



**US Army Corps
of Engineers®**
Memphis District

**GRAND PRAIRIE REGION AND BAYOU METO
BASIN, ARKANSAS PROJECT**

**BAYOU METO BASIN,
ARKANSAS**

GENERAL REEVALUATION REPORT

VOLUME 12

APPENDIX I

**QUALITY CONTROL PLAN & QC/QA
DOCUMENTATION**

NOVEMBER 2006





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**QUALITY MANAGEMENT DOCUMENTATION
TECHNICAL REVIEW PACKAGE**

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INTRODUCTION

The purpose of the Technical Review Package (TRP) is to provide formal documentation certifying that the Bayou Meto Basin, Arkansas General Reevaluation Report (GRR) conforms to pertinent regulations, guidance, sound professional practices, and the best available science and to show evidence that independent technical review(s) (ITR) as well as a legal review were performed. The independent technical reviews were performed in accordance with the guidelines as specified in the Quality Control Plan (QCP) presented in the Bayou Meto Basin, Arkansas General Reevaluation Project Study Plan (PSP), November 1998 and the established Memphis District framework of general policies, principles and organizational responsibilities for providing quality planning and planning studies and planning products consistent with Corps policies and regulations that meet or exceed customer expectations.

Technical Reviews (TRs) were performed under the direction of a Technical Review Manager, the Memphis District Project Management Council (PMC), and/or the Project Manager (PM). As specified in the QCP, ITRs were performed by the Technical Review Team (TRT) member having expertise in the functional area where the specific analysis, engineering design, or product was being performed. TR for Memphis District produced data and products was conducted by in-house resources. TR for Vicksburg District was conducted by a combination of Memphis and Vicksburg District resources. Review comments and responses, to include resolution of issues and concerns, were documented and filed. Because of the size and complexity of this project numerous "in-progress" TRs were conducted by the various technical disciplines. These reviews were performed at various milestones, critical verification checkpoints, or prior to utilization of data in further analyses or decision-making. These in-progress reviews normally involved the analyst and technical reviewer for a given discipline. Comments and or suggestions provided at these reviews were incorporated into the planning, engineering and design during the course of reevaluation effort. As stated in the QCP all memorandums for records, memorandum of understandings, report documentation and other working papers concerning the in-progress reviews will be maintained within the Memphis District and will be available if required.

During the course of the study Special Review Teams (SRTs) were formed to review and evaluate certain analyses, conclusions, and recommendations to determine the technical adequacy and reasonableness of study findings and identify areas needing further investigations. Four (4) separate SRTs were formed to 1) conduct a detailed review of the cost estimate for the agricultural water supply component, 2) review O & M requirements and costs, 3) investigate system water losses for optimum delivery, and 4) identify and resolve inconsistencies in data and revise appropriate documentation, tables, mapping, etc. These teams worked under the direction and guidance of the PMC.

QUALITY MANAGEMENT DOCUMENTATION TECHNICAL REVIEW PACKAGE

1. **PROJECT NAME:** Bayou Meto Basin, Arkansas
2. **DESCRIPTION:** Draft General Reevaluation Report (GRR) and Draft Environmental Impact Statement (DEIS)
3. **TECHNICAL REVIEW:** Conducted in accordance with the approved Bayou Meto Basin, Arkansas General Reevaluation Project Study Plan (PSP) and Corps policy and guidance concerning quality management.
4. **POLICY REVIEW:** Conducted in accordance with ER 5-1-11, ER 1105-2-100, ER 1110-1-12, Public Laws, Project Authorization Documents and other applicable Corps policy guidance.
5. **QUALITY CONTROL:** A Quality Control Plan (QCP) was developed as part of the Project Study Plan (PSP) prior to study initiation. The QCP described the procedures that would be used to ensure compliance with all technical and policy requirements. The overall goal of the review process is to assure a high quality project is planned, designed, and delivered on schedule, within budget and is acceptable to the customer and the Federal Government. The recommended plan is the only viable solution to the Bayou Meto Basin's groundwater depletion, agricultural water supply, flooding and drainage, and environmental resources problems. It meets the planning objectives consistent with applicable laws, regulations, and current policy; meets the desires and needs of the project sponsor and the state of Arkansas; and studies demonstrate a Federal interest in project implementation.
6. **SOURCE OF REVIEW:** Resources within the Memphis and Vicksburg Districts were utilized to accomplish the review. Development of the Project Management Plan (PMP) was accomplished with A-E contract resources which required a detailed review of project data and documents.

7. TECHNICAL/POLICY REVIEW TEAMS:

Technical Review Team

<u>DISCIPLINE/FUNCTION</u>	<u>OFFICE</u>	<u>TEAM MEMBER</u>
Project Manager	MVM-PM-P	Jim Bodron
Economist	MVM-PM-D	Effort Alexander
Biologist	MVM-PM-E	Dave Reece
Biologist	MVM-PM-E	Mark Smith
Biologist	MVK-PP-PQ	Marvin Cannon
Archaeologist	MVM-PM	Jim McNeil
Hydraulic Engineer	MVM-ED-H	Gary Billingsley
Cost Engineer	MVM-ED-C	Jerry Welch
Civil Engineer	MVM-ED-C	David McNutt
Geotechnical Engineer	MVM-ED-G	Ron Smith
GIS Specialist	MVM-ED-T	Jennifer Redden
Structural Engineer	MVM-ED-S	Ted Beasley
Mechanical Engineer	MVM-ED-S	Mohammad Nisar
Electrical Engineer	MVM-ED-S	Don Badowski
Architectural Engineer	MVM-ED-S	Dave Ferguson
Civil Engineer	MVM-ED-D	Richard Turner
Civil Engineer	MVM-ED-D	William Kiddy
Civil Engineer	MVM-CO-C	Robert Smith
Realty Specialist	MVM-RE-A	Willie McClain
Appraiser	MVM-RE-P	Martha Cole
Attorney	MVM-OC	Mike Parks

Special Review Team No. 1

<u>DISCIPLINE/FUNCTION</u>	<u>OFFICE</u>	<u>TEAM MEMBER</u>
Mechanical Engineer	MVM-ED-S	Wayne Quarles
Civil Engineer	MVM-ED-S	David Welch
Cost Engineer	MVM-ED-C	Richard Hurst
Cost Engineer	MVM-ED-C	Jerry Welch

Special Review Team No. 2

<u>DISCIPLINE/FUNCTION</u>	<u>OFFICE</u>	<u>TEAM MEMBER</u>
Mechanical Engineer	MVM-ED-S	Steve Channell
Electrical Engineer	MVM-ED-S	Shannon Reed
Mechanical Engineer	MVM-ED-G	Bill Gross
Civil Engineer	MVM-ED-D	William Kiddy

Special Review Team No. 3

<u>DISCIPLINE/FUNCTION</u>	<u>OFFICE</u>	<u>TEAM MEMBER</u>
Hydraulic Engineer	MVM-ED-H	Tracy James
Geotechnical Engineer	MVM-ED-G	Cory Williams
Project Manager	MVM-PM-P	Ken Bright
Economist	MVM-PM-D	Bobby Learned

Special Review Team No. 4

<u>DISCIPLINE/FUNCTION</u>	<u>OFFICE</u>	<u>TEAM MEMBER</u>
Civil Engineer	MVM-ED-T	Regina Kuykendoll
Hydraulic Engineer	MVM-ED-H	Gary Billingsley
Civil Technician	MVM-ED-D	Ralph Odell
Civil Engineer	MVM-ED-D	Lori Baldi

8. PROJECT DELIVERY TEAM:

<u>DISCIPLINE/FUNCTION</u>	<u>OFFICE</u>	<u>TEAM MEMBER</u>
Project Manager	MVM-PM-P	Ken Bright
	MVK-PP-D	Paul Eagles
Program Analyst	MVM-PM-P	Teresa Moore
	MVK-PP-D	Sissy Carter
Economist	MVM-PM-D	Bobby Learned
	MVK- PP-PE	Stoney Burke
Biologist	MVM-PM-E	Mark Smith
	MVK-PP-PQ	Marvin Cannon
	MVM-PM-E	Edward Lambert
Archaeologist	MVM-PM-E	Jim McNeil
	MVK-PP-PQ	Jim Wojtala
Hydraulic Engineer	MVM-ED-H	Tracy James
	MVM-ED-H	Gary Billingsley
	MVK-ED-H	Barry Sullivan
Cost Engineer	MVM-ED-C	Richard Hurst
	MVK-ED-CC	Phil Hegwood
Geotechnical Engineer	MVM-ED-G	Cory Williams
	MVK-ED-G	Nancy Purvis
GIS Specialist	MVM-ED-T	Jennifer Redden
	MVK-ED-HW	Dave Johnson
Structural Engineer	MVM-ED-S	Young Hsu
	MVK-ED-D	John Burnworth
Mechanical Engineer	MVM-ED-S	Wayne Quarles
	MVK-ED-D	Robert Hite

