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CEPOD-PDC

APR 2 3 2018

MEMORANDUM FOR Commander, Alaska Engineer District (CEPOA-PM-C/Amber Metallo), P.O. Box 6898 JBER, AK 99506-0898

SUBJECT: Approval of the Review Plan for the Barrow Alaska Coastal Erosion Feasibility Report

1. References:

a. Engineering Circular 1165-2-217, Review Policy for Civil Works, 20 Feb 18.

b. Review Plan for the Barrow Alaska Coastal Erosion Feasibility Report, Alaska District, U.S. Army Corps of Engineers. (Encl)

2. This memorandum constitutes approval of the Review Plan for the Barrow Alaska Coastal Erosion Feasibility Report, Alaska District, U.S. Army Corps of Engineers, which does not include a Type I Independent External Peer Review.

3. The approved Review Plan is subject to change as circumstances require, consistent with project development under the Project Management Business Process. Subsequent significant revisions to this Review Plan or its execution require my written approval.

4. POC is Mr. Russell Iwamura, Senior Economist, Civil Works Integration Division, at 808-835-4625 or email Russell.K.Iwamura@usace.army.mil.

Encl

THOMAS J. TICKNER, PMP
Brigadier General, USA
Commanding

REVIEW PLAN

Barrow Alaska Coastal Erosion Feasibility Study

Alaska District

23 April 2018

MSC Approval Date: 23 April 2018
Last Revision Date:

US Army Corps
of Engineers ®

REVIEW PLAN

Barrow Alaska Coastal Erosion Feasibility Study

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1. PURPOSE AND REQUIREMENTS

a. Purpose. This Review Plan defines the scope and level of peer review for the Barrow Alaska Coastal Erosion Feasibility Study.

b. References.

(1) Engineer Regulation (ER) 1105-2-100, Planning Guidance Notebook (2001).

(2) ER 1105-2-101, Risk Analysis for Flood Damage Reduction Studies (2006).

(3) ER 1165-2-26, Implementation of Executive Order 11988 on Flood Plain Management.

(4) ER 1110-2-8162, Incorporating Sea Level Change in Civil Works Programs (2013).

(5) Engineering and Construction Bulletin 2014-10, Guidance for Incorporating Climate Change Impacts to Inland Hydrology in Civil Works Studies, Designs, and Programs (2014).

(6) Implementation Guidance for Section 219 of the Water resources Development Act of 1999, Nonstructural Flood Control Projects.

(7) United States Army Corps of Engineers (USACE) Barrow, Alaska Coastal Storm Damage Reduction Technical Report, July 2010.

c. Requirements. This Review Plan was developed in accordance with Engineer Circular (EC) 1165-2-217, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design, construction, and operation, maintenance, repair, replacement and rehabilitation (OMRR&R). The EC outlines four general levels of review: District Quality Control/Quality Assurance (DQC), Agency Technical Review (ATR), Independent External Peer Review (IEPR), and Policy and Legal Compliance Review. In addition to these levels of review, decision documents are subject to cost engineering review and certification (per EC 1165-2-217) and planning model certification/approval (per EC 1105-2-412).

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO is responsible for managing the overall peer review effort described in this Review Plan. The RMO for decision documents is typically either a Planning Center of Expertise (PCX) or the Risk Management Center (RMC), depending on the primary purpose of the decision document. The RMO for the peer review effort described in this Review Plan is the National Planning Center of Expertise for Coastal Storm Risk Management (PCX-CSRM).

The RMO will coordinate with the Civil Works Cost Engineering and Agency Technical Review Mandatory Center of Expertise (MCX) to ensure the appropriate expertise is included on the review teams to assess the adequacy of cost estimates, construction schedules and contingencies.

3. STUDY INFORMATION

a. Authority. The Barrow Alaska Coastal Erosion Feasibility Study is being conducted under authority provided by Section 116 of the Energy and Water Development and Related Agencies Appropriations Act of 2010 (P.L. 111-85) as amended:

"to carry out structural and non-structural projects for storm damage prevention and reduction, coastal erosion, and ice and glacial damage in Alaska, including relocation of affected communities and construction of replacement facilities. . ."

b. Decision Document. The decision document for this study will be an integrated feasibility report and associated National Environmental Policy Act (NEPA) document. The primary objectives for this study are to determine the feasibility and Federal interest in assessing erosion and flooding damages in the vicinity of Barrow, Alaska (AK). Report approval will be at Headquarters, United States Army Corps of Engineers (HQUSACE) and result in a Director's Report that will be provided to Congress.

At this time, the District assumes an Environmental Assessment (EA) will be prepared with the feasibility report. If an Environmental Impact Statement (EIS) is required, the Alaska District (POA) will update the Review Plan accordingly.

c. Study/Project Description. There is currently no Federal coastal storm risk management project at Barrow. This is a feasibility study to assess coastal erosion and flooding damages in the vicinity of Barrow, AK and determine whether Federal interest exists to construct a project to reduce these damages.

