



**DEPARTMENT OF THE ARMY**  
U.S. ARMY CORPS OF ENGINEERS, SOUTH ATLANTIC DIVISION  
60 FORSYTH STREET SW, ROOM 10M15  
ATLANTA, GEORGIA 30303-8801

CESAD-RBT

15 Apr 2019

MEMORANDUM FOR COMMANDER, JACKSONVILLE DISTRICT

SUBJECT: Approval of the Review Plan for Salud Creek, Continuing Authorities Program, Section 14, Emergency Streambank and Shoreline Protection Project, San German, Puerto Rico

1. References:

a. Memorandum, CESAJ-EN-Q, 4 April 2019, subject as above.

b. Engineering Circular (EC) 1165-2-217, Water Resources Policies and Authorities Review Policy for Civil Works, 20 February 2018.

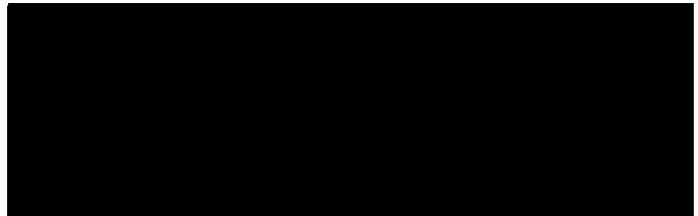
2. The Review Plan (RP) for the Salud Creek Emergency Streambank and Shoreline Protection Project and reference 1.a noted above have been reviewed by South Atlantic Division (SAD). SAD concurs with the conclusion that a Type II Independent External Peer Review (IEPR) of the subject project is not required. The RP is hereby approved in accordance with reference 1.b.

3. SAD concurs with the District's RP recommendation that outlines the requirements for District Quality Control (DQC), Agency Technical Review (ATR), and Biddability, Constructability, Operability, Environmental and Sustainability (BCOES) Review. The Safety Assurance Review/Type II Independent External Peer Review is not required. Documents to be reviewed include the Plans and Specifications and the Design Documentation Report (DDR).

4. The South Atlantic Division Office shall be the Review Management Organization for this project.

5. The District should take steps to post the approved RP to its website and provide a link to CESAD-RBT. Before posting to the website, the names of Corps/Army employees should be removed. Subsequent significant changes to this RP, such as scope or level of review changes, should they become necessary, will require new written approval from this office.

6. The SAD point of contact is [REDACTED].





DEPARTMENT OF THE ARMY  
CORPS OF ENGINEERS, JACKSONVILLE DISTRICT  
701 SAN MARCO BOULEVARD  
JACKSONVILLE, FLORIDA 32207-8915

CESAJ-EN-Q

4 APR 2019

MEMORANDUM FOR Commander, South Atlantic Division (CESAD-RBT), 60 Forsyth Street SW, Room 10M15, Atlanta, GA 30303

SUBJECT: Approval of Review Plan for the Salud Creek, Continuing Authorities Program, Section 14, Emergency Streambank and Shoreline Protection Project, San German, Puerto Rico

1. References.

- a. Engineering Circular (EC) 1165-2-217, Review Policy for Civil Works, 20 Feb 18.
- b. Flood Control Act of 1946, Public Law 79-526, 24 Jul 46.

2. I hereby request approval of the enclosed Review Plan for the Salud Creek, Continuing Authorities Program, Section 14, Emergency Streambank and Shoreline Protection Project, San German, Puerto Rico, and concurrence with the conclusion that a Type II Independent External Peer Review (IEPR) of the subject project is not required. The recommendation not to perform a Type II IEPR is based on the EC 1165-2-217 Risk Informed Decision Process as presented in the Review Plan. The Review Plan complies with applicable policy, provides for Agency Technical Review, and has been coordinated with the CESAD. It is my understanding that non-substantive changes to this Review Plan, should they become necessary, are authorized by CESAD.

