



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
SOUTH ATLANTIC DIVISION
60 FORSYTH STREET SW, ROOM 10M15
ATLANTA GA 30303-8801

CESAD-CG

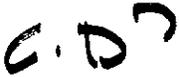
7 NOV 2016

MEMORANDUM FOR Commander, Savannah District, 100 W. Oglethorpe Avenue,
Savannah, Georgia 31401-3640

SUBJECT: Review Plan (RP) Approval, Savannah Harbor Expansion Project (SHEP),
Georgia and South Carolina, Cost Post Authorization Change Report (PACR)

1. The Review Plan (RP) for the Savannah Harbor Expansion Project (SHEP), Georgia and South Carolina, Cost Post Authorization Change Report, was prepared in accordance with Engineer Circular (EC) 1165-2-214 and coordinated with the Deep Draft Navigation Planning Center of Expertise (DDNPCX), which is the Review Management Organization for this PACR. Endorsement of the RP by the DDNPCX is enclosed. SAD's endorsement of the District's request exclusion from Type I Independent External Peer Review (IEPR) was forwarded to the Director of Civil Works 7 November 2016 (encl 2).
2. I hereby approve this RP, which is subject to change as circumstances require, consistent with project development under the Project Management Business Process. Subsequent revisions to this RP or its execution will require coordination with this office. The District will post the approved RP and a copy of this approval memorandum to the District public internet website and provide the web link to SAD. Before posting to the website, the names of Corps employees should be removed.
3. The point of contact for this action is Mr. Eric Bush at (404) 562-5220.

2 Encls
as


C. DAVID TURNER
Brigadier General, USA
Commanding

REVIEW PLAN

FOR

**SAVANNAH HARBOR EXPANSION PROJECT (SHEP)
GEORGIA AND SOUTH CAROLINA**

PROJECT NUMBER: 113006

POST-AUTHORIZATION CHANGE REPORT (PACR)

**PREPARED BY:
SAVANNAH DISTRICT**

NOVEMBER 2016



**US Army Corps
of Engineers®**

**SAVANNAH HARBOR EXPANSION PROJECT
GEORGIA AND SOUTH CAROLINA
POST-AUTHORIZATION CHANGE REPORT
REVIEW PLAN**

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**SAVANNAH HARBOR EXPANSION PROJECT
GEORGIA AND SOUTH CAROLINA
POST-AUTHORIZATION CHANGE REPORT
REVIEW PLAN**

1. PURPOSE AND REQUIREMENTS

This Review Plan defines the scope and level of peer review for the SHEP Cost PACR.

References:

- (1) ER 1105-2-100 "Planning Guidance Notebook & Appendices D, F, G and H" and amendments.
- (2) SMART Planning Principles
- (3) EC 1105-2-412, Assuring Quality of Planning Models, 31 March 2011
- (4) Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006
- (5) SHEP Project Management Plan (PMP), approved 5 November 2012
- (6) EC 1165-2-214 Water Resource Polices and Authorities Civil Works Review, 15 December 2012
- (7) SHEP PMP Quality Management Appendix B dated January 2015

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).

The Review Plan (RP) for the SHEP Cost PACR provides a series of peer review actions to ensure quality products are developed. The RP is intended to describe the processes that will be implemented to evaluate, independently from the Project Team, the technical sufficiency of the cost update and is a component of the latest Project Management Plan (PMP).

The RP is a collaborative product of the Project Delivery Team (PDT) and the Planning Center of Expertise for Deep-Draft Navigation (DDN-PCX). The Savannah District will place this RP and a copy of the South Atlantic Division (CESAD) approval memorandum on its public website. This RP will be updated as required.

The reviews for this study include the District Quality Control (DQC) reviews, and Agency Technical Reviews (ATR). A waiver to conduct an Independent External Peer Review (IEPR) has been submitted by the District for the SHEP Cost PACR. The RP will describe the level of review needed and detail how that review will be accomplished. The components of this RP were developed pursuant to the requirements of EC 1165-2-214, Civil Works Review Policy, dated 15 December 2012.

