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

14 DEC 2012

CESAD-PDP

MEMORANDUM FOR Commander, Mobile District (CESAM-PD-FP/Flakes)

SUBJECT: Review Plan Approval for the Indian, Sugar, Intrenchment and Snapfinger (ISIS) Creeks, Georgia, Integrated Feasibility Study and Environmental Assessment

1. References:

a. Memorandum, CESAM-PD-FP, 13 November 2012, Subject: Revised Review Plan (RP) and Independent External Peer Review (IEPR) Exclusion Memorandum for Indian, Sugar, Intrenchment, and Snapfinger (ISIS) Creeks,DeKalb County, Georgia

b. EC 1165-2-209, Civil Works Review Policy, 31 January 2010

2. The enclosed Review Plan for the ISIS Integrated Feasibility Report and Environmental Assessment has been prepared in accordance with Engineer Circular (EC) 1165-2-209. The Review Plan has been coordinated with the National Ecosystem Restoration Planning Center of Expertise (ECOPCX), which is the lead office to execute this plan. For further information, please contact the ECOPCX at (309)794-5448. The Review Plan does not include independent external peer review. The Review Plan states the modifications that SAM will make if HQUSACE does not grant the IEPR exclusion request.

3. I hereby approve this Review Plan, subject to HQUSACE approval of your IEPR exclusion request. This Review Plan will be immediately revised if HQUSACE does not grant an IEPR exclusion, and is subject to other change as circumstances require, consistent with study development under the Project Management Business Process. Subsequent revisions to this Review Plan or its execution will require new written approval from this office. The District shall post the approved Review Plan and a copy of this approval memorandum to the SAM District public internet website and provide a link to the ECOPCX for their use. Before posting to the website, the names of Corps employees should be removed.

4. The point of contact for this action is Mr. Patrick O'Donnell at (404) 562-5226.

Encl

DONALD E. JACKSON, JR.
COL, EN
Commanding

REVIEW PLAN

METRO-ATLANTA WATERSHEDS
INDIAN, SUGAR, INTRENCHMENT, AND SNAPFINGER CREEKS (ISIS)
FEASIBILITY STUDY, DEKALB COUNTY, GEORGIA

Mobile District

P2# 115180

MSC Approval Date: 14 December 2012
Last Revision Date: 07 December 2012

US Army Corps
of Engineers ®

REVIEW PLAN

Metro-Atlanta Watersheds
Indian, Sugar, Intrenchment, and Snapfinger Creeks (ISIS) General Investigation Study

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1. PURPOSE AND REQUIREMENTS

a. Purpose. This Review Plan (RP) defines the scope and level of peer review for the Indian, Sugar, Intrenchment, and Snapfinger (ISIS) Creeks, Dekalb County, Feasibility Study. This RP includes District Quality Control (DQC), Agency Technical Review (ATR), Type I Independent External Review (IEPR), policy review and legal review. This Review Plan and the Project Management Plan (PMP) are living documents and will be updated periodically.

The RP is a collaborative product of the Project Delivery Team (PDT) and the National Planning Center of Expertise for Ecosystem Restoration (ECO-PCX). The ECO-PCX shall oversee model certification and manage the peer review processes, which for this study includes the District Quality Control (DQC), and Agency Technical Reviews (ATR). The RP will describe the level of review needed and detail how that review will be accomplished. The components of this RP were developed pursuant to the requirements of Engineering Circular (EC) 1165-2-209, Civil Works Review Policy, 31 January 2010, which superseded EC 1105-2-410, 22 Aug 08.

The Feasibility Report will require Congressional authorization for implementation. This is a single purpose ecosystem restoration study. The decision documents that will be the ultimate focus of the peer review process are the Feasibility Report, with an integrated Environmental Assessment (EA), and the Engineering, Environmental, and Economic Appendices for this study.

This review plan does not cover implementation products. A review plan for the design and implementation phase of the project will be developed prior to approval of the final decision document in accordance with EC 1165-2-209.

b. References

(1) Engineering Circular (EC) 1165-2-209, Civil Works Review Policy, 31 Jan 2010
(2) EC 1105-2-412, Assuring Quality of Planning Models, 31 Mar 2011
(3) Engineering Regulation (ER) 1110-1-12, Quality Management, 21 July 2006
(4) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007

c. Requirements. This RP was developed in accordance with EC 1165-2-209, 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 1165-2-209), and planning models are subject to certification/approval (per EC 1105-2-412).

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO is responsible for managing the overall peer review effort described in this RP. 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 RP is ECO-PCX.

The RMO will coordinate with the Cost Engineering Directory of Expertise (DX) to ensure the appropriate expertise is included on the review teams to assess the adequacy of cost estimates, construction schedules and contingencies.

3. STUDY INFORMATION

a. Decision Document. The ISIS Creeks, DeKalb County, Georgia, Feasibility Report presents findings of the Feasibility Study completed in order to determine if there is a federal interest in providing aquatic ecosystem restoration to the ISIS Watersheds of DeKalb County, Georgia. The Feasibility Report will require approval at the U.S. Army Corps of Engineers, Headquarters (HQUSACE) level and Congressional authorization. National Environmental Policy Act (NEPA) documentation for this study will include an integrated Environmental Assessment (EA).

b. Study/Project Description.

