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

REPLY TO
ATTENTION OF

18 JUL 2014

CESAD-PDP

MEMORANDUM FOR Commander, Jacksonville District, (CESAJ-PD/Bush)

SUBJECT: STA 1-E Modifications to Correct Deficiencies in Vertical Lift Gates – Review Plan Approval

1. References:

a. Memorandum, CESAJ-PD, 24 February 2014, subject: STA 1-E Modifications to Correct Deficiencies in Vertical Lift Gates – Letter Report – Request for Review Plan Approval.

b. Memorandum, CECW-SAD, 7 July 2014, subject: Stormwater Treatment Area (STA) 1 East, Modifications to Correct Deficiencies in Vertical Lift Gates Study – Independent Peer External Review (IEPR) Exclusion Request.

c. Memorandum, CESAD-PDP, 12 Dec 2013, subject: Stormwater Treatment Area 1 East, Modifications to Correct Deficiencies in Vertical Lift Gates Study – Letter Report – Request for Exclusion from Type 1 Independent Peer External Review.

d. EC 1165-2-214, Civil Works Review Policy, 15 December 2012.

2. The district's request that an exclusion from the requirement to conduct Type I IEPR was approved by HQ USACE on 7 July 2014 (reference 1.b., enclosure 1).

3. The South Atlantic Division has completed its review of the subject Review Plan. The Review Plan (enclosure 2) has been reviewed by this office in accordance with reference 1.c. and is hereby approved.

4. The District should take steps to 1) post the SAD-approved Final Revised RP and a copy of this approval memorandum to the SAJ District public website and 2) provide a link to the Water Management and Reallocation Studies Planning Center of Expertise for their use. Before posting to the website the names of Corps/Army employees should be removed. The IEPR exclusion approval memorandum is incorporated as a part of the approved Review Plan and should be posted as a part of the approved Review Plan.

5. Questions may be directed to [redacted].

2 Encls
as

DONALD L. WALKER
COL, EN
Commanding

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
441 G STREET, NW
WASHINGTON, D.C. 20314-1000

CECW-SAD

JUL 7 2014

MEMORANDUM FOR Commander, U.S. Army Corps of Engineers, South Atlantic Division

SUBJECT: Stormwater Treatment Area (STA) 1 East, Modifications to Correct Deficiencies in Vertical Lift Gates Study - Independent External Peer Review (IEPR) Exclusion Request

1. HQUSACE has reviewed the IEPR exclusion request for the subject study. Based on applicable laws and policy, this project study is not subject to Type I IEPR as it does not meet any of the mandatory requirements. The project has a cost estimate of less than $45 million; does not represent a threat to health and life safety; is not controversial; and has not had a request for IEPR from the governor of an affected state or the head of a federal or state agency.

2. Approval of the exclusion request was based upon the following information. The STA-1E facility is part of the Central and Southern Florida project, and is designed to treat discharges into the Loxahatchee Wildlife Refuge. During operations, the water control structures failed, and were documented in a Design Deficiency Report and repairs were recommended. During the course of the repairs, additional deficiencies were found concerning the vertical lift gates. Damage includes corrosion of the aluminum slide gate frames and fractured gate stiffener tube butt welds. The formulation of this project is not based upon novel methods and does not present complex challenges for interpretation or conclusions that are likely to change prevailing practices. Precedent-setting methods or models will not be used in the evaluation. The total project cost is estimated to be less than $3 million and an Environmental Impact Statement is not required.

3. Questions should be directed to [redacted] Deputy Chief, South Atlantic Division Regional Integration Team, at [redacted].

STEVEN L. STOCKTON, P.E.
Director of Civil Works

REVIEW PLAN

STA-1E Gates
Deficiencies
Modification Report

Jacksonville District

Project # 114693

MSC Approval Date: 18 July 2014
Last Revision Date: 23 Jan 2015

US Army Corps
of Engineers ®

REVIEW PLAN

STA-1E Gates
Deficiencies
Modification Report

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1. PURPOSE AND REQUIREMENTS

Purpose. This Review Plan defines the scope and level of peer review for the STA-1E Gates Deficiencies Modification Report. Stormwater Treatment Area 1 East (STA-1E) was completed in 2005 and since that time, workmanship deficiencies have been identified which have the potential to impact performance if not corrected.

This Deficiencies Modification Report is a decision document that was prepared in accordance with the requirements of ER 1165-2-119, Modifications to Completed Projects and therefore does not follow the planning steps provided in ER 1105-2-100. However, engineering alternatives are being formulated, evaluated and compared in order to determine the least cost alternative that could achieve the intent and expected performance of the original design. These factors were considered in the process for deciding types and level of independent review that would be conducted. Upon approval, this review plan will be included into the Project Management Plan as an appendix to the Quality Management Plan.

a. References

(1) Engineering Circular (EC) 1165-2-214, Civil Works Review Policy, 15 Dec. 2012
(2) EC 1105-2-412, Assuring Quality of Planning Models, 31 Mar 2011
(3) Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 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) ER 1165-2-119, Modifications to Completed Projects, 31 Aug 1999

b. Requirements. This review plan was developed in accordance with EC 1165-2-214, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design, construction, and operation, maintenance, repair, replacement and rehabilitation (OMRR&R). The EC outlines four general levels of review: District Quality Control/Quality Assurance (DQC), Agency Technical Review (ATR), Independent External Peer Review (IEPR), and Policy and Legal Compliance Review. In addition to these levels of review, decision documents are subject to cost engineering review and certification (per EC 1165-2-214) and planning model certification/approval (per EC 1105-2-412).

