies 539 air miles northwest of Anchorage, 102 miles south of the Arctic Circle, and 161 miles east of Russia. Teller is located on a spit 72 miles northwest of Nome on the eastern side of Port Clarence. Port Clarence is a bay located west of Teller on the Seward Peninsula. The Deep Draft Arctic Ports System includes a number of channel alignments and widths ranging in depths from -12.5 feet to -35 feet. The considered project also includes numerous causeway and dock modifications. The purpose of this study is to determine if there is a Federal interest in making project improvements and to evaluate the benefits, costs, and environmental impacts associated with the project modifications.

The Tentatively Selected Plan (TSP) includes a 2,150-foot (655 meters) causeway extension, a 450-foot (137 meters) long dock, and dredging to -28 feet (-8.5 meters) mean lower low water (MLLW). This selected depth was based on the future with-project vessel characteristics expected at the Nome location. Approximately 441,000 cubic yards of dredged material would be removed from the harbor and deposited on the project's beach downdrift.

The Decision Document has been developed to meet the USACE modernized planning initiative, which is to complete investigations leading to a decision in less time by using a risk-informed assessment with less detailed information for each alternative evaluated. Although this new process has altered the milestones and evaluation procedures in a feasibility study, the manner in which alternatives are developed from problems, opportunities, measures, and constraints remains the same.

OBJECTIVES

The objective of this work is to conduct an independent external peer review (IEPR) of the Draft Integrated Feasibility Report (FR), Draft Environmental Assessment (EA), and Draft Finding of No Significant Impact (FONSI) Alaska Deep-Draft Arctic Port System Study (hereinafter: Alaska Deep-Draft Arctic Port System Study IEPR) in accordance with the Department of the Army, U.S. Army Corps of Engineers (USACE), Water Resources Policies and Authorities' *Civil Works Review* (Engineer Circular [EC] 1165-2-214, December 15, 2012), and the Office of Management and Budget's *Final Information Quality Bulletin for Peer Review* (December 16, 2004).

Peer review is one of the important procedures used to ensure that the quality of published information meets the standards of the scientific and technical community. Peer review typically evaluates the clarity of hypotheses, validity of the research design, quality of data collection procedures, robustness of the methods employed, appropriateness of the methods for the hypotheses being tested, extent to which the conclusions follow from the analysis, and strengths and limitations of the overall product.
The purpose of the IEPR is to assess the "adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used" (EC 1165-2-214; p. D-4) for the Alaska Deep-Draft Arctic Port System Study documents. The IEPR will be limited to technical review and will not involve

policy review. The IEPR will be conducted by subject matter experts (i.e., IEPR panel members) with extensive experience in engineering, geotechnical engineering, economics, environment, and plan formulation issues relevant to the project. They will also have experience applying their subject matter expertise to deep-draft navigation management.

The Panel will be "charged" with responding to specific technical questions as well as providing a broad technical evaluation of the overall project. Per EC 1165-2-214, Appendix D, review panels should identify, explain, and comment upon assumptions that underlie all the analyses, as well as evaluate the soundness of models, surveys, investigations, and methods. Review panels should be able to evaluate whether the interpretations of analysis and the conclusions based on analysis are reasonable. Reviews should focus on assumptions, data, methods, and models. The panel members may offer their opinions as to whether there are sufficient analyses upon which to base a recommendation.

DOCUMENTS PROVIDED

The following is a list of documents, supporting information, and reference materials that will be provided for the review.

Documents for Review

Table C-1. Review and Supplemental Documents

Title	No. of Pages	Required Disciplines
Review Documents		
Alaska Deep-Draft Arctic Port System Feasibility Study	179	All disciplines
Appendix A – Hydraulics and Hydrology	108	Engineering, geotechnical Engineering
Appendix B – Economics	252	Economics
Appendix C – Cost Engineering	12	Engineer
Appendix D – Real Estate	15	Plan formulation, economics
Appendix E – General Correspondence	10	All disciplines
Appendix F – NEPA Correspondence	28	Environmental, plan formulation
Appendix G - Coordination Act Report	148	Environmental, plan formulation
Appendix H - CWA Section 404(b)(1)	20	Environmental, plan formulation
Appendix I - EFH Evaluation	34	Environmental
Decision Management Plan	5	All disciplines
Risk Register	5	All disciplines
Public Comments	100	All disciplines

