DEPARTMENT OF THE ARMY
US ARMY ENGINEER DIVISION, SOUTHWESTERN
1100 COMMERCE STREET, SUITE 831
DALLAS TX 75242-1317

30 JUL 2015

CESWD-PDP

MEMORANDUM FOR Commander, Little Rock District

SUBJECT: Greers Ferry Lake, Arkansas Water Supply Storage Reallocation Study Review Plan Approval

1. Reference EC 1165-2-214, Water Resources Policies and Authorities, Civil Works Review, 15 December 2012.

2. The review plan for the subject study, enclosed, was reviewed and recommended for approval by the Water Management and Reallocation Studies Planning Center of Expertise (WMRS PCX). The review plan was prepared in accordance with the referenced guidance, and public comments received will be incorporated into the plan as the study progresses. Independent External Peer Review is not required for this study.

3. I hereby approve this review plan for the subject project study.

4. Please post the approved review plan with a copy of this memorandum to the District's public internet website and provide the internet address to the WMRS PCX and Southwestern Division. Before posting to the District website, the names of USACE employees should be removed.

5. The SWD point of contact for this action is Ms. Margaret Johanning, CESWD-PDP, at 469-487-7045 or email, Margaret.Johanning@usace.army.mil.

Encl

DAVID C. HILL
Brigadier General, USA
Commanding

CF:
CESWL-PM/Proffitt

REVIEW PLAN

Greers Ferry Lake, Arkansas
Water Supply Storage Reallocation Study
(Cleburne, Conway, Faulkner, Lonoke, Pulaski, Perry, Saline and Van Buren Counties)

Little Rock District

June 2015

US Army Corps of Engineers ®

Greers Ferry Lake, Arkansas
Water Supply Storage Reallocation Study

TABLE OF CONTENTS

1. PURPOSE AND REQUIREMENTS

This Review Plan defines the scope and level of peer review for the **Greers Ferry Lake, Arkansas, Water Supply Storage Reallocation Study.**

a. Reference

(1) ER 1105-2-100 "Planning Guidance Notebook & Appendices D, F, G and H"
(2) SMART Planning Principles
(3) EC 1105-2-412, Assuring Quality of Planning Models, 31 March 2011
(4) Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006
(5) Project Management Plan for the Greers Ferry Lake Water Supply Storage Reallocation Study
(6) EC 1165-2-214 Water Resources Policies and Authorities Civil Works Review, 15 December 2012, expires 15 December 2014
(7) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007

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).

According to the guidance set out in EC 1165-2-214, the Greers Ferry Water Supply Reallocation Report and Environmental Assessment will not require an Independent External Peer Review (IEPR).

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

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

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 proposed decision document is titled: **"Greers Ferry Lake, Arkansas, Water Supply Storage Reallocation Study".** Authority for the Corps to reallocate existing storage space to M&I water supply is contained in Public Law 85-500, Title III, Water Supply Act of 1958, as amended. The Secretary of the Army is authorized to cooperate with local interests

in providing storage space for M&I water supply in U.S. Army Corps of Engineers projects as long as the local interests agree to pay the costs associated with the storage space. The Chief of Engineers has the discretionary authority to reallocate the lesser of 15% or 50,000 acre feet of the total storage capacity in Greers Ferry Lake provided the reallocation has no severe effect on other authorized purposes and will not involve major structural or operational changes. If so, Congressional authorization is required.

The level of approval for the decision document is Assistant Secretary of the Army for Civil Works (ASA(CW)). The draft water storage agreement will be approved by ASA(CW), and the Final will be approved HQUSACE. National Environmental Policy Act (NEPA) documentation, an Environmental Assessment (EA), is anticipated in the feasibility phase and will be integrated into the Decision Document.

a. Study/Project Description

The Greers Ferry Dam is on the Red River approximately two miles northeast of Heber Springs, AR. The lake is one of five multiple-purpose projects constructed in the upper White River Basin for flood control, power generation, and water supply.

