

# **REVIEW PLAN**

## **Houston Ship Channel Project Deficiency Report (Flare at the Intersection of the Houston Ship Channel and Bayport Ship Channel) Houston-Galveston Navigation Channels, Texas**

*(Previously approved under BAYPORT FLARE, HOUSTON SHIP CHANNEL, TEXAS,  
LETTER REPORT OF BEND EASING AT BAYPORT)*

**U.S. Army Corps of Engineers  
Galveston District**

**October 2015**

**MSC Approval Date: 7 December 2012**

**Last Revision Date: October 2015**



**US Army Corps  
of Engineers®**

**REVIEW PLAN**

**Houston Ship Channel Project Deficiency Report  
(Flare at the Intersection of the Houston Ship Channel and Bayport Ship Channel) Houston-Galveston  
Navigation Channels, Texas**

**TABLE OF CONTENTS**

**1. PURPOSE AND REQUIREMENTS .....1**

**2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION .....1**

**3. STUDY INFORMATION .....1**

**4. DISTRICT QUALITY CONTROL (DQC).....5**

**5. AGENCY TECHNICAL REVIEW (ATR) .....6**

**6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR) .....7**

**7. POLICY AND LEGAL COMPLIANCE REVIEW .....9**

**8. COST ENGINEERING DIRECTORY OF EXPERTISE (DX) REVIEW AND CERTIFICATION .....9**

**9. MODEL CERTIFICATION AND APPROVAL.....9**

**10. REVIEW SCHEDULES AND COSTS .....10**

**11. PUBLIC PARTICIPATION .....11**

**12. REVIEW PLAN APPROVAL AND UPDATES.....11**

**13. REVIEW PLAN POINTS OF CONTACT .....11**

**ATTACHMENT 1: TEAM ROSTERS .....12**

**ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECISION DOCUMENTS.....14**

**ATTACHMENT 3: REVIEW PLAN REVISIONS .....16**

**ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS .....18**

**ATTACHMENT 5: IEPR II (SAR) EXCLUSION.....19**

## 1. PURPOSE AND REQUIREMENTS

**Purpose.** This Review Plan defines the scope and level of peer review for the *Houston Ship Channel Project Deficiency Report (Flare at the Intersection of the Houston Ship Channel and Bayport Ship Channel) Houston-Galveston Navigation Channels, Texas (HSCPDR)*. This Review Plan was previously approved under the study title of *Bayport Flare Houston Ship Channel, Texas Letter Report of Bend Easing at Bayport*.

### a. References

- Engineering Circular (EC) 1165-2-214, Civil Works Review, 15 Dec 2012
- EC 1105-2-412, Assuring Quality of Planning Models, 31 Mar 2011
- Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006
- ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007

**b. Requirements.** This review plan was developed in accordance with EC 1165-2-214, 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 1165-2-214) 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. Since the HSCPDR is inherently an engineering technical document (i.e., addressing design deficiency of constructed project features), the RMO for the peer review effort described in this Review Plan is the U.S. Army Corps of Engineers (USACE) Southwestern Division (SWD).

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, Total Project Cost Summary (TPCS) and contingencies.

## 3. STUDY INFORMATION

**a. Decision Document.** Approval of the Project Deficiency Report (PDR) will be at the HQUSACE level as it is a technical document defining modification of features to ensure the project operates to achieve the authorized purposes/benefits. The report will also include an EA. The Approval level for this report is the Chief, Operations, Directorate of Civil Works, HQUSACE.

Once approved, the findings and recommendations of the HSCPDR will be provided to the ASA(CW) for coordination as it will require a new investment decision to budget as part of the funding process.

The HSCPDR will be incorporated into the final Post Authorization Change Report (*Houston-Galveston Navigation Channels, Texas, Post Authorization Change Report and Section 902 Cost Limit Determination* (HGNC 902 PACR) in process) which is addressing the 902 cost limit issues on the Houston-Galveston Navigation Channels, Texas Project (HGNC). Ultimately, the HGNC 902 PACR will require Congressional Authorization to raise the limit of the authorized cost for the HGNC, Texas Authorization.

