

# REVIEW PLAN

*Savannah Harbor Expansion Project (SHEP)  
Georgia and South Carolina*

*Fish Passage at New Savannah Bluff Lock and Dam (NSBLD)  
Integrated Post-Authorization Analysis Report  
and Environmental Assessment*

**Prepared By:  
Savannah District**

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**US Army Corps  
of Engineers** ®

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Savannah District

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**Savannah Harbor Expansion Project (SHEP)  
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and Environmental Assessment**

**1. PURPOSE AND REQUIREMENTS**

**a. Purpose.** This Review Plan defines the scope and level of peer review for the Savannah Harbor Expansion Project (SHEP) Fish Passage at New Savannah Bluff Lock and Dam (NSBLD) Integrated Post-Authorization Analysis Report and Environmental Assessment.

**b. References.**

- (1) Engineer Circular (EC) 1165-2-214, Civil Works Review, 15 December 2012
- (2) EC 1105-2-412, Assuring Quality of Planning Models, 31 Mar 2011
- (3) Engineer Regulation (ER) 1110-1-12, Change 2, Quality Management, 30 Sept 2006
- (4) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007
- (5) SHEP Project Management Plan (PMP) approved 2 June 2017
- (6) SHEP Fish Passage at NSBLD Project Management Plan (PMP) Addendum dated November 2017
- (7) Savannah District Quality Control Plan, dated 2008

**c. 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, 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 models are subject to 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 Planning Center of Expertise for Inland Navigation (PCX-IN).

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.

### 3. STUDY INFORMATION

**a. Decision Document.** Preparation of an integrated decision document by CESAS includes the appropriate NEPA document. At present, CESAS believes that documentation will be an Environmental Assessment (EA) with a Finding of No Significant Impact (FONSI). The integrated decision document will be prepared in accordance with ER 1105-2-100.

**b. Study/Project Description.** The 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.

The SHEP Fish Passage is an environmental mitigation feature that addresses adverse impacts to shortnose and Atlantic sturgeon, and fulfills compliance with the Endangered Species Act. The approved 2012 SHEP General Reevaluation Report (GRR) and Final Environmental Impact Statement (FEIS) included the recommendation for construction of a Fish Passage around the NSBLD. Since the GRR/FEIS was published, a Periodic Assessment and Inspection of the lock and dam was conducted that identified significant deterioration and structural issues. As a result, the Corps closed the lock indefinitely in May 2014 due to safety concerns. In addition, the Corps determined that the condition of the structure could adversely impact the function of the proposed Fish Passage around the lock and dam as designed. In response, Savannah District included additional activities in the FY2017 updated SHEP cost estimate that would provide structural repairs to reduce the risk of a catastrophic failure of the dam and to ensure proper hydraulic operation of the proposed Fish Passage. In December 2016, the Water Infrastructure Improvements for the Nation (WIIN) Act was signed into law, requiring the Corps to study two in-channel options in lieu of the original design to go around the lock and dam.

As a modification to the SHEP, the objective of this post-authorization analysis report is to determine how the SHEP Fish Passage feature should be modified as required by the WIIN Act of 2016 in the most cost effective way.

The WIIN Act provides the Secretary of the Army with options to modify the SHEP Fish Passage feature as follows:

Option A: Repair the NSBLD lock wall and modify the structure such that the structure is able to:

- Maintain the pool for navigation, water supply, and recreational activities
- Allow safe passage over the structure to historic spawning grounds of shortnose sturgeon, Atlantic sturgeon, and other migratory fish; Or

Option B: Construct at an appropriate location across the Savannah River a structure that is able to maintain the pool for water supply and recreational activities; and

- Removal of the NSBLD on completion of construction of the Fish Passage structure; and

Following the construction of the in-channel weir and fish ramp, and demolition of the NSBLD, the Corps will convey the park and recreation area adjacent to the NSBLD to Augusta-Richmond County, Georgia, without consideration.

