US Army Corps of Engineers ®

REVIEW PLAN

Matagorda Ship Channel, Texas – Section 216 – Integrated Feasibility Report and Environmental Impact Statement (P2# 451954)

Galveston District

MSC Approval Date: *February 16, 2017*
Last Revision Date: _____

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1. PURPOSE AND REQUIREMENTS

a. Purpose. This Review Plan defines the scope and level of peer review for the Matagorda Ship Channel, Texas - Section 216 - Integrated Draft Feasibility Report and Environmental Impact Statement (MSC-EIS). The study area is located midway between Corpus Christi and Houston, on the Texas Gulf Coast.

The purpose of the MSC-EIS is to review the operation of the Matagorda Ship Channel, which was constructed by the U.S. Army Corps of Engineers (USACE). The Project Delivery Team (PDT) will identify and document significantly changed physical and economic conditions since the completion of construction, and develop recommendations on the advisability of modifying the Matagorda Ship Channel, or its operation.

The MSC-EIS is a single purpose review of completed projects study.

b. References

(1) Planning Bulletin (PB) 2016-2, Civil Works Review, 4 Mar 2016;
(2) Engineering Circular (EC) 1165-2-214, Civil Works Review, 15 Dec 2012;
(3) EC 1105-2-412, Assuring Quality of Planning Models, 31 Mar 2011;
(4) Engineering and Construction Bulletin No. 2016-9, CECW-CE, dated 04 Mar 2016;
(5) Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006;
(6) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007;
(7) MSC-EIS Project Management Plan, Dec 2016;
(8) District Quality Management Plan; and
(9) Matagorda Ship Channel, Texas Feasibility Cost Sharing Agreement (FCSA)

c. Requirements. This review plan was developed in accordance with EC 1165-2-214, and PB 2016-2, which provides the interim policy guidance for the expired EC 1165-2-214. EC 1165-2-214 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 Reviews. In addition to these levels of review, decision documents are subject to cost engineering review and certification (per EC 1165-2-214) 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 Deep Draft Navigation Planning Center of Expertise (DDNPCX) in coordination with the Soutwestern Division. The DDNPCX endorsed this Review Plan 27 January 2017.

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. Decision Document. The Matagorda Ship Channel, Texas, a single-purpose Section 216 review of completed projects (deep draft navigation) study, will review the operation of the Matagorda Ship Channel, which was constructed by USACE. The Project Delivery Team (PDT) will identify and document significantly changed physical and economic conditions since the completion of construction, and develop recommendations on the advisability of modifying the Matagorda Ship Channel, or its operation. Any recommendations will require approval at the District, Division, and Headquarters level and of the USACE Chief of Engineers. It is anticipated that Congressional authorization of improvements will be required. Recommendations for changes in Congressional authorization will be technically feasible, economically practicable, sound with respect to environmental considerations, and meet the requirements of the Principles and Guidelines (P&G). The study will be presented as a detailed feasibility study and integrated environmental impact assessment.

b. Study/Project Description. The Port of Port Lavaca-Point Comfort serves as a gateway to world markets for the Texas Mid-Coast Region. The port plays a vital role in supporting Texas chemical manufacturing industries and in building a stable economic foundation for Calhoun County. It is served by the Matagorda Ship Channel and the Gulf Intracoastal Waterway. Primary cargos handled are chemicals, petrochemicals, aluminum ore and agricultural fertilizer. A key part of this mix is very high value chemicals produced by area industries and sold for export to markets around the world. The public port is operated by the Calhoun Port Authority (CPA), previously known as the Calhoun County Navigation District. The CPA is governed by a Port Board made up of six members elected from districts within Calhoun County. The Port Director and a full-time professional staff are responsible for port management and day-to-day operations.

The CPA serves as the local non-Federal sponsor of the Matagorda Ship Channel which extends 24 miles from the Point Comfort Turning Basin into the Gulf of Mexico..

Port of Port Lavaca-Point Comfort
The Port of Port Lavaca-Point Comfort is located on the Western Gulf of Mexico near the mid-point of the Texas Coast (Figure 1). The port and related industries are part of a massive Texas chemical, refining and energy delivery complex.

Figure 1. Gulf of Mexico along the Texas Coast

Measures / Alternatives to be investigated include but are not necessarily limited to:

1) No Action
2) Widening of existing deep draft navigation channel
3) Deepening of existing deep draft navigation channel
4) Constructing ship passing lanes
5) Modifications to port operations
6) Modifications to existing port facilities
7) Modification to vessel traffic management
8) Combination of Measures

c. Factors Affecting the Scope and Level of Review. This study requires District Quality Control Review (DQC) and Agency Technical Review (ATR). In June 2016, it was determined that a Type I IEPR will be required during the study phase and Type II IEPR during the implementation phase. IEPR will be conducted in accordance with EC 1165-2-214. Some of the factors considered, followed by an assessment to determine the appropriate level of review (*italicized*) are provided below.