Title	No. of Pages	Required Disciplines
Total Page Count	916	
Supplemental Documents		
Nome Harbor O&M Dredging EA and FONSI	70	All disciplines
Navigation Improvement Final Interim FR and EA - Nome, Alaska	205	All disciplines
Total Page Count	275	

Documents for Reference

- USACE guidance *Civil Works Review,* (EC 1165-2-214, December 15, 2012)
- Office of Management and Budget's *Final Information Quality Bulletin for Peer Review* (December 16, 2004)
- Foundations of SMART Planning
- SMART Planning Bulletin (PB 2013-03)
- SMART – Planning Overview
- Planning Modernization Fact Sheet.
- Engineering and Construction Bulletin (ECB) 2012-18: Engineering Within the Planning Modernization Paradigm
- USACE Climate Change Adaptation Plan (June 2014)
- ETL 1100-2-1 – Procedures to Evaluate SLR Change Impacts Responses Adaptation
- ER 1100-2-8162 – Incorporating SLR Change in CW Programs

SCHEDULE

Table C-2, the final schedule, is based on the February 26, 2015 receipt of the final review documents.

Table C-2. Final Review Schedule

Task	Action	Due Date
Conduct Peer Review	Battelle sends review documents to panel members	3/27/2015
	Battelle convenes kick-off meeting with panel members	3/30/2015
	Battelle convenes kick-off meeting with USACE and panel members	3/31/2015
	Battelle convenes mid-review teleconference for panel members to ask clarifying questions of USACE	4/10/2015
	Panel members complete their individual reviews	4/27/2015
Prepare Final Panel Comments and Final IEPR Report	Battelle provides panel members with talking points for Panel Review Teleconference	5/1/2015
	Battelle convenes Panel Review Teleconference	5/4/2015
	Battelle provides Final Panel Comment templates and instructions to panel members	5/5/2015
	Panel members provide draft Final Panel Comments to Battelle	5/12/2015
	Battelle provides feedback to panel members on draft Final Panel Comments; panel members revise Final Panel Comments	5/13-5/20/2015
	Battelle finalizes Final Panel Comments	5/21/2015
	USACE provides public comments	4/3/2015
	Battelle sends public comment to Panel	4/28/2015
	Panel completes their review of the public comments	5/1/2015
	Panel drafts Final Panel Comment, if necessary	5/14/2015
	Panel finalizes Final Panel Comment regarding public comments	5/18/2015
	Battelle provides Final IEPR Report to panel members for review	5/26/2015
	Panel members provide comments on Final IEPR Report	5/28/2015
	*Battelle submits Final IEPR Report to USACE	6/1/2015
Comment/ Response Process	Battelle inputs Final Panel Comments to the Design Review and Checking System (DrChecks) and provides Final Panel Comment response template to USACE	6/1/2015
	Battelle convenes teleconference with Panel to review the Post-Final Panel Comment Response Process	6/1/2015
	USACE Project Delivery Team (PDT) provides draft Evaluator Responses to USACE Planning Center of Expertise (PCX) for review	6/15/2015
	USACE PCX reviews draft Evaluator Responses and works with USACE PDT regarding clarifications to responses, if needed	6/19/2015
	USACE PCX provides draft PDT Evaluator Responses to Battelle	6/22/2015
	Battelle provides the panel members the draft PDT Evaluator Responses	6/24/2015
	Panel members provide Battelle with draft BackCheck Responses	6/29/2015

Task	Action	Due Date
Comment/ Response Process	Battelle convenes teleconference with panel members to discuss draft BackCheck Responses	6/30/2015
	Battelle convenes Comment-Response Teleconference with panel members and USACE	7/1/2015
	USACE inputs final PDT Evaluator Responses to DrChecks	7/9/2015
	Battelle provides final PDT Evaluator Responses to panel members	7/13/2015
	Panel members provide Battelle with final BackCheck Responses	7/16/2015
	Battelle inputs the panel members' final BackCheck Responses to DrChecks	7/23/2015
	Battelle submits pdf printout of DrChecks project file*	7/24/2015
Agency Decision Milestone (ADM)	Panel prepares and/or reviews slides for ADM	TBD
	Agency Decision Milestone (ADM) Meeting	TBD
Civil Works Review Board (CWRB)	Panel prepares and/or reviews slides for CWRB	TBD
	Civil Works Review Board (CWRB) Meeting	11/17/2015

* Deliverables

CHARGE FOR PEER REVIEW

Members of this IEPR Panel are asked to determine whether the technical approach and scientific rationale presented in the Alaska Deep-Draft Arctic Port System Study documents are credible and whether the conclusions are valid. The Panel is asked to determine whether the technical work is adequate, competently performed, and properly documented; satisfies established quality requirements; and yields scientifically credible conclusions. The Panel is being asked to provide feedback on the economic, engineering, environmental resources, and plan formulation. The panel members are not being asked whether they would have conducted the work in a similar manner.