- b. **Study/Project Description.** The Houston Ship Channel (HSC) contains a deficiency inherent in the design in the *Houston-Galveston Navigation Channels, Texas, Limited Reevaluation Report and Final Supplemental Environmental Impact Statement* completed in November 1995 (1995 LRR/SEIS). The HGNC was authorized in the Water Resources Development Act of 1996 (WRDA 1996), Section 101(a)(30), P.L. 104-303. The Project was constructed as a multipurpose project with two separable elements, the HSC and the Galveston Channel. The two project purposes are to provide navigation improvements to the ports of Houston and Galveston, and to provide environmental restoration for the Houston portion of the Project through the beneficial use (BU) of dredged material. Construction of the HSC portion of the project was completed by 2007, while the Galveston Channel was completed in 2011.

The channel design for the HGNC did not fully account for impacts of the channel improvements within the HSC in the vicinity of the Bayport Ship Channel (BSC). A hazardous and unacceptable navigation condition has resulted. Increased traffic and vessel size afforded by the channel improvements authorized by WRDA 1996 has increased the potential for collisions and accidents within this section of the HSC. The intersection of the HSC and BSC has been a major safety concern since construction of the Houston portion of the 45-foot project was completed in 2007.

The location of the identified deficiency is situated along the HSC segment that crosses Galveston Bay between Redfish Reef to the south and Morgans Point to the North. Specifically, it is located northwest of the Mid Bay PA in the vicinity of the intersection between the HSC and the BSC as shown in Figure 1.

The HSC is constructed to a 45-foot authorized depth with a bottom width of 530 feet. As shown in Figure 1, the channel runs in a relatively straight course from Redfish Reef up to the HSC Bend (located within the box marked as the Area of Safety Concern). There is an approximate 15-degree bend or turn at HSC Point of Intersection (P.I.) Station 28+605.055; after which, the channel continues on a straight course to Morgans Point. At the intersection of the HSC and BSC, the Flare has a non-tangential south radius of 3,000 feet and a non-tangential north radius of 2,000 feet due to implementation of the WRDA 1996 project; specifically, the 45-foot HSC completed in 2007. The Flare bottom width varies with the widest width approximately 3,394 feet at its union with the HSC and tapering to 300 feet at the union with the BSC. The Flare is currently maintained at a depth of 40 feet with a 7-foot advance maintenance making the required depth at minus 47 feet. The HSC at the intersection is currently maintained at a depth of 45 feet with 2-foot advance maintenance, making the required depth at minus 47 feet.

Maintenance material in this area has been historically placed in PA 14, PA 15, and Mid Bay PA and is expected to also be available for marsh fill in Atkinson Island Marsh Cells M7/8/9, and M10, as well as any other existing Atkinson Island Marsh Cells requiring renourishment.