Authority: The Feasibility Report is being prepared in response to House Resolution 2445 of the Committee on Public Works and Transportation of the United States House of Representatives, adopted September 28, 1994. The ISIS Watersheds are located in and adjacent to the urban center of Atlanta, Georgia and the City of Atlanta (Figure 1).

This study is one of five investigations proposed in the Metro-Atlanta region of Georgia under this authority. The lack of non-federal sponsorship, and/or strained federal funding for investigations nationwide, have suspended study efforts for the other four investigations in various stages of the feasibility phase. There has been renewed interest by non-federal sponsors and new sponsorship potentials with the continued need for comprehensive watershed planning. DeKalb County, the non-Federal Sponsor for this effort remains responsible for the watershed projects included in this investigation.

Aquatic resources in the ISIS Watersheds have been negatively impacted historically by urban activities. DeKalb County, Georgia is one of the largest, most populated counties in the Metro-Atlanta area with a number of headwater streams ultimately discharging to both the Gulf of Mexico and the Atlantic Ocean. Federal support and the watershed perspective brought with this Feasibility Study will be used to comprehensively address aquatic ecosystem restoration in this urban region.

The urbanization effects on these creeks are:

1. Altered hydrology from urbanization that continues to degrade aquatic habitat and negatively impact native biota in these streams.
2. Excess sediment from overland and instream sources that degrades aquatic habitat and biological conditions.
3. Degraded riparian and floodplain function.

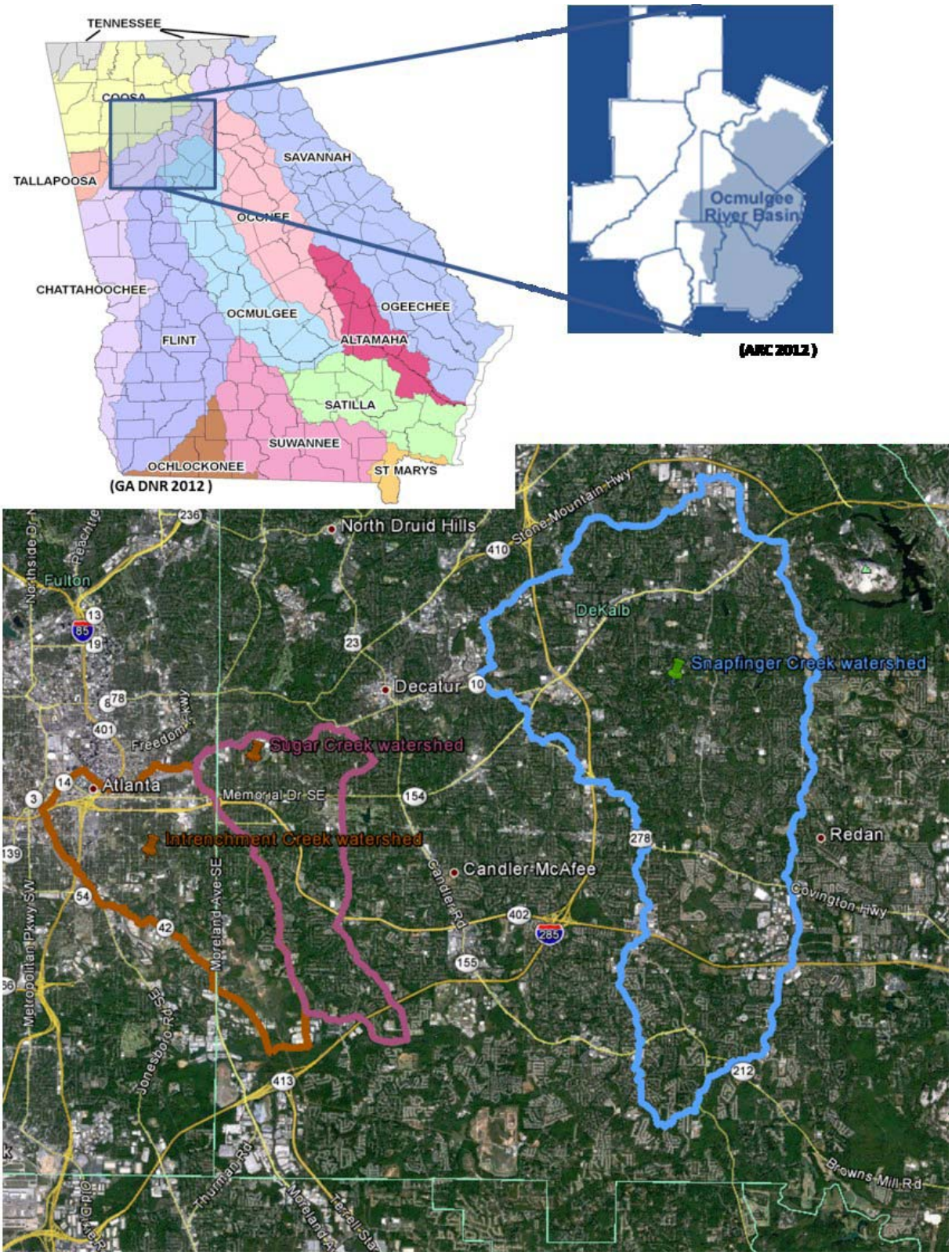

Figure 1. Location of ISIS Watersheds with respect to the Ocmulgee and Altamaha Rivers