**c. Factors Affecting the Scope and Level of Review.** This report will examine the two alternatives (options) outlined in 3.b. above. HQUSACE Implementation Guidance issued on 25 May 2017 did not specify the requirement for a Type I IEPR. However, based on significant public interest surrounding the NSBLD and this post-authorization analysis, the District intends to conduct a Type I IEPR. 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 Fish Passage at NSBLD Integrated Post-Authorization Analysis Report and EA. Analysis and design of the fish passage will be based on the design and performance criteria approved by NOAA Fisheries.

- **Project Feature Challenges:**

**Local Stakeholder Concerns.** The NSBLD was constructed in the 1930s to facilitate commercial navigation. The upstream pool it provides now serves as a municipal and industrial source of water for Augusta, GA, and North Augusta, SC, as well as a site for recreation and waterfront development. Removal of the lock and dam as described in the WIIN, creates significant concern for Congressional leaders, local communities, stakeholders, and land owners near the project site. As a result, the Corps has the challenge to adequately address the water supply and recreation uses when it evaluates the in-channel Fish Passage options.

**Litigation.** A landowner near the lock and dam has expressed substantial concern about the in-river Fish Passage design and the potential exists for a legal challenge to the USACE recommended plan at the conclusion of the post-authorization analysis process.

**Cost & Schedule Risk.** As a result of the WIIN, a risk to overall project cost and schedule exists, since the start of the SHEP Fish Passage was tied to the start of construction of the SHEP Inner Harbor dredging. Consultations with National Oceanic

and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) have been completed and the Amendment to the Biological Opinion (BiOp) was issued by NMFS on 13 Oct 2017. The Amended BiOp delinks the Fish Passage from the start of SHEP Inner Harbor Dredging to a construction start NLT January 2021. In evaluating the WIIN options, the PDT will also consider options in acquisition strategy and construction techniques to minimize this risk.

- **Project Life Safety:**

The SHEP Fish Passage at NSBLD does not involve any significant threat to human life/safety assurance. The dam impounds water roughly 16 feet deep and no commercial or residential properties are located immediately downstream of the dam. The population at risk is limited to lock personnel and recreational boaters.

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

There have been no requests by the Governors of Georgia or South Carolina to conduct an IEPR on the SHEP Fish Passage at NSBLD.

- **Likelihood to involve public dispute:**

During the study public scoping period, several municipal and local stakeholder groups stated their opposition to removing the NSBLD. The District received over 677 comments during the public scoping effort. Depending upon the recommended plan, it is possible the Corps solution may solicit public dispute/disagreement. The District has developed a strategic communications plan for the analysis effort and in coordination with the SHEP non-Federal sponsors, will include a public event/events during the public comment period on the draft report. Public dispute regarding cost is not expected if the PDT can develop a concept design/recommended plan that provides an adequate pool for water supply and recreation.

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

The SHEP Fish Passage at NSBLD does not contain novel methods or innovative materials that would result in new or substantial cost increases.

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

Designs for the SHEP Fish Passage do not include redundancy, resiliency, and/or robustness, unique construction sequencing, or reduced or overlapping design construction schedules.

**d. In-Kind Contributions.** Products and analyses provided by non-Federal sponsors as in-kind services are subject to DQC, ATR, and IEPR. At this time, there are no in-

kind services provided by the sponsors. The sponsors are the Georgia Ports Authority and the Georgia Department of Transportation.

#### **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 defined in the Project Management Plan (PMP). The home District (Savannah District) shall manage the 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.** A DQC review is a standard requirement for all decision documents. All DQC comments will be formally answered in a normal comment/response format. The DQC comments and responses and the back-check will be provided to the ATR team and will become a permanent part of the study documentation. The DQC will be conducted by senior CESAS personnel.

#### **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 (PCX-IN) 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. Products to Undergo ATR.** Certification of the ATRs will be provided prior to the District Commander signing the final report. Products to undergo ATR are the draft and final versions of the SHEP Fish Passage at NSBLD Integrated Post Authorization Analysis Report and Environmental Assessment. Additionally, the cost estimate will undergo an ATR with a separate ATR certification. Selection of Option A or Option B will require the following ATR team members.