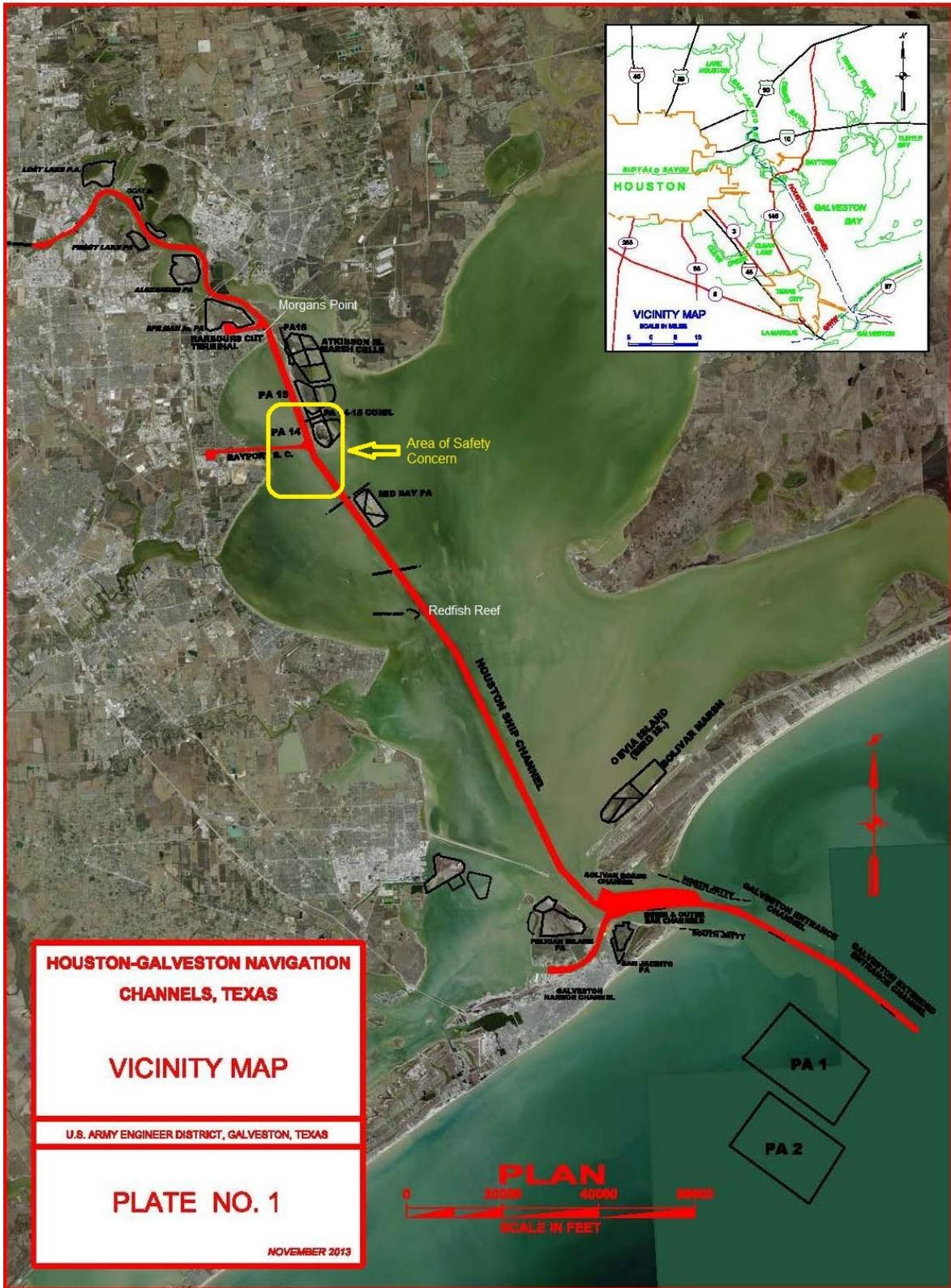


Figure 1 - HGNC Project Map with Approximate location of Area of Concern

From 2012-2014, the area of safety concern was being studied to develop and evaluate alternatives for navigation problems directly affecting the HSC at the Flare under Discretionary Authority. During that time, to assess the scope of the issue, expert elicitation and modeling was conducted to inventory, structure and characterize the HSC-BSC navigation hazard problems, root causes, and to develop structural / operational solutions. A White Paper was then submitted to Headquarters summarizing the process and conclusion of the experts, discussion of the recommended alternative to remediate the navigation safety deficiency, and the authority of modify the ship channel dimensions as necessary to better assure safe navigation conditions exist. Ultimately, it was decided that the study should continue as a Project Deficiency Report.

On April 1, 2015, Director of Civil Works, Steven Stockton, directed the Galveston District to proceed with a Project Deficiency Report (PDR) for a design deficiency. The PDR documents the scope of the plan to alleviate the navigation safety concerns in the vicinity of the intersection of the HSC and BSC. The purpose of the proposed project is to correct a design deficiency and conduct a corrective action through a channel modification required to make the project function on an interim basis as initially intended in a safe, viable, and reliable manner.

Additional improvements will be evaluated under the upcoming feasibility study of the HSC, including Galveston Bay to address potential channel widening, passing lanes, and anchorage areas. The study will be conducted under the authority of section 216 of the Flood Control Act of 1970, Review of Completed Projects.

The non-Federal sponsor for the HSCPDR is the Port of Houston Authority (PHA). The PHA is responsible for development of the EA and all NEPA documentation for this report.

**Previous approval of Review Plan and IEPR Exclusion** - During the Discretionary Authority study process the Review Plan and Type I IEPR exclusion were approved. SWD approved the Review Plan with approval of the Type I IEPR exclusion request by Memorandum Subject: Bayport Flare, Houston Ship Channel, Texas, Letter Report of Bend Easing (PWI #088910) – Review Plan Approval and dated December 7, 2012. The study has been converted to a Project Deficiency Report. HQ coordinated with the Chief, Office of Water Project Review. Said coordination resulted in an email dated October 6, 2015 from HQ providing confirmation that a new Type I IEPR Exclusion would not be needed. This Review Plan is being updated to current and will be reviewed by SWD, the RMO for this action.

- c. **Factors Affecting the Scope and Level of Review.** The peer review will focus on:
- Review of the planning process and criteria applied.
  - Review of the methods of preliminary analysis and design.
  - Compliance with client, program and NEPA requirements.
  - Completeness of preliminary design and support documents.
  - Spot checks for interdisciplinary coordination.