<u>DISCIPLINE/FUNCTION</u>	<u>OFFICE</u>	<u>TEAM MEMBER</u>
Electrical Engineer	MVM-ED-S	Alan Cardwell
	MVK-ED-D	Hank Braswell
Architectural Engineer	MVM-ED-S	Dave Ferguson
Civil Technician	MVM-ED-D	Ralph Odell
Civil Engineer	MVM-CO-C	Robert Smith
Realty Specialist	MVM-RE-A	Willie McClain
	MVK-RE-P	Dane Gray
Appraiser	MVM-RE-P	Eric Greever
	MVK-RE-EP	Robert Wood
Attorney	MVM-OC	Mike Parks
Water Quality Specialist	MKM—ED-HW	Karen Myers

9. POLICY ISSUES: None.

10. TECHNICAL ISSUES: None.

11. MAINTENANCE OF RECORDS: Quality control records will be maintained in the Memphis District.

SCHEDULE: Review milestones and critical checkpoints.

<u>Milestones</u>	<u>Date Scheduled</u>	<u>Date Completed</u>
Identify Problems & Needs	<u>15 Aug 99</u>	<u>15 Aug 99</u>
H&H Without-Project Analysis	<u>15 Sep 01</u>	<u>15 Sep 01</u>
Economic Without-Project Analysis	<u>13 Sep 02</u>	<u>13 Sep 02</u>
Alternative Formulation*	<u>30 Nov 01</u>	<u>30 Nov 01</u>
H&H Analysis of Alternatives	<u>10 May 02</u>	<u>10 May 02</u>
Economic Analysis of Alternatives	<u>30 Jan 03</u>	<u>30 Jan 03</u>
Environmental Analysis of Alternatives	<u>15 May 03</u>	<u>15 May 03</u>
Design Quantities	<u>31 May 02</u>	<u>31 May 02</u>
Alternative Evaluation	<u>6 Jun 03</u>	<u>6 Jun 03</u>
Plan Selection*	<u>13 Jun 03</u>	<u>13 Jun 03</u>
MCACES Cost Estimate	<u>15 Oct 02</u>	<u>30 Sep 02</u>
Benefit/Cost Analysis	<u>30 Jul 03</u>	<u>30 Jul 03</u>
NER Plan	<u>19 Sep 03</u>	<u>22 Sep 03</u>
Draft GRR & EIS*	<u>30 Sep 03</u>	<u>30 Sep 03</u>
IPRs/IRCs*	<u>1 Oct 99</u>	<u>1 Oct 99</u>
	<u>26 Feb 02</u>	<u>26 Feb 02</u>
	<u>16 May 03</u>	<u>16 May 03</u>
GRC*	<u> </u>	<u> </u>

* Critical Checkpoint

Note: Several slippages in completion of GRR occurred throughout the study process due to funding and resource constraints. Above scheduled dates were revised with each slippage (i.e. Draft GRR & EIS was originally scheduled for Sep 02. Funding and resource constraints slipped completion to Mar 03 and then Sep 03.)

IN-PROGRESS REVIEWS

Several In-Progress Reviews (IPRs) were conducted during the course of study execution. The first IPR with Mississippi Valley Division (MVD) staff was conducted on 1 October 1999. The purpose of this IPR was to review the project study plan (PSP), discuss study execution, and identify potential issues. Another IPR with MVD staff was conducted on 26 February 2002. Project delivery team members from MVM and MVK and representatives from the Bayou Meto Water Management District (BMWMD) and the Natural Resources Conservation Service (NRCS) participated in the review. The meeting included a review of the problems, needs, and opportunities and a presentation of existing conditions data. The major focus of discussions was the formulation and evaluation of alternative plans for agricultural water supply, flood control, and ecosystem restoration and waterfowl management. The review included a project briefing and status report. Essentially the same participants were involved in a VTC on 16 May 2003. MVD staff was provided a project overview and status report on the project. No significant technical issues were identified at any of these reviews.

Project briefings were provided to the Office of the Assistant Secretary of the Army (Civil Works) (OASA(CW)) on 13 May 1999 and 28 February 2002.

TECHNICAL REVIEW CHECKLIST

GENERAL				
Item	Yes	No	N/A	Comments
1. AUTHORITY				
Does the study conform to the intent of the cited study authority?	X			
2. SCOPE OF INVESTIGATION				
a. Have the water resource-related problems and opportunities been fully and clearly evaluated?	X			
b. Have all significant or special interest resources been adequately considered?	X			
c. Have all foreseeable short- and long-term needs been adequately considered?	X			
d. Have implications outside the study area been properly addressed?	X			
3. OBJECTIVE OF INVESTIGATION				
Are planning objectives clearly stated?	X			
4. RISK AND UNCERTAINTY - SENSITIVITY ANALYSIS				
a. Was risk analysis adequately scoped in the initial stage of the study?	X			
b. Have the plans and their effects been sufficiently examined to determine the uncertainty inherent in the data or in the various assumptions of future economic, demographic, social, attitudinal, environmental, hydrologic, and technological trends?	X			

GENERAL				
Item	Yes	No	N/A	Comments
c. Have the areas of sensitivity been adequately identified and proper analysis performed so that decisions can be made with knowledge of the degree of reliability of available information?	X			
d. Does the report address the risk and uncertainty of the without-project condition assumptions and does it test for sensitivity?	X			
e. Have the advantages and costs of reducing risk and uncertainty been adequately considered in the planning process?	X			
5. CHART OF ACCOUNTS				
a. Is the cost allocation in conformance with existing policies?	X			
b. Has the necessity for sub-allocations been adequately considered?	X			
c. Have all project purposes been included in the allocation?	X			
6. PROJECT COST SHARING				
a. Is the apportionment of cost to local interests in conformance with present policy and evaluation procedure?	X			
b. Are there special circumstances associated with the project that warrant consideration of increased Federal or non-Federal cost sharing?		X		

GENERAL				
Item	Yes	No	N/A	Comments
c. Are the items to be furnished by local interests those normally required under the law and by present policy; and, if not, is adequate support given for classifying the items as those to be furnished by local interests?	X			
d. Have reporting officers established that local interests fully understand and are willing and capable of furnishing the local cooperation specified?	X			
e. For mitigation projects, has a letter of intent to cost share the mitigation been obtained?			X	
7. COORDINATION				
a. Was there coordination with appropriate state, local, and Federal agencies, and (American Indian) Tribal Governments, and were their views considered in formulating the recommended plan?	X			
b. Has coordination conformed to law, executive orders, and agreements between agencies; and, if not, has the departure been satisfactorily explained?	X			
c. Have the proper preservation, conservation, historical, and scientific interests been consulted and were their views given adequate consideration during plan formulation?	X			
8. PUBLIC INVOLVEMENT				
a. Was the scoping process in accordance with ER 200-2-2?	X			

GENERAL				
Item	Yes	No	N/A	Comments
b. Were public involvement activities conducted during the planning process to fully inform interested parties and to ascertain their views?	X			
c. Has there been response to public concerns?	X			
d. Has the public involvement process been documented, and a discussion of the process prepared?	X			
9. POLICY ASPECTS				
a. Does the proposed project conform to policies established by law and HQUSACE directives governing Federal participation?	X			
b. Has the review considered current Administration policies and decisions, as well as directions, actions, and interpretations by Office of Management and Budget (OMB) and Assistant Secretary of the Army for Civil Works [ASA (CW)]?	X			The general reevaluation was conducted in response to Congressional Direction. The Administration does not support agricultural water supply; however, the project provides significant flood damage prevention and environmental restoration benefits.
10. LEGAL/INSTITUTIONAL				
a. Does the draft Project Cooperation Agreement (PCA) reflect applicable cost sharing and financing policies; policies regarding evaluation of in-kind non-Federal contributions; and other provisions required by law and policy for new start construction projects?	X			