Specific questions for the Panel (by report section or appendix) are included in the general charge guidance, which is provided below.

General Charge Guidance

Please answer the scientific and technical questions listed below and conduct a broad overview of the Alaska Deep-Draft Arctic Port System Study documents. Please focus your review on the review materials assigned to your discipline/area of expertise and technical knowledge. Even though there are some sections with no questions associated with them, that does not mean that you cannot comment on them. Please feel free to make any relevant and appropriate comment on any of the sections and appendices you were asked to review. In addition, please note the following guidance. Note that the Panel will be asked to provide an overall statement related to 2 and 3 below per USACE guidance (EC 1165-2-214; Appendix D).

1. Your response to the charge questions should not be limited to a “yes” or “no.” Please provide complete answers to fully explain your response.

2. Assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, and any biological opinions of the project study.

3. Assess the adequacy and acceptability of the economic analyses, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, and models used in evaluating economic or environmental impacts of the proposed project.

4. If appropriate, offer opinions as to whether there are sufficient analyses upon which to base a recommendation.

5. Identify, explain, and comment upon assumptions that underlie all the analyses, as well as evaluate the soundness of models, surveys, investigations, and methods.

6. Evaluate whether the interpretations of analysis and the conclusions based on analysis are reasonable.

7. Please focus the review on assumptions, data, methods, and models.

Please **do not** make recommendations on whether a particular alternative should be implemented, or whether you would have conducted the work in a similar manner. Also please **do not** comment on or make recommendations on policy issues and decision making. Comments should be provided based on your professional judgment, **not** the legality of the document.

1. If desired, panel members can contact one another. However, panel members **should not** contact anyone who is or was involved in the project, prepared the subject documents, or was part of the USACE Agency Technical Review (ATR).

2. Please contact the Battelle Project Manager (Jessica Tenzar, tenzarj@battelle.org) or Program Manager (Karen Johnson-Young (johnson-youngk@battelle.org) for requests or additional information.

3. In case of media contact, notify the Battelle Program Manager, Karen Johnson-Young (johnson-youngk@battelle.org) immediately.

4. Your name will appear as one of the panel members in the peer review. Your comments will be included in the Final IEPR Report, but will remain anonymous.

Please submit your comments in electronic form to Jessica Tenzar, **tenzarj@battelle.org**, no later than April 27, 2015, 10 pm ET.

IEPR of the Draft Integrated Feasibility Report (FR), Draft Environmental Assessment (EA), and Draft Finding of No Significant Impact (FONSI) Alaska Deep-Draft Arctic Port System Study

CHARGE QUESTIONS AND RELEVANT SECTIONS AS SUPPLIED BY USACE

The following Charge to Reviewers outlines the objective of the Independent External Peer Review (IEPR) for the subject study and the specific advice sought from the IEPR panel.

The objective of the IEPR is to obtain an independent evaluation of whether the interpretations of analysis and conclusions based on analysis are reasonable for the subject study. The IEPR panel is requested to offer a broad evaluation of the overall study decision document in addition to addressing the specific technical and scientific questions included in the charge. The panel has the flexibility to bring important issues to the attention of decision makers, including positive feedback or issues outside those specific areas outlined in the charge.

The panel review is to focus on scientific and technical matters, leaving policy determinations for USACE and the Army. The panel should not make recommendations on whether a particular alternative should be implemented or present findings that become “directives” in that they call for modifications or additional studies or suggest new conclusions and recommendations. In such circumstances, the panel may have assumed the role of advisors as well as reviewers, thus introducing bias and potential conflict in their ability to provide objective review.

Panel review comments are to be structured to fully communicate the panel’s intent by including the comment, why it is important, any potential consequences of failure to address, and suggestions on how to address the comment.