3. The district will post the CESAD approved Review Plan to its website and provide a link to the CESAD for its use. Names of Corps/Army employees will be withheld from the posted version, in accordance with guidance.

4. If you have any questions regarding the information in this memo, please feel free to contact me or contact 

Encl

# **PROJECT REVIEW PLAN**

For

## **Design and Implementation Phase Implementation**

For

### **Salud Creek at San Germán** Continuing Authorities Program Section 14 Emergency Streambank and Shoreline Protection Project

**San Germán, Puerto Rico**  
**Project P2 number: 460772**

**Jacksonville District**

**March 2019**



**US Army Corps  
of Engineers** ®

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ATTACHMENT B - Partial List of Acronyms and Abbreviations

ATTACHMENT C - ATR Report Outline and Completion of Agency Technical Review Form

## **1. PURPOSE AND REQUIREMENTS**

### **a. Purpose**

This Review Plan defines the scope of review activities for the Salud Creek at San Germán, Continuing Authorities Program (CAP) Section 14, Emergency Streambank and Shoreline Protection Project, San Germán, Puerto Rico. As discussed below, the review activities consist of a District Quality Control (DQC) effort, an Agency Technical Review (ATR), and a Biddability, Constructability, Operability, Environmental, and Sustainability (BCOES) Review. Also, as discussed below, an Independent External Peer Review (IEPR) is not recommended. The project is in the design phase, and the related documents including Plans and Specifications (P&S) and a Design Documentation Report (DDR) are the implementation documents. Upon approval, this Review Plan will be included into the Project Management Plan (PMP) for this project as an appendix to the Quality Management Plan (QMP).

### **b. References**

- (1). ER 1110-2-1150, Engineering and Design for Civil Works Projects, 31 August 1999
- (2). ER 1110-1-12, Engineering and Design Quality Management, 31 March 2011
- (3). EC 1165-2-217, Review Policy for Civil Works, 20 February 2018
- (4). ER 415-1-11, Biddability, Constructability, Operability, Environmental, and Sustainability (BCOES) Review, 1 January 2013
- (5). SAJ EN QMS 02611, SAJ Quality Control of In-House Products: Civil Works PED, 21 November 2011
- (6). P2 # 460772, Project Management Plan, Salud Creek at San Germán, Puerto Rico, October 2017
- (7). Salud Creek at San Germán Final Integrated Feasibility Report and Environmental Assessment, August 2018

### **c. Requirements**

This Review Plan was developed in accordance with EC 1165-2-217, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design and construction. The EC provides the procedures for ensuring the quality and credibility of U.S. Army Corps of Engineers (USACE) decision, implementation, and operations and maintenance documents and other work products. The EC outlines five levels of review: DQC, ATR, IEPR, BCOES, and Policy and Legal Review.

### **d. Review Plan Approval and Updates**

The South Atlantic Division (SAD) 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. Like the PMP, the Review Plan is a living document and may change as the project progresses. The Jacksonville District (SAJ) is responsible for keeping the Review Plan up-to-date. Minor changes to the review plan since the last MSC Commander approval will be documented in Attachment A. 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 Commander’s approval memorandum, will be posted on the SAJ’s webpage. The latest Review Plan will be provided to SAD.

**e. Review Management Organization**

SAD is designated as the Review Management Organization (RMO). The RMO, in cooperation of the vertical team, will approve the ATR team members selected by the SAJ. SAJ will assist SAD with management of the ATR and will develop the charge to reviewers.

**2. PROJECT INFORMATION**

**a. Project Location**

The project is located within the Maresúa Ward in the Municipality of San Germán, in the southwestern region of Puerto Rico (Figure 1). The study area includes approximately 1,060 linear feet of channel of Salud Creek that runs through the residential community of Portal de San Germán, a 56-unit Section 8 residential development for low income families that was constructed in 2014. Figure 1 and Figure 2 show the project location.