1) **Will parts of the study likely be challenging?** Yes. *This study assumes that identified problems with the entrance to the Matagorda Ship Channel will be addressed through the design deficiency study that is underway with no additional analysis required in this study effort. If the entrance issues are not addressed, channel improvements could exacerbate the difficulties with currents in the entrance channel. Multiple ongoing studies increase the study challenge, especially with regards to identification of without-project conditions because improvements to address the design deficiency have not yet been identified..*

Ths study does not have a dedicated PDT. Each PDT member also serves on other studies / projects making the scheduling of conference calls, meetings, in-progress reviews, SMART planning milestones, and study deliveries challenging. This also makes cost estimating a challenge.

2) **A preliminary assessment of where the project risks are likely to occur and what the magnitude of those risks might be.** *It is anticipated that neither the study, nor implementation of the recommended plan, will have any significant effect to human health, life or safety; this assessment was coordinated with and confirmed by the SWG Chief of Engineering and Construction).*

Implementation of the recommended plan may have significant economic, environmental, and / or social effects to the State of Texas, the Gulf Coast region, and to the nation. It is anticipated that an Environmental Impact Statement (EIS) in accordance with the National Environmental Policy Act (NEPA) will be required for this study.

It is anticipated that the study and implementation of the recommended plan will have significant agency interest. Improvements to the navigation channel will require development of a Dredged Material Management Plan to accommodate material from about 22 miles of channel improvements through Matagorda Bay and about 4 miles of channel improvements offshore in the Gulf of Mexico.

3) **Will the project be justified by life safety or is the project likely to involve significant threat to human life/safety assurance?** *No. The project would not be justified based on life safety. It is anticipated that neither the study, nor implementation of the recommended plan, will have any significant effect to human health, life or safety..*

4) **Has there been a request by the Governor of an affected state for a peer review by independent experts?** *No. There has been no request by the Governor of Texas for a peer review by independent experts.*

5) **Will there be significant public dispute as to the size, nature, or effects of the project?** *Possibly. It is anticipated that the study and implementation of the recommended plan may be controversial.*

The estimated total cost of the project, including any required mitigation costs, is likely to be somewhere between $300 - $500 million, based upon best professional judgment.

Environmental impacts may be significant because of the significant amount of sensitive bay bottom and oyster reef habitat that would be adversely affected by widening 25 miles of the existing ship channel. SWG has not received negative responses from local NGOs.

A formal scoping meeting took place in Port Lavaca on January 24, 2017. Per Council on Environmental Quality (CEQ) NEPA regulations (40 Part 1501.4(d)), formal scoping is done when an EIS is contemplated. Galveston District reviewed the potential for significant impacts and potential for controversy, and determined that since both are possible, an EIS will be prepared. The MSC-EIS will be circulated for public review.

6) **Is the project/study is likely to involve significant public dispute as to the economic or environmental cost or benefit of the project?** *Possibly. It is anticipated that significant public dispute as to the economic or environmental cost or benefit of the project may occur. Economic studies will be conducted using the approved HarborSym model to confirm the project depth(s) and verify that there are sufficient economic benefits. Environmental impacts may be significant (see paragraph 5 above) and environmental consequences of the proposed action will be documented in an EIS in accordance with the NEPA. Public and stakeholder perspectives will be obtained when the MSC-EIS is released for public review.*

7) **Is the information in the decision document or anticipated project design likely to be based on novel methods, involve the use of innovative materials or techniques, present complex challenges for interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practices?** *No. It is anticipated that the information in the decision document (MSC-EIS) will not present conclusions that are likely to change prevailing practices. The study will look at complex challenges requiring careful description and analysis for clear communication to varied audiences. Use of existing environmental information for plan formulation, rather than performing intensive environmental surveys and analysis, may be a high risk in coordination with resource agencies. The final MSC-EIS 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 precedence setting or likely to change policy decisions.*

8) **Is the project design anticipated to require redundancy, resiliency, and/or robustness, unique construction sequencing, or a reduced or overlapping design construction schedule?** *The project design is not anticipated to require redundancy, resiliency, and/or robustness. The project will not propose unique construction sequencing, or a reduced or overlapping design construction schedule.*

d. In-Kind Contributions. The sponsor is expected to provide the 50 percent of the cost of the feasibility study. , ATR, and IEPR. The in-kind contributions and analyses to be provided by the non-Federal sponsor may include existing reports and hard data that contribute to the study / project, assistance during public involvement actions, and assistance during plan formulation. All products produced under work-in-kind (WIK) are also subject to reviews identified in this Review Plan including DQC, ATR, and IEPR.