Broad Evaluation Charge Questions

1. Is the need for and intent of the decision document clearly described?

2. Does the decision document adequately address the stated need and intent?

3. Given the need for and intent of the decision document, assess the adequacy and acceptability of the following: Project evaluation data used in the study analyses.

4. Given the need for and intent of the decision document, assess the adequacy and acceptability of the following: Economic, environmental, and engineering assumptions that underlie the study analyses.

5. Given the need for and intent of the decision document, assess the adequacy and acceptability of the following: Economic, environmental, and engineering methodologies, analyses, and projections.

6. Given the need for and intent of the decision document, assess the adequacy and acceptability of the following: Models used in the evaluation of existing and future without-project conditions and of economic or environmental impacts of alternatives.

7. Given the need for and intent of the decision document, assess the adequacy and acceptability of the following: Methods for integrating risk and uncertainty.

8. Given the need for and intent of the decision document, assess the adequacy and acceptability of the following: Formulation of alternative plans and the range of alternative plans considered.

9. Given the need for and intent of the decision document, assess the adequacy and acceptability of the following: Quality and quantity of the surveys, investigations, and engineering sufficient for conceptual design of alternative plans.

10. Given the need for and intent of the decision document, assess the adequacy and acceptability of the following: Overall assessment of significant environmental impacts and any biological analyses.

11. Evaluate whether the interpretations of analysis and the conclusions based on analysis are reasonable.

12. Assess the considered and tentatively selected alternatives from the perspective of systems, including systemic aspects being considered from a temporal perspective, including the potential effects of climate change

Project Specific Charge Question

13. Assess the considered and tentatively selected alternatives from the perspective of systems, including systemic aspects being considered from a temporal perspective, including the potential effects of climate change.

Summary Questions

14. Please identify the most critical concerns (up to five) you have with the project and/or review documents. These concerns can be (but do not need to be) new ideas or issues that have not been raised previously.

15. Please provide positive feedback on the project and/or review documents.

Public Comment Questions

16. Does information or do concerns raised by the public raise any additional discipline-specific technical concerns with regard to the overall report?

APPENDIX D

Conflict of Interest Form for the Alaska Deep-Draft Arctic Port System Study Project

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Conflicts of Interest Questionnaire

[Independent External Peer Review]

[Arctic Deep Draft Navigation Study, Alaska IEPR]

The purpose of this document is to help the U.S. Army Corps of Engineers identify potential organizational conflicts of interest on a task order basis as early in the acquisition process as possible. Complete the questionnaire with background information and fully disclose relevant potential conflicts of interest. Substantial details are not necessary; USACE will examine additional information if appropriate. Affirmative answers will not disqualify your firm from this or future procurements.

NAME OF FIRM: **Battelle Memorial Institute**
REPRESENTATIVE'S NAME: **Gina M. Crabtree**
TELEPHONE: **614-424-5097**
ADDRESS: **505 King Avenue, Columbus, OH 43201**
EMAIL ADDRESS: **crabtreeg@battelle.org**

I. INDEPENDENCE FROM WORK PRODUCT. Has your firm been involved in any aspect of the preparation of the subject study report and associated analyses (field studies, report writing, supporting research etc.) No **X** Yes (if yes, briefly describe):

II. INTEREST IN STUDY AREA OR OUTCOME. Does your firm have any interests or holdings in the study area, or any stake in the outcome or recommendations of the study, or any affiliation with the local sponsor? No **X** Yes (if yes, briefly describe):

III. REVIEWERS. Do you anticipate that all expert reviewers on this task order will be selected from outside your firm? No Yes **X** (if no, briefly describe the difficulty in identifying outside reviewers):

IV. AFFILIATION WITH PARTIES THAT MAY BE INVOLVED WITH PROJECT IMPLEMENTATION. Do you anticipate that your firm will have any association with parties that may be involved with or benefit from future activities associated with this study, such as project construction? No **X** Yes (if yes, briefly describe):

V. ADDITIONAL INFORMATION. Report relevant aspects of your firm's background or present circumstances not addressed above that might reasonably be construed by others as affecting your firm's judgment. Please include any information that may reasonably: impair your firm's objectivity; skew the competition in favor of your firm; or allow your firm unequal access to nonpublic information. **No additional information to report.**

Gina Crabtree

Gina Crabtree, Battelle

February 6, 2014
DATE

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