**b. Required ATR Team Expertise**

<b>ATR Team Members/Disciplines</b>	<b>Expertise Required</b>
ATR Lead	The ATR lead position requires a senior professional with extensive experience in preparing Civil Works decision documents and conducting ATR. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. The ATR lead may also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc.). For this study, it is anticipated that the planning ATR team member will also act as the ATR team lead.
Planning	<p>The Plan Formulator necessitates a senior planner, preferably one who has had experience in navigation lock and dam projects including fish Passage.</p> <p>The ATR reviewer shall be a certified ATR Reviewer in Plan Formulation in the Planner Database.</p>
Environmental Resources	<p>The ATR team member must be a senior biologist and have recent experience in navigation lock and dam projects.</p> <p>The reviewer shall be certified ATR Reviewer in environmental compliance in the Planner Database.</p>
Cultural Resources	<p>The archaeologist/cultural resources reviewer must be on the list of certified reviewers that was released by HQ. The ATR member must have experience with historic structures.</p> <p>The reviewer shall be certified ATR Reviewer in environmental compliance in the Planner Database.</p>
Economist	The economist reviewer will be an expert in the field of economics and have a thorough understanding of life-cycle cost analysis, least cost analysis and recreation economics. The economist reviewer will review the identification of the most cost effective plan. The reviewer will be a certified ATR reviewer.
Geotechnical Engineering	The team member shall be a registered professional engineer with a minimum of 8 years of experience in the field of subsurface explorations, geotechnical

	analyses and civil works projects to include rock revetments, dam foundations and weir structures.
Structural Engineer	The reviewer should have extensive experience in the field of structural engineering particularly relating to concrete dams, spillways and lock gates. The ATR team member must be a registered professional engineer with at least 8 years of experience.
Mechanical Engineer	The reviewer should have extensive experience in the field of mechanical engineering especially relating to concrete dams, spillways and lock gates. The ATR team member must be a registered professional engineer with at least 8 years of experience
Electrical Engineer	The reviewer should have extensive experience in the field of electrical engineering especially relating to concrete dams, spillways and lock gates. The ATR team member must be a registered professional engineer with at least 8 years of experience.
Cost Estimating	The Cost ATR team member will be assigned by the Cost Engineering Mandatory Center of Expertise (MCX), located at the Walla Walla District (NWW). The individual will be from an existing pool of certified reviewers. The reviewer must be familiar with the most recent version of MII software, scheduling, Cost & Schedule Risk Analysis, and the Total Project Cost Summary. He/she must have recent experience with cost estimating for Navigation and Flood Risk Management projects, and will review Rough Order Magnitude (ROM) estimates of the alternatives, as well the updated final costs for the selected plan. NWW will oversee the Cost ATR process and will sign off on the ATR certification.
Hydraulic Engineering	The team member shall be a registered professional engineer with hydraulic design and modeling project experience associated with civil works project design. A minimum of 10 years relative experience is required.
Real Estate	The reviewer should have extensive experience with the acquisition and disposal of real property in accordance with PGL 31 – RE Support to Civil Works Planning Paradigm and ER 405-1-12, Chapter 11.

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

- (1) The review concern – identify the product’s information deficiency or incorrect application of policy, guidance, or procedures;
- (2) The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not been properly followed;
- (3) The significance of the concern – indicate the importance of the concern with regard to its potential impact on the plan selection, recommended plan components, efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability; and
- (4) The probable specific action needed to resolve the concern – identify the action(s) that must be taken to resolve the concern.

In some situations, especially when addressing incomplete or unclear information, ATR team members 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 ATR, draft report, and the final report. A sample Statement of Technical Review is included in Attachment 2.