The SHEP Cost PACR does not require an Environmental Impact Statement (EIS) and does not contain influential scientific information as these aspects of the project have not changed. The PACR contains updated cost information and economic benefits to the Nation.

District Quality Control (DQC) is the review of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). It is managed in the home district and may be conducted by staff in the home district as long as they are not doing the work involved in the study, including contracted work that is being reviewed. Documentation of DQC will become a permanent part of report documentation and will be provided to the ATR Team for use in their review.

Agency Technical Review (ATR) is an in-depth review managed by the Corps through the appropriate Planning Center of Expertise and conducted by a qualified team (outside the home district) that has not been involved in the study. The ATR lead shall be from outside the home MSC. The ATR team reviews work products to assure the proper application of established criteria, regulations, laws, codes, principles and professional practices. Reviewers will be individuals that have not worked on the study and otherwise be free from conflicts of interest related to the proposed project. ATR is intended to confirm that such work was performed in accordance with clearly established professional principles, practices, codes and criteria informed by Engineering Regulation (ER) 1105-2-100.

Independent External Peer Review (IEPR) is the most independent level of review. It is applied when the project meets certain criteria of risk and magnitude such that review by an outside team is warranted. IEPR is managed by the appropriate Planning Center of Expertise and is conducted by a qualified team from outside the USACE. IEPR will be conducted where the analyses are based on novel methods; present complex challenges for interpretation, contains precedent-setting methods or modes, presents conclusions that are likely to change prevailing practices, or is likely to affect policy decisions that have a significant impact. In the absence of a technical requirement, a project that costs greater than \$200 million may by itself necessitate an IEPR. In accordance with EC 1165-2-214, the District has submitted an Independent External Peer Review (IEPR) waiver request with the SHEP Cost PACR. The Cost PACR includes an increase in project costs above the current §902 (WRDA 1986) limits but does not represent a change in scope or purpose for the SHEP. There are no new activities identified for the project previously approved by USACE and authorized by Congress. Two Type I IEPRs were previously performed on the project recommended

in the 2012 GRR prior to the 2014 Congressional authorization. The cost increase reflected in the PACR is the result of new information obtained during detailed design, award of construction contracts, and updated market conditions. The Cost PACR is limited in scope and impact and will not significantly benefit from a third IEPR.

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 (RMO), depending on the primary purpose of the decision document. The RMO for the peer review effort described in this Review Plan is the PCX for the Deep-Draft Navigation (DDN-PCX).

The RMO will coordinate with the Cost Engineering Directory of Expertise (DX) to ensure the appropriate expertise is included on the review teams to assess the adequacy of cost estimates, construction schedules and contingencies. The SHEP FY17 Cost Estimate was ATR certified by the DX in Walla Walla District in June 2016.

3. STUDY/PROJECT INFORMATION

Decision Document

The proposed decision document is titled: "Savannah Harbor Expansion Project, Savannah, Georgia, Post-Authorization Change Report". The SHEP Cost PACR will require HQUSACE approval and Congressional authorization.

The Savannah Harbor Expansion Project was initially authorized for construction on 17 August 1999 in Public Law 106-53. A Chief of Engineers' Report dated 17 August 2012, documented the agency's decision on the 2012 General Re-evaluation Report (GRR).

The 2012 General Re-evaluation Report (GRR) estimated a total project first cost of \$652M. The FY2014 cost estimate identified a higher total project first cost of \$706M and that project cost was included in the Water Resources Reform and Development Act (WRRDA) of 2014. The higher cost shown in WRRDA 2014 included costs associated with the project, as well as a Settlement Agreement signed in May 2013 that resolved legal issues between USACE, the State of Georgia, the State of South Carolina, and several Non-Governmental Organizations. The Agreement identified additional actions that the parties would take to resolve remaining environmental concerns related to the project. In particular, USACE agreed that SHEP would (1) demonstrate that the dissolved oxygen system performs as designed, and (2) install and operate two additional water quality monitoring stations through the post-construction monitoring.