4. DISTRICT QUALITY CONTROL (DQC)

All decision documents (draft and final); 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). The home district shall manage DQC. Documentation of DQC activities is required and should be in accordance with the Quality Manual of the District and the home major subordinate command (MSC).

a. Documentation of DQC. DQC shall be consistent with the PMP and the Southwestern Division (SWD) Quality Management Plan (QMP). DQC shall be completed on each deliverable prior to submission to the PM or planner for incorporation into the decision document. The Project Delivery Team (PDT) will also be responsible for a compete reading of the draft and final MSC-EIS documents to assure the overall integrity of the report, technical appendices, and recommendations. A formal DQC review will be conducted on the MSC-EIS and all DQC comments and responses shall be documented in DrChecks. The DQC comment response report will be provided to the ATR team lead prior to the ATR kick-off meeting. A formal DQC will also be conducted on the Draft Final Report prior to final submission.

b. Products to Undergo DQC. DQC should review any technical assumptions, modeling parameters, and calculations as well as the content and format of the technical appendix and main report submitted and should take place at a minimum prior to the submittal to the vertical team prior to any SMART planning milestone. Additionally, any deliverables from contractors or products provided by the NFS should undergo DQC prior to being incorporated into the analysis used to generate technical information and products.

c. Required DQC Expertise. DQC shall be conducted by the technical team member's first line supervisor or a Regional Technical Specialist. In the event products from outside sources are incorporated the first line supervisor may delegate this DQC to a technical team member (not involved with the project) if it is determined that he/she has sufficient experience, objectivity, and knowledge of USACE guidance to properly evaluate the models/documents. DQC team members should not be members of the PDT.

DQC Team Members/Disciplines	Expertise Required
DQC Lead	The DQC lead should be a senior professional with extensive experience in preparing Civil Works decision documents and conducting DQC. The lead should DQC Lead also have the necessary skills and experience to lead a virtual team through the DQC process. The DQC lead may also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc.).
Plan Formulation	Team member should be a plan formulation subject matter expert, have extensive experience in the USACE planning process, and be knowledgeable of USACE policies and guidelines. Reviewer should be familiar with deep-draft navigation projects,

DQC Team Members/Disciplines	Expertise Required
	water resources, watershed planning, and have experience relevant to issues associated with Hurrican Flood Protection Project (HFPP) systems.
Economics	The Economics reviewer is required to be an economist certified for the deep-draft navigation business line. The economist should also have experience using HarborSym
Environmental Resources	Team member should be an environmental subject matter expert familiar with preparing, processing, and reviewing NEPA documents, and have experience with models identified in Section 9 of this Review Plan.
Cultural Resources	This project might not require this reviewer since cultural resources do not have a significant bearing on the planning in the MSC-EIS. If one is required, the member should demonstrate experience with archeological resources. The District (SWG) will coordinate with the RMO prior to the TSP to determine the need for a cultural resources ATR reviewer.
Hydrology & Hydraulic Engineering	Team member should be an H&H subject matter expert, demonstrate experience in risk-based storm surge and wave modeling, sea level rise, risk and uncertainty, sedimentation analysis, hydrodynamic modeling and have experience relevant to issues associated with deep-draft navigation, ship simulation and HFPP systems. The individual should be a certified PE.
Structural Engineer	Team member should be a structural subject matter expert with extensive experience in levee and floodwall design, pre- and post-construction evaluation, and rehabilitation. Team member should have a thorough understanding of structural measures to include, but not be limited to stability mitigation for levees. The individual should be a certified PE. Additionally, since the study includes evaluation of impacts (and mitigation) to an existing HFPP this reviewer should also have experience with the USACE Levee Safety Program and risk assessments.
Geotechnical Engineer	The geotechnical engineer should have experience with the classification, dredging, and disposal of dredged material. The geotechnical engineer should also be experienced in levee and floodwall design, having proper stability and seepage analysis experience.
Civil Engineering	Team member should be a civil design subject matter expert and have experience with deep-draft navigation and levee design, utility relocations, positive closure requirements, and interior drainage requirements. The individual should be a certified PE.
Cost Engineering	Team member should be familiar with cost estimating for similar projects in MCACES. Review includes construction schedules and contingencies for any document that requires cost certification. The team member will be a Certified Cost Technician, Certified Cost Consultant, or Certified Cost Engineer. As the Cost Engineering Mandatory Center of Expertise, Walla Walla District will assign this team member as part of a separate effort coordinated by the ATR team lead in conjunction with the SWG project manager.