This report addresses one request from the Mid-Arkansas Water Alliance (MAWA) (sponsor) for reallocation of storage out of Greers Ferry Lake. In May 2013, MAWA issued a letter request to the USACE Little Rock District for reallocation of enough water supply storage in Greers Ferry Lake to yield 15.25 million gallons per day (mgd). In the letter, MAWA estimated 18,866 acre-feet of storage would need to be allocated to achieve the desired 15.25 mgd yield, which is projected to help meet the water storage needs of central Arkansas through the year 2045.

MAWA is a not-for-profit membership corporation organized for the purpose of requesting water allocations from U.S. Army Corps of Engineers' lakes. Under MAWA's single reallocation request, nine different water entities will benefit from a reallocation:

1) Cabot Waterworks (City of Cabot, Cabot WW)
2) Central Arkansas Water (CAW)
3) Community Water System Public Water Authority
4) Conway Corporation
5) Conway County Regional Water Distribution District
6) Grand Prairie Bayou Two Regional Water District
7) Jacksonville Water Works
8) North Pulaski Waterworks Public Facilities Board
9) Ward Water and Sewer System (City of Ward)

Current storage capacity on the lake is 901,200 acre-feet of flood storage and 749,300 acre feet of conservation storage for a total of 1,650,500 acre-feet. The Water Supply Act of 1958 authorized water supply for the lake and the Chief of Engineers has discretion to reallocate up to 50,000 acre-feet if there is no significant impact to other authorized project purposes. The current request for 18,866 acre-feet of storage represents approximately 2.09% of the available 901,200 acre-feet of flood storage, 2.5% of the available 749,300 acre feet of conservation storage and 1.14% of the 1,650,500 acre feet of useable storage.

Currently, there are eleven water supply agreements at Greers Ferry Lake totaling 34,858.560 acre-feet. Of these, 31,320.16 acre feet are discretionary and 3,538.40 acre feet are congressional allocations. The current storage agreement of 31,320.16 acre-feet combined with the current request of 18,866 acre-feet results in 50,186.16 acre-feet of storage agreement. Since, combined request exceeds the 50,000 acre-feet authority the ASA CW signature is required on the report and draft contract. The agreements include:

Agreement	Agreement Storage (acre-feet)	Agreement Date
Heber Springs	1,008.00	May-59
Heber Springs II	3,538.40	Congressional
Subtotal	**4,546.40**	
Clinton	900.00	18-Sep-70
Clinton II	2,175.38	27-Sep-05
Subtotal	**3,075.38**	
Community Water System	225.00	5-Mar-71
Community Water System Phase 1	3,776.00	17-Feb-95
Community Water System Phase 2	4,295.00	2-Sep-98
Subtotal	**8,296.00**	
Red Apple Inn and Country Club	**65.88**	17-Jun-96
Thunderbird Country Club	**54.88**	10-Mar-98
Tannenbaum Country Club	**90.29**	14-Nov-98
Mid-Arkansas Water Alliance (MAWA)	**18,729.70**	5-May-10
Greers Ferry Total Agreements	**34,858.56**	
Total Proposed Reallocation for M&I Storage	***18,663***	

(1) Useable Storage = Flood Control Pool + Conservation Pool

(2) Based on pool elevations (Including previous reallocations from flood control pool) of:

El. 461.3 Normal Pool

El. 487.00 = Top of Flood Control Pool

El. 462.04 = Top of Conservation Pool

El. 435.00 = Bottom of Power Pool - lowest safe level of the lake still able to generate hydroelectric power

El. 491.00 = Flowage Easement (right to flood)

MAWA received a reallocation of 18,730 acre-feet from the flood pool in 2010 to support a yield request of 15 mgd. The top of the conservation pool at Greers Ferry Lake was increased by 0.6 feet as a result of this approved reallocation.

