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

CESAD-RBT 17 September 2019

MEMORANDUM FOR Commander, Jacksonville District, 701 San Marco Boulevard, Jacksonville, Florida 32207

SUBJECT: Approval of the Review Plan for Herbert Hoover Dike (HHD) S-71 and S-72 Embankment Armoring Project

1. References:

a. Memorandum, CESAJ-EN-Q, 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 HHD S-71 and S-72 Embankment Armoring Project submitted by the Jacksonville District via reference 1.a. noted above has been reviewed by South Atlantic Division (SAD) and is hereby approved in accordance with reference 1.b.

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

4. 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, and the conclusion that a 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).

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].

Major General, USA
Commanding

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

CESAJ-EN-Q

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

SUBJECT: Approval of Review Plan for Herbert Hoover Dike S-71 and S-72 Embankment Armoring Project

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 Herbert Hoover Dike S-71 and S-72 Embankment Armoring Project, 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 [redacted].

[redacted]

Encl

COL, EN
Commanding

PROJECT REVIEW PLAN

For

Preconstruction, Engineering and Design Phase Implementation Documents

For

Herbert Hoover Dike S-71 and S-72 Embankment Armoring Project

Project P2 number: 114527

Jacksonville District

May 2019

US Army Corps of Engineers ®

THE INFORMATION CONTAINED IN THIS REVIEW PLAN IS DISTRIBUTED SOLELY FOR THE PURPOSE OF PREDISSEMINATION PEER REVIEW UNDER APPLICABLE INFORMATION QUALITY GUIDELINES. IT HAS NOT BEEN FORMALLY DISSEMINATED BY THE U.S. ARMY CORPS OF ENGINEERS, JACKSONVILLE DISTRICT. IT DOES NOT REPRESENT AND SHOULD NOT BE CONSTRUED TO REPRESENT ANY AGENCY DETERMINATION OR POLICY.

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1. PURPOSE AND REQUIREMENTS

a. Purpose

This Review Plan defines the scope of review activities for the implementation documents of the Herbert Hoover Dike S-71 and S-72 Embankment Armoring Project (P2# 114527). 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 Herbert Hoover Dike S-71 and S-72 Embankment Armoring Project contract is currently in the Pre-Construction, Engineering and Design (PED) phase. The implementation documents to be reviewed are Plans and Specifications (P&S) and a Design Documentation Report (DDR). 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). 02611-SAJ Quality Control of In-House Products: Civil Works PED, 4 December 2017

(6). Project Management Plan for the Brevard County Hurricane and Storm Damage Reduction Project

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, construction, and Operation, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R). 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 SAD 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 SAD 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 with the vertical team, will approve the ATR team members. SAJ will assist SAD with management of the ATR and development of the charge to reviewers.

2. PROJECT INFORMATION

a. Project Location

The projects are located on the North West side of Lake Okeechobee, Florida, see Figure 1.