DQC Team Members/Disciplines	Expertise Required
Real Estate	Team members should be familiar with similar USACE Civil Works studies and projects.

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 (DDNPCX in this case) and is conducted by a qualified team from outside the home district 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 lead will be from outside the home MSC. The public, including scientific or professional societies, will not be asked to nominate potential peer reviewers.

a. Products to Undergo ATR. All ATRs will be coordinated through the DDNPCX. The ATR will be accomplished by an independent entity outside the home district, within USACE, as designated by the PCX. The purpose of this review is to ensure the proper application of clearly established criteria, regulations, laws, codes, principles, and professional practices of all project decision documents. The intent is for an ATR to not only ensure technical analyses are correct, but also to ensure compliance with all pertinent USACE guidance and delivery of high quality products early in the study prior to HQUSACE review. ATR will be completed on the following documentation:

(1) Draft Integrated MSC-EIS
(2) Final Integrated MSC-EIS

b. Required ATR Team Expertise. ATR teams will be comprised of senior USACE personnel and may be supplemented by outside experts as appropriate. The ATR team lead will be from outside the home MSC. The ATR team will be chosen based on each individual's qualifications and experience with similar projects and will be ATR certified by their respective Communities of Practice (CoPs) and/or Sub-CoPs, as applicable**. The ATR Team Lead is responsible for ensuring that all Reviewers are selected from the respective nationally-approved list of reviewers.** Although one ATR team member is identified for each technical discipline, depending upon reviewer availability and knowledge, more than one reviewer may be required for a given discipline to ensure required expertise is obtained for the review. The DDNPCX is responsible for recruiting the ATR team lead and ATR team.

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 Team Members/Disciplines	Expertise Required
	ATR process. The ATR lead may also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc.).
Plan Formulation	Team member should be a plan formulation subject matter expert, have extensive experience in the USACE planning process, and be knowledgeable of USACE policies and guidelines. Reviewer should be familiar with deep-draft navigation projects, water resources, watershed planning, and have experience relevant to issues associated with HFPP systems.
Economics	The Economics reviewer is required to be an economist certified for the deep-draft navigation business line. The economist should also have experience using HarborSym
Environmental Resources	Team member should be an environmental subject matter expert familiar with preparing, processing, and reviewing NEPA documents, and have experience with models identified in Section 9 of this Review Plan.
Cultural Resources	This project might not require this reviewer since cultural resources do not have a significant bearing on the planning in the MSC-EIS. If one is required, the member should demonstrate experience with archeological resources. The District (SWG) will coordinate with the RMO prior to the TSP milestone to determine the need for a cultural resources ATR reviewer.
ATR Team Members/Disciplines	**Expertise Required**
Hydrology & Hydraulic Engineering	Team member should be an H&H subject matter expert, demonstrate experience in risk-based storm surge and wave modeling, sea level rise, risk and uncertainty, sedimentation analysis, hydrodynamic modeling and have experience relevant to issues associated with deep-draft navigation, ship simulation and HFPP systems. The individual should be a certified PE.
Structural Engineer	Team member should be a structural subject matter expert with extensive experience in levee and floodwall design, pre- and post-construction evaluation, and rehabilitation. Team member should have a thorough understanding of structural measures to include, but not be limited to stability mitigation for levees. The individual should be a certified PE. Additionally, since the study includes evaluation of impacts (and mitigation) to an existing HFPP this reviewer should also have experience with the USACE Levee Safety Program and risk assessments.
Geotechnical Engineer	The geotechnical engineer should have experience with the classification, dredging, and disposal of dredged material. The geotechnical engineer should also be experienced in levee and floodwall design, having proper stability and seepage analysis experience.
Civil Engineering	Team member should be a civil design subject matter expert and have experience with deep-draft navigation and levee design, utility relocations, positive closure requirements, and interior drainage requirements. The individual should be a certified PE.
Cost Engineering	Team member should be familiar with cost estimating for similar projects in MCACES. Review includes construction schedules and contingencies for any document that requires cost certification. The team member will be a Certified Cost Technician, Certified Cost Consultant, or Certified Cost Engineer. As the Cost Engineering Mandatory Center of Expertise, Walla

ATR Team Members/Disciplines	Expertise Required
	Walla District will assign this team member as part of a separate effort coordinated by the ATR team lead in conjunction with the SWG project manager.
Real Estate	Team members should be familiar with similar USACE Civil Works studies and projects. RE ATR team member should be selected from the national Cop approved list of reviewers for commercial navigation projects.