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO is responsible for managing the overall peer review effort described in this Review Plan. The RMO for decision documents is typically either a Planning Center of Expertise (PCX) or the Risk Management Center (RMC), depending on the primary purpose of the decision document. The RMO for the peer review effort described in this Review Plan is Water Management and Reallocation Studies Planning Center of Expertise (WMRS-PCX).

The RMO will coordinate with the Cost Engineering Directory of Expertise (MCX) 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

Decision Document. The purpose of the Deficiencies Modification Report is to demonstrate that the project is consistent with the criteria for eligibility of USACE participation in the modifications under the existing project authority. The initial decision to be made is that the project conditions meet the criteria of a design or construction deficiency and that we have the authority to make changes to correct that deficiency. An economic analysis will be conducted to determine what alternative will be used to correct the deficiencies in the gates. This analysis will also determine if repair of the gates is economically justified. The decision will be made at the HQ USACE level. Additional Congressional authority will not be required. Appropriate NEPA documents will be prepared to address any environmental issues that are suggested by the alternatives .

a. Study/Project Description. Stormwater Treatment Area 1 East (STA-1E) was authorized in Section 315 of the Water Resources Development Act (WRDA) of 1996:

> SEC. 315. CENTRAL AND SOUTHERN FLORIDA, CANAL 51.
>
> The project for flood protection of West Palm Beach, Florida (C-51), authorized by section 203 of the Flood Control Act of 1962 (76 Stat. 1183), is modified to provide for the construction of an enlarged stormwater detention area, Storm Water Treatment Area 1 East, generally in accordance with the plan of improvements described in the February 15, 1994, report entitled "Everglades Protection Project, Palm Beach County, Conceptual Design", with such modifications as are approved by the Secretary. The additional work authorized by this section shall be accomplished at 100% Federal expense. Operation and maintenance of the stormwater detention area shall be consistent with regulations prescribed by the Secretary for the Central and Southern Florida project, and all costs of such operation and maintenance shall be provided by non-Federal interests.

The C-51 canal is a component of the Central and Southern Florida Project and is located in the central portion of Palm Beach County, Florida and extends from the edge of Water Conservation Area (WCA)-1 on the west almost to the Atlantic Ocean on the east **(Figure 1)**. The drainage area of the basin is approximately 164 square miles. STA-1E is located between WCA-1 and the C-51 canal, near the western end of the C-51 canal **(Figure 2)**.

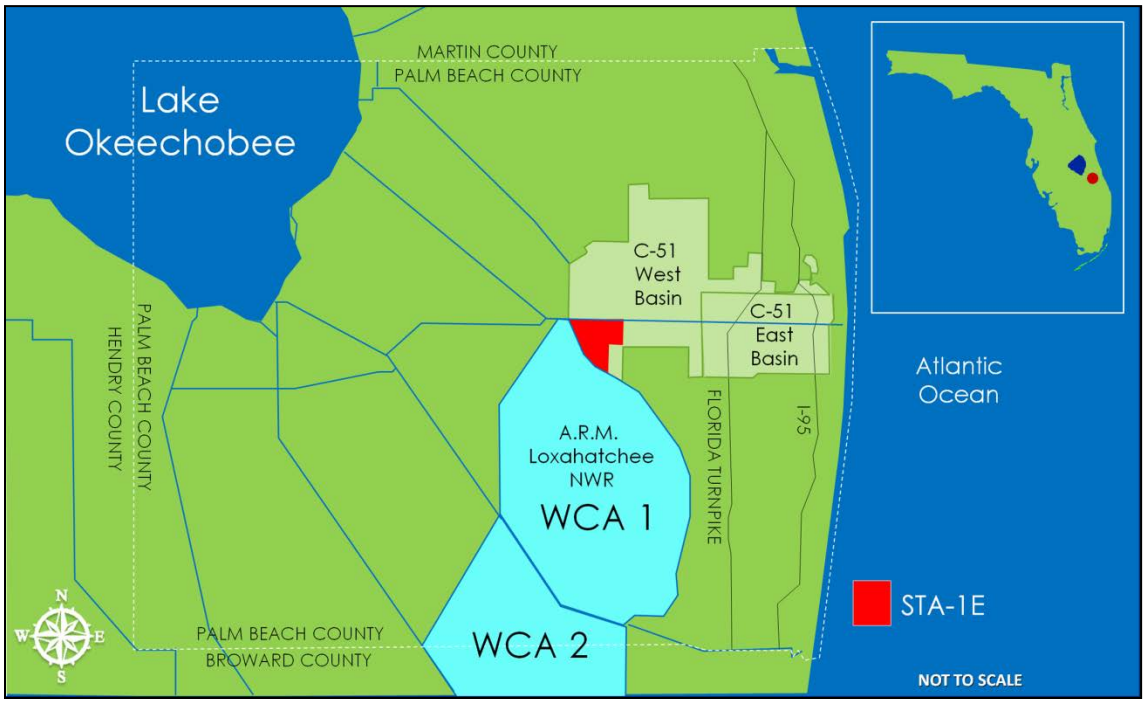

Figure 1: C-51 Basin and Project Area.