c. Factors Affecting the Scope and Level of Review. Factors affecting the scope and level of review include nuisance flooding and Federal and State listed endangered and threatened species. As stated in the 905(b) Reconnaissance Report, DeKalb County has provided information relating to numerous incidences and locations subject to flooding during relatively minor storm events. In the majority of these instances, the flooding hazards were limited to nuisance flooding and the associated concerns of mosquito habitats, odor, and minor damage to property and landscaping. In some instances, the associated flood hazards also included actual or projected damage to structures. In most such instances, the County was already in the process of addressing the flooding issues with those homeowners covered under flood hazard insurance. It is possible that federal assistance could accelerate these procedures and allow the County to address additional homes that are currently beyond the County's financial means to do so. Beyond this limited scope, it is not believed that there is a Federal interest in pursuing the mitigation of flooding to prevent future damages. However, flood reduction efforts will be considered an integral part of ecosystem restoration and preservation due to the need to reduce sediment transport and erosion along the stream corridors.

The study area also contains numerous endangered and threatened species. The sites identified by the tentatively selected plan will be surveyed by a qualified biologist following the Alternative Formulation Briefing (AFB). Further coordination with the U.S. Fish and Wildlife Service (USFWS) will be conducted prior to completion of the NEPA process. The threatened and endangered species as identified by USFWS include:

Listed Species in DeKalb County (updated May 2004)				
Species	**Federal Status**	**State Status**	**Habitat**	**Threats**
Bird				
Bald eagle *Haliaeetus leucocephalus*	T	E	Inland waterways and estuarine areas in Georgia.	Major factor in initial decline was lowered reproductive success following use of DDT. Current threats include habitat destruction, disturbance at the nest, illegal shooting, electrocution, impact injuries, and lead poisoning.
Fish				
Bluestripe shiner| *Cyprinella callitaenia*	No Federal Status	T	Brownwater streams	
Plant				
Bay star-vine	No	T	Twining on	

Schisandra glabra	Federal Status		subcanopy and understory trees/shrubs in rich alluvial woods	

Listed Species in DeKalb County (Cont'd) (updated May 2004)				
Species	**Federal Status**	**State Status**	**Habitat**	**Threats**
Black-spored quillwort *Isoetes melanospora*	E	E	Shallow pools on granite outcrops, where water collects after a rain. Pools are less than 1 foot deep and rock rimmed.	
Flatrock onion *Allium speculae*	No Federal Status	T	Seepy edges of vegetation mats on outcrops of granitic rock	
Granite rock stonecrop *Sedum pusillum*	No Federal Status	T	Granite outcrops among mosses in partial shade under red cedar trees	
Indian olive *Nestronia umbellula*	No Federal Status	T	Dry open upland forests of mixed hardwood and pine	
Piedmont barren strawberry *Waldsteinia lobata*	No Federal Status	T	Rocky acidic woods along streams with mountain laurel; rarely in drier upland oak-hickory-pine woods	
Pool Sprite, Snorkelwort *Amphianthus pusillus*	T	T	Shallow pools on granite outcrops, where water collects after a rain. Pools are less than 1 foot deep and rock rimmed	

Federal Status:
E - Endangered. The most critically imperiled species. A species that may become extinct or disappear from a significant part of its range if not immediately protected.
T - Threatened. The next most critical level of threatened species. A species that may become endangered if not protected.
State Status:

E - Endangered. A species that is in danger of extinction throughout all or part of its range in the State.
T - Threatened. A species that is likely to become an endangered species in the foreseeable future throughout all or parts of its range within the State.

d. In-Kind Contributions. Products and analyses provided by Non-Federal Sponsors as in-kind services are subject to DQC, ATR, and IEPR. The in-kind products and analyses to be provided by the Non-Federal Sponsor include GIS mapping, coordination, provision of vans and drivers and attendance of staff for four field visits of potential sites for future project features, quarterly project coordination meetings from 2006 to 2008, and site design work for sites considered for the ISIS project. Work in-kind services were agreed to in September 2011 by DeKalb County, Georgia and the Mobile District Project Manager.

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 requirements defined in the PMP. The Mobile District shall manage DQC. Documentation of DQC will be made using DrChecks review software and will become a permanent part of the study documentation.

a. Documentation of DQC. All work products undergo DQC. Basic quality control tools include providing for seamless review, quality checks and reviews, supervisory reviews, PDT reviews, etc. DQC comments will be documented in DrChecks. DQC documentation will be provided to the ATR Team via pdf format from the Planning Project Manager.

b. Products to Undergo DQC. All documents produced will undergo DQC. The DQC Review Team will be responsible for performing a technical review of the Feasibility Scoping Meeting (FSM) material, Alternative Formulation Briefing (AFB) package, the Draft Feasibility Report including the draft EA, engineering, economics, real estate, cost, and environmental appendices, and the final Feasibility Report including all appendices. The DQC review will be completed prior to submitting documents for ATR. All DQC documents will be provided to the DQC Team by uploading all comments to DrChecks. All DQC comments will be submitted, evaluated and back checked using DrChecks. Duties of the DQC Team include the following:

1) Reviewing report contents for compliance with established principles and procedures, using clearly justified and valid assumptions.
2) Reviewing methods and procedures used to determine appropriateness, correctness and reasonableness of results.
3) Providing the review team leader with documentation of comments, issues, and decisions arising out of the DQC review, comments, and resolutions.

c. Required DQC Expertise. The DQC Review Team will include a Plan Formulator, Biologist, Real Estate Planner, Engineer (H&H), Cost Estimator, Geotechnical Engineer, Archaeologist, Hazardous, Toxic, and Radioactive Waste (HTRW) Specialist, and Economist.