It should be noted that the legal review is the responsibility of the USACE, SWG Office of Counsel and is not under the purview of the ATR team.

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 be 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.

In some situations, especially addressing incomplete or unclear information, comments may seek clarification to 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 coordination (the vertical team includes the district, MSC, 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 vertical team for further resolution, in accordance with the resolution process for policy issues 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 vertical team 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 will:

- 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 vertical team 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 vertical team). 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 1165-2-214, 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 1165-2-214.

- 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. The plan will likely involve impacts. The risk informed decision on whether to perform a Type I IEPR for the MSC-EIS was based on the following italicized items followed by the non-italicized District response.

If the decision document meets the mandatory triggers for Type I IEPR described in Paragraph 11.d.(1) and Appendix D of EC 1165-2-214; and if it doesn't, then also: This decision was made

subsequent to coordination with the DDNPCX, RMC, and the Coastal Storm Risk Management Planning Center of Expertise (CSRM-PCX). Type I IEPR is being required during the study phase. The project meets a mandatory trigger to perform IEPR I. The project cost is estimated as $300M-$500M for the MSC-EIS project, more than the $200M trigger.

There has not been a request by the Governor of Texas nor is it anticipated that the office of the Governor of Texas will request a peer review by independent experts.

There has been a determination by the Chief of Engineering and Construction Division – CESWG, that Type I IEPR is warranted (Attachment 5 – Chief's SAR Assessment).

The Economic studies will be conducted using the approved HarborSym model to confirm the project depth(s), and width(s) and to verify there are sufficient economic benefits.

Environmental consequences of the proposed action will be documented in an EIS in accordance with the NEPA and will undergo public review to allow for public and agency comments.

Whether the product is likely to contain influential scientific information or be highly influential scientific assessment; and; The project is not likely to contain influential scientific information or be a highly influential scientific assessment

If and how the decision document meets any of the possible exclusions described in Paragraph 11.d. (3) and Appendix D of EC 1165-2-214. The District is not applying for exclusion of IEPR.

The status of any request to conduct IEPR from a head of a Federal or state agency charged with reviewing the project, if applicable; and No requests have been made from a head of a Federal or state agency charged with reviewing the project; however, the District is not applying for an exclusion to IEPR.

- *If the proposed project meets the criteria for conducting Type II IEPR described in Paragraph 2 of Appendix D of EC 1165-2-214, including:*

if the Federal action is justified by life safety or failure of the project would pose a significant threat to human life; The project is not justified by life safety. However, there has been a determination by the Chief of Engineering and Construction Division – CESWG, that Type I IEPR is warranted (Attachment 5 – Chief's SAR Assessment).

if the project involves the use of innovative materials or techniques where the engineering is based on novel methods, presents complex challenges for interpretations, contains precedent-setting methods or models, or presents conclusions that are likely to change prevailing practices; Project does not include any of the aforementioned (innovative materials, techniques, etc.).

if the project has unique construction sequencing or a reduced or overlapping design construction schedule. The project does not have unique construction sequencing or a reduced or overlapping design construction scheduled.

The DDNPCX will serve as the RMO, in coordination with Southwestern Division, during the study phase and coordinate with the RMC and CSRM-PCX to ensure that associated study efforts are properly addressed during the review process for both ATR
and/ if Type I IEPR is triggered.

b. Products to Undergo Type I IEPR. Type I IEPR will be performed for the entire draft decision document, including supporting documentation (appendices). This review will be conducted concurrently with the ATR, Public and Agency Review, Division QA Review and HQ Policy Review.

c. Required Type I IEPR Panel Expertise. The expertise represented on the Type I IEPR panel may be similar to those on the ATR team, but may be more specifically focused and generally will not involve as many disciplines. At minimum, the panel should include the necessary expertise to assess the engineering, environmental, and economic adequacy of the decision document as required by EC 1165-2-214, Appendix D. The Outside Eligible Organization (OEO) will determine the final participants on the panel.