The coastal storm risk management study objectives are:

- Reduce risk to life, health, and safety.

- Reduce damages caused by flooding and shoreline erosion to residential and commercial structures and critical public infrastructure.

- Reduce or mitigate damage to tangible cultural heritage.

The community of Barrow, also referred to as Utqiagvik, is located on the Arctic Ocean (Figure 1), approximately 750 miles north of Anchorage, AK. The State of Alaska issued an order and made the name, Utqiagvik, official on December 1, 2016. However, for the purpose of this study the former name of Barrow will generally be

used as a practical matter to keep the name consistent with the previous study. It is the northernmost community in the United States and the administrative, economic, social, and cultural center for the North Slope Borough (NSB). Barrow has a population of approximately 5,000 according to the NSB 2015 census.

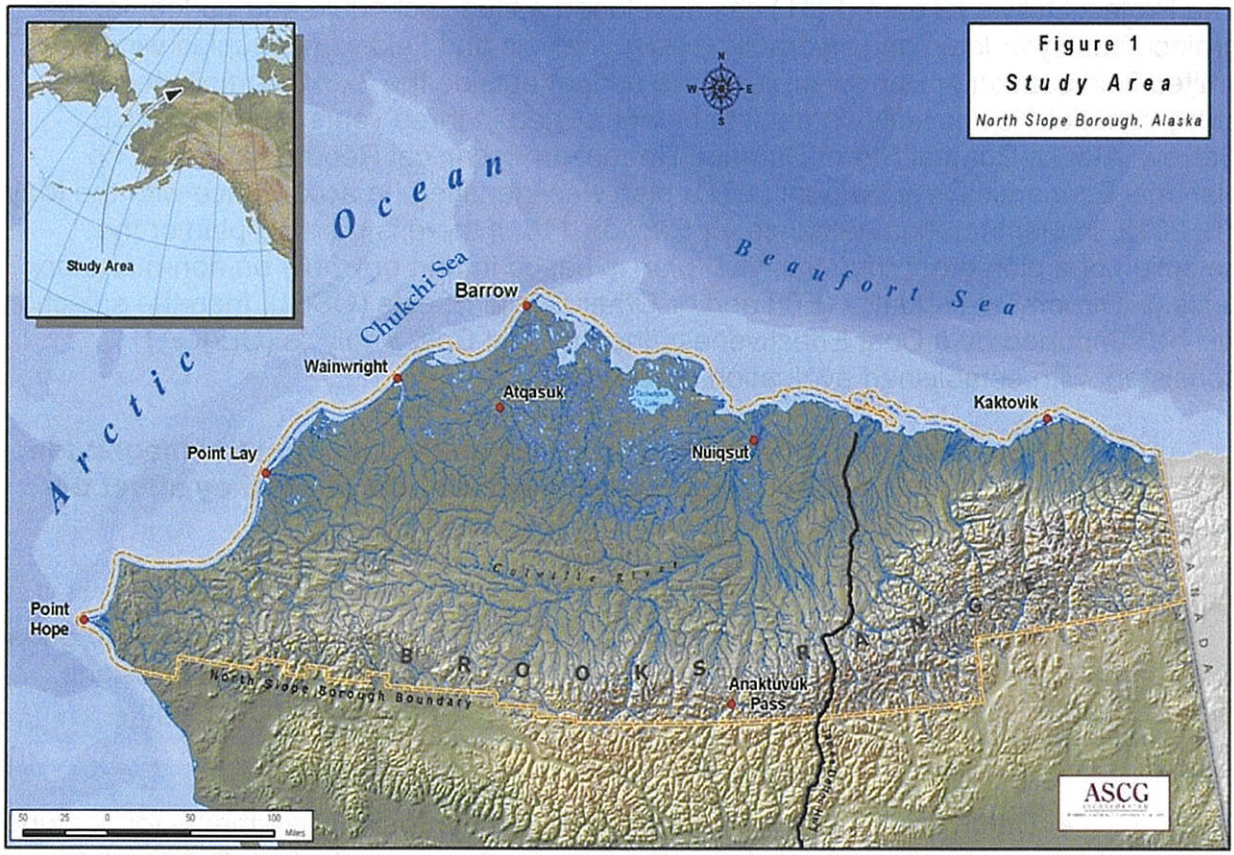

Figure 1. Location of Barrow, AK (Corps 2010)

The City of Barrow, incorporated in 1958, is the largest community in the NSB, which includes almost all of Alaska north of the 68th Parallel. Barrow is considered a hub for several outlying communities on the North Slope. Barrow encompasses 18.4 square miles of land and 2.9 square miles of water. The majority of the 5,000 residents are Inupiat Eskimos. Barrow is on the coastline of the Arctic Ocean about 10 miles southwest of Point Barrow, the northernmost point of land in Alaska. Point Barrow is on a spit fronting Elson Lagoon and marks the boundary between the Chukchi Sea on the west and the Beaufort Sea on the east, both considered part of the Arctic Ocean.