DQC Team	Expertise Required

Members/Disciplines	
Planning	The Planning Reviewer will be a senior water resources planner with experience in conducting the plan formulation process for ecosystem restoration studies, including identifying goals and objectives, recognizing planning constraints, distinguishing project alternatives, screening and evaluating project alternatives and selecting a recommended plan.
Economics	The DQC team member will be an Economist and have recent experience with an ecosystem restoration project.
Environmental Resources	The DQC team member will be able to review the EA and environmental models, such as the Ecosystem Response Model, field data and be familiar with ecosystem restoration projects.
Cultural Resources	An Archeologist who is knowledgeable in ecosystem restorations will also be a part of the DQC Team.
Hydrology & Hydraulic Engineering	The DQC team member will have a good understanding of ecosystem restoration projects and the areas around them and the required modeling.
Geotechnical Engineering	The DQC team member will have a good understanding of ecosystem restoration projects and the areas around them and the required modeling.
Cost Engineering	The Cost Estimator will review the Rough Order Magnitudes (ROM) of the alternatives and also the final costs for the selected plan.
Real Estate	A Real Estate Specialist will be needed as a part of the DQC.

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.

Products to Undergo ATR. ATR is performed at key points in the study process to ensure the proper application of appropriate regulations and professional procedures. ATRs will be performed at the FSM, AFB, and the Draft Feasibility Report milestones. Specific study areas undergoing ATR include the Draft Feasibility Report with an integrated EA, engineering, economics, real estate, cost, and environmental appendices. The final Feasibility Report including all appendices and Final NEPA documentation will have an

ATR backcheck to ensure all comments or concerns have been adequately addressed. This study is past the FSM timeframe, and an ATR was previously done on the AFB materials; however, because additional analysis was completed, the AFB materials will be modified and will warrant an additional ATR. Each ATR Team will be comprised of individuals from all technical disciplines that were significant in the preparation of the report. All ATR documents will be sent to the ATR Lead via FTP link. All ATR comments will be entered and responded to in DrChecks.

a. Required ATR Team Expertise. The following disciplines will participate in the ATR. The ATRs would apply the best and most appropriate nationally-available expertise, science, and engineering technology for planning of ecosystem restoration projects. All ATR team members will have recent expertise in ecosystem restoration projects and be knowledgeable about the latest ecosystem restoration guidance and criteria. For a complete list of the personnel who will be working on the ATRs for this project and their qualifications, please see Appendix A.

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR Lead will be a senior professional with extensive experience in preparing Civil Works decision documents and conducting ATR. The ATR Lead will 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).
Planning	The Planning Reviewer will be a senior water resources planner with experience in conducting the plan formulation process for ecosystem restoration studies, including identifying goals and objectives, recognizing planning constraints, distinguishing project alternatives, screening and evaluating project alternatives and selecting a recommended plan.
Economics	The ATR team member will be an Economist and have recent experience with an ecosystem restoration project.
Environmental Resources	The ATR team member will be able to review the EA and environmental models, such as the Ecosystem Response Model, field data and be familiar with ecosystem restoration projects. The reviewer must have full knowledge of ER 200-2-2 and the NEPA process and required documentation.
Cultural Resources	An Archeologist who is knowledgeable in ecosystem restorations will also be a part of the ATR Team.
Hydrology & Hydraulic Engineering	The ATR team member will have a good understanding of ecosystem restoration projects and the areas around them and the required modeling, with a minimum of seven years of experience, and be a Professional Engineer (P.E.)

Geotechnical Engineering	The ATR team member will have a good understanding of ecosystem restoration projects and the areas around them and the required modeling, with a minimum of seven years of experience in geotechnical engineering, and be a Professional Engineer (P.E.)
Cost Engineering	The Cost Estimator will review the Rough Order Magnitudes (ROM) of the alternatives and also the final costs for the selected plan. A Cost Engineering Directory of Expertise (Cost DX) has been established at the Corps Walla Walla District (NWW). The Cost Engineering will review the final cost estimate, risk analysis, total project cost summary and construction schedule.
Real Estate	A Real Estate Specialist will be needed as a part of the ATR. The Real Estate reviewer is to have expertise in the real estate planning process for cost shared and full federal civil works projects, relocations, report preparation and acquisition of real estate interests including Ecosystem Restoration projects. The reviewer must have a full working knowledge of EC 405-2-12, Real Estate Planning and Acquisition Responsibilities for Civil Works Projects and Public Law 91-646. The reviewer must be able to identify areas of the REP that are not in compliance with the guidance set forth in EC405-2-12 and will make recommendations for bringing the report into compliance. All estates suggested for use will be reviewed to assure they are sufficient to allow project construction, and the real estate cost estimate will be validated as being adequate to allow for real estate acquisition.

b. Documentation of ATR. DrChecks review software will be used to document all ATR comments, responses and associated resolutions accomplished throughout the review process. The four key parts of a quality review comment will normally include:

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

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

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

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

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

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 will be completed, based on work reviewed to date, for the AFB, draft report, and final report. A sample Statement of Technical Review is included in Attachment 2.