The following paragraphs discuss specific factors will help determine the appropriate scope and level of review.

An Environmental Assessment (EA) will be developed for NEPA due to the long history of environmental analyses that have been performed in the area.

Project risks are believed to be relatively low since the potential for project failure is small, there is no new science involved in the project, and all predictions of outcomes have a low level of uncertainty.

Other factors considered affecting the scope and level of review:

- The project involves no new science follows an established institutional process. Consequently, the project is not expected to encounter any technical, institutional, or social challenges.
- The Governor of Texas is not requesting a peer review by independent experts.
- The project is not expected to cause significant public dispute with regard to its size, nature, or effects.
- The project is not expected to cause significant public dispute with regard to its economic or environmental costs and benefits.
- The project design will not involve precedent-setting methods, use innovative materials, or change prevailing practices.

- d. **In-Kind Contributions.** Products and analyses provided by non-Federal sponsors as in-kind services are subject to DQC, ATR, and IEPR. The PHA is responsible for development of the EA and all NEPA documentation for this report.

#### **4. DISTRICT QUALITY CONTROL (DQC)**

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 for the report. 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 MSC.

**Documentation of DQC.** DQC is the review of basic science and engineering work products focused on fulfilling the project quality requirements. It is managed by the Galveston District and may be conducted by staff in the home district as long as they are not doing the work involved in the study. Basic quality control tools will include quality checks and reviews and supervisory reviews. The Galveston District will be responsible for a complete reading of the report to assure the overall integrity of the report, technical appendices and the recommendations before approval by the District Commander.

For the HSCPDR, non-PDT members and/or supervisory staff will conduct this review for major draft and final products. Planning, Economics and Environmental DQC reviewers will likely come from SWD Regional Planning and Environmental Center (RPEC). It is expected that the Major Subordinate Command (MSC)/District Quality Management Plan addresses the conduct and documentation of this fundamental level of review. DQC will be documented using the Dr. Checks review software/website.

Two DQC reviews are planned for this project. The first DQC of the draft report was conducted and certified in September 2015. Subsequent to that certification the report began concurrent ATR, Public Review, SWD, and HQ reviews. The DrChecks Comment Record from the DQC was included with the documents provided for the ATR review. A second DQC will be conducted for the final report prior to its submittal to SWQ/HQ. The second DQC is scheduled to commence in November 2015.

- a. **Products to Undergo DQC.** Products to undergo DQC include: 1) HSCPDR, 2) NEPA Document, 3) Cost Estimate (Walla Walla ATR), 4) Real Estate Plan, and 5) Pertinent Correspondence.
- b. **Required DQC Expertise.** Expertise required to conduct DQC includes: 1) Coastal Deep Draft Planning, 2) Coastal Deep Draft Economics, 3) Environmental Resources, 4) Real Estate, 5) Engineering Design, and 6) Cost Estimating.

**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 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. A copy of the DrChecks Record of ATR Comments will be provided with the Final Report Submittal to SWD and HQ.

- a. **Products to Undergo ATR.** The following products will be reviewed:
  - HSCPDR
  - NEPA Document
  - Cost Estimate (Walla Walla ATR)
  - Real Estate Plan
  - Pertinent Correspondence
  - DrChecks Record of Comments from DQC provided
- b. **Required ATR Team Expertise.** It is anticipated that the review team will consist of nine reviewers, one from each of the following disciplines: engineering design, hydraulics and hydrology, economics, environmental, real estate, plan formulation, operations and cost engineering. A brief description of the disciplines required for the ATR team are identified below:

<b>ATR Team Members/Disciplines</b>	<b>Expertise Required</b>
ATR Lead	Randall B. Harvey – CESAM-EN-H
Planning	Jason Norris – CEPOA-PM-C-PL
Economics	Kimberly Otto – CESAM-PD-D
Environmental Resources and Cultural Resources	Lekesha Reynolds – CESAM-PD-EC
Hydrology & Hydraulics Engineering (H&H)	Michael Alexander – CESAM-EN-HH
Geotechnical Engineering	Joshua Blevins – CESAM-EN-GG
Real Estate	Belinda Estabrook –CESAS-RE-A

- 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:

- The review concern – identify the product’s information deficiency or incorrect application of policy, guidance, or procedures;
- The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not been properly followed;
- 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
- 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 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 coordination (the vertical team includes the district, RMO, 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 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 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 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 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 AFB, 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 1165-2-209, 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 1165-2-209.
  - **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.** Due consideration was given to Paragraph 15 of EC 1165-2-214 as well as Appendix D of the same EC. The total project costs for this project are estimated to be under \$20 million. Further, we do not anticipate that other criteria, such as public safety concerns, significant controversy, a high level of complexity, and significant economic, environmental and social effects to the nation, innovative solutions, or life safety issues will trigger the requirement for IEPR. Lastly, the project does not include an Environmental Impact Statement (EIS) and falls within the footprint of the currently maintained federal channel.