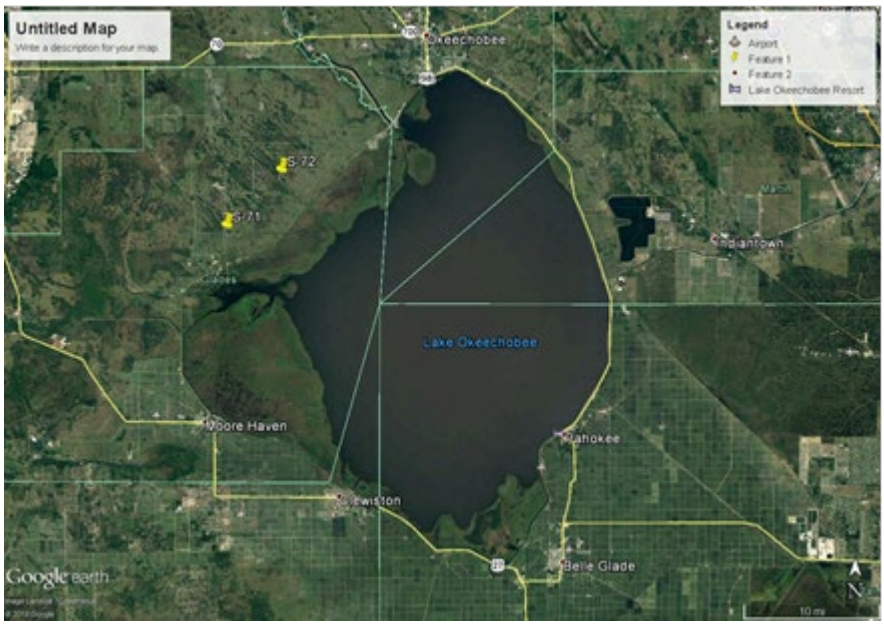

Figure 1: Project location map

Figure 2: S-71 Project Site Aerial Image

Figure 3: S-72 Project Site Aerial Image

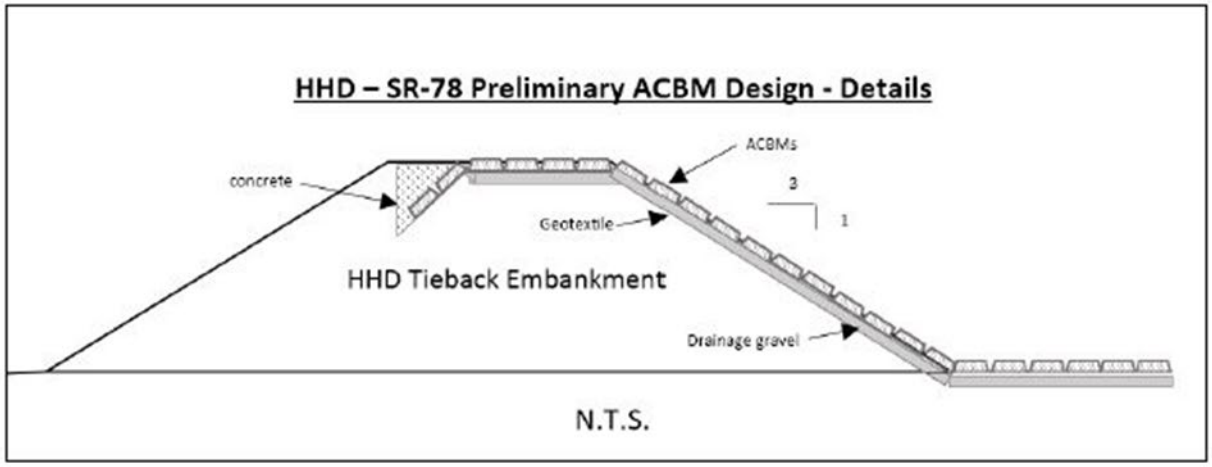

Figure 4: Typical Section of Armoring

b. Project Background

Herbert Hoover Dike is an earthen embankment system located along the perimeter of Lake Okeechobee, a large (724 square mile surface area) freshwater lake in south Florida. The lake is located approximately 30 miles west of the Atlantic Ocean and 60 miles east of the Gulf of Mexico. The lake and surrounding drainage area encompass approximately 5,600 square miles. The dike was constructed primarily to provide local flood protection. Components of the embankment system have been built intermittently since the early 1900s. Federal involvement began in the 1930s with the construction of dikes (for flood protection) along portions of the north and south shores.

In the 1960s, the crest elevations of those dikes were increased and additional embankments were constructed on the northwest and northeast shores. As a result, the Herbert Hoover Dike system now encircles Lake Okeechobee entirely, except in the vicinity of Fisheating Creek on the western shore.

The existing embankments total approximately 143 miles in length with crest elevations ranging from 32 to 46 feet, National Geodetic Vertical Datum (NGVD). Adjacent land elevations typically range from 10 to 20 feet, NGVD. Lakeside levee slopes vary from 1V:3H to 1V:10H and landside slopes range from 1V:2H to 1V:5H.

c. Project Description

This Review Plan will address the landside slope revetment of the HHD at Structures S-71 and S-72. A project location map is included in Figure 1. At these locations, the embankment crest of HHD is low, which exceeds the Annual Probability of Failure (APF) guidelines for overwash and overtopping. Elevating the crest is not feasible because the crest must meet existing feature elevations. The project will include placing revetment to armor and protect the embankment from failure during a temporary overtop and overwash event. Aerial images of the project sites are shown in Figures 2 and 3. A proposed typical section of armoring is provided in Figure 4. Although Figure 4 references SR78, the detail is applicable to S-71 and S-72. The Hydrologic Engineering Center - River Analysis System (HEC-RAS) Version 5.0.7

hydraulic routing model was used to evaluate storm surge overtopping at each of the structures. An unsteady-flow routing simulation was performed using a model domain consisting of a single two-dimensional (2D) flow area.

d. Public Participation

The SAJ's Corporate Communications Office continually keeps the public informed on SAJ projects and activities. There are no controversial concerns, planned activities, public participation meetings, or workshops that could generate issues needing provision to review teams. The project Review Plan will be posted on the SAJ's webpage. Any comments or questions regarding the Review Plan will be addressed by SAJ.

e. Project Sponsor

The South Florida Water Management District is the sponsor and only responsible for the provision of lands. Since the revetment at S-71 and S-72 is within the Federal right-of-way, no additional lands are required. The sponsor will not be providing in-kind contributions to the project.

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

The cost related documents associated with this contract do not require external peer review or certification. Therefore, no additional review requirements will be executed by the Cost Engineering Mandatory Center of Expertise (MCX) for the implementation documents addressed by this Review Plan.