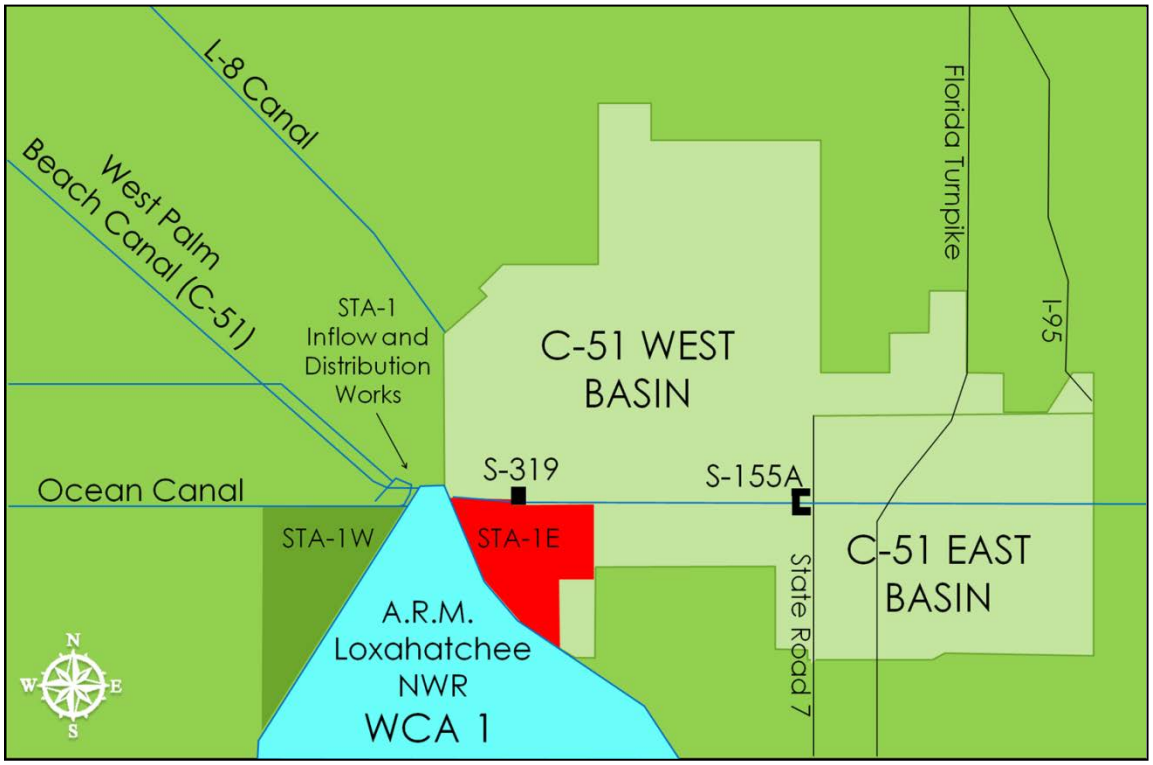

Figure 2: STA-1E location.

STA-1E encompasses approximately 6,000 acres divided into 10 cells **(Figure 3)**. Two cells along the northern portion of the STA-1E function as water distribution cells, and relay water to the rest of the STA-1E. The remaining eight cells comprise the treatment area of STA-1E, with cell 4 divided into a north and south cell. The treatment cells are separated by earthen embankments, and water levels and flows are controlled in parallel flow paths via a series of gated culverts through the embankments. The distribution cells allow some operator flexibility in sending water to the treatment cells. The topography project site slopes from northeast to southwest. Elevations at the project site vary from approximately 19.0 feet NGVD near the northeast corner to approximately 12.0 feet NGVD along the L-40 Levee adjacent to the southwest side of the project. The development of cells in a series was a result of the difference in elevation in the existing topography and alignment of the overall treatment area boundary.