By HQ Email notification dated 4 December 2012, the study received approval for an exclusion from the requirement for Type I IEPR. Headquarters has confirmed that the previous Type I IEPR exclusion approval under the *Bayport Flare, Houston Ship Channel, Texas Letter of Report Bend Easing – Review Plan is acceptable for this study*. As such, the District has already obtained exclusion for the project study from Type I IEPR.

The SWG Engineering and Construction Chief recommended excluding this project from a Type II IEPR. Concurrence was received from the Risk Management Center.

- 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.
- e. Products to Undergo Type II IEPR.** Not Applicable.

**f. Required Type II IEPR Panel Expertise.** Not Applicable.

**g. Documentation of Type II 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 home MSC 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. COST ENGINEERING DIRECTORY OF EXPERTISE (DX) REVIEW AND CERTIFICATION**

All decision documents shall be coordinated with the Cost Engineering DX, located in the Walla Walla District. The DX 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 DX will also provide the Cost Engineering DX certification. The RMO is responsible for coordination with the Cost Engineering DX.

## **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: economic benefit models (e.g., Study specific spreadsheet), environmental models for habitat evaluation or mitigation planning (e.g., IWRPlan, HEP HSI models, HGM), transportation or navigation models, and homegrown or spreadsheet models (e.g., excel spreadsheets, @Risk, etc; see EC 1105-2-412 for more information about what constitutes a planning

model). Below are some examples of the type of information that might be included in this section (Note: Lesser known models, including local/regional models, will need a more complete description than widely used, nationally recognized models).

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification / Approval Status
American oyster HSI model	USFWS HEP evaluates the quality and quantity of available habitat for selected wildlife species. The HEP delivers Habitat Suitability Indices (HSI), which measure habitat suitability of a sample plot relative to optimum habitat suitability for a species in a defined region. The proposed project would incur impacts to oyster reef ( <i>Crassostrea virginica</i> ) at the intersection of the HSC and BSC. These impacts would require mitigation in the form of creating oyster reef in areas determined suitable through coordination with the State and Federal environmental resource agencies. We plan on utilizing the American Oyster HSI model to assess impacts and mitigation for the HSCPDR project. This model has been approved for use (see <a href="http://cw-environment.usace.army.mil/model-library.cfm?CoP=Restore&amp;Option=View&amp;Id=99">http://cw-environment.usace.army.mil/model-library.cfm?CoP=Restore&amp;Option=View&amp;Id=99</a> ).	Certified

**b. Engineering Models.** The following engineering models are anticipated to be used in the development of the decision document: hydrologic, hydraulic, geotechnical, civil, structural, cost engineering and similar models. Below is an example of the type of information that might be included in this section.

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Approval Status
TABS-MD Hydrodynamic Model	Model is designed to provide accurate and representative current velocity fields for use in ship simulator for navigation study	Certified
Ship Simulator	Engineer Research and Design Center Simulator used to simulate channel alternatives	Certified
Mii - cost estimating models	Cost Engineering's model for developing cost.	Approved
Crystal Ball Risk Based Analysis	Cost Engineering's model for determining risk in cost estimating.	Approved

## 10. REVIEW SCHEDULES AND COSTS

### a. ATR Schedule and Cost.

Estimated schedule for ATR of the draft HSCPDR and EA Report – Note ATR is concurrent with Public Review and SWD and HQ Review.

ATR Review of draft documents  
 ATR Certification of draft documents  
 Public Review of Draft Reports

September – October 2015  
 October 2015  
 September – October 2015

- The estimated cost for ATR is \$40,000 including the participation of the ATR Lead to address the ATR process and any significant and/or unresolved ATR concerns.

**b. Type I and II IEPR Schedule and Cost.** NA

**c. Model Certification/Approval Schedule and Cost.** All models anticipated to be used are already certified or approved.