GENERAL				
Item	Yes	No	N/A	Comments
b. Has the sponsor either demonstrated that it possesses all authorities necessary to implement its responsibilities under the PCA or submitted a plan to obtain those authorities?	X			The BMWMD has the legal and financial capabilities in place to act as project sponsor and meet all non-Federal responsibilities for project implementation and operation and maintenance.
c. Have the legal and institutional obstacles to project implementation been considered and has a plan been developed to overcome them?	X			
d. Does the report indicate the physical criteria for satisfactory project performance that can be used as a basis for establishing sponsor's operation, maintenance, and repair and land use management responsibilities?	X			

PLAN FORMULATION				
Item	Yes	No	N/A	Comments
1. SCOPING				
a. Have all reasonable alternatives, including nonstructural and no-action plans, been adequately addressed?	X			
b. Has recent guidance been incorporated in the study?	X			
c. Have environmental principles been considered in formulating alternative plans? (EOP)	X			
d. Does the report fully address system sustainability issues related to the recommended plan?	X			
e. Has full consideration been given to inclusion of recreation as a project purpose?	X			
2. EXISTING CONDITIONS/PLAN DEVELOPMENT				
a. Have the assumptions and rationale for the without-project conditions been explicitly stated and are they reasonable?	X			
b. Have innovative alternatives been fully considered?	X			
c. For water supply, has a range of measures been adequately considered that can, over time, balance water demand for various purposes with water availability?	X			A conjunctive use – sustained yield analysis was conducted. A water balance considering all available sources and demands was used in determining unmet water needs.
3. ALTERNATIVE SCREENING				
a. Have both beneficial and adverse effects been adequately evaluated for the selected plan and alternatives?	X			A System of Accounts was developed and analyzed for all alternative plans.

PLAN FORMULATION				
Item	Yes	No	N/A	Comments
b. Has acquisition of necessary land for future project elements been adequately considered?	X			
c. Has a reasonable justification been provided for eliminating alternatives?	X			
4. PLAN SELECTION				
a. Has the National Economic Development (NED) plan been identified and properly evaluated?	X			
b. Have a sufficient number of alternatives been analyzed to define both the lower and upper portion of the net NED benefit curve?	X			
c. Is there sufficient rationale for any recommended departure from the NED plan?			X	
d. Are the reasons for selection of major elements of the recommended plan sound and adequate?	X			
e. Does the selected plan conform to existing policy? If not, have the reasons for departure been adequately documented?	X			
f. Would phased construction be appropriate?	X			Project components have been divided into construction items that would facilitate phased construction and allow benefits to accrue at the earliest possible time.
g. Is the selected plan consistent with applicable comprehensive plans for the area?	X			
h. Have Hazardous, Toxic, and Radiological Waste (HTRW) concerns been addressed?	X			

PLAN FORMULATION				
Item	Yes	No	N/A	Comments
i. Has Risk and Uncertainty Analysis been conducted?	X			
j. Have economic and environmental project outputs been given equal consideration in determining the recommended plan?	X			
k. What coordination has occurred with State, Local, and Federal agencies and have their views been considered in formulating a plan?	X			A team consisting of members from local, state, and Federal resource agencies worked together in formulating alternative plans.
5. REPORT REVIEW				
a. Does the report format follow the most recent guidance?	X			
b. Have all major technical/policy review issues and resolutions been documented?	X			
c. Is the technical/policy review certification signature page included?	X			

ECONOMIC AND SOCIAL ANALYSIS

Item	Yes	No	N/A	Comments
1. GENERAL				
a. Have the National Economic Development (NED) benefits been evaluated in accordance with appropriate guidelines and procedures? If not, are acceptable reasons for deviation from standard procedures furnished?	X			
b. Are the assumptions regarding future alternative conditions clearly stated and justified and are these assumptions reasonable?	X			
c. Have all known NED/NER benefits been included in the benefit estimate?	X			
d. Are the economic projections reasonable?	X			
e. Have methodologies and assumptions been explained in sufficient detail?	X			
f. Is the information and data adequate to reasonably support the benefit estimate?	X			
g. Is the without-project condition reasonable and does it actually reflect how non-Federal interests will act if the resource under study is not developed?	X			
h. Have possibilities of windfall benefits and appropriate special cost sharing been thoroughly investigated?	X			
i. Are average annual benefits on the same time basis as average annual costs?	X			

ECONOMIC AND SOCIAL ANALYSIS

Item	Yes	No	N/A	Comments
j. Have possible negative economic impacts been adequately considered and evaluated?	X			
k. If NED employment benefits are claimed, is the area still eligible?	X			
l. If, as a result of investigations between planning and regulatory staffs, it is apparent that an activity to be conducted by a project beneficiary is not in the public interest, have the projected economic benefit(s) associated with that activity been eliminated?	X			
m. Have Section 122 significant resource items been addressed?	X			
n. Has adequate consideration been given to tradeoffs between economic and environmental effects?	X			
o. Do the combined beneficial NER, NED and Environmental Quality (EQ) effects outweigh the combined adverse NED and EQ effects?	X			
p. Are separable features, including mitigation measures, incrementally justified?	X			
q. Does the report state the benefit-cost ratio for the recommended plan assuming existing conditions prevail over the period of analysis?	X			
r. Has recreational development or losses imposed by project implementation been adequately determined with economic evaluation and shown in the chart of accounts?	X			

ECONOMIC AND SOCIAL ANALYSIS

Item	Yes	No	N/A	Comments
s. Does the interest rate and amortization period conform to present practice?	X			
t. Has a current price level been used?	X			
u. Have induced impacts and associated costs been given proper treatment?	X			
v. Have cost estimates and annual charges been determined for mitigation and environmental projects?	X			
w. Have all project costs incurred by the local sponsor been included?	X			
Has interest during construction been correctly calculated and included in the economic analysis?	X			
2. FLOOD CONTROL STUDIES - ESTABLISH INVENTORY OF STRUCTURES				
a. Do the boundaries for the drainage basins encompass all portions of the study area that are expected to experience future flooding?			X	
b. Have the overflow limits been accurately defined on field maps?			X	
c. Are the estimates of structures within the 500-year overflow from the most recent sources available?			X	
d. Has all new development in the overflow area been accounted for?			X	
e. Do the hydraulic relationships appear reasonable?			X	

3. FLOOD CONTROL STUDIES - COMPILE A DATA BASE OF STRUCTURES FOR FLOOD DAMAGE ESTIMATION				
a. If a sample was not taken, are all structures within the overflow area represented in the database?			X	
b. If a sample was taken, do the residential structures in the database represent a random, statistically significant sample of all types of structures in the overflow area and are all commercial structures included?			X	
c. Are the methods used to measure the ground and first floor elevation of each structure in the database reasonable?			X	
d. Is the method to determine the value of each structure in the database defensible and do the values represent current prices?			X	
e. Have all other attributes associated with the structures been accurately represented?			X	
4. FLOOD CONTROL STUDIES - DEVELOP DEPTH-DAMAGE FUNCTIONS				
a. Are the depth-damage functions used for structure and contents damage evaluation internally consistent, logical, and reasonable?			X	
b. Are the depth-damage functions area specific?			X	
5. FLOOD CONTROL STRUCTURES - CALCULATE EQUIVALENT ANNUAL DAMAGES				
a. Is the methodology for calculating damages by structure type for a given year reasonable and defensible?			X	
b. Is the technique used to interpolate estimates of damages between given years accurate and clearly explained?			X	
c. Have all features of the analysis been clearly explained and logically presented?			X	

d. Are these explanations in sufficient detail?			X	
e. Have all assumptions used in the analysis been adequately defended?			X	
f. Are the estimates of damages by flood zone reasonable?			X	
6. FLOOD CONTROL STUDIES--AGRICULTURAL SECTOR: INUNDATION REDUCTION/INTENSIFICATION BENEFITS TO CROPS				
a. Has the project area been adequately evaluated to determine which areas, if any, have significantly different characteristics?	X			
b. Were land use and cropping pattern information for basic crops for without- and with-project conditions appropriately determined for the project area?	X			
c. Were appropriate/adequate sources of land use/cropping pattern data utilized?	X			
d. Have project area lands been appropriately separated into two categories--lands on which cropping patterns are the same with and without the project and lands on which there would be a change in cropping patterns with the plan?	X			
e. Were appropriate/adequate sources of flood-free yield and crop budget/crop production cost data utilized?	X			
f. Were flood-free yield data and crop budget/ crop production cost data appropriately determined for the project area for without- and with-project conditions?	X			
g. Were appropriate current (current fiscal year) normalized agricultural crop prices used in crop benefit analysis?	X			