The non-Federal sponsor is the NSB.

d. Factors Affecting the Scope and Level of Review.

This section discusses factors affecting the risk informed decisions on the appropriate scope and level of review. Assumptions are as follows:

(1) Which parts of the study are likely to be challenging?

The Project Delivery Team (PDT) has developed a study schedule and budget for the project, but Hydrologic and Hydraulic (H&H) analysis and field work coupled with a limited field season in Barrow projects the budget outside the 3x3x3 compliance. The study schedule is currently on track to be completed in three years. In the USACE Barrow, Alaska Coastal Storm Damage Reduction Technical Report July 2010, no National Economic Development (NED) plan was identified. In accordance with the May 10, 2012, implementation guidance for Section 116, if there is no NED plan or the selection of a plan other than the NED plan is based in part or whole on non-monetary units (Environmental Quality (EQ) and/or Other Social Effects (OSE)), then the selection will be supported by a Cost Effectiveness/Incremental Cost Analysis (CE/ICA) consistent with established evaluation procedures.

(2) Where are project risks likely to occur and what might the magnitude of those risks be (e.g., what are the uncertainties and how might they affect the success of the project)?

Project risks include:

- The study budget may not be 3x3x3 compliant because critical data gaps exist that affect the alternative analysis and even the conceptual alternative designs. Since the arctic conditions at Barrow result in a limited window to conduct field investigations, these data gaps can significantly increase cost.

- Datum uncertain within a Feasibility Study; Risk assessments for flooding are based upon accurate vertical measurements. Barrow currently has no published tidal datum to accurately model coastal flooding within the study area. Current upland mapping (2014) is based on two foot contours that do not meet minimal Accuracy Standards for Large-Scale Maps (ASPRS). The general topography of Barrow is very flat and accuracy greater than 2 feet is needed to accurately assess the flood impacts. Unknown tidal datum and uncertainty in accuracy of mapping within the study area both contribute to a very high level of datum uncertainty that will directly affect the outcome of any study undertaken. (See EM-1110-2-6056, Section M)

- The sheetpile alternative carried forward during the charette could result in higher cost and require more time than allotted under the SMART planning process in order to fill data gaps required for design in a coastal, permafrost laden environment. This alternative will be carried forward, until technical reasons screen it out. A recent study by the NSB resulted in sheetpile as the recommended alternative.

- The hindcast data (continuous hindcast from 1982 to 2003, plus 27 storms selected from 1954 to 1982) used for the wave modeling in the earlier study needs to be updated with the last 13 years (2004 to 2017) of wave information. The risk impact of not including this data is unknown. However, Barrow has been hit with two storms in the last two years, both declared state of emergencies. Including the last 13 years of data into our current models would help us better understand existing conditions, wave height and wave run-up which is the leading cause of flooding in the low-lying areas. Not accounting for the current conditions and developing a design based on the existing data that is 13 years old could result in under designing or over designing the TSP or choosing the wrong TSP due to inaccurate costing.

- Risk expert has been engaged to work with the PDT on addressing risk items as they move through data gathering on the path to the TSP.

(3) Will the project likely be justified by life safety or is the project likely to involve a significant threat to human life/safety?

No. However, there is some threat to human life/safety as flooding and erosion threatens commercial and residential structures along the coastline. Storm events close roads and impact transportation by stranding people when Stevenson Street (only access road north) is overtopped. These closures negatively affect subsistence activities by postponing peoples' ability to launch boats and participate in whaling activities.

(4) Are there significant environmental, economic, or social issues identified at this time?

There are no significant negative economic impacts identified for this project. There is a possibility of negative environmental impacts based on where the best gravel source is identified. Cooper Island is a low-lying barrier island 25 miles east of Barrow. Using Cooper Island as a potential gravel source was a possibility based on the 2010 Technical Report, but this raised several concerns. The island is used extensively by migrating shorebirds and seabirds as nesting habitat, and is adjacent to marine waters that are extremely productive for invertebrates that, in turn, are eaten by fish and bowhead whales. The site also contains cultural resources. Further analysis will be conducted to identify viable gravel sources for this study. If Cooper Island or any other environmentally sensitive site is chosen as the gravel source, mitigation will be considered in order to reduce any significant impacts to less than significant. There will be negative impacts on cultural resources; however, these adverse effects will be mitigated through the National Historic Preservation Act's (NHPA) Section 106 process.

(5) Will the project require an Environmental Impact Statement (EIS)? If so, is Independent External Peer Review (IEPR) required?

It is anticipated that an EA will be sufficient to satisfy requirements of the NEPA. If, during the course of the Study additional information is gathered that determines an EA

is not sufficient, this Review Plan will be revised to include an EIS and appropriate IEPR.