**11. PUBLIC PARTICIPATION**

Stakeholder and public comments are continually solicited. Public involvement section will be part of Report and EA. Public review will be concurrent with ATR, SWD and HQ reviews.

An Environmental Assessment specifically addressing the proposed plan for the Letter HSCPDR for a 20-year period of analysis has been prepared. This Environmental Assessment must address impacts. A public notice describing the recommended plan of the HSPCR was issue in September 2015.

**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 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:

Michael Zalesak	SWD, Chief, Regional Business Technical	469-487-7079
Michael Sterling	SWD, Regional Management Organization POC	469-487-7096
Sheri Willey	RPEC, Chief, Plan Formulation Section	409-766-3917
Cheryl Jaynes	RPEC, Plan Formulation Section, Planning Lead	409-766-3804
Randall B. Harvey	ATR Team Lead	251-690-2718
Kim Otto	Technical Lead, DDNPCX	251-694-3842

**ATTACHMENT 1: TEAM ROSTERS**

**PROJECT DELIVERY TEAM**

<b>PDT Roster</b>			
<b>NAME</b>	<b>TITLE/ORG.</b>	<b>PHONE</b>	<b>EMAIL</b>
Shakhar Misir	Project Manager CESWG-PM-J	409-766-3094	<a href="mailto:shakhar.d.misir@usace.army.mil">shakhar.d.misir@usace.army.mil</a>
Cheryl Jaynes	Planning Study Lead CESWF-PEC-PF	409-766-3804	<a href="mailto:cheryl.jaynes@usace.army.mil">cheryl.jaynes@usace.army.mil</a>
Bob Needham	Economist CESWF-PEC-PE	409-766-6338	<a href="mailto:robert.a.needham@usace.army.mil">robert.a.needham@usace.army.mil</a>
Carl Sepulveda	Environmental Lead AECOM	409-766-6346	<a href="mailto:carl.seplveda@aecom.com">carl.seplveda@aecom.com</a>
Nancy Young	Civil Engineer CESWG-EC-EG	409-766-3147	<a href="mailto:nancy.c.young@usace.army.mil">nancy.c.young@usace.army.mil</a>
Al Meyer	Civil Engineer CESWG-AO-NH	409-766-3145	<a href="mailto:alton.h.meyer@usace.army.mil">alton.h.meyer@usace.army.mil</a>
D. Brad Boothby	Geotechnical Engineer CESWG-EC-ES	409-766-6335	<a href="mailto:david.b.boothby@usace.army.mil">david.b.boothby@usace.army.mil</a>
Senu Agbley	Hydraulics & Hydrology CESWG-EC-EH	409-766-6383	<a href="mailto:senanu.agbley@usace.army.mil">senanu.agbley@usace.army.mil</a>
Dale Williams	Cost Engineer CESWG-EC-PS	409-766-3124	<a href="mailto:dale.g.williams@usace.army.mil">dale.g.williams@usace.army.mil</a>
Kenny Pablo	Real Estate CESWG-RE-A	409-766-3816	<a href="mailto:kenneth.pablo@usace.army.mil">kenneth.pablo@usace.army.mil</a>

**DQC TEAM**

<b>DQC Roster</b>			
<b>NAME</b>	<b>TITLE/ORG.</b>	<b>PHONE</b>	<b>EMAIL</b>
Byron Williams	DQC Manager/No Review	409-766-3140	<a href="mailto:byron.d.williams@usace.army.mil">byron.d.williams@usace.army.mil</a>
Sheri Willey	RPEC, Chief, Plan Formulation Section (SWF-PEC-PF)	409-766-3917	<a href="mailto:sheridan.s.willey@usace.army.mil">sheridan.s.willey@usace.army.mil</a>
Jennifer Jacobson	Environmental Reviewer (CESAM- PD-EC)	251-690-2724	<a href="mailto:jennifer.l.jacobson@usace.army.mil">jennifer.l.jacobson@usace.army.mil</a>
Ed Rossman	RPEC, Planning Branch, Chief, Economics (SWF-PEC-PE)	918-669-4921	<a href="mailto:edwin.j.rossman@usace.army.mil">edwin.j.rossman@usace.army.mil</a>
Lori Thomas	Chief, Geotechnical & Structures Section (CESWG-EC-ES)	409-766-6324	<a href="mailto:lori.k.thomas@usace.army.mil">lori.k.thomas@usace.army.mil</a>
David Brown	Chief, General Engineering Section (CESWG-EC-EG)	409-766-3969	<a href="mailto:david.r.brown@usace.army.mil">david.r.brown@usace.army.mil</a>
Brian Murphy	Real Estate, Technical Services Branch (CESWG-RE-S)	409-766-3803	<a href="mailto:brian.murphy@usace.army.mil">brian.murphy@usace.army.mil</a>