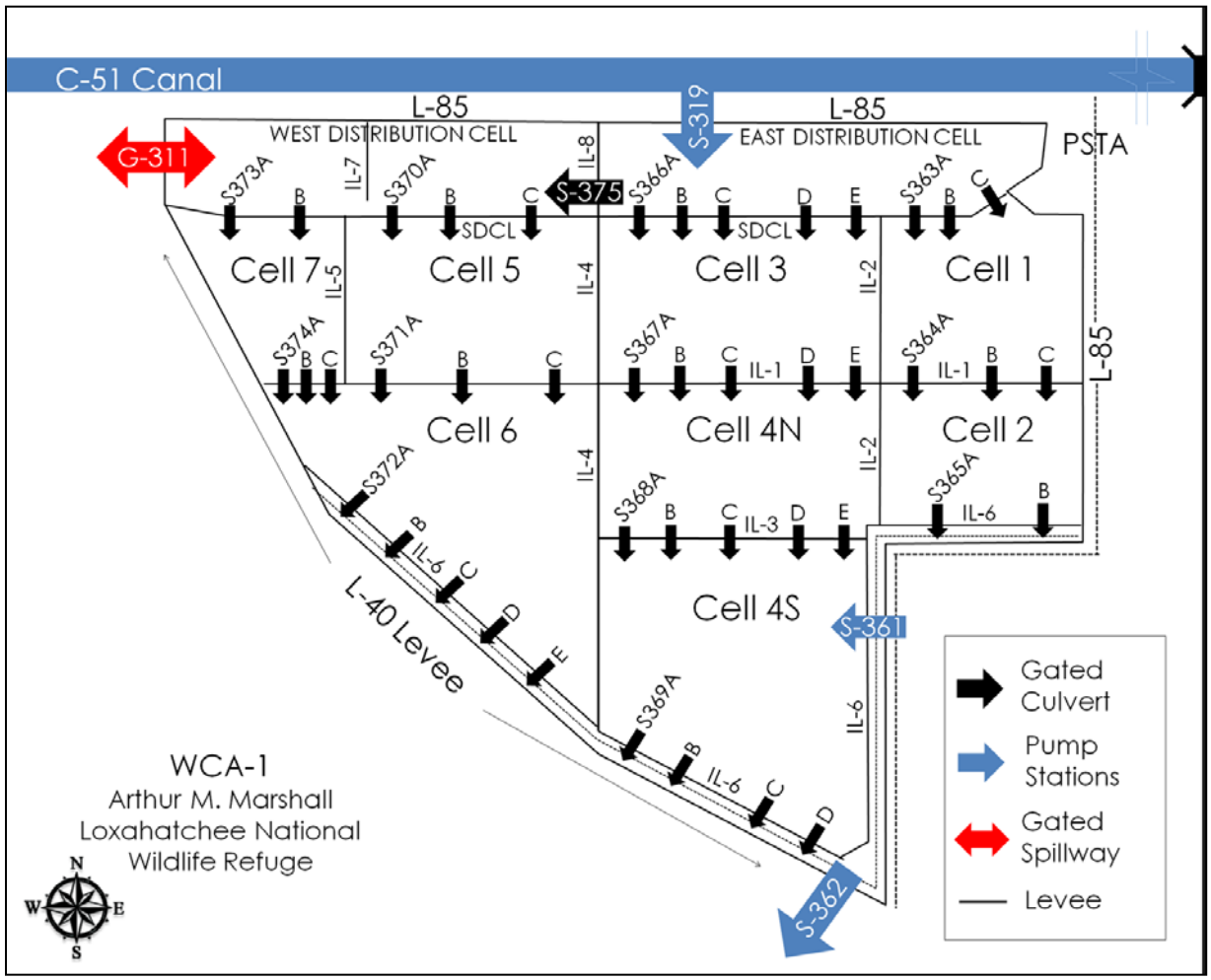

Figure 3: STA-1E location of deficient gated culverts.

The study/report assesses probable deficiencies in the construction of the Gates within the STA-1E project.

Prospective repairs to be evaluated are as follows:

1) Corrosion of the aluminum slide gate frames: There are 46 aluminum slide gate assemblies on the project. The frames for these gates are fastened to the concrete culverts using stainless steel fasteners. While the original project specifications required isolation between the aluminum frames and the concrete headwalls using a coat of bituminous paint, this work had not been performed. There is no isolation between the aluminum frames and stainless steel bolts. Subsequently, corrosion of the aluminum frames has occurred. The most significant corrosion is concentrated at the anchor bolt connections. As a result, portions of the slide gate frames below the waterline are in danger of disconnecting from the walls in many locations if the issue is not addressed in the near future. These frames will be evaluated to determine if they should be removed, repaired and isolated from the concrete culverts and the anchor bolts using a coat of bituminous paint. The gates will need to be dewatered in order to accomplish this work.

2) Fractured gate stiffener welds: The STA-1E cells and levees were constructed via three contracts. The stiffeners for the 13 aluminum slide gates that were manufactured for the first of these contracts were constructed using square hollow tube sections. While splicing of structural members was prohibited in the original project specifications, visual inspection of the gates reveals that 16 stiffeners on nine different gates contain butt weld splices. Splicing of 6061-T6 alloy is not usually performed because the aluminum loses half its bending strength when welded. Aluminum welds tend to be brittle and it is difficult to obtain a full fusion weld due to the inability to place a backer rod inside the small tube section. Visible cracks appear in the welded splices at four of the nine gates that contain spliced stiffeners. The cracked stiffeners have caused these gates to deflect under hydrostatic load and their seals to leak. These spliced stiffeners should be removed and replaced with full length stock material. The spliced stiffeners on the remaining five gates where splices have been observed should also be replaced due to the bending strength reduction issue noted above. The weld quality at these splices is uncertain and they could possibly have hairline cracks or fail at a later date due to fatigue. This work should be performed while the gates are dewatered for the frame repairs noted above.

The objective of the Deficiencies Modification Report is to analyze the problems that are occurring and to recommend potential corrective action(s) to make the project perform in a safe, viable and reliable manner. Engineering alternatives will be formulated and analyzed in order to determine a cost-effective solution to the problems that are occurring.

c. Factors Affecting the Scope and Level of Review. This section discusses the factors affecting the risk informed decisions on the appropriate scope and level of review. The discussion is intended to be detailed enough to assess the level and focus of review and support the PDT, PCX, and vertical team decisions on the appropriate level of review and types of expertise represented on the various review teams. Pertinent areas of importance, from EC 1165-2-214 are presented as bullets that are then addressed for this specific report:

- *If parts of the study will likely be challenging.*

The purpose of the report is to demonstrate that the project is consistent with the criteria for eligibility for USACE participation in the modifications under the existing project authority. The report provides a basis for approving the use of federal construction funding on a locally operated feature of the federal project to make repairs to the existing project deficiencies. The report will address alternatives (cost, design and performance) that include measures to correct the noted gate deficiencies. The analysis will be based on site inspections by the Jacksonville District Engineering Division. The USACE analysis will not require the development of any new models or methods or innovative design. There are no socio-economic concerns as the analysis will be limited to those corrective actions within an existing project. Additionally, the proposed corrective actions will be coordinated with the appropriate agencies or entities as part of compliance with the National Environmental Policy Act (NEPA) of 1969, and will not present any institutional challenges.