(6) Is the project likely to have significant interagency interest?

Yes, it is anticipated that there will be significant interagency interest as several agencies have information that can positively impact the project. The Corps will be pursuing information from several agencies including, but not limited to:

- Alaska Department of Transportation & Public Facilities (AKDOT&PF) – Plans for upgrades were looked at in the past and information collected on Stevenson Street could be useful in choosing an alternative.

- U.S. Navy & Alaska Department of Environmental Consideration (ADEC) – Potential (Hazardous, Toxic and Radioactive Waste) HTRWs could be located at the old Navy landfill and old airstrip. Additional information on these affected locations would help the Corps determine a mitigation strategy.

- Federal Emergency Management Agency (FEMA) – Provide assistance with flood mapping and insurance issues.

- Bureau of Indian Affairs and Bureau of Land Management (BIA/BLM) – Could be involved/provide information on land ownership within the project area.

- State Historic Preservation Office (SHPO) – Provide concurrence with assessment of effect and participate in creation of and sign Memorandum of Agreement to mitigate adverse effects to historic properties.

(7) Is the project likely to contain influential scientific information or be a highly influential scientific assessment?

The project report is not likely to contain influential scientific information or be a highly influential scientific assessment. However, depending on the stipulations finalized in the Memorandum of Agreement, mitigative actions could produce influential scientific information.

(8) Will information in the decision document be based on novel methods, involve the use of innovative material or techniques, present complex challenges for interpretation, contain precedent setting methods or models, or present conclusions that are likely to change prevailing practices?

No. The information in the decision document will likely not be based on novel methods, involve the use of innovative material or techniques, present complex challenges for interpretation, contain precedent-setting methods or models, nor present conclusions that are likely to change prevailing practices. Design of a coastal storm risk

management project in Barrow will be based upon previously developed and utilized methods.

(9) Is the final estimated cost for the project over $200 million?

No. Cost analysis outlined in the 2010 Technical Report ranges from $21.9 million to $183.5 million (2007). The $183.5 million alternative was a revetment built to withstand an ivu event. An ivu event refers to mounds of ice that sometimes plow onto land, powered by winds and currents. The ice may dig its leading edge into the beach and buckle up into piles of ice blocks, often pushing a small amount of debris ahead of it. It was decided during the charette that building for an ivu event, which significantly increases material costs (rock and gravel), is unnecessary as ivu events are not frequent and occasional maintenance or repairs would be cost effective; therefore, no current alternative is anticipated to near $200 million. If costs approach the $200 million mark, the level of review could change.

(10) Is there a request by the Governor of Alaska or an affected state for peer review by independent experts?

No. There is no request by the Governor of Alaska or an affected state for peer review by independent experts and such a request is not anticipated.

(11) Is the project likely to involve significant public dispute as to the size, nature or effects of influence?

No. This coastal storm risk management project is unlikely to involve significant public dispute as to the size, nature or effects of influence. The public has voiced support for a project as future without project conditions would result in a significant threat to their Utilidor and freshwater source, as well as, damage or loss of residential and commercial structures.

(12) Is the project design anticipated to require redundancy, resiliency, and/or robustness, unique construction sequencing, or a reduced or overlapping design construction schedule?

No. The project is unlikely to require redundancy, resiliency, and/or robustness, unique construction sequencing, or a reduced or overlapping design construction schedule. Construction may require multiple field seasons as the initial study area spans a 5 mile stretch of coastline.

e. In-Kind Contributions. Products and analyses provided by non-Federal sponsors as in-kind services are subject to DQC, ATR, and IEPR reviews. The in-kind products and analyses to be provided by the non-Federal sponsor will be integral to the study as defined by ER 1165-2-208, In-Kind Contribution Credit Provisions of Section 221 of the Flood Control Act of 1970, as amended. The expected in-kind contribution will likely support the following services:

- Geotechnical services: engineering data from contractors, LIDAR analysis.

- Environmental services: There is a need for support from the Barrow Wildlife Department for the logistics needed for the proposed fisheries data gathering during the study since there are no commercial services available.

- Cultural Resources: Not anticipated at this time, but could change depending on chosen alternative and resulting impact to cultural sites and historic buildings.

- Planning assistance pertaining to, but not limited to, working with the Corps and contracted parties to provide reports, maps, budgetary and census data related to the study.