**Figure 1: Project Location Map**



**Figure 2: Project Location Map Inset**

**b. Project Authorization**

A study was conducted under the authority of Section 14 of the Flood Control Act of 1946, as amended, which authorizes the study, design, and construction of small projects for streambank and shoreline erosion protection of public works and non-profit public services. Section 14 is designed to implement projects to protect public facilities and facilities owned by non-profit organizations used to provide public services that are open to all on equal terms. These facilities must have been properly maintained, be in imminent threat of damage or failure by natural erosion processes on streambanks and shorelines, and be essential and important enough to merit Federal participation in their protection.

**c. Project Description**

The project site includes a row of public housing units, a pedestrian bridge, a vehicular bridge, a double barrel culvert, and two single culverts adjacent to a parallel running creek. Bank erosion extends from the creek to within six to eight feet of the housing units in the upper portion (east side) of the impacted area and to within two feet of the housing units in the lower portion (west side). The purpose of the project is to construct emergency streambank protection to prevent bank erosion from damaging the housing development and the adjacent structures.

The subject residential development, Portal de San Germán, which provides housing for low income families in the Municipality of San Germán, is an essential non-profit public service owned and operated by a non-profit organization, and is maintained as such. It is under imminent threat of damage or failure from continuing streambank erosion at the site. Bank erosion along Salud Creek is threatening the structural integrity of the housing units and associated infrastructure, increasing the existing risk of losing housing structures during a major storm event. This project is designed to stop the erosion problem at Salud Creek.

The current design of the project includes: clearing and grubbing approximately 940 linear feet of eroded channel embankment, grading and compaction of the cleared ground surface, placement of 840 linear feet of anchored HPTRM to full bank height, addition of four inches of topsoil and sod or seed, rehabilitation of the stormwater outfalls (culverts) both west of the vehicular bridge and east of the pedestrian bridge, and armoring with concrete of approximate 100 linear feet of channel embankment around the two rehabilitated culverts. Rehabilitation of culverts is expected to consist of clearing away vegetation from around the culvert outfalls, repairing broken headwalls, and adding new concrete around the culvert outfalls to reinforce the foundation and prevent future erosion.

**d. Public Participation**

The SAJ's Corporate Communications Office continually keeps the public informed on SAJ projects and activities. A summary from every public meeting, if any are needed, will be provided to the review team. The approved review plan will be posted on the SAJ webpage. Any comments or questions regarding the Review Plan will be addressed by the SAJ.

**e. In-Kind-Contributions by Project Sponsor**

There are no in-kind sponsor contributions related to the P&S and DDR that will affect this Review Plan or related reviews.

**f. Civil Works Cost Engineering Mandatory Center of Expertise Review and Certification**

The cost related documents associated with the P&S and DDR and the associated contract do not require external peer review or certification by the Cost Engineering Mandatory Center of Expertise (MCX).

**3. DISTRICT QUALITY CONTROL**

**a. Requirements**

All implementation documents (including supporting data, analyses, environmental compliance documents, etc.) shall undergo a DQC. A DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the PMP. DQC will be performed on P&S and DDR in accordance with SAJ's Engineering Division Quality Management System (EN QMS). The EN QMS defines DQC as the sum of two reviews, Discipline Quality Check and Review (DQCR) and Product Quality Control Review (PQCR).

**b. Documentation**

DQCRs occur during the design development process and are carried out as a routine management practice by each discipline. Checklists are utilized by each discipline to facilitate the review and to document the DQCR review comments. Certification of DQCR is signed by the Branch Chief certifying that the DQCR on all design analyses and products have been completed in accordance with the EN QMS process prior to release from the Branch.

The PQCR shall ensure consistency and effective coordination across all disciplines and shall assure the overall coherence and integrity of the products. Review comments and responses for this review will be documented in DrChecks<sup>sm</sup>. The PQCR shall be QC certified by the Engineering Technical Lead (ETL), all applicable Section and Branch Chiefs, and the Division

Chief. This PQCR certification signifies that all DQCR Certifications are complete, as well as the PQCR.