h. Has each proposed plan been evaluated to determine changes in net income over without-project conditions for those lands on which cropping patterns do not change?	X			
i. Has each alternative been evaluated to determine effects on frequency and duration of excessive soil moisture, frequency and duration of inundation, reduced damage from inadequate soil moisture during the growing season, and reduced damage from erosion?	X			
j. Have appropriate farm budgeting techniques been utilized to measure changes in net income from reduced damage to crops and reduced costs of production?	X			
k. Does the crop damage analysis take into account replanting and the potential for substitution with alternate crops when flooding prevents planting of primary crop and is associated loss in net income included?	X			
l. Does area-frequency data adequately reflect flooding conditions for without- and with-project conditions? Are there sufficient historical flood record data to indicate the existing/future flood problems in the project area?	X			
m. Have intensification benefits for acreages of "basic" crops and "other" crops been appropriately and thoroughly addressed?	X			
n. Has appropriate farm budget or land value evaluation method been chosen for estimating benefits for lands on which cropping patterns changed?	X			

o. Does change in cropping patterns increase the acreage of "other" crops and, if so, has an appropriate assessment of "other" crops been made pursuant to ER 1105-2-100?	X			
p. Has the potential and extent of project- induced flooding/flood damages been addressed?	X			
q. Have the sources, derivation, and application of projection factors been addressed?	X			
r. Have benefits been included in the benefit analysis considered usable project increments as construction is completed?	X			
s. Were projected benefits annualized (converted to annual equivalent values) based on use of appropriate project economic life and current Federal interest rate factors?	X			
t. Have damages or additional costs accruing to the project area from sediment damage or removal of sediment from roads, culverts, channels, etc., been appropriately and adequately addressed?	X			
7. FLOOD CONTROL STUDIES--AGRICULTURAL SECTOR: INUNDATION REDUCTION TO OTHER AGRICULTURAL PROPERTIES AND ENTERPRISES				
a. Have all other agricultural improvements/ enterprises been inventoried (number, type, use, location, etc.) and flood damages assessed? ((These other improvements/enterprises include catfish farm operations, grain storage bins and other storage facilities, barns/sheds, shops, agricultural non-crop items (farm roads, fences, drainage ditches, supplies, etc.) etc.))	X			

b. Do procedures/methodology used to assess flood damages/construct stage-damage curves appear reasonable? Were damage factors based on site-specific surveys of affected improvements/enterprises?	X			
c. Are estimates of flood damage to other agricultural properties/enterprises based on use of frequency method of analysis (flood depths or stages associated with applicable frequency of occurrence of flooding)?	X			
d. Has the analysis of flood damage to these other agricultural improvements/enterprises been conducted for without- and with-project conditions?	X			
e. Are benefits to the items appropriately projected? Basis for projection factors used?	X			
f. Have projected benefit values been annualized (converted to annual equivalent values) using appropriate project economic life and current Federal interest rate factors?	X			
8. NAVIGATION STUDIES				
a. Has the historical traffic been identified for all waterway segments?			X	
b. Have Waterborne Commerce Statistics Center (WCSC) and Lock Performance Monitoring System (LPMS) traffic data been reviewed and reconciled?			X	
c. Does the selected base-line traffic reflect a representative volume and distribution of existing waterway activity? Is it a reasonable point from which to base traffic projections?			X	

d. Has the without-project condition been clearly defined with all assumptions fully identified?			X	
e. Does the without-project condition reflect actual industry practice?			X	
f. Have traffic projection methodologies been fully described and have all secondary sources been documented?			X	
g. Does the projected traffic seem reasonable?			X	
h. Do transportation rates reflect ultimate origins and destinations? Have all handling and transfer charges been included?			X	
i. Have all models and methodologies been fully documented? Is the logic defensible and based on sound economic principles?			X	
j. Have all model inputs been fully described and documented?			X	
k. Has sampling been employed to generate any inputs? If so, have sound statistical techniques been used?			X	
l. Are model outputs adequately calibrated to base-line conditions?			X	
m. Have benefits been calculated for each reasonable increment of waterway/project?			X	
n. Has a sensitivity analysis been prepared that describes benefits for significant specific scenarios?			X	
o. Has the efficiency of nonstructural/small-scale measures been evaluated?			X	

9. FINANCIAL ANALYSIS				
a. Has a statement of local sponsor financial capability been provided?	X			
b. Has a local sponsor financing plan been provided?	X			
c. Has a Commander's Assessment of the local sponsor financing plan been prepared?	X			
d. Does the report include the sponsor's project-related yearly cash flows (both expenditures and receipts where cost recovery is proposed), including provisions for major rehabilitation and operational contingencies and anticipated, but uncertain, repair costs resulting from damages from natural events?	X			
e. Does the report indicate the sponsor's ability to finance its share of the project cost and to carry out project implementation operation, maintenance, and repair/ rehabilitation responsibilities?	X			
f. Does the report state the most appropriate means for raising additional non-Federal financial resources, including those necessary to create special assessment districts (flood control) or to impose fees (commercial navigation) where available resources are not sufficient?	X			

ENVIRONMENTAL ANALYSIS

Item	Yes	No	N/A	Comments
1. GENERAL				
a. Have the necessary technical studies and coordination been conducted in accordance with National Environmental Policy Act of 1969 (NEPA) and other applicable environmental laws?	X			
b. Have the environmental impacts of all reasonable alternatives been properly evaluated and displayed?	X			
c. Has mitigation of adverse effects been considered in each alternative plan?	X			
d. Has the appropriate level of coordination between Environmental, Engineering, and Real Estate branches occurred?	X			
e. Have secondary project impacts been addressed?	X			
f. Will the activity to be conducted by a project beneficiary necessitate a Department of the Army regulatory permit, and if so, has the activity been discussed?	X			
g. If an activity to be conducted by a project beneficiary may not be found in the public interest (i.e., the beneficiary is unable to obtain Section 404 permits), have the projected environmental benefit(s) associated with that activity been eliminated?			X	

2. DRAFT NEPA AND RELATED DOCUMENTS				
a. Has a Notice of Intent been prepared and published in the Federal Register?	X			
b. Have all plans and alternatives been evaluated?	X			
c. Has a scoping process been scheduled and/or conducted to discuss proposed alternatives and solicit comments on issues?	X			
d. Has the environmental setting been described for the study area and at the locations of the proposed alternatives?	X			
e. Have the significant and special interest resources been identified for the study area and at the locations of the proposed alternatives?	X			
f. Have the future conditions without the project been prepared to describe the future conditions of the significant environmental resources?	X			
g. Have the impacts to significant environmental resources been assessed to determine the direct and indirect impacts of all study alternatives on significant resources?	X			
h. Have the future with- and without-project ecological benefits been assessed with a habitat-based analysis system [i.e., Habitat Evaluation Procedures (HEP), Wetland Value Assessment (WVA), or some other approved HQUSACE model etc.]?	X			
i. Have fish and wildlife mitigation measures been included in the proposed alternatives?	X			

2. DRAFT NEPA AND RELATED DOCUMENTS				
j. Have environmental measures been formulated to develop appropriate environmental features?	X			
k. Were environmental features coordinated with the project managers and design engineers?	X			
l. Was an endangered species Biological Assessment (BA) prepared to assess impacts and coordinated with National Marine Fisheries Service (NMFS) and U. S. Fish and Wildlife Service (FWS) and is there a letter of concurrence (biological opinion)?	X			BA has been prepared, but no BO has been received.
m. Was there coordination with FWS? Was a Fish and Wildlife Planning Aid Letter or Coordination Act Report prepared?	X			
n. Was State Water Quality Certification (WQC) applied for, WQC public notice prepared, and coordinated with the appropriate state Department of Environmental Quality (DEQ)?			X	WQC will be requested during public review of draft EIS.
o. Was a Coastal Zone Consistency Determination prepared and coordinated with appropriate state agency?			X	
p. Were a Section 404(b)(1) evaluation prepared and a Section 404 public notice prepared and distributed to the public?	X			The evaluation has been prepared, but no public notice has been distributed. Notice will be given during public review period.
q. Was a state Scenic Rivers Permit request prepared?			X	