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

Type I IEPR is required for all decision documents except where no mandatory triggers apply, criteria for an exclusion are met, and a risk-informed recommendation justifies exclusion. 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** All decision documents require an IEPR, unless an exclusion is requested and ultimately, approved. This report will examine the two options outlined in section 3.b. HQUSACE Implementation Guidance issued on 25 May 2017 did not specify the requirement for a Type I IEPR. However, based on significant public interest surrounding the NSBLD and this post-authorization analysis, the District intends to conduct a Type I IEPR.

Type I IEPR is mandatory if any of the following are true:

(1) Significant threat to human life. The decision document phase is the initial concept design phase of a project. Therefore, when life safety issues exist, a Type I IEPR that includes a Safety Assurance Review (SAR) is required.

**Answer: No threat to human life.**

(2) Total Project Cost is estimated to be greater than \$200 million. **Answer: No**

(3) A request by a State Governor of an affected state. **Answer: No**

(4) A request by the head of a Federal or state agency charged with reviewing the project study if he/she determines that the project is likely to have a significant adverse impact on environmental, cultural, or other resources under the jurisdiction of the agency after implementation of proposed mitigation plans. **Answer: No**

(5) Significant public dispute as to size, nature or effects of the project. **Answer: Yes**

(6) Significant public dispute as to the economic or environmental cost or benefits of the project. **Answer: Yes**

(7) Cases where information 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.

**Answer: No**

(8) Any other circumstances where the Chief of engineers determines Type I IEPR is warranted. **Answer: No**

Since a significant threat to life and safety from the Fish Passage feature is not expected, the District Chief of Engineering does not recommend a Type II IEPR Safety Assurance Review of this project at this time.

A risk-informed decision concerning the timing and the appropriate level of reviews for the project implementation phase will be prepared and submitted for approval in an updated Review Plan prior to initiation of the design/implementation phase of this project.

- b. Products to Undergo Type I IEPR.** The final Decision Document shall undergo a Type I IEPR per requirements in EC 1165-2-214.

c. **Required Type I IEPR Panel Expertise.** The required Type I IEPR panel expertise will come from planning and engineering.

<b>IEPR Panel Members/Discipline</b>	<b>Expertise Required</b>
<b>Planning</b>	The Planning reviewer should be a senior water resources planner with experience in plan formulation, including least cost analysis and fish passage. The Planning reviewer will determine if the plan selection is appropriate. This person should have experience dealing with stakeholders and dealing with conflict resolution.
<b>Environmental/NEPA Compliance</b>	The environmental resources reviewer will be an expert in the field of fish passage with knowledge of Atlantic and shortnose sturgeon behavior, and performance requirements, and will have a thorough understanding of fish passage for anadromous and resident migratory fish. At least 15 years of experience directly related to water resource environmental evaluation or review and National Environmental Policy Act (NEPA) compliance. Minimum MS degree or higher in a related field. Familiar with the habitat, fish, and wildlife species that may be affected by the project alternatives in this study area. Should be familiar with fisheries (spawning, rearing, freshwater migration) with knowledge of riverine systems. An expert in compliance with environmental laws, policies, and regulations, including compliance with the Fish and Wildlife Coordination Act and Endangered Species Act (ESA). Particular knowledge of construction impacts on fisheries and aquatic ecology is desired.
<b>Economist</b>	The economist reviewer will be an expert in the field of economics and have a thorough understanding of life-cycle cost analysis, least cost analysis, and recreation economics. Review the identification of the most cost effective plan.
<b>General Engineer</b>	The engineering reviewer will be a registered professional engineer with a minimum of 10 years of experience in engineering design for civil works projects or a professor from academia with extensive background in riverine systems and engineering theory and practice of water control and fish passage structures associated with anadromous fish of the southeastern United States. A minimum of a Master's degree in engineering with an emphasis on design and construction of large river engineering projects is required. The reviewer will be experienced in the design and construction of low-head dams and fish passage structures and USACE rules and regulations for Civil Works dams. Specific areas of expertise will include civil/site design, electrical systems, mechanical systems, and structural design. The reviewer shall have familiarity with large,