#### **4. AGENCY TECHNICAL REVIEW**

##### **a. Risk Informed Decision on Appropriate Level of Review**

Design and Implementation (DI) phase implementation documents are being prepared, and an ATR of the P&S and DDR documents will be required.

##### **b. Agency Technical Review Scope.**

ATR is undertaken to "ensure the quality and credibility of the government's scientific information" in accordance with EC 1165-2-217 and ER 1110-1-12. An ATR will be performed on the P&S and DDR pre-final submittals.

A site visit will not be scheduled for the ATR Team. If necessary, additional data and photos of the project site required by the ATR team will be gathered by PDT members during plan-in-hand site visits. This information will be disseminated to the ATR Team by the PDT.

ATR will be conducted by individuals and organizations that are external to the SAJ. The ATR Team Leader will be a USACE employee outside SAD. The required disciplines and experience are described below.

ATR comments are documented in the DrChecks<sup>sm</sup> model review documentation database. DrChecks<sup>sm</sup> is a module in the ProjNet<sup>sm</sup> suite of tools developed and operated at ERDC-CERL ([www.projnet.org](http://www.projnet.org)). At the conclusion of ATR, the ATR Team Leader will prepare an ATR Report that summarizes the review. An outline for an ATR Review Report is in Attachment C. The report will include at a minimum the Charge to Reviewers, ATR Certification Form from EC 1165-2-217, and the DrChecks<sup>sm</sup> printout of the comment resolution.

##### **c. ATR Disciplines.**

As stipulated in ER 1110-1-12, ATR members will be sought from the following sources: regional technical specialists (RTS); subject matter experts (SME) certified in CERCAP; senior level experts from other districts; Center of Expertise staff; experts from other USACE commands; contractors; academic or other technical experts; or a combination of the above. The ATR Team will be comprised of the following disciplines; knowledge, skills and abilities; and experience levels.

ATR Team Leader. The ATR Team Leader shall have experience with channel projects and have performed ATR Team Leader duties on past ATR teams. ATR Team Leader can also serve as a co-duty to one of the review disciplines.

Hydraulic Engineering. The team member shall be a registered professional engineer with a minimum of 5 years of experience in hydraulic modeling and design.

Geotechnical Engineering and Engineering Geology. The team member shall be a registered professional and shall have a minimum of 5 years of experience in geotechnical engineering. Experience shall encompass geologic and geotechnical analyses that are used to support the development of P&S for erosion protection projects.

Structural Engineering. The team member shall be a registered professional engineer with a minimum of 5 years of experience in structural engineering.

## **5. BIDDABILITY, CONSTRUCTABILITY, OPERABILITY, ENVIRONMENTAL, AND SUSTAINABILITY REVIEW**

The value of a BCOES review is based on minimizing problems during the construction phase through effective checks performed by knowledgeable, experienced personnel prior to advertising for a contract. BCOES requirements must be emphasized throughout the planning and design processes for all programs and projects, including during planning and design. This will help to ensure that the Government's contract requirements are clear, executable, and readily understandable by private sector bidders or proposers. It will also help ensure that the construction may be done efficiently and in an environmentally sound manner, and that the construction activities and projects are sufficiently sustainable. Effective BCOES reviews of design and contract documents will reduce risks of cost and time growth, unnecessary changes and claims, as well as support safe, efficient, sustainable operations and maintenance by the facility users and maintenance organization after construction is complete. A BCOES Review will be conducted for this project. Requirements and further details are stipulated in ER 1110-1-12, ER 415-1-11, and SAJ EN QMS 02611.