IEPR Panel Members/Disciplines	Expertise Required
Plan Formulation	A minimum of 10 years of demonstrated experience in public works planning with a Master's degree in a related field. The reviewer should be very familiar with USACE civil works planning policies, methodologies, and procedures.
Economics	The Economics Panel Member should have extensive experience related to economic analyses for deep-draft navigation projects. Knowledge of tools employed for economic analysis, risk analysis, and trade forecasts are required.
Environmental	The Environmental Panel Member should be an expert regarding NEPA compliance and deep-draft navigation projects and knowledgeable regarding environmental aspects of coastal systems and dredged material management.
Geotechnical Engineer	The Engineering Panel Member should be a geotechnical subject matter expert with extensive experience in levee and floodwall design, pre- and post-construction evaluation, and rehabilitation. This member should have a thorough understanding of structural measures to include, but not be limited to stability mitigation for levees. Lastly, the member needs experience relevant to issues associated with deep-draft navigation. The individual should be a certified PE.
H&H/Coastal Engineer	The H&H Engineer should be an expert with deep-draft navigation channel design and modification as well as coastal storm surge evaluations. The individual should be a certified PE.

d. Documentation of Type I IEPR. The IEPR panel will be selected and managed by an Outside Eligible Organization (OEO) per EC 1165-2-214, Appendix D. Panel comments will be compiled by the OEO. Comments should address the adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used. IEPR comments should generally include the

same four key parts as described for ATR comments in Section 5.c above. The OEO will prepare a final Review Report that will accompany the publication of the final decision document and shall:

- 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; 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.

The final Review Report will be submitted by the OEO no later than 60 days following the close of the public comment period for the draft decision document. USACE shall consider all recommendations contained in the Review Report and prepare a written response for all recommendations adopted or not adopted. The final decision document will summarize the Review Report and USACE response. The Review Report and USACE response will be made available to the public, including through electronic means on the internet.

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 home MSC Commander. DQC and ATR 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 (MCX)

All decision documents shall be coordinated with the 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 applicable) and in the development of the review charge(s). The MCX will also provide the Cost Engineering MCX certification. The RMO is responsible for coordination with the 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).

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 (SET) 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).

a. Planning Models. The following planning 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	Certification / Approval Status
HarborSym	The program will be used to evaluate and compare the future without- and with-project plans for the FHCIP to aid in the selection of a plan to meet the study objectives.	Certified
The United States Fish and Wildlife Service (USFWS) Habitat Evaluation Procedure (HEP)	The USFWS HEP will be used to evaluate habitat conditions that would result from alternative plans. Habitat Suitability Index (HSI) models will be used for the mottled duck and great egret. These are approved models.	Approved for use

b. Engineering Models. 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
Ship Simulation	This model will simulate ship movement through various alternative scenarios. A two dimensional hydrodynamic model will be applied to the vicinity of the ship channel to generate currents for the ship simulator. The results will be used for determining a final design channel plan, which will be applied to the salinity models.	Approved for use; oversight by ERDC
GeoStudio & Slope/W	This model will be used for geotechnical stability analysis.	Approved for use
Mii - cost estimating models	Cost Engineering's model for developing cost.	Cost Engineering Approved Model
Crystal Ball Risk Based Analysis	Cost Engineering's model for determining risk in cost estimating.	Cost Engineering Approved Model
ADCIRC	System of computer programs used for prediction of storm surge and flooding	Approved for use
CMS-Wave	Spectral wave transformation numerical model, part of Coastal Modeling System (CMS)	Approved for use
STWAVE	Steady State spectral WAVE, half-plane model for nearshore wind-wave growth and propagation	Approved for use

10. REVIEW SCHEDULES AND COSTS

a. ATR Schedule and Cost. ATR of the MSC-EIS report will be performed concurrent to Public and Agency Review, Division QA Review, HQ Policy Review, and Type I IEPR. The following table shows preliminary cost estimates to conduct ATR. ATR will be completed on the MSC-EIS. Cost of the ATR is based on the following guidance from the DDNPCX.

- ATR of the draft document will be approximately $5K per reviewer + $3K for the ATR team lead + $3.5K for the DDNPCX.
- ATR of the final document will vary between $3-$5K per reviewer +$3K for ATR lead +$3.5K for DDNPCX

Estimated schedule for DQC and ATR				
Product	**Start**	**Finish**	**Duration (days)**	**Estimated Cost**
Draft MSC-EIS (DQC)	Nov 2017	Dec 2017	28	$25,000
Draft MSC-EIS (**ATR**) after TSP (concurrent with Public & Agency, and VT Reviews)	April 2018	July 2018	45	$50,000
Final MSC-EIS (DQC)	Jan 2019	Feb 2019	28	$25,000
Final MSC-EIS (**ATR**) after ADM	Mar 2019	May 2019	42	50,000
		Total Estimated Cost for DQC/ATR		**$150,000**

b. Type I IEPR Schedule and Cost. Upon approval of this review plan by SWD, and receipt of funding for the IEPR review, the District will initiate the IEPR Contract with the DDNPCX. The Type I IEPR contract will be awarded to begin IEPR concurrent with the ATR, Division QA Review, HQ Policy Review and Public and Agency Review. IEPR is estimated to cost between $150,000 - $250,000.

c. Model Certification/Approval Schedule and Cost. All models utilized in this study are approved.