Study/Project Location and Description

SHEP will deepen the existing 42-foot mean lower low water (MLLW) deep draft navigation project to an authorized depth of 47 feet MLLW. The navigation project is a shipping channel on the Savannah River, which forms the border between the States of Georgia and South Carolina.

As required by Engineering Regulation (ER) 1110-2-1302, Engineering Circular (EC) 11-2-206 and Director of Civil Works (DCW) Policy Memorandum CWPM 12-001, project costs must be updated every two years. In 2016, Savannah District updated the construction costs for the SHEP. In June, the District provided the updated estimate to HQUSACE for consideration by the HQUSACE Change Control Board and the estimate was approved in August. This Post Authorization Change Report (PACR) documents the authorized project, project progress, changes from authorized project, and updated costs.

The 2012 General Re-evaluation Report (GRR) estimated the total project first cost to be \$652M. The 2014 cost estimate raised the total project first cost to \$706M. The current 2016 cost estimate increases the total project first cost to \$973M. The difference in these costs is attributable to a number of items common for a project of this magnitude and complexity. These items include refinements in quantities identified during development of detailed designs, design changes stemming from adjustments to early project assumptions, escalation due to schedule slippage, current market conditions, and related adjustments. The 2014 cost estimate included a decrease in contingency from 25% to 19% as some cost risk was determined to be mitigated with the completion of detailed designs for some mitigation features. The 2016 cost estimate restored that contingency to 24.2%.

Project Purpose

There have been no changes to the project single purpose – navigation -- since the 2012 Chief of Engineers Report. The project addresses inefficiencies in the marine transportation of goods through Savannah Harbor.

Factors Affecting the Scope and Level of Review

The factors affecting the risk-informed decisions on the appropriate scope and level of review are included below with the assessment of the applicability of that factor to the SHEP Cost PACR. There have been no changes to the project scope since the 2012 Chief of Engineers Report. Additional site-specific information was obtained as detailed designs have been prepared, allowing the designs to be refined since the Chief of Engineers Report.

- **Project challenges:**

Litigation. A Settlement Agreement signed in May 2013 resolved legal issues between USACE, the State of Georgia, the State of South Carolina, and several Non-Governmental Organizations. The Agreement identified additional actions that the parties would take to resolve remaining environmental concerns related to the project. In particular, USACE agreed that SHEP would (1) demonstrate that the dissolved oxygen system performs as designed, and (2) install and operate two additional water quality monitoring stations through the post-construction monitoring. The District recently entered into a contract for an independent engineering firm to monitor the dissolved oxygen system's initial performance and assess whether the system performs as intended. The initial monitoring will document the lower system's performance over a 59-day period and the effect of that operation on the estuary. After construction of the upper system is complete, the performance of the entire system (both upper and lower plants) will be monitored and evaluated, following procedures similar to what will be implemented at the lower system. After South Carolina identified where they would like the two additional water quality gages, SHEP installed the gages in 2013 and is funding the USGS to monitor and report conditions at those sites. The cost to operate each of those two additional sites is about \$35,000 per year. Costs for these actions were included in the 2014 certified cost estimate.

Contract Cost Increases. Approximately \$87M in contract costs are associated with the awarded contracts over the original estimates contained in the 2012 SHEP GRR for the Entrance Channel Dredging, Dissolved Oxygen Injection System, Raw Water Storage Impoundment, and DMCA 14A Dike Raising contracts. A detailed description of these cost increases is outlined in the SHEP Cost PACR.

Cost & Schedule Risk Contingency. As a result of the cost changes identified, the FY2017 updated cost estimate includes an updated CSRA which incorporates these issues and determined the residual cost risk (24.2%) for the project to be higher than previously calculated in the 2014 estimate (19%). A separate cost risk contingency of 25% was developed and applied for Real Estate. This is coupled with the increased construction costs for the awarded features that are under construction. The increased Cost Risk is primarily attributed to the dredging bid competition; non-dredging bid competition; and fuel prices for dredging. The increased Schedule Risk is attributed to the uncertainty of the funding stream and special handling requirements for the cadmium handling as part of the Inner Harbor Dredging contract. These updated cost risk contingency factors added approximately \$69M in costs to the project. Of this total, approximately \$32M of the increase is attributed to the increase in base construction costs while the remaining \$37M increase is attributed to the increase in the cost risk contingency from 19% to 24.2%.