Willie Joe Honza	Professional Services Section (CESWG-EC-PS)	409-766-3161	<a href="mailto:willie.j.honza@usace.army.mil">willie.j.honza@usace.army.mil</a>
Chris Frabotta	Chief, Navigation Branch	409-766-3071	<a href="mailto:christopher.c.frabotta@usace.army.mil">christopher.c.frabotta@usace.army.mil</a>
Robert Thomas	Branch Chief, H&H Reservoir Control Branch (CESWG-EC-EH)	409-766-3975	<a href="mailto:robert.c.thomas@usace.army.mil">robert.c.thomas@usace.army.mil</a>
Samantha Borer	Plan Form Reviewer	904-232-1066	<a href="mailto:Samantha.j.borer@usace.army.mil">Samantha.j.borer@usace.army.mil</a>

**AGENCY TECHNICAL REVIEW TEAM**

<b>ATR Team Members/Disciplines</b>	<b>Expertise Required</b>
ATR Lead	Randall B. Harvey – CESAM-EN-H
Planning	Jason Norris – CEPOA-PM-C-PL
Economics	Kimberly Otto – CESAM-PD-D
Environmental Resources and Cultural Resources	Lekesha Reynolds – CESAM-PD-EC
Hydrology & Hydraulics Engineering (H&H)	Michael Alexander – CESAM-EN-HH
Geotechnical Engineering	Joshua Blevins – CESAM-EN-GG

**VERTICAL TEAM POC'S**

<b>NAME</b>	<b>TITLE/ORG.</b>	<b>PHONE</b>	<b>EMAIL</b>
Dr. Michael Sterling	MSC Planning Coordinator for SWG (for this action)	469-487-7096	Michael.C.Sterling@usace.army.mil
Becky Moyer	Chief, Planning and Policy Division	469-487-7038	Rebecca.J.Moyer@usace.army.mil
Sandy Gore	Deputy, SWD Regional Integration Team	202-761-5237	Sandy.L.Gore@usace.army.mil

**PLANNING CENTER OF EXPERTISE  
DEEP-DRAFT NAVIGATION**

<b>NAME</b>	<b>TITLE/ORG.</b>	<b>PHONE</b>	<b>EMAIL</b>
Todd Nettles	Program Manager, PCX Deep-Draft Navigation	251-694-3841	Todd.A.Nettles@usace.army.mil

**ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECISION DOCUMENTS**

**COMPLETION OF AGENCY TECHNICAL REVIEW**

The Agency Technical Review (ATR) has been completed for the Houston Ship Channel Project Deficiency Report (Flare at the Intersection of the Houston Ship Channel and Bayport Ship Channel), Houston-Galveston Navigation Channels, Texas.. The ATR was conducted as defined in the project’s Review Plan to comply with the requirements of EC 1165-2-209. 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<sup>sm</sup>.