Greers Ferry Lake has been investigated under the dam safety program and assigned a dam safety action class level of 4 (DSAC IV), meaning that the project may not meet all safety guidelines, but that the probability of failure and risk of consequences is low. We will be obtaining a dam safety letter to accompany the report. The sponsors are aware of their cost sharing obligations as it pertains to dam safety and water supply.

b. Factors Affecting the Scope and Level of Review

- Southwestern Power Association, Power Marketing Agency for the Department of Entergy is an important stakeholder, historically has not agreed with USACE Little Rock's calculation of benefits forgone for reallocation from the conservation pool.
- The major risks in the project include the reduction in hydropower benefits that will result if a reallocation from the Conservation Pool is the recommended solution. Currently policy states that the ASA (CW) can approve the agreement if authorized purposes are not severely impacted. If the hydropower benefits are severely impacted, and the report recommended reallocation, the sponsor would need to seek Congressional authorization for a reallocation.
- No life safety issues are anticipated, since the dam is considered a Dam Safety Action Classification IV class (Low Urgency).
- Reallocations that would require raising the conservation pool will be considered by HQ USACE (USACE DSO and CECW-P). Reallocation reports that recommend pool raises will include a review of the Potential Failure Mode Analysis (PFMA) for the dam and an analysis of the effect of a higher pool elevation on the probability of failure and consequences associated with the changed pool elevation.
- A risk of reduction in flood control benefits
- Reallocation from the flood control pool and the conservation pool will both be considered for this study.
- It is expected that there will be no request by the Governor for an IEPR.
- The project should not be publically controversial.
- The public is not expected to dispute the economics nor the environmental impacts of the project.
- No design will be recommended by the decision document; therefore, it will not require novel construction methods or sequencing.
- Total Federal project cost is expected to be limited to the study cost. No implementation costs are anticipated.
- There is ample experience within USACE on water supply reallocation reports. This activity can be treated as routine.
- The study should be excluded from am IEPR because of the relative size of the reallocation. Reallocation is for 2.5% of the total conservation pool. Total conservation storage is 749,300 acre-ft and this request is for reallocation of approximately 18,866 acre feet of it. There would be no change in total elevation of the reservoir if the storage is reallocated from the conservation pool.

In-Kind Contributions. No in-kind analysis will be conducted by the sponsor.

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. DQC documentation shall be provided to the ATR team prior to conducting each review. Documentation of DQC activities is required and should be in accordance with the Quality Manual of the District and the home MSC.

a. Documentation of DQC. DQC includes documenting and maintenance of records for internal audits of proper DQC implementation. The reviewers will make written comments, the respective team member will respond to comments noting concurrence or non-concurrence with an explanation of revised work and its location in the reviewed document. The review leader will compile all the comments and responses, note if the review and responses are comprehensive, note significant issues and responses and non resolved issues, before signing the DQC statement of technical review. The project manager will also sign and date the statement. Subsequently the Chiefs of Planning, Engineering, and Real Estate will describe the significant concerns and resolution and will sign a certification of Quality Assurance Review.

b. Products to Undergo DQC.

i. Alternative Milestone Meeting Documentation
ii. Tentatively Selected Plan Documentation
iii. Draft Report including NEPA and supporting documentation
iv. Draft Water Storage Agreement
v. Agency Decision Milestone documentation
vi. Final Report and documentation

c. Required DQC Expertise

DQC Team Members/Disciplines	Expertise Required
Planning – Water Supply Specialist	The Planning reviewer should be a senior water resources planner with experience in water supply reallocation.
Real Estate	The Real Estate reviewer should be experienced in water supply reallocation.
Economics	The reviewer shall have extensive knowledge of the principles and guidelines of economic analysis as it relates to models for water supply within the Corps of Engineers including water demand analysis and reallocations within reservoirs.
Hydraulic and Hydrologic Engineering – Reservoir Control	An engineer familiar with running RIVERWARE on reservoirs. The engineer should be familiar with how the information is used by the economists and the biologists in their assessments.
Civil Engineering	The professional engineers shall have the experience to estimate quantities for planning purposes. They shall be familiar with both the planning and the water supply reallocation process.

NEPA Specialist	The reviewer shall be an expert in the NEPA process. The reviewer shall be familiar with the impacts from water supply reallocation.
Cost Engineering	The cost engineer shall be an expert in MII.
Dam Safety Professional	The professional engineer shall have experience in Dam Safety, and be able to verify the reliability of stability assessments.