- **Preliminary assessment and magnitude of project risks:**

Since the 2014 certified cost estimate was prepared, SHEP has made substantial progress. The District prepared detailed designs on several project features and awarded five construction contracts. These activities provided new insight and altered the overall risk environment for the project. Since the WRRDA 2014 authorization, the following design activities were completed and include a brief discussion of risk management:

Revisions to Disposal Area 14A Dike Raising that addressed structural concerns for handling cadmium material in the inner harbor. The District completed the SHEP Cadmium Handling and Placement Plan in September 2016 and is coordinating an Environmental Assessment (EA) with the natural resource agencies with completion projected in January 2017.

Recovery of the CSS Georgia Effort #1 was completed in November 2015 and encompassed recovery of over 80% of vessel pieces and artifacts. Effort #2 will recover the remaining two large pieces of casemate scheduled for completion during the summer of 2017.

Sediment Basin Tide Gate and Embankment Removal. The contract was awarded in September 2016. At the 65% design phase, analysis was conducted by the Value Engineering (VE) team that indicated the sediment basin had substantially filled in naturally since the SHEP GRR was completed in 2012. This natural rate of fill may eliminate the requirement to construct the Rock Weir and Fill aspect of the feature thereby realizing a potential savings of approximately \$40M. The District's plan of action is to monitor the sediment basin rate of fill after the Tide Gate is removed and the McCoy's Cut Diversion Structure and flow re-routing is completed and assess the need to construct this aspect of the feature.

Fish Passage at New Savannah Bluff Lock and Dam (NSBLD). The SHEP Fish Passage is an environmental mitigation feature that ensures compliance with the Endangered Species Act. Since the SHEP Fish Passage Design was completed in 2014, a Periodic Assessment and Inspection of the NSBLD was completed that indicated significant deterioration and structural issues with the lock wall that required closure of the lock indefinitely and would impact the function of the Fish Passage as designed. The District included design related costs in the FY2017 cost estimate to provide for necessary structural repairs to reduce risk of a catastrophic failure and ensure proper hydraulic operation of the Fish Passage. The design update is underway for completion in FY 2017.

- **Project Life Safety:**

The SHEP Cost PACR does not involve any significant threat to human life/safety assurance.

- **State Governor Request for Peer Review by Independent Experts:**

There has been no requests by the Governors of Georgia or South Carolina to conduct an Independent Peer Review on the SHEP cost increases.

- **Likelihood to involve public dispute:**

Based on coordination with the SHEP non-Federal sponsors and the 2013 Settlement Agreement, public disputes involving the SHEP cost increase are not expected.

- **Decision Document likely to include novel methods or innovative materials:**

The SHEP Cost PACR does not contain novel methods or innovative materials resulting in the new cost increase.

- **Project Designs likely to include redundancy, resiliency, and/or robustness, unique construction sequencing, or reduced or overlapping design construction schedules:**

SHEP project designs do not include redundancy, resiliency, and/or robustness, unique construction sequencing, or reduced or overlapping design construction schedules. The SHEP Inner Harbor Dredging Design will include a dredging sequence to address the removal, handling and placement of the naturally occurring Cadmium dredged material into DMCA 14A/14B. This sequencing is not unique but a requirement outlined in the 2012 SHEP GRR.