2. DRAFT NEPA AND RELATED DOCUMENTS				
r. Was a Farmland Impact Rating Assessment form prepared and the proposed actions coordinated with local and state Natural Resources Conservation Service (NRCS) activities?	X			
s. Were appropriate environmental appendixes prepared and included in the report?	X			
t. Was a monitoring plan prepared and coordinated with state agencies?			X	
u. Was the Preliminary Draft Environmental Impact Statement (PDEIS) prepared as outlined in ER 200-2-2?	X			
v. Was the DEIS submitted for District review comments? Were revisions made?	X			
w. Was input provided to assist the preparation of the Planning Guidance Memorandum (PGM)?			X	
x. Were transmittal letters prepared and properly staffed to submit the DEIS for public and agency review?			X	
y. Has a public meeting been conducted or planned to respond to public inquiries?	X			Scoping meetings have been conducted. Another public meeting will be held during review of DEIS.
z. Was adequate coordination documented between National Environmental Policy Act (NEPA) (Sec. 101(b)(4)) and National Historic Preservation Act (NHPA) (36 CFR 800.14)?	X			
aa. Are locations of sensitive cultural resource sites adequately protected from NEPA document "advertising" to vandals (NHPA Sec. 304)?	X			

3. FINAL NEPA AND RELATED DOCUMENTS				
a. Have responses to public comments on DEIS been prepared?			X	
b. Were CEMVM, Feasibility Review Conference (FRC), and HQUSACE comments incorporated into the Final Environmental Impact Statement (FEIS)?			X	
c. Has the Public Involvement Appendix (incorporates public and agency comments and our responses) been prepared?	X			The appendix contains the post scoping document. Following review of DEIS, all comments and responses will be disclosed in the FEIS.
d. Does the final Fish and Wildlife Coordination Act Report include public comments and state wildlife agency endorsement?			X	
e. Has the FEIS been sent forward for filing with EPA and to accompany the final feasibility report?			X	
f. Has the FEIS been developed and coordinated in accordance with ER 200-2-2?			X	
4. Hazardous, Toxic, and Radiological Waste (HTRW)				
a. Did the Phase I assessment incorporate land use history, site visits/characterization, agency records review, and aerial photography analysis?	X			
b. Was an initial Phase I HTRW assessment performed? Depending on the results, has a Phase II HTRW been scoped?	X			Phase II not required.
c. Has avoidance of potential HTRW problems been incorporated into alternative plans?	X			

5. MITIGATION				
a. Have existing and future without-project conditions been developed?	X			
b. Have the project impacts been described and impacts quantified with a habitat-based method?	X			
c. Have all reasonable mitigation alternatives been adequately addressed?	X			
d. Were incremental analyses conducted and the project benefits calculated with mitigation?				In progress.
e. Does the mitigation report follow the appropriate format for authorization?				In progress.
f. Was the appropriate NEPA and related documents prepared for the preferred mitigation alternative?				In progress, analysis on-going.
6. CULTURAL RESOURCES				
a. Has a literature and records review been completed including consultation of the appropriate state site file database, site maps, and survey maps?	X			
b. If applicable, has the state Comprehensive Archeological Plan been consulted?	X			
c. Has preliminary consultation with the State Historic Preservation Officer (SHPO) been completed and documented by formal letter?	X			
d. Has the appropriate level of coordination between cultural and other offices occurred?	X			On-going.

e. Have the necessary cultural resource studies been conducted in accordance with the National Historic Preservation Act (NHPA) and other applicable cultural resources laws and regulations?	X			Not complete, but on going.
f. Was coordination completed with the SHPO?	X			On-going.
g. If applicable, was coordination completed with the Advisory Council on Historic Preservation?			X	At this point there is not a need for coordination.
h. Is cultural resources input included in the report if a land use history for Phase I HTRW assessment was performed?	X			
i. Has coordination with Native Americans required by the Native American Graves Protection and Repatriation Act of 1990 or other applicable laws, regulations, and guidance been completed?			X	The Quapaw Tribe has been consulted. Currently in the process of determining which other tribes to consult with.
j. If applicable, have all artifacts been curated in accordance with 36 CFR 69 "Curation of Federally-Owned and Administered Archeological Collections"?			X	Artifacts are still being analyzed.
k. If Federal lands are directly involved with the proposed project, is applicability of NHPA Sec. 110 and other applicable laws, regulations, and guidelines clearly explained?			X	No Federal lands are directly involved.
l. Have copies of final cultural resources reports been furnished to the SHPO and any appropriate organizations?				On-going.
m. Are cultural resources issues left incomplete at this stage of planning clearly described for all interested parties?	X			

n. Are costs of incomplete planning or mitigation actions for cultural resources estimated?	X			
o. Are unusually high costs of completing planning or mitigation actions anticipated, and if so, are such explained clearly and coordinated with NEPA, economic analysis, and other documents?		X		
p. Are special problems, complexity, or characteristics of cultural resources pertinent to the proposed project clearly identified?	X			Subject to change.
q. Does the magnitude of the proposed project warrant implementation of or planning for an MOA agreement among USACE, SHPO, Advisory Council on Historic Preservation, and other parties? If so, if this issue fully explained?	X			SHPO has requested.
r. Is Area of Potential Effect clearly discussed, and coordinated with NEPA statements elsewhere?	X			
s. Are Federal lands managed by other agencies or other public lands with cultural resources associated with the project? If so, is coordination made?		X		
t. Is there potential for this project to bring unlawful vandalizing of cultural resource sites in or adjacent to the project area?		X		
u. Are "off project" borrow pits, access roads, or other earth disturbing activities anticipated and accounted for?	X			To the extent possible at current level of design.

7. RECREATION / ESTHETIC				
a. Have the necessary recreational and esthetic studies and coordination been conducted in accordance with the National Forest Conservation Act (NFCA) of 1994, the Federal Public Works Act (FPWA) of 1965, and the Water Resources Development Act (WRDA) of 1986, Land and Water Conservation Fund Act, and appropriate Corps regulations?	X			
b. Has the assessment of adverse effects dealing with recreation and esthetic conditions been considered in each alternative plan?	X			
c. When significant impacts are imposed on the esthetic environment, has a procedure, such as the Visual Resources Assessment Procedure, Corps of Engineers Waterways Experiment Station (CEWES) Instructional Report EL-88-1, or comparable method, been used to assess esthetic degradation?	X			
d. Has coordination with the state's Department of Culture, Recreation, and Tourism been conducted and the State Comprehensive Outdoor Recreation Plan been consulted concerning proposed recreational development by others?	X			
e. Has appropriate NED unit day values been assessed via Economic Guidance Memorandum, Unit Day Values for recreation? Are current fiscal year rates being used?			X	

f. Has recreational or esthetic development been documented through supply and demand analysis?	X			
g. Have recreational and esthetics been included as significant resources within the EIS?	X			
h. If recreation benefits are claimed, is an adequate description of the competing facilities and their existing and expected future use with and without the proposed project included? Are there impacts on peak versus average use in the with- and without-project conditions?			X	

ENGINEERING DIVISION

Item	Yes	No	N/A	Comments
1. GENERAL				
a. Does the hydrologic and hydraulic engineering analysis conform to Engineer Technical Letter (ETL) 1110-2-230?	X			
b. Is the supporting engineering data of sufficient detail to adequately describe the proposed design?	X			
c. Have adequate subsurface investigations been made to reasonably assure that the foundation is satisfactory?	X			68 undisturbed and general borings and more than 300 cone penetrometer borings were taken.
d. Is the proposed project based on sound engineering and will the intended purpose be performed over the life of the project?	X			
e. Is the construction schedule and period reasonable? Can the project be constructed in phases to achieve some partial benefits?	X			
f. Are there any potential problems which could result from structural failure or operational procedure? If so, are measures proposed or available to minimize or eliminate the impact?		X		
g. Are there any potential problems which could result from a catastrophic natural event? If so, are measures proposed or available to minimize or eliminate the impact?		X		

ENGINEERING DIVISION

Item	Yes	No	N/A	Comments
h. Have local engineering design criteria been considered? Less stringent standards and (cost effective) innovative technology may be acceptable when lives are not endangered.	X			USBR design criteria for pipelines and water control structures when safety was not an issue and design integrity was impacted.
i. Have adequate field investigations been conducted?	X			Numerous data gathering field trips were conducted.
j. Have adequate investigations been conducted to identify affected facilities and utilities for possible relocation? Have relocations plans been coordinated with utility owners?	X			A thorough field investigation was accomplished to identify affected facilities and utilities.
k. Have alternative alignments been considered for project cost savings?	X			
l. Has a stability analysis been prepared and used in developing the design plans?	X			Analysis include: channel slope stability, structural excavation stability and sliding, overturning, bearing and settlement on structures.
m. Have the proposed structures been properly sized?	X			
n. Is the selected project constructible and operable?	X			
o. Do the mechanical and structural designs conform to current guidance?	X			
p. Do the overflow maps accurately show flooded areas?	X			
q. Are stage-frequency curves representative of known flooding depths? Does the model reflect actual damage conditions?	X			
r. Have local design plans been identified and analyzed as potential alternatives?	X			

ENGINEERING DIVISION

Item	Yes	No	N/A	Comments
s. Have periodic meetings been held with local representatives to determine if the alternative plans are acceptable?	X			Numerous group and individual meetings were conducted throughout the study process to receive local input and present study findings.