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

Type I IEPR is required for all decision documents except where no mandatory triggers apply, criteria for exclusion are met, and a risk-informed recommendation justifies exclusion. IEPR is the most independent level of review, and is applied in cases that meet certain criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. A risk-informed decision, as described in EC 1165-2-209, 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 1165-2-209.

- 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. The ISIS Feasibility Study does not currently meet any of the mandatory triggers for Type I IEPR as listed below. Therefore, an IEPR Exclusion Memo will be submitted with the RP to the MSC (SAD) and HQUSACE. If the IEPR Exclusion Memo is not approved by HQUSACE, then Type I IEPR will be conducted on the study.

The following is a list of mandatory triggers that warrant Type I IEPR and the reasons the ISIS Study does not meet these triggers:

1. If there is a significant threat to human life.
   - The ISIS project posses no such threat as the structures are designed to attenuate peak flows from storms having one year to less than 10-year recurrence intervals and drain down in less than 48 hours. All larger storms are safely passed over the embankments. The embankments will be designed lower in elevation than will qualify for either state or federal dam/levee safety programs. All other project features shall be focused along the stream and shall not pose any human safety issues
2. If the estimated total project cost, including mitigation costs, is greater than $45 million.
   - The ISIS project is estimated to cost from $12 - $15M to construct and the feasibility cost is under $4M.
3. If the Governor of an affected State requests a peer review by independent experts.
   - This project has not warranted the attention of the Governor's office in Georgia nor is it expected to do so.
4. If the Director of Civil Works or the Chief of Engineers determines that the project study is controversial due to significant public dispute over the size, nature or effects of the project or the economic or environmental costs or benefits of the project.
   - This study is not likely to result in public dispute based upon the agency and public involvement to date.
5. If there is significant dispute as to size, nature or effects of the project.

- There is no significant dispute as to size, nature or effects of the project to date.

6. If there is significant public dispute as to the economic or environmental cost or benefit of the project.
   - This study is not likely to result in public dispute as to the economic or environmental cost or benefit of the project based upon the agency and public involvement to date.

7. Cases where information is based on novel methods, presents complex challenges for interpretation, contains precedent setting methods or models, or presents conclusions that are likely to change prevailing practices.
   - Restoration methods identified in this study are among those commonly used to restore hydrology and ecosystem habitat.

8. Any other circumstances where the Chief of Engineers determines Type I IEPR is warranted.
   - There are no other circumstances at this time warranting IEPR.

A project study may be excluded from Type I IEPR in cases where none of the above mandatory triggers are met and:

1. It does not include an Environmental Impact Statement (EIS).
   - As anticipated by most ecosystem restoration projects, the PDT feels an EA will be sufficient along with cultural, tribal, historic coordination to complete the NEPA documentation.
2. The project is not controversial.
   - Agencies and the public have expressed general support for this project in the coordination to date.
3. Has no more than negligible adverse impacts on scarce or unique tribal, cultural or historic resources.
   - This will be documented in the study and is the case for this project.
4. Has no substantial adverse impacts on fish and wildlife species and their habitat prior to the implementation of mitigation measures.
   - As this study is being conducted to restore aquatic habitat for native species in the region at minimal impact to the habitat during construction.
5. Has, before implementation of mitigation measures, no more than negligible adverse impact on a species listed as an endangered or threatened species under the Endangered Species Act of 1973 or the critical habitat of such species.
   - No Threatened or Endangered species are present in the study area according to the USFWS. One State listed fish species of significance was discovered by the study effort, but none of the features in consideration will negatively impact this species (Altamaha Shiner)
6. Has minimal life safety risk.
   - This project posses no such threat as the structures are designed to attenuate peak flows from storms having one year to less than 10-year recurrence intervals and drain down in less than 48 hours. All larger storms are safely passed over the embankments. The embankments will be designed lower in elevation than will

qualify for either state or federal dam/levee safety programs. All other project features shall be focused along the stream and shall not pose any human safety issues.

7. If the study involves only the rehabilitation or replacement of existing hydropower turbines, lock structures, or flood control gates within the same footprint and for the same purpose as an existing water resources project.
   - This is not applicable to this project.
8. If the study is for an activity for which there is ample experience within the USACE and industry to treat the activity as being routine
   - This is not applicable to this project.
9. If the project study does not include an EIS and is a project study pursued under the Continuing Authorities Program (CAP).
   - This is not a CAP project; however, as anticipated by most ecosystem restoration projects, PDT feels an EA will be sufficient along with cultural, tribal, historic coordination to complete the NEPA documentation.

Based on the project as currently envisioned, the District Chief of Engineering, as the Engineer-In-Responsible-Charge, does not recommend a Type II IEPR Safety Assurance Review of this project at this time. A risk-informed decision concerning the timing and the appropriate level of reviews for the project implementation phase will be prepared and submitted for approval in an updated Review Plan prior to initiation of the design/implementation phase of this project.