	complex Civil Works dam projects with high public and interagency interests.
<b>Hydraulic Engineer</b>	The hydraulic engineering reviewer will be a registered professional engineer and certified floodplain manager with a minimum of 10 years of experience and an extensive background in large river engineering projects and hydraulic theory and practice. A minimum of a Master's degree in engineering is required in the field of riverine hydraulics and water control structures. The reviewer will have a thorough understanding of large Civil Works hydraulic control structures and fish passage facilities associated with anadromous fish of the southeastern United States. The reviewer will also have expertise in hydraulic modeling, familiarity with the USACE Hydrologic Engineering Center-River Analysis System (HEC-RAS) 4.0 and similar USACE hydrologic and hydraulic computer models, and requirements and regulations for civil works structures to include dam safety and floodplain inundation. The reviewer shall have familiarity with large, complex Civil Works dam projects with high public and interagency interests.
<b>Cultural Resources</b>	The cultural resources reviewer will be an expert in the field of architectural history with knowledge of industrial architecture. At least 10 years of experience directly related to historic structures evaluation or review and National Historic Preservation Act (NHPA) compliance. Minimum of an MS/MA degree in historic preservation, architectural history, public history, history, or a related field. Familiarity and experience with cultural resource survey work, the Secretary of the Interiors Standards for Archeology and Historic Preservation, the National Register Program, Heritage Documentation Programs, and the applicable Code of Federal Regulations. Will also be an expert in compliance with additional environmental laws, policies, and regulations, including compliance with National Environmental Policy Act (NEPA). Particular knowledge of construction impacts on historic structures.

**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 and 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 4.d 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 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 MANDATORY CENTER OF EXPERTISE (MCX) REVIEW AND CERTIFICATION**

All decision documents shall be coordinated with the Civil Works Cost Engineering and Agency Technical Review Mandatory Center of Expertise (Cost Engineering MCX), located in the Walla Walla District. The MCX will assist in determining the expertise needed on the ATR team and Type I IEPR (if required) and in the development of the new charge(s). The MCX will also provide the Cost Engineering certification. The RMO, which is the PCX-IN in this case, is responsible for coordination with the Cost Engineering MCX.

## 9. MODEL CERTIFICATION AND APPROVAL

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

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 PDT is not using any planning models during this study. An EXCEL spreadsheet will be used to prepare the least cost analysis.

Planning Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification/Approval Status
No Planning Models		

**b. Engineering Models.** Engineering will use the latest version of the HEC-RAS model for this decision document. HEC-RAS will be used to generate water surface profiles and inundation maps for a range of flow events. Of primary interest are water surface elevations during low-flow conditions and flood inundation limits and depths during high flow conditions. The new 2D flow module in HEC-RAS 5.0 will be used to determine inundation limits and depths for the with-project condition. All Engineering models are Corps approved.

Engineering Model Name and Version	Brief Description of the Model and How it Will Be Applied in the Study	Approval Status
HEC-RAAS 5.0	HEC-RAS - Hydraulic modeling software developed and maintained by the Corps' Hydrologic Engineering Center in Davis, CA. HEC-RAS is the industry standard in hydraulic modeling and allows the user to perform 1D and 2D hydraulic computations (e.g. water surface profiles). HEC-RAS is the HH&C CoP preferred software for River Hydraulics and has been approved for use in planning studies.	HEC-RAS is the HH&C CoP preferred hydraulic modeling for Dam safety and River hydraulics.

**10. REVIEW SCHEDULES AND COSTS**

**a. ATR Schedule and Cost.** The cost for the ATRs is estimated to be \$90,000. The documents to be reviewed and scheduled dates for review are as follows:

- Draft Integrated Report with EA:
- ATR Draft Report and Cost Estimate – \$60,000 (Scheduled 4/2018 – 5/2018)
- ATR –Final Report and EA – \$30,000 (Scheduled 9/2018 – 10/2018)9/24/2018 – 10/5/2018

**b. Type I IEPR Schedule and Cost.** A Type I IEPR is contained in the schedule and projected to be conducted in conjunction with the draft report public comment period during the 3rd quarter FY 2018 at an estimated cost of \$80,000.