- *A preliminary assessment of where the project risks are likely to occur and what the magnitude of those risks might be:* The risks for the corrective actions would mainly be related to construction. Construction techniques would be typical for those measures associated with Stormwater Treatment Areas. There are no significant risks to life safety; all construction would be confined within the existing STA-1E and there would be no reduction of flood control within the C&SF project system. Water is discharged into an unpopulated water conservation area. In the event of non-performance, water would not be pumped into the STA and would have to bypass the treatment and be sent to tide in the C 51 Canal. Any water already in the STA would be retained until it met the water quality standards. Although some residential communities border STA-1E, these areas are located along the extreme eastern portion of the STA-1E and therefore would not increase safety hazards or risk for construction within the project area. Risks associated with accuracy of the cost estimate will be addressed by review and certification by the National Cost Directory of Expertise, or Cost MCX.

  If the project will likely be justified by life safety or if the project likely involves significant threat to human life/safety assurance: The proposed repairs are not justified by, nor will they affect, life safety. Water is discharged into an unpopulated water conservation area. In the event of non-performance, water would not be pumped into the STA and would have to bypass the treatment and be sent to tide in the C 51 Canal. Any water already in the STA would be retained until it met the water quality standards.

- *If there is a request by the Governor of an affected state for a peer review by independent experts:* There has not been, nor is there expected to be, a request by the Governor of an affected state for a peer review by independent experts.

- *If the project/study is likely to involve significant public dispute as to the size, nature, or effects of the project:* The project/study is not likely to involve significant public dispute as to the size, nature, or effects of the project. Repairs are associated with improving performance of an existing project.

- *If the project/study is likely to involve significant public dispute as to the economic or environmental cost or benefit of the project:* The project/study is not likely to involve significant public dispute as to the economic or environmental cost or benefit of the project. Corrective actions are associated with improving performance of an existing project. The project was authorized and designed to achieve specific performance standards for phosphorus

concentration in the water discharged to Water Conservation Area 1. The Deficiencies Modification Report will describe alternatives that will be analyzed and selection among these corrective actions will be based upon the lowest cost to achieve the intent and expected performance of the original design. Monetized benefits of alternatives were not developed in the original documents, nor will they be developed for this analysis.

- *If the information in the decision document or anticipated project design is likely to be based on novel methods, involve the use of innovative materials or techniques, present complex challenges for interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practices:.* STA-1E construction was performed from 2000 to 2004. Information contained in the report regarding the problems at the project was obtained from field visits and surveys performed by Jacksonville District USACE staff. No novel methods, innovative materials or techniques were used to collect the information and forecast the problems. The information does not present complex challenges for interpretation.

  The alternatives proposed are neither novel nor precedent setting. Alternatives were developed to allow the project to function as designed and intended. Choices among alternatives were based on least cost to achieve the functions of the project. The report addresses alternatives that include repair of the deficient gates and gate rails, corroded due to dissimilar metal contact.

  If the project design is anticipated to require redundancy, resiliency, and/or robustness, unique construction sequencing, or a reduced or overlapping design construction schedule: . Neither the current design nor the proposed alternatives require redundancy, resiliency, robustness, unique construction sequencing or scheduling over common USACE practice. The construction schedule will be coordinated with the appropriate agencies and entities to prevent or lessen any effects that may occur in taking partial operation of the STA-1E offline. Water is discharged into an unpopulated water conservation area. In the event of non-performance, water would not be pumped into the STA and would have to bypass the treatment and be sent to tide in the C 51 Canal. Any water already in the STA would be retained until it met the water quality standards.

d. In-Kind Contributions. The Non-federal Sponsor will provide no in-kind products and analyses.

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 shall manage DQC. Documentation of DQC activities is required. The DQC documentation will be provided to the ATR review team.

a. Documentation of DQC. District Quality Control will be accomplished by comprehensive review by the PDT and independent reviewers. Comments will be provided by tracked changes to the report. Tracked changes/comments will be incorporated into the subsequent version. This DQC will involve the PDT as well as the supervisory chain of command, and sponsor review.

b. Products to Undergo DQC. The Deficiencies Modification Report, which includes NEPA updates, as needed. The design will be reviewed separately from this Report during the Implementation Phase. An updated Review plan to address the appropriate scope and levels of review will be prepared and approved prior to initiation of the design/implementation phase. The Deficiencies Modification Report will be reviewed by the sponsor for concurrence as well as the PDT, and will also undergo a supervisory review.

5. AGENCY TECHNICAL REVIEW (ATR)

ATR is mandatory for all decision documents (including supporting data, analyses, environmental compliance documents, etc.). The objective of ATR is to ensure consistency with established criteria, guidance, procedures, and policy. The ATR will assess whether the analyses presented are technically correct and comply with published USACE guidance, and that the document explains the analyses and results in a reasonably clear manner for the public and decision makers. ATR is managed within USACE by the designated RMO and is conducted by a qualified team from outside the home district that is not involved in the day-to-day production of the project/product. ATR teams will be comprised of senior USACE personnel and may be supplemented by outside experts as appropriate. The ATR team lead will be from outside the home MSC.

a. Products to Undergo ATR. The Deficiencies Modification Report will undergo ATR.