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 02611 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 the DQCR is signed by the Branch Chief certifying that 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^{sm}. 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

PED phase implementation documents for the project are being prepared. An ATR of the pre-final P&S and DDR documents for the design of the initial construction of the Herbert Hoover Dike S-71 and S-72 Embankment Armoring Project will be undertaken.

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.

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 will be documented in the DrChecks^{sm} model review documentation database. DrChecks^{sm} is a module in the ProjNet^{sm} suite of tools developed and operated at ERDC-CERL (www.projnet.org). At the conclusion of ATR, the ATR Team Leader will prepare an ATR Review 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^{sm} 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 be a professional outside the home MSC with extensive experience in preparing Civil Works documents and conducting ATRs. The ATR Team Lead shall have 10 or more years of experience with Civil Works Projects and have performed ATR Team Lead duties on complex civil works projects. The ATR Team Leader may be a co-duty with one of the other review disciplines.

Hydrology and Hydraulics (H&H). The H&H team member shall be a registered professional with 10 or more years of experience in conducting and evaluating hydrologic and hydraulic analyses for flood risk management projects. Experience with HEC and ERDC 2D hydraulic modeling is required. Experience with USACE Dam Safety Program is required.

Geotechnical Engineering and Engineering Geology. The Geotechnical team member shall be a registered professional engineer and have 10 or more years of experience in geotechnical engineering. Team member shall be experienced in dam and/or levee design, post-construction evaluation, and rehabilitation. Experience shall include geotechnical evaluation of

flood risk management structures. Experience shall encompass design and selection of appropriate bridge and stream bank erosion and scour countermeasures, including alternatives to conventional riprap and filter design such as articulated concrete block mattresses (ACBM). Experience with USACE Dam Safety Program is required.

Civil Engineering. The Civil team member shall be a registered professional engineer and have 10 or more years of experience in the design, layout, and construction of flood control structures including dams. The Civil team member shall have demonstrated knowledge regarding hydraulic structures, erosion control, earthwork, and concrete placement. Experience with USACE Dam Safety Program is desired.

Construction Management. The Construction team member shall have 10 or more years of experience in the construction of flood control structures including dams.

Discipline	Name	Description of Credentials
ATR Team Lead	[redacted]	The ATR Team Lead is a professional outside the home MSC with extensive experience in preparing Civil Works documents and conducting ATRs. The ATR Team Lead has 10 or more years of experience with Civil Works Projects and has performed ATR Team Lead duties on complex civil works projects.
Hydrology and Hydraulics (H&H)	[redacted]	The H&H team member is a registered professional with 10 or more years of experience in conducting and evaluating hydrologic and hydraulic analyses for flood risk management projects. Team member has experience with HEC and ERDC 2D hydraulic modeling and with the USACE Dam Safety Program.
Geotechnical Engineering and Engineering Geology	[redacted]	The Geotechnical team member is a registered professional engineer and has 10 or more years of experience in geotechnical engineering. Team member is experienced in dam and/or levee design, post-construction evaluation, and rehabilitation. Experience includes geotechnical evaluation of flood risk management structures and design and selection of appropriate bridge and stream bank erosion and scour countermeasures, including alternatives to conventional riprap and filter design such as articulated concrete block mattresses (ACBM). Team member has experience with USACE Dam Safety Program.
Civil Engineering	[redacted]	The Civil team member has 10 or more years of experience in the design, layout, and construction of flood control structures, including dams. Team member has demonstrated knowledge regarding hydraulic structures, erosion control, earthwork, and concrete placement.
Construction Management	[redacted]	The Construction team member has 10 or more years of experience in the construction of flood control structures, including dams.

Table 1: ATR Team

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 review 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 implementation guidance for both 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 Pre-construction, Engineering and Design Phases, respectively). The EC defines Section 2035 Safety Assurance Review (SAR) as a Type II Independent External Peer Review (IEPR). The EC requires Type II IEPR be conducted outside USACE.

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.

The requirements for Type II Independent External Peer Reviews (also referred to as Safety Assurance Reviews) are outlined in EC 1165-2-217, dated 20 February 2018. However, more recently, “Interim Guidance on Streamlining Independent External Peer Review (IEPR) for Improved Civil Works Product Delivery”, dated 05 April 2019, was released. Based on the streamlined guidance, the need for a Type II IEPR can be determined based on evaluation of the following factors that are provided in the streamline guidance:

(1) The project would pose a significant threat to human life.