Independent External Peer Review (IEPR). The ISIS Feasibility Study does not currently meet any of the mandatory triggers for Type I IEPR as listed above in section 6a. Therefore, an IEPR Exclusion Memo will be submitted by the Mobile District with the RP to the MSC (SAD) and HQUSACE. If the IEPR Exclusion Memo is not approved by HQUSACE, then Type I IEPR will be conducted on the study. The Review Plan will be updated prior to the draft report and after any such decisions have been resolved.

b. Products to Undergo Type I IEPR. Not-Applicable pending approval of IEPR Exclusion Memorandum. The study does not meet any of the mandatory triggers outlined in EC 1165-2-209 as listed above in Section 6a.

c. Required Type I IEPR Panel Expertise. Not-Applicable based on the mandatory triggers outlined in EC 1165-2-209 as listed above in Section 6a.

d. Documentation of Type I IEPR. Not-Applicable based on the mandatory triggers outlined in EC 1165-2-209 as listed above in Section 6a. However, if IEPR is warranted by HQUSACE, then all comments and responses regarding IEPR will be documented in DrChecks

7. POLICY AND LEGAL COMPLIANCE REVIEW

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

reports and the supporting analyses and coordination comply with law and policy, and warrant approval or further recommendation to higher authority by the home MSC Commander. DQC and ATR augment and complement the policy review processes by addressing compliance with pertinent published Army policies, particularly policies on analytical methods and the presentation of findings in decision documents.

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

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

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 this 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 process the Hydrology, Hydraulics and Coastal Community of Practice (HH&C CoP) of USACE follows to validate engineering software for use in planning studies and to satisfy the requirements of the Corps' Scientific and Engineering Technology (SET) initiative is provided in Enterprise Standard (ES)-08101 Software Validation for the Hydrology, Hydraulics and Coastal Community of Practice. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

a. Planning Models. The following planning models are anticipated to be used in the development of the decision document:

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification / Approval Status
Ecosystem Restoration Model (ERM)	Due to the large number of ecosystem restoration projects located in the Metro-Atlanta area and policy requirements to quantify the environmental outputs of proposed restoration measures, the Corps realized that an Ecosystem Response Model (ERM) needed to be developed to support the decision making process for ecosystem restoration projects	The ERM was reviewed as part of the project's ATR process in November 2009 and was previously recommended for model certification by the Institute for Water

	located in the North Georgia region. An interagency team with representatives from the Corps, U.S. Fish and Wildlife Service (USFWS), U.S. Environmental Protection Agency (USEPA), Georgia Department of Natural Resources (GADNR) Wildlife Resources Division (WRD), GADNR Environmental Protection Division (EPD), non-federal sponsors and stakeholders was formed in order to initiate early coordination with resource agency personnel and develop a standard approach for measuring "stream health" in the Metro-Atlanta region and a methodology for quantifying environmental benefits (output) of restoration projects. The ERM meets the challenge of quantifying the habitat improvement.	Resources (IWR) in 2007. The ERM is considered a plan formulation tool, which the application of is subject to review in ATR. ATR has been completed and the application of the ERM was not questioned or unsupported. The sub-models that are the inputs to the ERM (State of Georgia Fish, macro-invertebrate, and habitat assessments) were determined to require approval for use (not certified as they were developed by the State and not the Corps). The ECO-PCX has reviewed the sub-models and drafted letters requesting that HQ approve them for use as planning models. The sub-models apply to a region and particular stream types within Georgia and are applicable for all projects located in the appropriate areas covered by the sub-models.
Institute of Water Resources (IWR) Planning Suite	The economics model used in this study was the Institute for Water Resources (IWR) Planning Suite. This model assists with plan formulation by combining solutions to planning problems and calculating the additive effects of each combination, or "plan". IWR Planning Suite can assist with plan comparison by conducting Cost Effectiveness and Incremental Cost Analyses (CE/ICA), identifying the plans which are the best financial investments, and displaying the	Certified

	effects of each on a range of decision variables. The ecological benefits estimated by the ERM were loaded into the model by project alternative, along with their estimated construction and maintenance cost to determine those plans which yield the best value for the level of fiscal investment. These alternatives are identified as "Best Buy" alternatives by the model and are the foundation from which an acceptable and complete plan may be selected (with input from the non-Federal Sponsor and collaborating agencies) as the National Ecosystem Restoration (NER) Plan. IWR Planning Suite is being used for ISIS to assist decision makers in determining how to invest limited dollars in solving ecosystem problems. It helps them answer questions like: How much can we afford to invest in an ecosystem project? Is it worth potentially doubling a project's cost, for example, to get a relatively small increase in ecosystem benefits? What level of ecosystem benefits is worth it?	

b. Engineering Models. The following engineering models are anticipated to be used in the development of the decision document:

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Approval Status
PondPack	PondPack is designed to aid the user in sizing of detention ponds, developing outlet rating curves, accounting for pond infiltration, and calculating pond detention times. PondPack has the capability to route a hydrograph through a detention pond or other similar project features to determine the effects the feature has on the inflow hydrograph. For this study, PondPack was used to model individual project features for sizing of outlet works and determining the reduction of peak flow based on detention of flows by project features.	*Allowed for use by the Engineering Community of Practice.
Sediment Impact Analysis Method (SIAM)	SIAM is a module built into Hydrologic Engineering Center - River Analysis System (HEC-RAS) that compares annualized sediment reach transport capacities to supplies and indicates reaches of overall sediment surplus or deficit. SIAM uses geometry, flow, velocity, and other inputs from the HEC-RAS steady flow simulation in conjunction with user input characteristics	Approved