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 reviewer members will be selected from the appropriate Communities of Practice approved lists of reviewers. The ATR team lead will be from outside the home MSC.

a. Products to Undergo ATR.

i) Alternatives Milestone Meeting Documentation
ii) Tentatively Selected Plan Documentation
iii) Draft Report including NEPA and supporting documentation
iv) Draft Water Supply Storage Agreement
v) Final Report and documentation
vi) Final Water Supply Storage Agreement

b. Required ATR Team Expertise

ATR reviewer members will be selected from the appropriate Communities of Practice approved lists of reviewers.

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).
Planning – Water Supply Specialist	The Planning reviewer should be a senior water resources planner with experience in water supply reallocation.
Real Estate	The Real Estate reviewer should be experienced in water supply reallocation and be from the approved list of reviewers.
Economics	The reviewer shall have extensive knowledge of the principles and guidelines of economic analysis as it relates to models for water supply within the Corps of Engineers including water demand analysis and reallocations within reservoirs.

Hydraulic and Hydrologic Engineering – Reservoir Control	An engineer familiar with running RIVERWARE on reservoirs. The engineer should be familiar with how the information is used by the economists and the biologists in their assessments.
NEPA Specialist	The reviewer shall be an expert in the NEPA process. The reviewer shall be familiar with the impacts from water supply reallocation.
Cost Engineering/Civil Engineer	The cost engineer shall be an expert in MII and a certified cost engineer. They shall be familiar with both the planning and the water supply reallocation process.
Dam Safety Professional	The professional engineer shall have experience in Dam Safety, and be able to verify the reliability of stability assessments.

c. Documentation of ATR

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

1) The review concern – identify the product's information deficiency or incorrect application of policy, guidance, or procedures;

2) The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not 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 should 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)

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.

Decision on IEPR. IEPR exclusion was requested and approved.

1. This project does not contain any of the mandatory triggers described in EC 1165-2-214, 11.d.

   i. There is no public safety component of the project.
   ii. The total project cost is less than $45 million.
   iii. We do not expect the governor to request IEPR.
   iv. We do not expect the DCW or the Chief of Engineers to determine this project 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.

2. This project does not contain any of the discretionary triggers described in EC 1165-2-214, 11.d. (2).

   i. We do not expect a request to conduct IEPR from a head of a Federal or state agency charged with reviewing the project.

3. This project is eligible for exclusion from IEPR because:
   i. This reallocation does not require an Environmental Impact statement
   ii. It is not controversial
   iii. It has no more than negligible adverse impacts on scarce or unique tribal, cultural, or historic resources, and
   iv. It has no substantial adverse impacts on fish and wildlife species and their habitat prior to the implementation of mitigation measures.
   v. It has, before implementation of mitigation measures, no more than a 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.

4. Per EC 1165-2-214, when a decision document does not trigger a mandatory Type I IEPR, a risk-informed recommendation will be developed. The process shall consider the consequences of non-performance on project economics, the environment, and social well-being (public safety and social justice), as well as indicate whether the product is likely to contain influential scientific information or be a highly influential scientific assessment, or involve other issues that provide a rationale for determining the appropriate level of review. Furthermore, the recommendation much make a case that the study is so limited in scope or impact that it would not significantly benefit from IEPR.

   The Little Rock District has considered the criteria above and is recommending an exclusion of this action from an IEPR. This action is a standard reallocation study involving standardized methods and well established criteria for determination of water supply demand, analysis of alternatives, and derivation of user costs. There is therefore minimal risk of substantial non-performance related to project economics. With regard to impacts on the environment, a draft environmental assessment (EA) and finding on No Significant Impacts (FONSI) will be prepared in compliance with the National Environmental Policy Act (NEPA). If a FONSI is ultimately determined to be appropriate for signature by the District Commander, impacts to the environmental are, by definition, determined to be not significant. Accordingly, analysis of environmental impacts does not involve a large degree of uncertainty or high risk for underestimation. Health and safety would not be impacted through the recommended plan. Social justice considerations are being addressed through determination of low income eligibility

determinations in accordance with Section 322 of Water Resources Development Act (WRDA) 1990. Given these considerations, the risk of non-performance with regard to matters pertaining to social well-being would be anticipated as minimal.