11. PUBLIC PARTICIPATION

The public will be able to comment on the MSC-EIS during the decision making process. A public meeting is not expected to be required for the study. The public review will occur after the TSP milestone, concurrent with ATR, IEPR, Division QA Review, and HQ Policy Review.

The public will have an opportunity to review and provide comments on the MSC-EIS during the public review period, which will occur concurrently with the ATR, IEPR, QA Review, and Policy Review. The MSC-EIS will be released for Public and Agency Review subsequent to the TSP milestone.

As required by EC 1165-2-214, the approved Review Plan will be posted on the Galveston District public website (http://www.swg.usace.army.mil/Business-With-Us/Planning-Environmental-Branch/Planning-Section/). This is not a formal comment period and there is no set timeframe for the opportunity for public comment. If and when comments are received, the PDT will consider them and decide if revisions to the review plan are necessary. This engagement will ensure that the peer review approach is responsive to the wide array of stakeholders and customers, both within and outside the Federal government.

12. REVIEW PLAN APPROVAL AND UPDATES

The Southwestern Division Commander is responsible for approving this Review Plan. The Commander's approval reflects vertical team input (involving district, MSC, 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. The home district is responsible for keeping the Review Plan up to date. Minor changes to the review plan since the last MSC Commander approval are 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 MSC Commander following the process used for initially approving the plan. The latest version of the Review Plan, along with the Commanders' approval memorandum, should be posted on the Home District's webpage. The latest Review Plan should also be provided to the RMO (DDNPCX in this case) and home MSC.

13. REVIEW PLAN POINTS OF CONTACT

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

U.S. Army Corps of Engineers, Galveston District
ATTN: Project Manager
2000 Fort Point Road
Galveston, Texas 77550
409-766-3168

U.S. Army Corps of Engineers, Southwestern Division
ATTN: Senior Economist
1100 Commerce Street, Suite 831
Dallas, Texas 75242
469-487-7065

U.S. Army Corps of Engineers, Regional Environmental and Planning Center
ATTN: Planning Lead
2000 Fort Point Road
Galveston, Texas 77550
409-766-3804

U.S. Army Corps of Engineers, Deep Draft Navigation Planning Center of Expertise
ATTN: Review Management Organization
P.O. Box 2288
Mobile, Alabama 36628
251-694-3842

US Army Corps of Engineers
Risk Management Center
12596 West Bayaud Ave., Suite 400
Lakewood, CO 80228
304-399-5217

ATTACHMENT 1: TEAM ROSTERS

PDT Member	Role	Phone	E-mail
	Project Management (SWG)		
	Planning Lead (RPEC)		
	H&H		
	Economics		
	Economics		
	Environmental Resources		
	Cultural Resources		
	Geotechnical Engineering		
	Operations PM		
	Civil Engineering		
	Civil Engineering		
	Real Estate		
	Cost Engineering		

ATR Member	Role	Phone	Email
	DDNPCX Review Manager/ATR Lead		
TBD	Plan Formulation		
TBD	Economics		
TBD	Environmental /Cultural		
TBD	H&H Engineer		
TBD	Geo/Structural Engineer		
TBD	Civil Engineer		
TBD	Cost Engineering		
TBD	Real Estate		

DQC Level 1	Role	Phone	Email
TBD	DQC Lead		
TBD	Sr. Planner		
TBD	Sr. Environmental Planner - RPEC		
TBD	Sr. Economist - RPEC		
TBD	Geotechnical Engineer		
TBD	Structural Engineer		
TBD	Civil Engineer		

TBD	Sr. Real Estate		
TBD	Hydraulics & Hydrology		

DQC Level 2	Role (Supervisory)	Phone	Email
	DQC Manager/No Review		
	RPEC, Chief, Plan Formulation		
	RPEC, Chief, Unit A, NEPA/Cultural Resources Section (SWF-PEC-TN)		
	RPEC, Planning Branch, Chief, Economics (SWF-PEC-PE)		
	Chief, Geotechnical & Structures Section		
	Chief, General Engineering Section		
	Real Estate, Technical Services		
	Professional Services Section		
	Chief, Navigation Branch		
	Branch Chief, H&H Reservoir Control Branch (CESWG-EC-EH)		

Vertical Team	Role	Phone	Email
	SWD Planning & Policy CoP		
	Chief, SWD Planning Division		
	Regional Integration Team		
	Chief, SWD Real Estate		
	Chief, Regional E&C		
	SWD Division Counsel		
	Acting Chief, SWD Programs		

IEPR Panel Members	Role	Phone	Email
TBD	Plan Formulation		
TBD	Economics		
TBD	Environmental		
TBD	Geotechnical /Structural Engineering		
TBD	H&H Coastal Engineer		

ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECSION DOCUMENTS

COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the *<type of product>* for *<project name and location>*. The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-214. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrChecks[sm].