COST ENGINEERING				
Item	Yes	No	N/A	Comments
a. Does the cost estimate presented have the endorsement of the Cost Engineer assigned to the study team?	X			
b. Does the cost estimate presented reflect the recommended plan with all revisions?	X			
c. Is the project estimate divided according to the anticipated construction contracts?	X			Large "construction contract areas" may actually consist of more than 1 contract.
d. Are all the expected cost elements present for this type project (see code or chart of account)? An example would be turfing for channel backfill and berm areas.	X			
e. Are the unit costs for the cost elements in a comparable range with the Memphis District Historic Cost Item database?	X			Grand Prairie cost models (based on detailed P&S) was used as a model for costs. Some elements had design refinements after reviewing the costs.
f. Does the cost estimate technical documentation compare favorably with the general report project description?	X			
g. Do the presented design quantities, especially for the major determining cost elements, appear proportionate and reasonable?	X			
h. Do they agree with other quantities listed in the technical appendices of other disciplines, such as turfing acres verses right of way acres vs. environmentally impacted acres?	X			Quantity checks were performed on major features (LF of pipeline, number of specific HP pumps, etc.).

COST ENGINEERING				
Item	Yes	No	N/A	Comments
i. Are the units of measure consistent with normal bidding practice?	X			
j. Were proper ER procedures followed and professional cost engineering principles used?	X			
k. Have poor job access or remote site locations been accounted for, such as extra costs for road construction, labor per diem, and product delivery?	X			
l. Are contingency factors appropriate for the level of risk perceived in the project construction cost?	X			
m. Were weather factors or possible flooding of the job site taken into account?	X			
n. Were dewatering or unwatering costs applied where necessary?	X			
o. Were proper labor rates and overburden/overtime percentages applied?	X			
p. Were overhead, profit, and mob & demob properly applied to the general contractor and his subcontractors?	X			
q. Were proper equipment and/or rental rates applied and adjusted for current fuel and overtime?	X			
r. Have annual operation and maintenance costs been properly assigned and included in the project costs?	X			
s. Are annual operation, maintenance, and replacement costs reasonable?	X			A special review team was set up to make recommendations to the O&M costs. These were then incorporated.

COST ENGINEERING				
Item	Yes	No	N/A	Comments
t. Have the project costs been properly escalated to agree with current cost and bidding climates?	X			
u. Have the controlling construction cost elements been developed in sufficient detail to assure the accuracy of the construction cost?	X			Two separate review teams were formed to review costs and make recommendations.
v. Do cost summary tables and cost extensions presented check arithmetically?	X			
w. Did the Cost Engineer and reviewer visit the project site?	X			The AE that did the estimate visited many of the sites within the project area.
x. Are engineering and design and supervision and administration charges reasonable and/or in conformance with current experience?	X			
y. Has there been adequate coordination between the designer and cost estimator to identify potential cost savings by use of alternative materials or varying operation and maintenance requirements?	X			This was performed during the special review teams' reviews.

REAL ESTATE DIVISION

Item					Comments
1. GENERAL					
a. Have the rights-of-way submitted by locals been verified?			X		
b. Have adequate field investigations been conducted? Has every attempt been made to stay within existing or apparent right-of-way?	X				
c. Has there been adequate coordination between Real Estate, Engineering, and Environmental branches in evaluating the alternative plans?	X				
d. Has the appropriate level of coordination between Environmental and Real Estate branches occurred, including costs associated with land activities for mitigation and environmental features?	X				
e. Have all land damages and acquisition costs been identified?	X				
f. Has a Compensable Report and/or a Real Estate Supplement been prepared?	X				

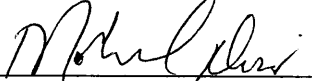
COMPLETION OF INDEPENDENT TECHNICAL REVIEW

The Memphis and Vicksburg Districts have completed the general reevaluation of the Bayou Meto Basin, Arkansas. Notice is hereby given that an independent technical review has been conducted that is appropriate to the level of risk and complexity inherent in the project, as defined in the Quality Control Plan. During the independent technical review, 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 the level of data obtained; and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing Corps policy. The independent technical review was accomplished by an independent team consisting of members from the Memphis and Vicksburg Districts and an A-E contractor.



Technical Review Team Member

10/6/03
Date



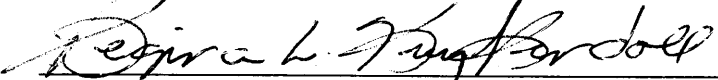
Technical Review Team Member

10/6/03
Date



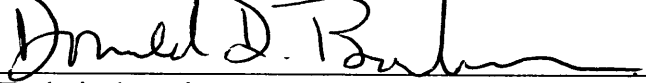
Technical Review Team Member

10/6/03
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Technical Review Team Member

10/7/03
Date



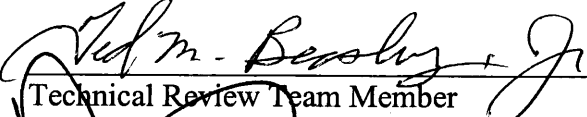
Technical Review Team Member

10/7/03
Date



Technical Review Team Member

10/7/03
Date



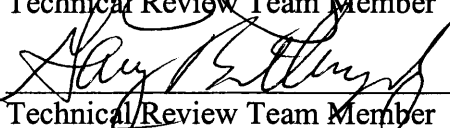
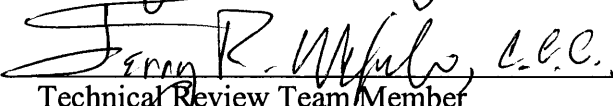
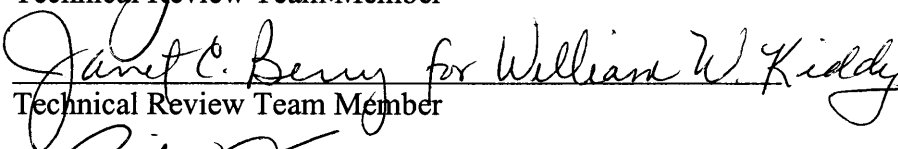
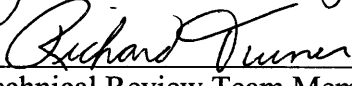
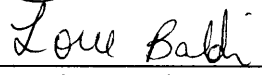
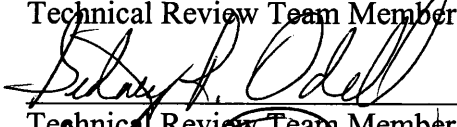
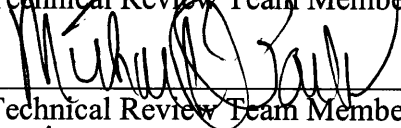
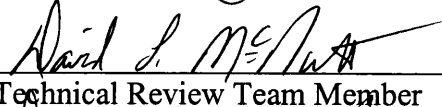
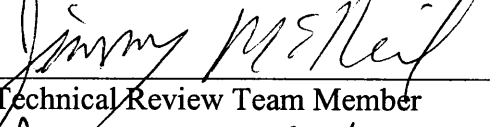
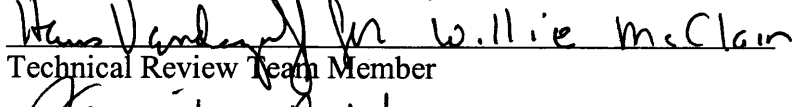
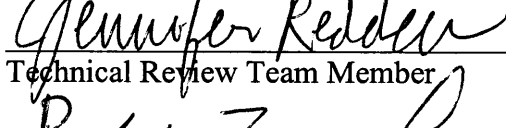
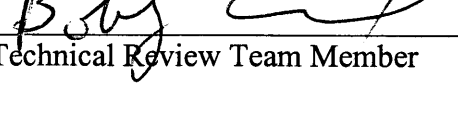
Technical Review Team Member

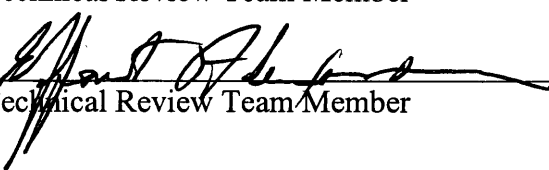
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CERTIFICATION OF INDEPENDENT TECHNICAL REVIEW

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

- 1) MCACES Cost Estimate: A detailed review of the MCACES cost estimate was conducted at the lowest system level by a Special Review Team. Preliminary results focused the review on landowner takeoffs, telemetry, gate valves, pipelines, and E&D and S&A costs.
- 2) O&M Requirements for Agricultural Water Supply Component: A Special Review Team was to conduct a detailed review of project O&M requirements. Results and recommendations from this review were evaluated and incorporated as appropriate.
- 3) Water Losses in Distribution System due to Seepage, Evaporation, and Operation: A detailed review and analyses of expected losses resulting from all factors was performed by a Special Review Team. The revised system losses were incorporated into the analyses and system designs.
- 4) Report Inconsistencies: A Special Review Team was formed to review the report to resolve any inconsistencies in data, quantities, results, etc. and revise any documentation, tables, mapping, etc. accordingly.
- 5) Selected Plan of Improvement: A review of the comprehensive plan of improvement was conducted to assure uniformity with the individual project component findings and results. Necessary changes and revisions were incorporated into the final plan.