b. Required ATR Team Expertise. ATR members will be sought from the following sources: regional technical specialists (RTS); appointed subject matter experts (SME) from other districts; 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 Members/Disciplines	Expertise Required
ATR Lead	The ATR lead should be a senior professional with extensive experience in preparing Civil Works decision documents and conducting ATR. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. The ATR lead may also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc).
Plan Formulation/Economics	The Plan Formulation/Economics reviewer should be a senior water resources planner that is able to determine if alternatives considered were sufficient, and appropriately considered, economically justified, and evaluate policy compliance within the context of ER 1165-2-119, Modifications to Completed Projects.
NEPA Compliance	Reviewer should be a senior environmental resource specialist with experience in preparing NEPA documents and determining NEPA compliance.
Civil Engineering	The team member should be a registered professional engineer and have 10 or more years experience in civil engineering. Experience needs to include the engineering and design of water management project

	features such as levees and water control structures and have expertise in the areas of corrosion control and metal fracturing. Team member should be able to assist in determining if alternatives considered were sufficient, and appropriately considered, within the context of evaluation under ER 1165-2-119, Modifications to Completed Projects.
Structural Engineering	The team member should be a registered professional engineer and have 10 or more years experience in civil engineering. Experience needs to include the engineering and design of water management project features such as levees, water control structures and have expertise in the areas of corrosion control and metal fracturing. Team member should be able to assist in determining if alternatives considered were sufficient, and appropriately considered, within the context of evaluation under ER 1165-2-119, Modifications to Completed Projects.
Hydraulic Engineer	The team member should be a registered professional engineer and have 10 or more years experience in hydraulic engineering. Experience needs to include the retention and evaluation of flow through water management structures. Team member able to assist in determining if alternatives considered are sufficient and appropriately evaluated in accordance with ER 1165-2-119, Modifications to Completed Projects.
Cost Engineering	The Cost Engineering MCX will determine the appropriate expertise.

The ATR Team Leader will coordinate final staffing, schedule and cost with the district.

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:

i. The review concern – identify the product's information deficiency or incorrect application of policy, guidance, or procedures;
ii. The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not be properly followed;
iii. 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
iv. The probable specific action needed to resolve the concern – identify the action(s) that the reporting officers must take to resolve the concern.

In some situations, especially addressing incomplete or unclear information, comments may seek clarification in order to then assess whether further specific concerns may exist.

The ATR documentation in DrChecks will include the text of each ATR concern, the PDT response, a brief summary of the pertinent points in any discussion, including any vertical team coordination (the vertical team includes the district, RMO, MSC, and HQUSACE), and the agreed upon resolution. If an ATR concern cannot be satisfactorily resolved between the ATR team and the PDT, it will be elevated to the vertical team for further resolution in accordance with the policy issue resolution process described in either ER 1110-1-12 or ER 1105-2-100, Appendix H, as appropriate. Unresolved

concerns can be closed in DrChecks with a notation that the concern has been elevated to the vertical team for resolution.

At the conclusion of each ATR effort, the ATR team will prepare a Review Report summarizing the review. Review Reports will be considered an integral part of the ATR documentation and shall:

- Identify the document(s) reviewed and the purpose of the review;
- Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- Include the charge to the reviewers;
- Describe the nature of their review and their findings and conclusions;
- Identify and summarize each unresolved issue (if any); and
- Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

ATR may be certified when all ATR concerns are either resolved or referred to the vertical team for resolution and the ATR documentation is complete. The ATR Lead will prepare a Statement of Technical Review certifying that the issues raised by the ATR team have been resolved (or elevated to the vertical team). A Statement of Technical Review should be completed based on work reviewed to date on the final Deficiencies Modification Report. A sample Statement of Technical Review is included in Attachment 2.

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

IEPR may be required for decision documents under certain circumstances. IEPR is the most independent level of review, and is applied in cases that meet certain criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. A risk-informed decision, as described in EC 1165-2-214, 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. Type I IEPR is not required for this Deficiencies Modification Report. This report does not trip any of the mandatory IEPR triggers. An exclusion from the requirements to conduct an IEPR review on the STA-1E has been approved and is attached as a aprt of this Review Plan.

b.Type II IEPR is not required. This project does not trigger WRDA 2007 Section 2035 factors for Safety Assurance Review (termed Type II IEPR in EC 1165-2-214) and therefore, a review under Section 2035 is not required.

Support for the Type I IEPR ex**c**lusion request and documentation that Type II IEPR is not required, is based on the criteria in EC 1165-2-214 and the discussion in above, Section 3 – Factors Affecting the Scope and Level of Review and is provided in the following bullets:

- *Significant threat to human life:* There are no significant risks to life safety; all construction would be confined within the existing STA-1E and there would be no reduction of flood control within the C&SF project system. Although some residential communities border STA-1E, these areas are located along the eastern portion of the STA-1E. All work would occur within the 6,000-acre STA-1E, and therefore would not increase safety hazards or risk for construction within the project area.

- *Where the estimated total cost of the project, including mitigation costs, is greater than $45 million:* No, the estimated total cost of the project will be less than $3 million which is much less than $45 million.

- *Where the Governor of an affected State requests a peer review by independent experts:* No such request has been made nor is such a request anticipated.

- *Where a request to conduct IEPR has been made by a Federal or state agency charged with reviewing the project, 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 any planned mitigation:* No such request has been made nor is such a request anticipated. The proposed project will not have a significant adverse impact on any environmental, cultural or other resources. The proposed corrective actions would occur completely within STA-1E project culvert gate areas and would be limited to these existing project features. The corrective actions would not change the function or scope of the authorized project.

- *Where there is significant public dispute over the size, nature, or effects of the project or the economic or environmental costs or benefits of the project:* The project/study is not likely to involve significant public dispute as to the economic or environmental cost or benefit of the project. Corrective actions are associated with improving performance of an existing project. The project was authorized and designed to achieve specific performance standards for phosphorus concentration in the water discharged to Water Conservation Area 1. The report will describe alternatives that will be analyzed and selection among

these corrective actions will be based upon the lowest cost to achieve the intent and expected performance of the original design. Monetized benefits of alternatives were not developed in the original documents, nor will they be developed for this analysis.