4. DISTRICT QUALITY CONTROL

All decision documents (including supporting data, analyses, environmental compliance documents, etc.) shall undergo DQC. DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). POA will manage DQC. Documentation of DQC activities is required and should be in accordance with the Quality Manual of POA and Pacific Ocean Division (POD).

a. Documentation of DQC. Review comments, evaluations (responses to comments), and response/action taken (for each comment) from the DQC of the Feasibility Study will be maintained in ProjNet (DrChecks) or some comparable tool. The DQC Lead will prepare a study report checklist confirming that all the required elements of the report/document are complete, consistent, and technically sufficient to support the findings and recommendations. DQC comment/response reports will be provided to the ATR team prior to initiation of ATR of the Draft and Final Reports.

b. Required DQC Expertise. The POA DQC process requires that the DQC team be composed of appropriate personnel, including technical chiefs and persons not directly associated with the PDT in the detailed preparation of the document. The team will include the POA chiefs of Planning, Environmental, Geotechnical, and Hydraulics & Hydrology. DQC members should also include, as a minimum, the following members: plan formulator (with expertise in water resources and coastal storm risk management), realty specialist (with experience in civil works studies), cost engineer (with expertise in estimating costs for coastal storm risk management projects), geotechnical specialist, hydraulic design engineer (with expertise in designing seawalls), economist (with expertise in coastal storm risk management analysis) and an environmental specialist (with expertise in NEPA compliance and evaluation of impacts on marine species and birds).

5. AGENCY TECHNICAL REVIEW (ATR)

ATR is mandatory for all decision documents (including supporting data, analyses, environmental compliance documents, etc.). The objective of ATR is to ensure consistency with established criteria, guidance, procedures, and policy. The ATR will assess whether the analyses presented are technically correct and comply with published USACE guidance, and that the document explains the analyses and results in a reasonably clear manner for the public and decision makers. ATR is managed within USACE by the designated RMO and is conducted by a qualified team from outside POA that is not involved in the day-to-day production of the project/product. ATR teams will be comprised of senior USACE personnel and may be supplemented by outside experts as appropriate. The ATR team will be identified by the PCX-CSRM; POA/POD will not nominate candidates for the ATR team. The ATR team lead will be from out side POD.

a. Products to Undergo ATR. ATR will be performed on the Draft and Final Integrated Feasibility and EA Report.

b. Required ATR Team Expertise. The purpose of the ATR is to ensure the work product is consistent with established guidance, procedures, criteria, and policy. Members of the ATR team will be from outside POA, with the ATR Lead from outside POD. Members of the ATR team will reflect expertise of PDT members. It is anticipated that the ATR team will consist of 5-8 persons, (depending upon actual availability of specific persons at the time of the review and how the Cost Engineering MCX handles the cost engineering review). One reviewer can serve on the ATR team to cover more than one discipline, provided they have the appropriate expertise in their background and are certified by that Community of Practice (CoP) or Sub-CoP.

The ATR team members' expertise required for this study are provided below.

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead should be a senior professional with extensive experience in preparing Civil Works decision documents and conducting ATR. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. The ATR lead may also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc.).
Planning	The Planning reviewer should be a senior water resources planner with extensive experience in the Corps planning process and be knowledgeable of current Corps policies and guidance. Experience with coastal storm risk management is required;

	experience with flood events and subsistence communities is desired.
Economics	The economics reviewer should be experienced in economic evaluation of civil works coastal storm risk management projects.
Environmental Resources	The environmental reviewer should be experienced in coastal ecosystems, the influence of construction of seawalls and other coastal features, and the NEPA process and analysis procedures. The reviewer should also be experienced in the NHPA Section 106 process and tribal aspects of Corps projects.
Hydraulic (Coastal) Engineering	The hydraulic engineering reviewer will be an expert in the field of coastal hydraulics and have a thorough understanding of analyses of winds, waves, currents, hydrodynamic-salinity, and coastline structures. Hydraulic modeling may include the SBEACH computer program. A registered professional engineer is recommended with applicable model experience.
Geotechnical Engineering	The geotechnical engineering reviewer will be experienced in geotechnical investigation practices including soil classification, the design of seawall foundations over fine-grained marine soils, and the classification of rip rap and core materials for suitability in seawall construction. No modeling anticipated at this time. A registered professional engineer is recommended.
Cost Engineering	The cost engineering reviewer will be familiar with cost estimating using the Microcomputer Aided Cost Engineering System (MCACES) model and preparation of an MII Cost Estimate. The reviewer will be a Certified Cost Technician, Certified Cost Consultant, or Certified Cost Engineer. Coordination with the Cost Engineering MCX will be required for their approval of the selected cost engineering reviewer and to obtain Cost Engineering MCX certification of the cost estimate.
Real Estate	The real estate reviewer will be experienced in Federal civil works real estate law, policy, and guidance, development of Real Estate Plans for civil works studies.
Operations	The operations reviewer should have at least 3 years of experience with coastal storm risk management studies.

c. Documentation of ATR. DrChecks review software will be used to document all ATR comments, responses and associated resolutions accomplished throughout the review process. Comments should be limited to those that are required to ensure adequacy of the product. The four key parts of a quality review comment will normally include:

(1) The review concern – identify the product's information deficiency or incorrect application of policy, guidance, or procedures;

(2) The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not been properly followed;

(3) The significance of the concern – indicate the importance of the concern with regard to its potential impact on the plan selection, recommended plan; components, efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability; and

(4) The probable specific action needed to resolve the concern – identify the action(s) that the reporting officers must take to resolve the concern.