This standard relocation study does not involve novel, untested, or influential scientific information or methods. The study analyses, while complex, are within the typical scope of similar reallocation studies. Methodology and required data and analyses are well-established in USACE guidance for such studies. It is not expected that the project would benefit from IEPR because the science and models used in the study have been used numerous times for reallocations throughout the Division.

It would not otherwise benefit from an IEPR because there is ample experience with USACE on water supply reallocation reports. This activity can be treated as routine. In the past five years, SWL has completed five reallocations.

The limited scope of this action, use of well-established criteria, minimal anticipated environmental impacts, and low uncertainty, are all indicative of an action that would benefit little from further review by IEPR. While providing little benefit, a requirement for IEPR would, however, result in the delay in delivery of a reliable water supply.

Finally, the recommended plan would not significantly affect project operations in terms of flood risk reduction, dam safety, fish and wildlife, water quality, recreation or hydropower. Environmental impacts will be addressed in the draft EA/FONSI for the project.

The Little Rock District requests that the RMO and Division Commander endorse the request for exclusion from IEPR and forward a request to the Regional Integration Team (RIT) for their endorsement and approval by the Director of Civil Works per guidance in EC 1165-2-214.

Type II IEPR, the Safety Assurance Review, are conducted on design and construction activities for any hurricane and storm risk management and flood risk management projects, as well as other projects where existing and potential hazards pose a significant threat to human life. Reallocation of storage does not meet the criteria for Type II IEPR.

a. Products to Undergo Type I IEPR. Not-Applicable

b. Required Type I IEPR Panel Expertise. Not-Applicable

c. 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.

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

Cost MCX involvement is not expected due to the current scope of the study. The RMO or PCX will coordinate as needed.

9. MODEL CERTIFICATION AND APPROVAL

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

EC 1105-2-412 does not cover engineering models used in planning. The responsible use of well-known and proven USACE developed and commercial engineering software will continue and the professional practice of documenting the application of the software and modeling results will be followed. As part of the USACE Scientific and Engineering Technology (SET) Initiative, many engineering models have been identified as preferred or acceptable for use on Corps studies and these models should be used whenever appropriate. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

a. Planning Models. The 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
Study Specific Spreadsheets for Needs Analysis	*Checking the needs analysis for the water district.*	*Request approval for use through PCX*
Study Specific Spreadsheets for Hydropower Benefits Forgone	*Determination from the Hydropower Analysis Center (HAC)*	*Approved*
Flood Damage Reduction Analysis (HEC-FDA) http://www.hec.usace.army.mil/software/hec-fda/	- An economic model - Developed by the USACE Hydrologic Engineering Center (HEC). -Provides the capability to perform an integrated hydrologic engineering and economic analysis during the formulation and evaluation of flood risk management plans. -Designed to assist USACE study members in using risk analysis	*Certified*

	procedures for formulating and evaluating flood risk management measures (EM 1110-2-1619, ER 1105-2-101). - Assists USACE staff in analyzing the economics of flood risk management projects. - Software 1) stores hydrologic and economic data necessary for an analysis, 2) provides tools to visualize data and results, 3) computes expected annual damage (EAD) and equivalent annual damages, 4) computes annual exceedance probability (AEP) and conditional non-exceedance probability as required for levee certification, and, 5) implements the risk analysis procedures described in EM 1110-2-1619. 6) follows functional elements of a study involving coordinated study layout and configuration, hydrologic engineering analyses, economic analyses, and plan formulation and evaluation. - Used continuously throughout the planning process as the study evolves from the base year without-project condition analysis through the analyses of alternative plans over their project life. - Hydrologic engineering and portions of the economics are performed separately, but in a coordinated manner after specifying the study configuration and layout, and merged for the formulation and evaluation of the potential flood risk management plans.	