## **6. INDEPENDENT EXTERNAL PEER REVIEW**

### **a. General.**

EC 1165-2-217 provides guidance for the implementation of IEPR according to Sections 2034 and 2035 of the Water Resources Development Act (WRDA) of 2007 (Public Law (P.L.) 110-114). The EC addresses review procedures for both the Planning and the Design and Construction Phases (also referred to in USACE guidance as the Feasibility and the Design and Implementation Phases). The EC defines Section 2035 Safety Assurance Review (SAR), Type II Independent External Peer Review (IEPR). The EC also requires Type II IEPR be managed and conducted outside the Corps of Engineers.

### **b. Type I Independent External Peer Review Determination.**

A Type I IEPR is primarily associated with decision documents. A Type I IEPR is not applicable to the implementation documents covered by this Review Plan.

### **c. Type II Independent External Peer Review Determination (Section 2035).**

This project does not trigger WRDA 2007 Section 2035 factors for Safety Assurance Review (termed Type II IEPR in EC 1165-2-217). Therefore, a review under Section 2035 is not required. The factors in determining whether a review of design and construction activities of a project are necessary as stated under Section 2035, along with the applicability statements for this Review Plan, are as follows:

- (1) The failure of the project would pose a significant threat to human life.

*This project consists of clearing and grubbing and bank armoring construction. Failure of the armoring system will not directly pose a significant threat to human life.*

- (2) The project involves the use of innovative materials or techniques.

*This project will use methods and procedures commonly used by the USACE on other similar works.*

(3) The project design lacks redundancy.

*The concept of redundancy does not apply to bank armoring projects.*

(4) The project has unique construction sequencing or a reduced or overlapping design construction schedule.

*This project's construction sequence and schedule have been used successfully by the USACE on this and other similar works. Construction schedules do not have unique sequencing and activities are not reduced or overlapped.*

Based on the discussion above, the SAJ Chief of Engineering, as the Engineer-In-Responsible-Charge, does not recommend a Type II IEPR of the P&S and DDR.

## **7. POLICY AND LEGAL COMPLIANCE**

The SAJ Office of Counsel reviews all contract actions for legal sufficiency in accordance with Engineer Federal Acquisition Regulation Supplement 1.602-2 Responsibilities. The subject implementation documents and supporting environmental documents will be reviewed for legal sufficiency prior to advertisement.

## **8. MODEL CERTIFICATION AND APPROVAL**

The project does not use any models that have not been approved for use by USACE. During feasibility phase, the Interconnected Pond Routing (ICPR) model was used to determine the runoff discharge hydrograph, and the Hydrologic Engineering Center's River Analysis System (HEC-RAS) model was utilized for the hydraulic and hydrologic analyses. The HEC-RAS model will also be used for additional hydraulic analysis during design phase.

## **9. PROJECT DELIVERY TEAM DISCIPLINES**

<b>Discipline/Expertise</b>
Geomatics & Survey
Hydraulic Design Engineering
Geotechnical Engineering
Structural Engineering
Geology

## **10. BUDGET AND SCHEDULE**

### **a. Project Milestones.**

<b>Task</b>	<b>Date</b>
DQCR	April 2019
PQCR/DQC*	May 2019

ATR Review	June 2019
ATR Certification	June 2019
BCOES Review	June 2019
BCOES Certification	July 2019

\*SAJ EN QMS 02611 defines DQC as the sum of DQCR and PQCR

**b. ATR Cost.**

Funds will be budgeted to execute ATR and schedule as outlined above. It is envisioned that each reviewer will be afforded 24 hours review plus 8 hours for coordination. The estimated cost range is \$20,000 - \$25,000.