As noted above, all concerns resulting from independent technical review of the project have been considered. The report and all associated documents required by the National Environmental Policy Act have been fully reviewed.

for James A Reader
Chief, Planning, Programs, and Project Management Division

9 Oct 03
Date

Dennis J. Kemper
Chief, Engineering Division

9 Oct 03
Date

Robert D. Cook
Chief, Construction-Operations Division

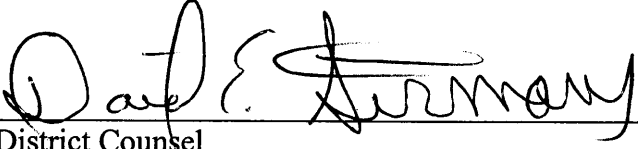
9 Oct 03
Date

Henri Vandenberg
Chief, Real Estate Division

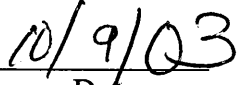
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CERTIFICATION OF LEGAL REVIEW

The general reevaluation report for the Bayou Meto Basin, Arkansas project, including all associated documents required by the National Environmental Policy Act, has been fully reviewed by the Office of Counsel, Memphis District, and is approved as legally sufficient.



District Counsel



Date

ITR REVIEW
MARCH-JULY 2006



Reply to
Attention of:

DEPARTMENT OF THE ARMY
MEMPHIS DISTRICT CORPS OF ENGINEERS
167 NORTH MAIN STREET B-202
MEMPHIS TN 38103-1894

CEMVM-PM-P

14 March 2006

MEMORANDUM FOR Commander Mississippi Valley Division, ATTN: CEMVD-PD-KM
(Tommy Shelton), 1400 Walnut Street, Vicksburg, MS 39181-0080

SUBJECT: Bayou Meto Basin, AR Certification of Independent Technical Review and
Certification of Legal Review

1. From August 1999 to September 2003, the Bayou Meto Basin, AR Project progressed from the identifying problems and opportunities stage, to a draft General Reevaluation Report (GRR) and Environmental Impact Statement (EIS) submitted for Mississippi Valley Division (MVD) review. During this time, In-Progress Reviews and Internal Review Conferences were held in October 1999, February 2002, and May 2003.
2. In September 2003, the Draft GRR and Draft EIS were sent to MVD for review and comments were received in November 2003. These comments were addressed and the report was changed accordingly.
3. During the MVD review, Memphis District (MVM) undertook a Special Review Team approach within the District in October 2003. Four special review teams were formed to: 1) conduct a detailed review of the cost estimate for the agricultural water supply component; 2) review Operation & Maintenance (O&M) requirements and costs; 3) investigate system water losses for optimum delivery; and 4) identify and resolve inconsistencies in data and revise appropriate documentation, tables, mapping, etc.
4. Report changes were made based on MVD and Special Review Team comments. This draft GRR and draft EIS was forwarded to HQUSACE in March 2004 for policy compliance review.
5. During the policy compliance review of the project, HQUSACE came to the Memphis District in November 2004 to view the project area, meet the non-Federal sponsors of the project, and conduct a General Review Conference to discuss the draft Policy Guidance Memorandum (PGM) submitted to the Memphis District in August 2004. Following the GRC, a revised draft PGM was sent to the District in December 2004, which contained 86 comments. HQUSACE instructed the Memphis District in March 2005 to provide additional responses to 28 of the 86 comments that dealt primarily with economics, real estate, authority, policy, and optimization issues. HQUSACE felt these comments were crucial in getting their approval of the report. We submitted to HQUSACE responses to these 28 comments in April 2005. HQUSACE transmitted the final PGM, which incorporated these 28 responses, in June 2005.

CEMVM-PM-P

SUBJECT: Bayou Meto Basin, AR Certification of Independent Technical Review and Certification of Legal Review

6. Three of the 28 responses sent to HQUSACE, dealt with issues that would require technical analyses to resolve the comment. The 3 comments dealt with 1) the economics projections for with and without project; 2) the cost allocation of the Little Bayou Meto Pump Station and channel work between the flood control and waterfowl management components; and 3) the incremental justification of the waterfowl management component.

7. The economic projections for with and without project condition were based largely on the groundwater projections of the United States Geological Survey (USGS). To clarify, assumptions made in the economic analyses, the Memphis District provided more detailed information in order to explain their methodology. In explaining the methodology, the Memphis District provided additional maps showing the USGS extensive groundwater monitoring program. It was this data from the monitoring program that drove the predictive modeling that was used in forecasting the groundwater shortage. All of this information was forwarded to HQUSACE in February 2005 to expedite the review process.

8. A cost allocation for the Little Bayou Meto (1000 CFS) Pump Station and channel work was accomplished using the Separable Cost – Remaining Benefits (SCRB) method, as directed by HQUSACE. Using the *Hamilton City Flood Damage Reduction and Ecosystem Restoration Project* as an example, HQUSACE felt that this would be an acceptable method to allocate costs between flood control and waterfowl management. The use of this method was coordinated with HQUSACE in October 2005 with the understanding that the application of this method satisfied the requirement addressed by the comment.

9. Much of the additional analysis for the Waterfowl Management Component of the project, as required by the PGM, was contracted to ERDC. They worked with members of the PDT and resource agencies and lead the effort to perform incremental cost analysis which was completed in November 2005.

10. Results of reanalysis were incorporated in the Draft GRR and Draft EIS and these documents were released for public review in December 2005. The final PGM was revised showing the District Actions taken based on the HQ assessment and required actions outlined by HQUSACE. This document was sent to HQUSACE on 19 January 2006, and then again on 26 January 2006.

11. At the direction of HQUSACE, the Memphis District on 07 February 2006 began an independent technical review (ITR) of the GRR on feature changes as a result of the PGM review. On 27 February 2006, the District completed the ITR and the project delivery team began resolving the comments. The revision of the flood control cost estimate and the increasing cost of agricultural water supply construction cost estimate price leveling from 2003 to 2005 were important revisions made to the report.

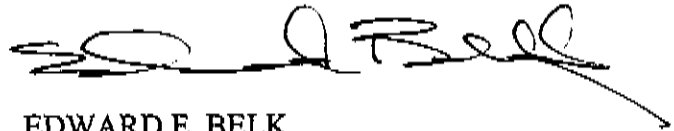
CEMVM-PM-P

SUBJECT: Bayou Meto Basin, AR Certification of Independent Technical Review and Certification of Legal Review

12. Enclosed are the comments from the ITR team with District Actions where applicable, Certification of the Independent Technical Review, and Certification of Legal Review as requested.

13. If you have any questions, please feel free to call Mr. Jim Lloyd at 901-544-3343 or Mr. Tracy James at 901-544-0673.

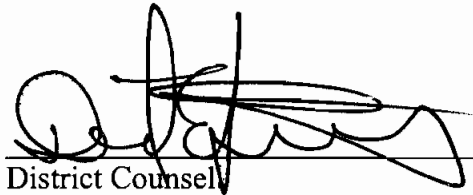
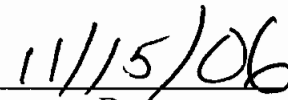
FOR THE COMMANDER:

A handwritten signature in black ink, appearing to read "E. E. Belk", with a long horizontal stroke extending to the right.

EDWARD E. BELK
Deputy for Project Management

CERTIFICATION OF LEGAL REVIEW

The general revaluation report for the Bayou Meto Basin, Arkansas project, including all associated documents required by the National Environmental Policy Act, has been fully reviewed by the Office of Counsel, Memphis District, and is approved as legally sufficient.