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
RIVERWARE	- Hydrologic model - Used in assessing the engineering aspects of reservoir operations, lake recreation analysis, flood damage analysis, and water supply yield analysis. - RIVERWARE run is necessary to provide necessary yield data to USACE Hydropower Analysis Center (HAC)

10. REVIEW SCHEDULES AND COSTS

ATR Schedule and Cost. Estimated Cost for ATR is $25,000

Activity ID	Activity Name	Start	Finish	Milestone - Civil Works

Activity ID	Activity Name	Start	Finish	Milestone - Civil Works
ALT1000	Analysis of Final Array of Alternatives	22Feb -16	13-May-16	
SCP1260	Update Report Synopsis, Risk Register and DMP	14-Dec-15	11-Jan-16	
SCP1310	Conduct Alternatives Milestone Meeting		4-Feb-16	CW261
REV1000	DQC Alternatives Documentation		4-Feb-16	
REV1010	ATR Alternatives Documentation		4-Feb-16	
ALT1110	Submit TSP Milestone		23-Jun-16	CW262
ALT1130	TSP MFR		13-Jul-16	CW060
ALT1140	Update Report Synopsis, Risk Register, DMP and Report Consistent with TSP	14-Jul-16	20-Jul-16	
ALT1150	Prepare Draft Report for Concurrent Review	14-Jul-16	10-Aug16	
ALT1170	Submit Draft Report to HQ		17-Aug-16	CW150
ALT1175	Prepare NOA	18-Aug-16	31-Aug-16	
REV1080	ATR of Draft Report		31-Aug-16	
REV1090	MSC Review Draft Report		31-Aug-16	
ALT1190	Release of Draft Feasibility Report for Public Review	1-Sep-16		CW250
ALT1210	Public Draft Report and NEPA Comment Period	1-Sep-16	6-Oct-16	
ALT1220	Policy Review	1-Sep-16	7-Sep-16	
ALT1235	Develop Public Response Matrix	7-Oct-16	13-Oct-16	
FEA1120	Agency Decision Milestone		22-Nov-16	CW263
FEA1040	HQ Finalize comments and Project Guidance Memo	29-Nov-16	8-Dec-16	
REV1150	DQC/ATR of Final Report		22-Dec-16	
FEA1080	Prepare CWRB Package	23-Dec-16	28-Dec-16	
FEA1100	MSC Transmittal Letter with Final Report		28-Dec-16	CW260
FEA1110	Submit Final Report (Division Engineer's Notice)		28-Dec-16	CW160
FEA2000	Final Approval		4-Aug-17	CW170

a. **Type I IEPR Schedule and Cost.** Not-Applicable

b. **Model Certification/Approval Schedule and Cost.** A one-time model certification for the Water Demand Analysis is required. The estimated cost for the certification is between $15-20k and schedule TBD based on approved reviewer schedule. Economic model HEC-FDA is certified. RIVERWARE, as an engineering model, does not require approval.

11. PUBLIC PARTICIPATION

The Little Rock District will make the draft documents available for the public review. Draft documents will be mailed to interested stakeholders and posted on the district website. All the public involvement requirements for NEPA have been and will continue to be met. Significant and relevant public comments will be provided to reviewers before they conduct their review. See ATR milestones for public comment periods.

12. REVIEW PLAN APPROVAL AND UPDATES

The Southwestern 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, should 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:

- District Contact, Project Manager: Glenn Proffitt, 501-340-1068
- MSC Contact: Margaret Johanning, 469-487-7045
- Review Management Organization: Cherilyn Plaxco, 501-324-5036

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 water supply reallocation for Greers Ferry Lake, Arkansas, Reallocation Study, Cleburne County. The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-214. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrChecks[sm].

SIGNATURE _____ _____

Name Date
ATR Team Leader
Office Symbol/Company

SIGNATURE _____ _____

Name Date
Project Manager
Office Symbol

SIGNATURE _____ _____

Name Date
Architect Engineer Project Manager[1]
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

ATTACHMENT 4: ACRONYNS 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
DX	Directory 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
HQUSACE	Headquarters, U.S. Army Corps of Engineers	RMC	Risk Management Center
IEPR	Independent External Peer Review	RMO	Review Management Organization
ITR	Independent Technical Review	RTS	Regional Technical Specialist
LRR	Limited Reevaluation Report	SAR	Safety Assurance Review
MSC	Major Subordinate Command	USACE	U.S. Army Corps of Engineers
		WRDA	Water Resources Development Act