- *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.* No novel methods, innovative materials or techniques were used to collect the information, forecast the problems or formulate alternatives. The information does not present complex challenges for interpretation.

  The alternatives proposed are neither novel nor precedent setting. Alternatives were developed to allow the project to function as designed and intended. Choices among alternatives were based on least cost to achieve the functions of the project. The report addresses alternatives that include options for repairing or replacing metal gates that have inappropriate welds that are cracking. These measures are commonplace for the USACE and do not change the scope or function of the authorized project.

  - *Where the Chief has determined that Type I IEPR is warranted.* No such determination has been made. An IEPR exclusion has been approved.

  - *How the decision document meets any of the possible exclusions described in Paragraph 11.d.(3) and Appendix D of EC 1165-2-214:* The report does not include an EIS, and it is expected that the DCW or the Chief will determine that the project:

    (i) It is not controversial; and
    (ii) Has no more than negligible adverse impacts on scarce or unique tribal, cultural, or historic resources;
    (iii) Has no substantial adverse impacts on fish and wildlife species and their habitat prior to the implementation of mitigation measures; and
    (iv) Has, before implementation of mitigation measures, no more than negligible adverse impact on a species listed as endangered or threatened species under the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.) or the critical habitat of such species designated under such Act.

  Further, the proposed work is so limited in scope or impact, involving only modifications of Culvert Vertical Lift Gates and Frames that this work would not significantly benefit from a Type I IEPR. USACE and industry have ample experience in implementing the considered measures.

In addition, based on the report as currently envisioned as well as evaluation of the risk associated with this effort, the District Chief of Engineering, as the Engineer-In-Responsible-Charge, does not recommend a Type II IEPR Safety Assurance Review of this report. If any alternatives are added which do pose any significant risk to human life this review plan will be revised to reflect that and a new recommendation concerning the need for a Type II IEPR/SAR made at that 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. The risk factors from Paragraph 2 of Appendix E of EC 1165-2-214, are specifically addressed below:

- *Is the Federal action justified by life safety or would failure of the project pose a significant threat to human life?* There are no significant risks to life safety; all construction would be confined within the existing STA-1E and there would be no reduction of flood control within the C&SF project system. In the event of non-performance, water would not be pumped into the STA would have to bypass the treatment and be sent to tide in the C 51 Canal. Any water already in the STA would be retained until it met the water quality standards. Although some residential communities border STA-1E, these areas are located along the eastern side of the STA-1E and therefore would not experience increased safety hazards or risk for construction within the project area.

- *Does the project involve the use of innovative materials or techniques where the engineering is based on novel methods, present complex challenges for interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practices?* No novel methods, innovative materials or techniques were used to collect the information, forecast the problems or formulate alternatives. The information does not present complex challenges for interpretation.

  The alternatives proposed are neither novel nor precedent setting. Alternatives were developed to allow the project to function as designed and intended. Choices among alternatives were based on least cost to achieve the functions of the project. The report addresses alternatives that include options for repairing or replacing metal gates that have inappropriate welds that are cracking. These measures are commonplace for the USACE and do not change the scope or function of the authorized project.

- *Does the project design require redundancy, resiliency, and/or robustness?* No, redundancy, resiliency and robustness are not required. The corrective actions will ensure that STA-1E will perform as originally intended and are not intended to create a secondary or back-up system in case of failure, increased armoring, or any other features that would move beyond original intent and function. The corrective actions will ensure that the culvert vertical lift gates and rails operate as designed. These measures are commonplace for the USACE.

- *Does the project have unique construction sequencing or a reduced or overlapping design construction schedule?* No. The project does not have or pose unique sequencing or a reduced or overlapping design. The construction methods and procedures that will be employed have been used successfully by the USACE on other similar projects.

b. Products to Undergo Type I IEPR. An exclusion from Type I IEPR has been approved.

c. **Required Type I IEPR Panel Expertise.** Not applicable.

d. **Documentation of Type I IEPR.** Not applicable.

7. POLICY AND LEGAL COMPLIANCE REVIEW

All decision documents will be reviewed throughout the study process for their compliance with law and policy. Guidance for policy and legal compliance reviews is addressed in Appendix H, ER 1105-2-100. These reviews culminate in determinations that the recommendations in the reports and the supporting analyses and coordination comply with law and policy, and warrant approval or further

recommendation to higher authority by the home MSC Commander. DQC and ATR augment and complement the policy review processes by addressing compliance with pertinent published Army policies, particularly policies on analytical methods and the presentation of findings in decision documents. The approval level for this report is at HQ USACE.

8. COST ENGINEERING DIRECTORY OF EXPERTISE (MCX) REVIEW AND CERTIFICATION

All decision documents shall be coordinated with the Cost Engineering MCX, located in the Walla Walla District. The MCX will assist in determining the expertise needed on the ATR team and in the development of the review charge(s). The MCX will also provide the Cost Engineering MCX certification. The RMO 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 USACE 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).

Appropriate Planning and Engineering models were utilized during the initial design and construction of this project and this modification will not alter the design or construction parameters of that initial project. Consequently, no additional modeling is planned or anticipated.

10. REVIEW SCHEDULES AND COSTS

a. ATR Schedule and Cost. One ATR is planned, of the Deficiencies Modification Report. ATR should start as soon as possible. Anticipated duration breakdown includes initial ATR Team review and comment, 2 weeks; PDT comment evaluation, 1 week; ATR Team comment backcheck; 1 week; PDT provides revised report with commitments to ATR Team, 1 week; and ATR verification of commitments and certification, 1 week. Or a total 6 week total process.