**11. REVIEW PLAN POINTS OF CONTACT**

Title	Organization	Phone
Review Manager	CESAJ-EN-Q	[REDACTED]
Quality Manager	CESAD-RBT	[REDACTED]

**ATTACHMENT A: APPROVED REVIEW PLAN REVISIONS**

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

**ATTACHMENT B: PARTIAL LIST OF ACRONYMS AND ABBREVIATIONS**

<u>Acronyms</u>	<u>Defined</u>
AFB	Alternatives Formulation Briefing
ATR	Agency Technical Review
BCOES	Biddability, Constructability, Operability, Environmental, and Sustainability Review
CAP	Continuing Authorities Program
CERCAP	Corps of Engineers Reviewer Certification and Access Program
CY	Cubic Yards
DDR	Design Documentation Report
DI	Design and Implementation Phase
DQC	District Quality Control
DQCR	Discipline Quality Control Review
EA	Environmental Assessment
EC	Engineering Circular
EN QMS	Engineering Division Quality Management System
ER	Engineering Regulation
ERDC-CERL	Engineer Research and Development Center – Construction Engineering Research Laboratory
ESA	Endangered Species Act
ETL	Engineering Technical Lead
EV	Emergent Vegetation
FDEP	Florida Department of Environmental Protection
FONSI	Findings of No Significant Impacts
FSCA	Feasibility and Cost Sharing Agreement
FY	Fiscal Year
GRR	General Reevaluation Report
HPTRM	High Performance Turf Reinforcement Matting
IEPR	Independent External Peer Review
LPP	Locally Preferred Plan
MCX	Mandatory Center of Expertise
MLLW	Mean Low Low Water
MSC	Major Subordinate Command
NAS	National Academy of Sciences
NEPA	National Environmental Policy Act
ODMDS	Ocean Dredged Material Disposal Site
OMB	Office of Management and Budget
OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation
P&S	Plans and Specifications

<b><u>Acronyms</u></b>	<b><u>Defined</u></b>
PDT	Project Delivery Team
PM	Project Manager
PMP	Project Management Plan
PPA	Project Partnering Agreement
PQCR	Product Quality Control Review
QA	Quality Assurance
QCP	Quality Control Plan
QMP	Quality Management Plan
QMS	Quality Management System
RMC	Risk Management Center
RMO	Review Management Organization
RP	Review Plan
RTS	Regional Technical Specialist
SAD	South Atlantic Division Office
SAJ	South Atlantic Jacksonville District Office
SAR	Safety Assurance Review (also referred as Type II IEPR)
SAV	Submerged Aquatic Vegetation
SME	Subject Matter Expert
USACE	U.S. Army Corps of Engineers
WRDA	Water Resources and Development Act

**ATTACHMENT C:**

**ATR REPORT OUTLINE AND COMPLETION OF AGENCY TECHNICAL REVIEW**

**San Germán at Salud Creek  
Continuing Authorities Program Section 14  
Emergency Streambank and Shoreline Protection Project  
San Germán, Puerto Rico**

**ATR REPORT OUTLINE:**

- 1. Introduction:**
- 2. Project Description:**
- 3. ATR Team Members:**
  - Geotechnical Engineering and Engineering Geology.**
  - Structural Engineering.**
  - Hydraulic Design Engineering.**
  - ATR Team Leader.**
- 4. ATR Objective:**
- 5. Documents Reviewed:**
- 6. Findings and Conclusions:**
- 7. Unresolved Issues:**

# COMPLETION OF AGENCY TECHNICAL REVIEW

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The Agency Technical Review (ATR) has been completed for Salud Creek at San Germán, Continuing Authorities Program Section 14, Emergency Streambank and Shoreline Erosion Protection Project, San Germán, Puerto Rico, including the design documents, plans and specifications, and DDR. The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-217 and ER 1110-1-12. 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>.

\_\_\_\_\_  
NAME  
ATR Team Leader

\_\_\_\_\_  
Date

\_\_\_\_\_  
NAME  
Project Manager

\_\_\_\_\_  
Date

\_\_\_\_\_  
NAME  
Review Management Office Representative

\_\_\_\_\_  
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.

\_\_\_\_\_  
NAME  
Chief, Engineering Division  
SAJ-EN

\_\_\_\_\_  
Date