(5) In some situations, especially addressing incomplete or unclear information, comments may seek clarification in order to then assess whether further specific concerns may exist.

The ATR documentation in DrChecks will include the text of each ATR concern, the PDT response, a brief summary of the pertinent points in any discussion, including any Vertical Team (VT) coordination (the VT includes POA, PCX-CSRM, POD, and HQUSACE, and the agreed upon resolution. If an ATR concern cannot be satisfactorily resolved between the ATR team and the PDT, it will be elevated to the VT for further resolution in accordance with the policy issue resolution process described in either ER 1110-1-12 or ER 1105-2-100, Appendix H, as appropriate. Unresolved concerns can be closed in DrChecks with a notation that the concern has been elevated to the VT for resolution.

At the conclusion of each ATR effort, the ATR team will prepare a Review Report summarizing the review. Review Reports will be considered an integral part of the ATR documentation and shall:

- Identify the document(s) reviewed and the purpose of the review;

- Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;

- Include the charge to the reviewers;

- Describe the nature of their review and their findings and conclusions;

- Identify and summarize each unresolved issue (if any); and

- Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

ATR may be certified when all ATR concerns are either resolved or referred to the VT for resolution and the ATR documentation is complete. The ATR Lead will prepare a Statement of Technical Review certifying that the issues raised by the ATR team have been resolved (or elevated to the VT). A Statement of Technical Review should be completed, based on work reviewed to date for the draft report and final report. A sample Statement of Technical Review is included in Attachment 2.

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

IEPR may be required for decision documents under certain circumstances. IEPR is the most independent level of review, and is applied in cases that meet certain criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. A risk-informed decision, as described in EC 1165-2-217, and as amended in WRRDA 2014, Section 1044 (a) is made as to whether IEPR is appropriate. IEPR panels will consist of independent, recognized experts from outside of the USACE in the appropriate disciplines, representing a balance of areas of expertise suitable for the review being conducted. There are two types of IEPR:

- Type I IEPR. Type I IEPR reviews are managed outside the USACE and are conducted on project studies. Type I IEPR panels assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, economic analysis, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in the evaluation of environmental impacts of proposed projects, and biological opinions of the project study. Type I IEPR will cover the entire decision document or action and will address all underlying engineering, economics, and environmental work, not just one aspect of the study. For decision documents where a Type II IEPR (Safety Assurance Review) is anticipated during project implementation, safety assurance shall also be addressed during the Type I IEPR per EC 1165-2-217.

- Type II IEPR. Type II IEPR, or Safety Assurance Review (SAR), are managed outside the USACE and are conducted on design and construction activities for hurricane, storm, and flood risk management projects or other projects where existing and potential hazards pose a significant threat to human life. Type II IEPR panels will conduct reviews of the design and construction activities prior to initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness, and

acceptability of the design and construction activities in assuring public health safety and welfare.

a. Decision on IEPR. Type I and Type II IEPR is not anticipated for this decision document (Feasibility Phase) based on the following factors and criteria stated in EC 1165-2-217 and Planning Bulletin (PB) 2016-02.

(1) Type I IEPR.

(a) The project does not meet any of the triggers in EC 1165-2-217, Paragraph 11.4.1, and PB 2016-02, Paragraph 5.a, that would make a Type I IEPR mandatory.

- Significant threat to human life. The POA Chief of Engineering concurs that the life safety risks of this project will be no greater than those expected conditions experienced under without-project conditions. There is ample experience within the USACE and industry to treat the activity as being routine since it is a typical coastal storm risk management project using standard engineering design and construction methods resulting in minimal life safety risk.

- Total project cost. Cost analysis outlined in the 2010 Technical Report ranges from $21.9 million to $183.5 million (2007$). The $183.5 million alternative was a revetment built to withstand an ivu event. It was decided during the charette that building for an ivu event, which significantly increases material costs (rock and gravel), is unnecessary as ivu events are not frequent and occasional maintenance or repairs would be cost effective; therefore, no current alternative is anticipated to near $200 million.

- Request by the Governor. There has been no request from the Governor of Alaska that an IEPR be conducted.

- Request by the head of a Federal or state agency. Similarly, there has been no request from the head of a Federal or state agency that an IEPR be conducted.

- Significant public dispute. There has been no significant public dispute as to the size, nature, or effects of the project or the economic or environmental cost or benefits of the project.

- Report information. The information in the report is not based on novel methods, does not present complex challenges for interpretation, does not contain precedent-setting methods or models, and does not present conclusions that are likely to change prevailing practices.

- Chief of Engineers determination. The Chief of Engineers has not determined that an IEPR is warranted.

- EIS or EA. At this time, an EA is being pursued. If it is determined that an EIS is needed after collecting additional data, the Review Plan will be revised to include an EIS and subsequent IEPR.