	of sediment quantities and gradations to determine whether a stream reach is aggrading or degrading. SIAM is a screening level tool to compute rough, relative responses to a range of alternatives. For this study, SIAM was used to determine the overall trends of degradation of aggregation in various reaches of the stream.	
Hydrologic Engineering Center-Hydrologic Modeling System (HEC-HMS)	HEC-HMS is designed to simulate the precipitation-runoff processes of dendritic drainage basins. The program produces hydrographs based on precipitation events and characteristics of the watershed as defined by the user. For this study HEC-HMS was used to determine peak flows for subbasins, flow confluences, and river reaches to be used in the HEC-RAS steady flow simulation.	Approved
Hydrologic Engineering Center-River Analysis System (HEC-RAS)	HEC-RAS software allows the user to perform one-dimensional steady flow, unsteady flow calculations, sediment transport/mobile bed computations, and water temperature modeling. The primary component on the model used for this study was the steady flow analysis for gradually varied flows. This component of HEC-RAS uses the one-dimensional energy equation to determine channel velocities, water surface elevations, stream power, and other outputs as defined by the user.	Approved
Watershed Characterization System (WCS)	WCS uses the Universal Soil Loss Equation (USLE) to calculate the amount of sediment delivered to user defined assessment points in a watershed. The USLE has been the most widely accepted and utilized soil loss equation for over 30 years. Designed as a method to predict average annual soil loss caused by sheet and rill erosion, it cannot be applied to a specific year or a specific storm. WCS uses soil data, watershed topography, land use, and best management practices to determine the amount of sediment (produced from sheet and rill erosion) delivered to user specified assessment points. The output from the WCS model was used as an input for the SIAM model runs.	*Allowed for use by the Engineering Community of Practice.
Micro-Computer Aided Cost Estimating System II (MCACES)	The Micro-Computer Cost Estimating System II (MCACES) is used to prepare a detailed labor, equipment and material cost estimate.	Approved

***Allowed for use by the Engineering Community of Practice specifies**: Some model building pieces of software such as STELLA, OASIS, CSUDP and WMM are listed in the Planning Analysis AoE. These pieces of software are placed in the "Allowed for Use" category but with a strong caveat. While they are used frequently in the USACE planning and engineering processes

they are pieces of software that can be used to create any type of model. Therefore, it is impossible to pre-certify we know what the model does or how it does it. Therefore, while the HH&C CoP believes these tools are fine for building models and they are "validated" as "Allowed for Use" we caution the user that the ATR and the IEPR must include a much more thorough review of the inner workings of the model as the basic assumptions, equations and output used or created for the model have NOT been pre-validated. It is also important to note that an application built using these tools needs to be created by someone knowledgeable about the software and that knowledgeable people must review the application during the review process, ATR and IEPR, if required, to ensure the validity of any equations and/or algorithms built into the tool. The HH&C CoP "validation" review process is not intended to review each and every application that can be developed using these tools. To do this will require coordination with Project Management to ensure the appropriate review is built into the PMP and properly resourced.

10. REVIEW SCHEDULES AND COSTS

a. ATR Schedule and Cost.

Peer Review Schedule – Major Milestones with Estimated Costs:

Study Element	Type of Review	Date(s)	Approximate Cost	Completed
Initial Public Workshop	Public	May 2004	$10,000	Yes
Feasibility Scoping Meeting (completed)	FSM	Jan 2005	$20,000	Yes
Early consultation on Ecosystem Response Model (ERM)	ECO-PCX	Jul 2005	$10,000	Yes
Development and Submission of ERM to USACE	HQ Pilot	Jul 2006	$50,000	Yes
Agency Technical Review (ATR) of ERM	ECO-PCX	Jul 2006	$15,000	Yes
Certification Review of ERM	IWR	Apr 2007	$5,000	Yes
Approval to use ERM as Plan Formulation Tool	ECO-PCX	Dec 2007	$0	Yes
Stormwater symposium presentation (Sponsor request)	Public	Jun 2008	$10,000	Yes
District Quality Control (DQC) of AFB Materials	District	May 2009	$10,000	Yes
ATR of AFB Materials	ATR	Nov 2009	$20,000	Yes
Interim Public Workshop #1 (presentation)	Public	Jan 2012	$10,000	Yes
Interim Public Workshop #2 (workstations)	Public	Mar 2012	$10,000	No
DQC of Revised AFB Materials	SAM	Mar 2012	$10,000	No
ATR of Revised AFB Materials	ATR	Apr 2012	$40,000	Yes
Alternative Formulation Briefing	SAD/HQ	Jan 2013	$10,000	Yes

Additional milestones including DQC and ATR will be scheduled upon future receipt of Federal funding needed to complete the Feasibility Study.

b. Type I IEPR Schedule and Cost. Not Applicable. The ISIS Feasibility Study does not meet any of the mandatory triggers outlined in EC 1165-209. An IEPR Exclusion Memo will be submitted to the MSC and HQUSACE with the RP.

c. Model Certification/Approval Schedule and Cost. The ERM was approved as part of the project's ATR process in November 2009 and was previously recommended for model certification by the Institute of Water Resources in 2007. The ERM has been approved for use in this study by the Corps ECO-PCX as a plan formulation tool (see attached documentation).

11. PUBLIC PARTICIPATION

The first public workshop was held in May 2004 in a public library located within the study area in DeKalb County, Georgia. This workshop was well attended by the local community and their comments were included in FSM package and will be included in the report. In June 2008, the ISIS project was briefed at DeKalb County's Stormwater Symposium at which a Vision to Action/Multivision Integration Session was held by Mobile District and South Atlantic Division (SAD) to determine community interest and establish a vision. Once the draft report is essentially complete, then the public will be invited to a final public workshop. Any comments received will be considered in the draft report for final ATR. It is not anticipated that there will be any significant interagency interest in this project. Once the draft report is complete, it will be available to the public as part of the EA process.