**c. Model Certification/Approval Schedule and Cost.** Not Applicable.

**11. PUBLIC PARTICIPATION**

The District issued a public notice to inform stakeholders and natural resource agencies that it is conducting an evaluation to identify the best way to modify the SHEP as required by the WIIN Act. The District received numerous comments on the analysis report. The District also attended an education workshop on May 31, 2017, that was hosted jointly by the Augusta Chamber of Commerce, the City of Augusta, GA, and the City of North Augusta, SC. That workshop provided additional information on the issues in the community that could be affected by the SHEP Fish Passage feature.

State and Federal resource agencies may be invited to participate in the analysis effort as partner agencies or as technical members of the PDT, as appropriate. Agencies with

regulatory review responsibilities will be contacted for coordination as required by applicable laws and procedures.

There will be a public review period of the draft report and the documents will be available for review through the Savannah District website. A public workshop/event(s) will be included during the public comment period. The current schedule includes public review of the draft integrated report and EA during the third quarter of 2018. CESAS will post the final report on our public website when the final report is approved.

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

The CESAD Commander is responsible for approving this Review Plan. The Commander's approval reflects vertical team input as to the appropriate scope and level of review for the decision document. The Review Plan is a living document and may change as the analysis process 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) must be approved by the MSC Commander following the process used for initially approving the plan. The Review Plan, along with the Commanders' approval memorandum, will be posted on the Home District's webpage. The approved Review Plan will also be provided to the RMO, which is the PCX-IN.

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

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

- CESAS Project Manager, 912-652-6113
- CESAS Planning Chief, 912-652-5781
- CESAD Point of Contact: 404-562-5226
- PCX-IN RMO, 504-862-1062

## ATTACHMENT 1: TEAM ROSTERS

The PDT list of specific team members can be found in the PMP.

Table 1 – Project Delivery Team

<b>Discipline</b>	<b>Office/Agency</b>
Project Manager	CESAS-PM-C
Plan Formulator	CESAS-PM-P
Environmental	CESAS-PM-P
Economist	CESAS-PM-P
Cultural Resources	CESAS-PM-P
Real Estate	CESAS-RE-AP
Engineering Hydraulics/Hydrology	CESAS-EN-H
Mechanical	CESAS-EN-DM
Electrical	CESAS-EN-DE
Structural	CESAS-EN-DS
Geotechnical	CESAS-EN-GS
Cost Estimating	CESAS-EN-ET Cost MCX

Table 2 – Agency Technical Review

<b>Discipline</b>	<b>Office/Agency</b>	<b>Name</b>
ATR Lead	TBD	TBD
Plan Formulator	TBD	TBD
Environmental	TBD	TBD
Economist	TBD	TBD
Cultural Resources	TBD	TBD
Real Estate	TBD	TBD
Hydraulics/Hydrology	TBD	TBD
Mechanical	TBD	TBD
Electrical	TBD	TBD
Structural	TBD	TBD
Geotechnical	TBD	TBD
Cost Estimation	TBD	TBD

Table 3 – IEPR

<b>Discipline</b>	<b>Office/Agency</b>	<b>Name</b>
Planner	TBD	TBD
Environmental/NEPA	TBD	TBD
General Engineer	TBD	TBD
Hydraulic Engineer	TBD	TBD
Cultural Resources	TBD	TBD
Economist/Recreational Economist	TBD	TBD

**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 <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<sup>SM</sup>.

*SIGNATURE*

Name

ATR Team Leader

Office Symbol/Company

\_\_\_\_\_  
Date

*SIGNATURE*

Name

Project Manager

Office Symbol

\_\_\_\_\_  
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**

<b>Revision Date</b>	<b>Description of Change</b>	<b>Page/Paragraph Number</b>