(b) In addition, in accordance with EC 1165-2-217, Paragraph 15.d, the PDT has developed a risk-informed recommendation that the decision document does not warrant a Type I IEPR based on the following criteria.

- Per the Section 116 guidance, if the study does not yield an NED plan, the selection of a plan can be based in part or whole non-monetary units (EQ/OSE) and supported by a CE/ICA metric. The coastal storm risk management study follows a straight forward modeling approach. No significant impacts to environmental resources are anticipated. If an impact is identified later in the study, mitigation will be considered. The project does not pose a significant threat to human life, health and safety. Based on these considerations, the risk associated with project non-performance is acceptable.

- The product is not likely to contain influential scientific information or be a highly influential scientific assessment.

- This coastal storm risk management study is a typical project involving traditional methods of beach nourishment, rock revetment, and other structural and non-structural alternatives. Therefore, it is anticipated that there is minimal risk involved with the project. The final Feasibility Report and supporting documentation will contain standard engineering, economic, and environmental analyses and information. Novel methods will not be utilized and methods, models or conclusions will not be precedent setting or likely to change policy decisions. The Alaska District believes the study to be so limited in scope and impact that it would not significantly benefit from an IEPR.

(2) Type II IEPR

(a) The District Chief of Engineering has determined that the project would not pose a significant threat to human life or public safety.

(b) In addition, in accordance with EC 1165-2-217, Paragraph 12, the District Chief of Engineering has considered the following factors in making a risk-informed decision that the project does not warrant a Type II IEPR.

- Construction materials and techniques. The project does not involve the use of innovative materials or techniques where the engineering is based on novel methods; does not present complex challenges for interpretation, does not contain precedent-setting methods or models, or presents conclusions that are likely to change prevailing practices.

- Project design. The project design does not require unusual levels of redundancy, resiliency, or robustness.

- Construction Schedule. The project does not have a unique construction sequencing; or a reduced or overlapping design construction schedule.

b. Products to Undergo Type I IEPR. Not Applicable.

c. Required Type I IEPR Panel Expertise. Not Applicable.

d. Documentation of Type I IEPR. Not Applicable.

7. POLICY AND LEGAL COMPLIANCE REVIEW

All decision documents will be reviewed throughout the study process for their compliance with law and policy. Guidance for policy and legal compliance reviews is addressed in Appendix H, ER 1105-2-100. These reviews culminate in determinations that the recommendations in the reports and the supporting analyses and coordination comply with law and policy, and warrant approval or further recommendation to higher authority by the POD Commander. DQC and ATR augment and complement the policy review processes by addressing compliance with pertinent published Army policies, particularly policies on analytical methods and the presentation of findings in decision documents.

8. CIVIL WORKS COST ENGINEERING AND AGENCY TECHNICAL REVIEW MANDATORY CENTER OF EXPERTISE REVIEW AND CERTIFICATION

All decision documents shall be coordinated with the Civil Works Cost Engineering MCX, located in the Walla Walla District. The MCX will assist in determining the expertise needed on the ATR team and Type I IEPR team (if required) and in the development of the review charge(s). The MCX will also provide the Cost Engineering certification. The RMO is responsible for coordination with the Cost Engineering MCX.

9. MODEL CERTIFICATION AND APPROVAL

EC 1105-2-412 mandates the use of certified or approved models for all planning activities to ensure the models are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions. Planning models, for the purposes of the EC, are defined as any models and analytical tools that planners use to define water resources management problems and opportunities, to formulate potential alternatives to address the problems and take advantage of the opportunities, to evaluate potential effects of alternatives and to support decision making. The use of a certified/approved planning model does not constitute technical review of the planning product. The selection and application of the

model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

a. Planning Models. For this project, the PM will coordinate with the PCX-CSRM in determining the appropriate technically and theoretically sound and functional single-use or study-specific economic tool that can be applied during the planning process by knowledgeable and trained staff for purposes consistent with the model's purpose and limitations, and is in accordance with EC 1105-2-412 Paragraph 5.c.

b. Engineering Models. EC 1105-2-412 does not cover engineering models used in planning. The responsible use of well-known and proven USACE developed and commercial engineering software will continue and the professional practice of documenting the application of the software and modeling results will be followed. As part of the USACE Scientific and Engineering Technology Initiative, many engineering models have been identified as preferred or acceptable for use on Corps studies and these models should be used whenever appropriate. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

The following engineering models are anticipated to be used in the development of the decision document.