4. THE PROJECT DELIVERY TEAM (PDT)

The PDT is an interagency team directly involved in the development of the decision documents. Disciplines included on the PDT will include but may not be limited to the following:

Project Delivery Team

Discipline	Office/Agency
Project Manager	CESAS-PM-C
Plan Formulator	CESAS-PD
Environmental	CESAS-PD
Economist	CESAS-PD
Hydraulics & Hydrology	CESAS-EN-H
Cost Engineer	CESAS-EN-ET

5. DISTRICT QUALITY CONTROL (DQC)

District Quality Control 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). All studies undergo DQC. The home District shall manage DQC. Basic quality control tools include a Quality Management Plan providing for seamless review, quality checks and reviews, supervisory reviews, and PDT reviews.

Quality checks and reviews occur during the development process and are carried out as a routine management practice. Quality checks may be performed by staff responsible for the work, such as supervisors, work leaders, team leaders, designated individuals from the senior staff, or other qualified personnel. However, they should not be performed by the same people who performed the original work, including managing/reviewing the work in the case of contracted efforts. A certification statement noting that DQC was performed, will be provided to the ATR Team.

PDT reviews are performed by members of the PDT to ensure consistency and effective coordination across all project disciplines. Additionally, the PDT is responsible for a complete reading of any reports and accompanying appendices prepared by or for the PDT to assure the overall coherence and integrity of the report, technical appendices, and the recommendations before a decision can be made by the District Commander. For this study, the SHEP Cost PACR underwent a DQC by the Division Chiefs with some responsibility for the analysis or project to be constructed.

Required DQC Expertise

DQC Team Members/Disciplines	Expertise Required (all supervisors)
Planning	The Planning reviewer should be a Planning supervisor experienced in Corps Civil Works.
Engineering	An Engineering supervisor experienced in Corps Civil Works.
Real Estate	The Reviewer shall be a RE supervisor who is familiar with Civil Works, in particular SHEP.
Operations	The Reviewer shall be an OP supervisor who is familiar with Civil Works, in particular SHEP.
Project Management	The Reviewer shall be a PM supervisor who is familiar with Civil Works, in particular SHEP.
Office Of Counsel	The Reviewer shall be an OC supervisor who is familiar with Civil Works, in particular SHEP.

6. 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.

Products to Undergo ATR

The PACR will undergo ATR. In order to make ATR comments and responses a permanent part of study documentation, they will be entered into a comment tracking software program titled DrChecks.

Required ATR Team Experience

The ATR team will be made up of personnel determined by the DDNPCX. The expertise represented on the ATR team should reflect the significant expertise involved in the work effort and will generally mirror the expertise on the PDT.

Required ATR Experience

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead should be a senior professional with extensive experience in preparing Civil Works decision documents and conducting ATR. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process
Plan Formulation	The Plan Formulation reviewer should be a senior water resources planner with experience in formulation, evaluation, and selection of alternatives for deep draft navigation projects.
Economics	The reviewer shall have extensive knowledge of the principles and guidelines of economic analysis as it relates to models for navigation/dredging within the Corps of Engineers.

Environmental	The reviewer shall be ATR certified in environmental compliance. The reviewer shall have experience in Deep Draft Navigation projects.
Cost Engineering	The Cost Engineering reviewer will be identified by the Cost Engineering Mandatory Center of Expertise (MCX) and will have experience using Micro-Computer Aided Cost Estimating System (MCASES) and experience developing cost estimates for deep draft navigation improvements, dredging, and cost risk analysis.
Civil Engineer	The team member shall be a registered professional engineer with civil/site work project experience that includes dredging and disposal operations, embankments, channels, and coastal structures.

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 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.

The 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. A sample Statement of Technical Review is included in Attachment 2.

7. INDEPENDENT EXTERNAL PEER REVIEW (IEPR) PROCESS

An 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. The District has

requested a waiver from conducting a Type I IEPR on the SHEP Cost PACR. Two Type I IEPRs were previously performed on the project recommended in the 2012 GRR prior to the 2014 Congressional authorization. The cost increase reflected in the Cost PACR is the result of new information obtained during detailed design, award of construction contracts, and updated market conditions. The PACR is limited in scope and impact that it will not significantly benefit from a third IEPR.

- 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.

Decision on IEPR

The following risk informed assessment was performed by the PDT to determine whether to perform IEPR.