SIGNATURE _____ _____

Name Date
ATR Team Leader
Office Symbol/Company

SIGNATURE _____ _____

Name Date
Project Manager
Office Symbol

SIGNATURE _____ _____

Name Date
Architect Engineer Project Manager[1]
Company, location

SIGNATURE (If different from the ATR Lead) _____ _____

Name Date
DDNPCX Review Management Office Representative
Office Symbol

SIGNATURE _____ _____

Name Date
SWD Review Management Office Representative
Office Symbol

[1] Only needed if some portion of the ATR was contracted

CERTIFICATION OF AGENCY TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows: *Describe the major technical concerns and their resolution.*

As noted above, all concerns resulting from the ATR of the project have been fully resolved.

SIGNATURE _____ _____

Name Date
Chief, Engineering Division
Office Symbol

SIGNATURE _____ _____

Name Date
Chief, Planning Division
Office Symbol

SIGNATURE _____ _____

Name Date
Chief, Real Estate Division
Office Symbol

ATTACHMENT 3: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number

ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS

Term	Definition	Term	Definition
AFB	Alternative Formulation Briefing	NER	National Ecosystem Restoration
ASA(CW)	Assistant Secretary of the Army for Civil Works	NFS	Non-Federal Sponsor
ATR	Agency Technical Review	NEPA	National Environmental Policy Act
CSDR	Coastal Storm Damage Reduction	O&M	Operation and maintenance
DPR	Detailed Project Report	OMB	Office and Management and Budget
DQC	District Quality Control/Quality Assurance	OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation
DX	Directory of Expertise	OEO	Outside Eligible Organization
EA	Environmental Assessment	OSE	Other Social Effects
EC	Engineer Circular	PCX	Planning Center of Expertise
EIS	Environmental Impact Statement	PDT	Project Delivery Team
EO	Executive Order	PAC	Post Authorization Change
ER	Ecosystem Restoration	PMP	Project Management Plan
FDR	Flood Damage Reduction	PL	Public Law
FEMA	Federal Emergency Management Agency	QMP	Quality Management Plan
FRM	Flood Risk Management	QA	Quality Assurance
FSM	Feasibility Scoping Meeting	QC	Quality Control
GRR	General Reevaluation Report	RED	Regional Economic Development
Home District/MSC	The District or MSC responsible for the preparation of the decision document	RMC	Risk Management Center
HQUSACE	Headquarters, U.S. Army Corps of Engineers	RMO	Review Management Organization
IEPR	Independent External Peer Review	RTS	Regional Technical Specialist
ITR	Independent Technical Review	SAR	Safety Assurance Review
LRR	Limited Reevaluation Report	USACE	U.S. Army Corps of Engineers
MSC	Major Subordinate Command	WRDA	Water Resources Development Act
NED	National Economic Development		

ADM	Agency Decision Milestone	AMC	Alternatives Milestone Conference
AMM	Alternatives Milestone Meeting	ATRT	Agency Technical Review Team
CECW	Corps of Engineers, Civil Works	CPA	Calhoun Port Authority
CoP	Community of Practice	CWRB	Civil Works Review Board
ECB	Engineering Circular Bulleting	EIS	Environmental Impact Statement
EM	Engineering Manuary	ER	Engineering Regulation
FEA	Feasibility	H&H	Hydrology, hydraulics & sediment
HH&C	Hydrology, Hydraulics & Coastal	HTRW	Hazardous, Toxic & Radioactive Waste
IPR	In-Progress Review	MCASES	Micro-Computer Aided Cost Estimating System
MCX	Civil Works Cost Engineering & Agency Technical Review Mandatory Center of Expertise	NGO	Non-Governmental Orgainzation
OEO	Outside Eligible Organization	P&G	Principles & Guidelines
RP	Review Plan	SET	Scientific & Engineering Technolocy
SWD	Southwestern Division	SWG	Galveston District
TSP	Tentatively Selected Plan	VE	Value Engineering

ATTACHMENT 5: CESWG Chief of Engineering and Construction Dividion SAR Assessment