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Approval Status
Micro-computer Aided Cost Engineering System (MCACES) 2nd Generation (MII)	The MCACES/MII construction cost estimating software, developed by Building Systems Design Inc., is a tool used by cost engineers to develop and prepare all Civil Works cost estimates. Using the features in this system, cost estimates are prepared uniformly allowing cost engineers throughout USACE to function as one virtual cost engineering team.	Cost Engineering MCX Required Model
Beach-FX	Beach-FX is an engineering-economic software tool used to evaluate the physical performance and economic benefits and costs of shore protection projects. The model consists of a Monte Carlo simulation that evaluates reach erosion, physical storm impacts, and damages that occur from a storm passing a shore.	Certified Model
SBEACH	SBEACH is a numerical simulation model used to predict beach, berm, and dune erosion produced by storm waves and water levels.	Certified Model
GSSHA	Gridded Surface/Subsurface Hydrologic Analysis (GSSHA) is a two-dimensional, physically based watershed model developed by the Engineer Research and Development Center of the United	Certified Model

	States Army Corps of Engineers. It simulates surface water and groundwater hydrology, erosion and sediment transport. The GSSHA model is used for hydraulic engineering and research, and is on the FEMA list of hydrologic models accepted for use in the national flood insurance program for flood hydrograph estimation. Input is best prepared by the Watershed Modeling System interface,[2] which effectively links the model with geographic information systems (GIS).	
CSTORM-MS	Coastal Storm Modeling System (CSTORM-MS)—a comprehensive system of highly skilled and highly resolved models used to simulate coastal storms and accurately assess risk to coastal communities. With physics-based modeling capabilities, CSTORM-MS integrates a suite of high fidelity storm modeling tools to support a wide range of coastal engineering needs for simulating the following: •Tropical and extra-tropical storms •Wind, wave, and water levels •Coastal response, including erosion, breaching and accretion	Certified Model
CSHORE	CSHORE is used for near shore dynamics. It is a physics-based tool to predict profile and shoreline change, including the Coastal 2D (horizontal) steady-state near shore morphology response.	Certified Model

10. REVIEW SCHEDULE AND COSTS

a. ATR Schedule and Cost. The ATR schedule and cost will be further identified after scoping with the sponsor, however, it is currently estimated that ATRs will be conducted on the draft report and the final report. The ATR of the draft report is tentatively scheduled for August 2018. Estimated cost of ATR for both the draft and final feasibility report is $75K. ATR Lead participation in milestone meetings is planned with an additional cost of $25K. This document will be updated when costs are known.

b. Type I IEPR Schedule and Cost. Although a Type I or II IEPR is not anticipated from an environmental standpoint, $200K has been allocated in the draft budget for a Type I IEPR in the case that estimated project costs exceed $200M. The cost estimates have not been calculated. An IEPR will be required if environmental investigations push the NEPA document to an EIS. Once further information is collected in both of these areas, there will be a better understanding of whether a line item for IEPR can be removed from the budget.

c. Model Certification/Approval Schedule and Cost. The PDT will work with the PCX-CSRM on approval for a single-use spreadsheet model. The model review plan will be developed in accordance with policy provided by EC 1165-2-14. The model will be approved prior to use in identifying the tentatively selected plan. The estimated cost for certification or approval of planning models is estimated at $15K to $20K. The schedule will be included in this section once it is determined.

11. PUBLIC PARTICIPATION

All future revisions to the Review Plan and any minor updates will be posted to the POA webpage. Public review of the draft decision document will be held concurrently with Major Subordinate Command (MSC) review, ATR, and OWPR policy review. The public, including scientific or professional societies, will not be asked to nominate potential peer reviewers. If an EIS is required, the public comment period for the draft EIS will be no less than 45 days. Comments received during the public comment period for the draft report will not necessarily be available to the other review teams as part of their reviews, with exception of the IEPR panel (if applicable) which will receive a copy of any draft report public comments received. Public comments will be reviewed, addressed, and incorporated into the final draft report as appropriate. The final decision document, associated review reports, and USACE responses to IEPR comments (if applicable) will be made available to the public on the internet.

12. REVIEW PLAN APPROVAL AND UPDATES

The POD Commander is responsible for approving this Review Plan. The Commander's approval reflects VT input (involving POA, POD, RMO, and HQUSACE members) as to the appropriate scope and level of review for the decision document. Like the PMP, the Review Plan is a living document and may change as the study progresses. POA is responsible for keeping the Review Plan up to date. Minor changes to the Review Plan since the last POD Commander approval will be documented in Attachment 3. Significant changes to the Review Plan (such as changes to the scope and/or level of review) should be re-approved by the POD Commander following the process used for initially approving the plan. The latest version of the Review Plan, along with the POD Commander's approval memorandum, will be posted on the POA webpage. The latest Review Plan should also be provided to the RMO and POD.

13. REVIEW PLAN POINTS OF CONTACT

Public questions and/or comments on this review plan can be directed to the following points of contact:

- PDT Plan Formulator (POA), (907) 753-5632.
- PDT Project Manager (POA), (907) 753-2539.

- POD Senior Economist (POD), (808) 835-4625.
- PCX-CSRM Review Manager (NAD), (347) 370-4591.