Estimated total ATR Team cost is $30K, broken down as follows:

ATR Lead, $5K
Plan Formulation/Economics, $5K
NEPA Compliance, $2K
Civil/Structural Engineering, $8K
Hydraulic Engineering, $3K
Cost Engineering, $7K

b. Type I IEPR Schedule and Cost. Not applicable.

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

11. PUBLIC PARTICIPATION

The initial construction of the project was covered by an EIS and the project documents were coordinated with the public. The Deficiencies Modifications Report describes repairs to some of the existing facilities, to enable the project to perform as planned and designed. The USFWS has concurred with the USACE Categorical Exclusion letter dated 30 September 2013. Consequently, no additional public comments will be sought unless NEPA review indicates that additional public coordination is appropriate.

12. REVIEW PLAN APPROVAL AND UPDATES

The South Atlantic Division Commander is responsible for approving this Review Plan. The Commander's approval reflects vertical team input (involving district, MSC, RMO, and HQUSACE members) as to the appropriate scope and level of review for the decision document. Like the PMP, the Review Plan is a living document and may change as the study progresses. The home district is responsible for keeping the Review Plan up to date. Minor changes to the review plan since the last MSC Commander approval are documented in Attachment 3. Significant changes to the Review Plan (such as changes to the scope and/or level of review) should be re-approved by the MSC Commander following the process used for initially approving the plan. The latest version of the Review Plan, along with the Commanders' approval memorandum, will be posted on the Home District's webpage. The latest Review Plan should also be provided to the RMO and home MSC.

13. REVIEW PLAN POINTS OF CONTACT

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

- Jacksonville District Project Manager, 904-232-2084
- Jacksonville District Planning Technical Lead, 904-232-1102
- Jacksonville District Review Coordinator, 904-232-1102
- South Atlantic Division Point of Contact, 404-562-5206
- Water Management and Reallocation Studies Planning Center of Expertise Point of Contact, 469-487-7033

ATTACHMENT 1: TEAM ROSTERS

PDT

Name	Organization	Role
Al Bruns	Jacksonville District	Project Manager
Steve Barth	Jacksonville District	Engineering Technical Lead
Paul Stevenson	Jacksonville District	Planning Technical Lead
Bill Gallagher	Jacksonville District	Planning Technical Lead
Melissa Nasuti	Jacksonville District	Environmental Lead
Stacie Auvenshine	Jacksonville District	Environmental Lead
Bobbie Rene	Jacksonville District	Cost Estimator
George Leveret	Jacksonville District	Structural Engineering
Corey Press	Jacksonville District	Structural Engineering
Jose Pena	Jacksonville District	Structural Engineering
Aaron Lassiter	Jacksonville District	Water Quality
Wendy Weaver	Jacksonville District	Cultural Resources
Max Millstein	Jacksonville District	Economist
Matt Donaldson	Jacksonville District	Office of Council

ATR Team (To be determined by the PCX)

Name	Organization	Role
		ATR Lead
		Plan Formulation/Economics
		NEPA Compliance
		Civil/Structural Engineering
		Cost Engineering

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 DrChecksm.

SIGNATURE _____ _____

Name Date
ATR Team Leader
Office Symbol/Company

SIGNATURE _____ _____

Name Date
Project Manager
Office Symbol

SIGNATURE _____ _____

Name Date
Architect Engineer Project Manager1
Company, location

SIGNATURE _____ _____

Name Date
Review Management Office Representative
Office Symbol

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 Date
Chief, Engineering Division
Office Symbol

SIGNATURE _____ _____

Name Date
Chief, Planning Division
Office Symbol

1 Only needed if some portion of the ATR was contracted

ATTACHMENT 3: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number
23 Jan 2015	minor revision: removed H&H ATR member	page 16
	per ATR Manager approval dated 12-17-2013	

ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS

Term	Definition	Term	Definition
AFB	Alternative Formulation Briefing	NED	National Economic Development
ASA(CW)	Assistant Secretary of the Army for Civil Works	NER	National Ecosystem Restoration
ATR	Agency Technical Review	NEPA	National Environmental Policy Act
CSDR	Coastal Storm Damage Reduction	O&M	Operation and maintenance
DPR	Detailed Project Report	OMB	Office and Management and Budget
DQC	District Quality Control/Quality Assurance	OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation
MCX	Mandatory Center of Expertise	OEO	Outside Eligible Organization
EA	Environmental Assessment	OSE	Other Social Effects
EC	Engineer Circular	PCX	Planning Center of Expertise
EIS	Environmental Impact Statement	PDT	Project Delivery Team
EO	Executive Order	PAC	Post Authorization Change
ER	Ecosystem Restoration	PMP	Project Management Plan
FDR	Flood Damage Reduction	PL	Public Law
FEMA	Federal Emergency Management Agency	QMP	Quality Management Plan
FRM	Flood Risk Management	QA	Quality Assurance
FSM	Feasibility Scoping Meeting	QC	Quality Control
GRR	General Reevaluation Report	RED	Regional Economic Development
Home District/MSC	The District or MSC responsible for the preparation of the decision document	RMC	Risk Management Center
HQUSACE	Headquarters, U.S. Army Corps of Engineers	RMO	Review Management Organization
IEPR	Independent External Peer Review	RTS	Regional Technical Specialist
ITR	Independent Technical Review	SAR	Safety Assurance Review
LRR	Limited Reevaluation Report	USACE	U.S. Army Corps of Engineers
MSC	Major Subordinate Command	WRDA	Water Resources Development Act