The need for the project is described in the HHD Dam Safety Modification Report, and the S-71 and S-72 embankments pose a threat to human life. The risk analysis indicates that the risk at these locations is slightly elevated at approximately 0.25 to 0.50 orders of magnitude above the Tolerable Risk Guideline. The decision to use armoring as a means to reduce this risk was included in the DSMR and the report underwent IEPR review and was approved. Therefore, additional review of the decision

to use armoring as a means to reduce risk is not necessary. The construction project itself does not pose a significant threat to human life since the construction activity does not lower the embankment crest, does not require significant excavations, and no cofferdams are required to control Lake Okeechobee during construction.

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

This project will utilize materials and techniques used by the USACE on other similar construction projects. These methods and techniques are considered standard.

(3) The engineering is based on novel methods, presents complex challenges for interpretations, contains precedent setting methods or models, or presents conclusions that are likely to change prevailing practices.

The S-71 and S-72 armoring projects have none of these characteristics. The designs are simple and use accepted design methodology.

Based on the discussion above, the District Chief of Engineering, as the Engineer-In-Responsible-Charge, does not recommend a Type II IEPR Safety Assurance Review 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 engineering models that have not been approved for use by USACE. Work conducted uses Bentley MicroStation in combination of InRoads line of products to develop the set of plans shown.

MODEL
Bentley Microstation V8i, Bentley Systems Inc, 2010
Bentley InRoads Microstation V8i, Bentley Systems, Inc.
HEC-UNET v4.0, USACE Hydraulic Engineering Center
HEC-HMS v4.2.1
HEC-RAS v.5.0.7
HES-ResSim v.3.1
HY-8
AdH
SMS v.10.1
GIS (ESRI ArcMap)
STWAVE Full Plane (Version 5.0)
STWAVE Half Plane (Version 4.0)
ACES (Version 4.03)
Bretschneider

Compaq Visual Fortran (Professional Edition 6.1.0)
SEEP/W, GeoStudio 2012 Version 8.0.9.6484
SLOPE/W, GeoStudio 2012 Version 8.0.9.6484
STAADPro v8.0
Ram Element Version 10.7

Table 2: Model and Status

9. PROJECT DELIVERY TEAM DISCIPLINES

PDT Disciplines
Hydrology and Hydraulics (H&H)
Geotechnical Engineering and Engineering Geology
Civil Engineering

Table 3: PDT Disciplines

10. BUDGET AND SCHEDULE

a. Project Milestones.

Task	Date
DQCR Complete	9/24/2019
PQCR Complete	11/07/2019
ATR Review	12/03/2019
ATR Certification	01/17/2020
BCOES Review	01/31/2020
BCOES Certification	03/24/2020

Table 4: Project Schedule Milestones

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 $25,000 - $35,000.

11. REVIEW PLAN POINTS OF CONTACT

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

Table 5: Review Plan Milestones

ATTACHMENT A: APPROVED REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number

Table 6: Review Plan Revisions

ATTACHMENT B: PARTIAL LIST OF ACRONYMS AND ABBREVIATIONS

Acronyms	Defined
AFB	Alternatives Formulation Briefing
ATR	Agency Technical Review
BCOES	Biddability, Constructability, Operability, Environmental, and Sustainability Review
BOEM	Bureau of Ocean Energy Management
CAP	Continuing Authorities Program
CERCAP	Corps of Engineers Reviewer Certification and Access Program
CY	Cubic Yards
DDR	Design Documentation Report
DQC	District Quality Control
DQCR	Discipline Quality Control Review
EC	Engineering Circular
EA	Environmental Assessment
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
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
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
NED	National Economic Development
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
PED	Preconstruction Engineering and Design

Acronyms	Defined
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
SAJ	South Atlantic Jacksonville District Office
SAD	South Atlantic Division Office
SAR	Safety Assurance Review (also referred as Type II IEPR)
SME	Subject Matter Expert
USACE	U.S. Army Corps of Engineers
WRDA	Water Resources and Development Act

Table 7: Abbreviations

ATTACHMENT C:

ATR REPORT OUTLINE AND COMPLETION OF AGENCY TECHNICAL REVIEW

Herbert Hoover Dike S-71 and S-72 Embankment Armoring Project

ATR REPORT OUTLINE (Unneeded items, such as ATR Team Member Disciplines that are not identified as needed in the Review Plan, shall be deleted from the ATR Report.)

1. **Introduction:**

2. **ATR Team Members:**

   ATR Team Leader
   Hydrology and Hydraulics (H&H)
   Geotechnical Engineering and Engineering Geology
   Civil Engineering
   Construction Management

3. **ATR Objective:**

4. **Documents Reviewed:**

5. **Findings and Conclusions:**

6. **Unresolved Issues:**

COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the Preconstruction, Engineering and Design Phase Implementation Documents for the Herbert Hoover Dike S-71 and S-72 Embankment Armoring Project, 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[sm].

NAME ATR Team Leader	Date
NAME Engineering Technical Lead	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