- (1) Significant threat to human life.
There is no significant threat to human life.
- (2) Total project cost greater than \$200 million.
The increase in total project cost for the project is approximately \$267 million.
- (3) Request by the State Governor.
There has been no request from a Governor, nor by the head of a Federal or State agency.
- (4) Significant public dispute.
No public dispute is anticipated.
- (5) Methods are novel or complex.
No novel or complex methods are anticipated.
- (6) Chief of Engineers determines Independent External Peer Review is necessary.
To date, the Chief of Engineers has not determined that Independent External Peer Review is necessary.
- (7) Preparation of an EIS.
The Cost PACR does not include an EIS.

The SHEP Cost PACR meets one of the triggers for a Type I IEPR. However, the PACR does not include any new actions that USACE or Congress has not previously approved / authorized. No changes in scope are proposed. The cost increase is the result of new information obtained during detailed design and updated market

conditions. Such events are common for a project of this magnitude and complexity. In addition, the original construction plan and its associated costs underwent two IEPRs prior to the 2014 Congressional authorization. Since the decisions related to the SHEP Cost PACR would not benefit significantly from a Type I IEPR, an exclusion is being requested.

Per EC 1165-2-214, when a decision document does not require a Type I IEPR, a risk-informed recommendation will be developed. The process shall consider the consequences of non-performance on project economics, the environment, and social well-being (public safety and social justice), as well as indicate whether the product is likely to contain influential scientific information or be a highly influential scientific assessment, or involve other issues that provide a rationale for determining the appropriate level of review. Furthermore, the recommendation must make a case that the study is so limited in scope or impact that it would not significantly benefit from IEPR.

The limited scope of this action (an increase in the costs authorized to be expended to perform previously-approved work), review and certification by USACE cost experts, and negligible additional environmental impacts, all indicate that the proposed action would benefit little from further review by IEPR.

The Savannah District requests that the RMO and Division Commander endorse the request for exclusion from Type I IEPR and forward the request to the Regional Integration Team (RIT) for their endorsement and approval by the Director of Civil Works per guidance in EC 1165-2-214.

Type II IEPR, the Safety Assurance Review, are conducted on design and construction activities for any hurricane and storm risk management and flood risk management projects, as well as other projects where existing and potential hazards pose a significant threat to human life. This project does not trigger WRDA 2007 Section 2035 factors for Safety Assurance Review (termed Type II IEPR in EC 1165-2-214) and therefore, a Type II IEPR review is not required/recommended. If the project scope is changed, this determination will be reevaluated. In a Memorandum to the Savannah District, dated 1 August 2016, the South Atlantic Division (CESAD) approved the most recent SHEP Review Plan, stating “The primary purpose of this update of the Savannah Harbor Expansion Project (SHEP) Review Plan (RP) is to combine the In-House and A-E Design product RP as well as reaffirm the decision of the Division Chief of Engineering that a Type II Independent External Review (Type II IEPR) is not required.”

Products to Undergo Type I IEPR. Not-Applicable

Required Type I IEPR Panel Expertise. Not-Applicable

Documentation of Type I IEPR. Not-Applicable.

8. POLICY AND LEGAL COMPLIANCE REVIEWS

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.

9. COST ENGINEERING MANDATORY CENTER OF EXPERTISE

All decision documents have been coordinated with the Cost Engineering Mandatory Center of Expertise, located in the Walla Walla District. The MCX will assist in determining the expertise needed on the ATR team and in the development of the review. The Cost Engineering MCX certified the costs included in the SHEP Cost PACR in June 2016. The RMO is responsible for coordination with the Cost Engineering MCX.

10. 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).

b. Planning Models. Not applicable.

c. Engineering Models. Not applicable.

11. REVIEW SCHEDULES AND COSTS

ATR Schedule and Cost. The ATR for this PACR was completed on 4 November 2016 and an estimated cost of \$15,000.

Type I IEPR Schedule and Cost. Not applicable.

Model Certification/Approval Schedule and Cost. Not applicable.