*SIGNATURE*

Randall B. Harvey  
ATR Team Leader  
CESAM-EN-H

\_\_\_\_\_  
Date

*SIGNATURE*

Shakhar D. Misir  
Project Manager  
CESWG-PM-J

\_\_\_\_\_  
Date

*SIGNATURE*

Name  
Architect Engineer Project Manager<sup>1</sup>  
Company, location

\_\_\_\_\_  
Date

*SIGNATURE*

Name  
Review Management Office Representative  
Office Symbol

\_\_\_\_\_  
Date

**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*

Chief, Engineering Division

*Office Symbol*

\_\_\_\_\_  
Date

*SIGNATURE*

*Name*

Chief, Planning Division

*Office Symbol*

\_\_\_\_\_  
Date

<sup>1</sup> Only needed if some portion of the ATR was contracted

**ATTACHMENT 3: REVIEW PLAN REVISIONS**

Revision Date	Description of Change	Page / Paragraph Number
October 2015	Title change to <i>Houston Ship Channel Project Deficiency Report (Flare at the Intersection of the Houston Ship Channel and Bayport Ship Channel) Houston-Galveston Navigation Channels, Texas from BAYPORT FLARE, HOUSTON SHIP CHANNEL, TEXAS, LETTER REPORT OF BEND EASING AT BAYPORT</i>	Title page of Report, page ii, page 1, Sections 1 and 3a, Attachment 2
October 2015	1a reference to EC 1165-2-209 changed to EC 1165-2-214	Page 1 under 1a, 1c,
October 2015	Change references of “Bayport O&M Discretionary Authority” to “HSCPDR”.	Section 3a, and 3b on page 1
October 2015	RMO for this action has been determined to be SWD and not the DDNPCX. This paragraph has been revised to clarify that SWD is the RMO.	Page 1, Section 2
October 2015	Paragraph has been updated to address that the HSCPDR Decision Document WILL require authorization by the ASA(CW) and information will be wrapped into the HGNC902 PACR report.	Section 3a
October 2015	Study Description has been updated and expanded to reflect the engineering deficiency, historical background information, addition of a figure, and previous Review Plan (with IEPR Exclusion) approval. Ultimate, the scope of the work does not change.	Section 3b
October 2015	Change from “no in-kind services are anticipated” to state “The in-kind products and analyses to be provided by the non-Federal sponsor include the Environmental Assessment and NEPA documentation.”	Section 3d
October 2015	Paragraph 3 (previously 2) under the “Documentation of DQC” paragraph under Section 4 has been updated and paragraph 2 is new.	Section 4, page 5
October 2015	Updated to reflect current	Section 4a and 4b
October 2015	Statement added: “A copy of the DrChecks Record of ATR Comments will be provided with the Final Report Submittal to SWD and HQ”, products to undergo ATR updated, ATR team added,	Section 5b
October 2015	Added: <b>“Headquarters has confirmed that the previous IEPR exclusion approval under the Bayport Flare, Houston Ship Channel, Texas Letter of Report Bend Easing – Review Plan is acceptable for this study. As such, the District has already obtained exclusion for the project study from IEPR.”</b>	Section 6, paragraph 4 (bolded text)
October 2015	Model Table under 9a updated for Planning	Section 9a
October 2015	Model Table under 9b updated	Section 9b
October 2015	Review Schedules and Costs update for current schedule	Section 10a
October 2015	Date removed in sentence.	Section 10c

October 2015	Section 11 revised for current study	Section 11
October 2015	Section 13 Review Plan Points of Contact updated	Section 13
October 2015	Team Rosters updated	Attachment 1
October 2015	ATR Lead and PM names added	Attachment 2
November 2015	TYPE II Exclusion Memo added	Attachment 5

**ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS**

<u>Term</u>	<u>Definition</u>	<u>Term</u>	<u>Definition</u>
AFB	Alternative Formulation Briefing	NED	National Economic Development
ASA(CW)	Assistant Secretary of the Army for Civil Works	NER	National Ecosystem Restoration
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/MS	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

## MEMORANDUM FOR RECORD

SUBJECT: Type 2 IEPR Exclusion for Houston Ship Channel Project Deficiency Report (Flare at the Intersection of the Houston Ship Channel and Bayport Ship Channel), Houston-Galveston Navigation Channels, Texas

1. The subject report outlines Federal plans to widen a portion of the Houston Ship Channel and increase the radius of the Bayport Flare at its intersection with the Houston Ship Channel. This construction is a dredging project that relies on well established, standard procedures. The project will not involve engineering that is based on novel methods, presents complex challenges for interpretation, contains precedent-setting methods or models, or presents conclusions that are likely to change prevailing practices. There are no technical, institutional, or social challenges associated with the project.

2. This construction project is a corrective action through a channel modification to correct a design deficiency and alleviate the navigation safety concerns in the vicinity of the intersection of the Houston Ship Channel (HSC) and Bayport Ship Channel (BSC). The project increases the existing 3,000 feet southern radius of the Flare at the intersection of the HSC and BSC to 4,000 feet, and widens the HSC by a maximum of 235 feet to the east between about HSC Station 26+484 and HSC Station 30+090. The alteration has been validated through ship simulations conducted by the Corps Coastal Hydraulic Laboratory (CHL), a part of the Engineer Research and Development Center (ERDC).

3. Based upon the foregoing, it is my determination that the corrective action for the design deficiency at the HSC and BSC intersection does not pose a significant threat to life safety. Therefore, no Safety Assurance Review is needed or required.

Terry F. Bautista, P.E.  
Chief, Engineering and Construction Division