12. REVIEW PLAN APPROVAL AND UPDATES

The SAD Commander is responsible for approving this RP. 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 RP is a living document and may change as the study progresses. The Mobile District is responsible for keeping the RP up to date. Minor changes to the RP since the last MSC Commander approval are documented in Attachment 3. Significant changes to the RP (such as changes to the scope and/or level of review) must be re-approved by the MSC Commander following the process used for initially approving the plan. The latest version of the RP, along with the Commanders' approval memorandum, will be posted on the Home District's webpage. The latest RP will 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:

- Plan Formulator, Mobile District, 251-694-3809
- Program Manager, Mobile District, 404-562-5229
- ECOPCX Point of Contact, 309-794-5448

ATTACHMENT 1: TEAM ROSTERS

Discipline (POC)	Office/Agency
Project Manager	CESAM-PM-C
Plan Formulator	CESAM-PD-FP
Senior Biologist	CESAM-PD-EI
Real Estate	CESAM-RE-P
Engineer (H&H)	CESAM-EN-HH
Archeologist	CESAS-PD-EM
HTRW	CESAM-EN-GE
Economist	CESAM-PD-FE
ECO-PCX	CESWT-PW-P
ECO-PCX Coordinator	CEMVP-PD-F
ECO-PCX Coordinator	CENAO-WR-PR
Cost Estimator	CESAM-EN-E
Geotechnical Engineer	CESAM-EN-GG
Tetratech	Contractor

Agency Technical Review Team	
Discipline (POC)	**Office/Agency**
ATR Team Lead/Plan Formulation	CESWT-PW-P
Plan Formulation	CESWT-PE-P
Cultural Resources	CESWT-SWT-PE-E
Hydrology & Hydraulics	CEERD-HN-RR
Real Estate	CEMVM-RE-P
Economics	CENAO-PM-PR
Environmental/NEPA	CESWT-PE-E
Cost Engineering	CENWW-EC-X
Geotechnical	CEMVM-EC-G

ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECSION DOCUMENTS

COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the General Investigation Feasibility Study for Indian, Sugar, Intrenchment and Snapfinger Creeks (ISIS). The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-209. 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].

Marc Masnor
ATR Team Leader
CESWT-PE-P

Date

E. Dean Trawick
Project Manager
CESAM-PM-CM

Date

Jamie Childers
Architect Engineer Project Manager
TetraTech, Atlanta, Georgia

Date

Wilbert Paynes
Review Management Office Representative
CESAD-PDP

Date

CERTIFICATION OF AGENCY TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows:

As noted above, all concerns resulting from the ATR of the project have been fully resolved.

SIGNATURE

Douglas C. Otto
Chief, Engineering Division
CESAM-EN

Date

SIGNATURE

Curtis M. Flakes
Chief, Planning Division
CESAM-PD

Date

[1] Only needed if some portion of the ATR was contracted

ATTACHMENT 3: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page/Paragraph Number
11 May 2012	Review Plan transferred into correct ECO-PCX template	Entire document
13 Nov 2012	Review Plan updated per comments received from SAD on 5 Nov 2012.	Entire document
7 Dec 2012	Revised Schedule per SAD	Page 17

ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS

Term	Definition	Term	Definition
AFB	Alternative Formulation Briefing	MCACES	Micro-Computer Aided Cost Estimating System II
ATR	Agency Technical Review	NEPA	National Environmental Policy Act
CAP	Continuing Authorities Program	NER	National Ecosystem Restoration
CE/ICA	Cost Effectiveness and Incremental Cost Analyses	OMRR&R	operation, maintenance, repair, replacement and rehabilitation
DQC	District Quality Control	PDT	Project Delivery Team
DX	Directory of Expertise	PMP	Project Management Plan
EA	Environmental Assessment	ROM	Rough Order of Magnitude
EC	Engineering Circular	RMC	Risk Management Center
ECO-PCX	Ecosystem Restoration Planning Center of Expertise	RMO	Review Management Organization
EIS	Environmental Impact Statement	RP	Review Plan
EPD	Environmental Protection Division	SAD	South Atlantic Division
ER	Engineering Regulation	SAR	Safety Assurance Review
ERM	Ecosystem Response Model	SET	Scientific and Engineering Technology
FSM	Feasibility Scoping Meeting	SIAM	Sediment Impact Analysis Method
GADNR	Georgia Department of Natural Resources	HQUSACE	US Army Corps of Engineers Headquarters
H&H	Hydrology and Hydraulics	USEPA	US Environmental Protection Agency
HEC-HMS	Hydrologic Engineering Center-Hydrologic Modeling System	USFWS	United States Fish and Wildlife Service
HECRAS	Hydrologic Engineering Center River Analysis System	USLE	Universal Soil Loss Equation
HTRW	Hazardous, Toxic, Radioactive Waste	WCS	Watershed Characterization System
IEPR	Independent External Peer Review	WRD	Wildlife Resources Division
ISIS	Indian, Sugar, Intrenchment and Snapfinger	WRDA	Water Resources Development Act
IWR	Institute of Water Resources		