12. PUBLIC PARTICIPATION

HQUSACE, CESAD, and the Savannah District have coordinated with the State of Georgia (non-Federal sponsors) and discussed the issues that have increased the project costs. Those issues have also been identified to county and city officials, civic and non-governmental organizations and the general public as part of the District's periodic updates about the status of the project. The District has updated the natural resource agencies on the overall project at annual SHEP Interagency Monitoring Workshop. Formal letters informing the agencies of the SHEP cost increases have not been issued. In addition, the Savannah District website is continually updated with progress and status notifications to keep the public apprised of the project. Savannah District will post the approved Cost PACR on the District's public website.

13. RISK MANAGEMENT

The SHEP is presently in construction. Certain features are presently being constructed, while others are undergoing final detailed design, and still others will be designed in the coming years. The present risks under consideration relate to funding and costs. Risks related to the construction process and the performance of the completed features are not under consideration at this time.

The market for construction work varies constantly, with the cost for a particular action being affected by other construction that is occurring near that work site, as well as more widespread economic conditions.

In addition, as more information is obtained during the detailed design process, costs for a given feature may be affected by such things as increases in quantities or lack of adequate staging areas.

No change in scope is being considered in the present proposed action. The evaluation concerns the cost to construct features that were previously approved.

Factors that are believed to affect the project's schedule and cost risk will be examined in detail. Those risks will be assessed as the study progresses, including whether either a Type I or Type II IEPR is warranted.

14. NON-FEDERAL SPONSOR'S COST SHARE AND WORK-IN-KIND CONTRIBUTIONS

Products and analyses provided by non-Federal sponsors as in-kind services are subject to DQC, ATR, and IEPR. This project is being constructed at 70 % Federal and 30% Non-Federal. There is no work-in-kind being provided for the SHEP Cost PACR and therefore, no peer review of sponsor in-kind contributions is required.

15. REVIEW PLAN APPROVAL AND UPDATES

The South Atlantic 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.

16. REVIEW PLAN POINTS OF CONTACT

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

- District Contact, Sr. Project Manager: (912) 652-5195
- MSC Contact: (404) 562-5121
- Review Management Organization: (251) 694-3842

ATTACHMENT 1 – TEAM ROSTER - REMOVED FOR WEBSITE POSTING

ATTACHMENT 2 – SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECISION DOCUMENTS

ATTACHMENT 3 – REVIEW PLAN REVISIONS

ATTACHMENT 4 – ACROYNMS AND ABBREVIATIONS

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 water supply reallocation for Savannah Harbor Expansion Project, Savannah, GA, Post-Authorization Change Report. 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 DrCheckssm.

SIGNATURE

Name

ATR Team Leader

Office Symbol/Company

Date

SIGNATURE

Name

Project Manager

Office Symbol

Date

SIGNATURE

Name

Architect Engineer Project Manager¹

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

¹ Only needed if some portion of the ATR was contracted

ATTACHMENT 3: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number

ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS

<u>Term</u>	<u>Definition</u>	<u>Term</u>	<u>Definition</u>
AFB	Alternative Formulation Briefing		
ATR	Agency Technical Review	NEPA	National Environmental Policy Act
		O&M	Operation and maintenance
DQC	District Quality Control/Quality Assurance		
DX	Directory of Expertise		
EA	Environmental Assessment		
EC	Engineer Circular	PCX	Planning Center of Expertise
EIS	Environmental Impact Statement	PDT	Project Delivery Team
		PAC	Post Authorization Change
ER	Ecosystem Restoration	PMP	Project Management Plan
		PL	Public Law
FEMA	Federal Emergency Management Agency		
		QA	Quality Assurance
		QC	Quality Control
HQUSACE	Headquarters, U.S. Army Corps of Engineers		
IEPR	Independent External Peer Review	RMO	Review Management Organization
ITR	Independent Technical Review		
		SAR	Safety Assurance Review
MSC	Major Subordinate Command	USACE	U.S. Army Corps of Engineers
		WRDA	Water Resources Development Act