District Counsel
Date

CERTIFICATION OF INDEPENDENT TECHNICAL REVIEW

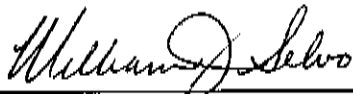
Significant concerns and the explanation of resolution are as follows:

The attached pages are the Bayou Meto, Arkansas Basin Technical Review comments and the Project Delivery Team's responses.



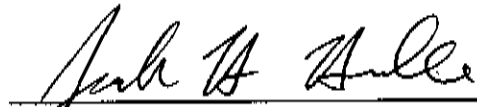
Chief, Planning, Programs, and Project Management Division

3/14/06
Date

for 

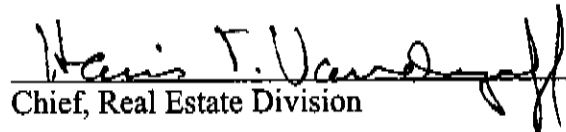
Chief, Engineering and Construction Division

3-14-06
Date



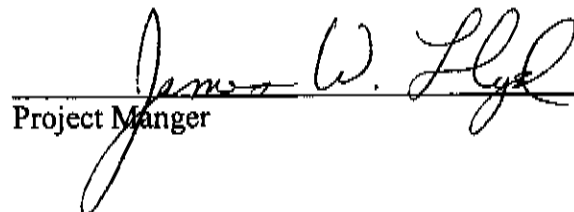
Chief, Operations Division

3-13-06
Date



Chief, Real Estate Division

3/13/06
Date

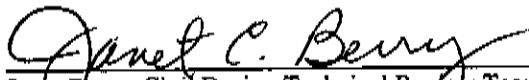


Project Manager

3-13-06
Date

COMPLETION OF INDEPENDENT TECHNICAL REVIEW

This Independent Technical Review covers the technical revisions to the Bayou Meto Basin, Arkansas General Reevaluation Report. The need for the technical revision to the report were identified during development of the 21 June 2005 Policy Guidance Memorandum Supplement. The independent technical review was accomplished by the original team from the Memphis District. Unavailable original team members were replaced by other technically qualified U.S. Army Corps of Engineers employees.


Janet Berry, Civil Design Technical Review Team Member

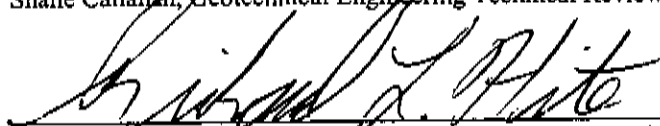
27 Mar 06
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Dave Berretta, Hydraulics & Hydrology Technical Review Team Member

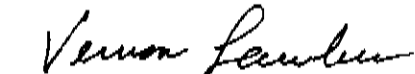
3 MAR 06
Date

for 
Shane Callahan, Geotechnical Engineering Technical Review Team Member

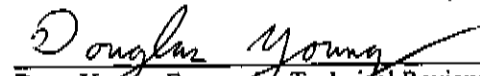
2 Mar 06
Date


Richard Hite, Environmental Technical Review Team Member

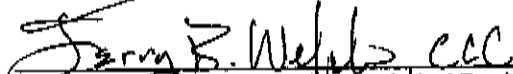
3 MAR 06
Date


Vernon Lawless, Real Estate Technical Review Team Member

2 Mar 06
Date


Doug Young, Economics Technical Review Team Member

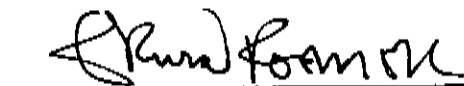
2 MAR 06
Date


Jerry Welch, Cost Engineering Technical Review Team Member

2 Mar 06
Date


Ken Bright, Plan Formulation Technical Review Team Member

3 Mar 06
Date


Erwin Roemer, Environmental Technical Review Team Member

3 MAR 06
Date

ITR 2003 to 2006 for Bayou Meto Basin project

The following are the comments by the Memphis District Independent Technical Review team.

Janet Berry, Civil Design

Dave Berretta, Hydraulics and Hydrology

Shane Callahan, Geotechnical Engineering

Richard Hite, Environmental

Vernon Lawless, Real Estate

Doug Young, Economics

Jerry Welch, Cost Engineering

Ken Bright, Plan Formulation

Erwin Roemer, Environmental

Civil Design PGM ITR Comments

From: Berry, Janet C MVM
Sent: Tuesday, February 07, 2006 10:56 AM
To: Lloyd, James W MVM
Subject: RE: BAYou Meto ITR

Jim,

I have reviewed the comments in the attached document and there are no comments related to Civil Design. Therefore, I have no ITR comments.

Thank you,
Jan Berry

Hydraulics and Hydrology PGM ITR Comments

From: Berretta, David P MVM
Sent: Monday, February 13, 2006 8:40 AM
To: Lloyd, James W MVM
Subject: H&H ITR Review

Jim:

Here is my assessment. If I have missed any comments, please let me know.

16. Comment 3e: Projected Land Use.

This comment has been adequately resolved and Appendix E has been revised.

23. Comment 3l: Other Consumptive Uses of Water.

Page 47 of the Main Report has been revised to include the District Response.

24. Comment 3m: Groundwater Legislation.

The District Response erroneously states "...Title IV of the Arkansas Soil and Water Conservation Commission's Rules and Regulations". However, the revisions to pages 71 and 72 of the Main Report correctly state "...Title IV of the Arkansas Natural Resources Commission's Rules and Regulations".

The Main Report has been revised.

David P. Berretta, P.E.
Chief, Hydraulics and Hydrology Branch
Memphis District Corps of Engineers
901-544-0676

Geotechnical PGM ITR Comments

From: Callahan, Shane MVM
Sent: Monday, February 13, 2006 10:46 AM
To: Lloyd, James W MVM
Cc: James, Tracy M MVM; Selvo, William J MVM
Subject: RE: Bayou Meto ITR

The Bayou Meto draft GRR PGM dated 21 June 2005 was reviewed and no geotechnical engineering issues were found. No comments on this document are being provided by Geotechnical Engineering Branch.

Thanks

Shane Callahan, P.E.
U.S. Army Corps of Engineers, Memphis
Geotechnical Engineering Branch
CE-MVM-EC-G
(901)544-3665
Donald.S.Callahan@us.army.mil

Environmental PGM ITR Comments

From: Hite, Richard L MVM
Sent: Thursday, February 16, 2006 10:44 AM
To: Lloyd, James W MVM
Subject: Bayou Meto: ITR

15 February 2006

I have completed ITR of the 'Policy Compliance Memorandum Supplement' dated June 21, 2005, for the Bayou Meto Basin Project Report. A review of the comments and final District Action follows:

- Pg 1, Comment 2a; Authority Limits – Action complete.
- Pg 5, Comment 2c; Authority for Ecosystem Restoration and Enhancement – Action complete.
- Pg 9, Comment 2i; District responsibilities – Action complete.
- Pg 49, Comment 4g; Mitigation Versus Restoration Terminology – Action completed.
- Pg 49, Comment 4h; Salt Bayou Cleanout and Restoration – Action complete.
- Pg 50, Comment 4i; Mitigation Requirements – Action complete.
- Pg 51, Comment 4j; Waterfowl Benefits – Table 12 has not been revised.

District Response: The table has been revised to show no waterfowl benefits resulting from the water supply component of the project and is in the GRR.

Table 12. BAYOU METO BASIN, ARKANSAS PROJECT Bayou Meto IPA Selected Plan for Water Supply Component Summary of First Costs and Average Annual Equivalent (AAE) Benefits, Costs, Excess Benefits, and Benefit-to-Cost (BCR) Ratio (October 2004 Price Levels, 5.375% Discount Rate)	
BENEFIT/COST CATEGORY	BENEFIT/COST (\$)
FIRST COST	
Import System	\$301,771,000
On-Farm	\$65,000,000
Total (First Cost + Mitigation)	\$366,771,000
ANNUAL BENEFITS	
Irrigation Benefits	\$32,330,000
Waterfowl Benefits	\$0
Total	\$32,330,000
ANNUAL COSTS	
Interest	
Import System	\$19,378,000
On-Farm	\$4,262,000
Sinking Fund	
Import System	\$1,525,000
On-Farm	\$335,000
Operation & Maintenance	
Import System	
Pump Station	\$1,708,000
Small Pump Stations	\$632,000
Structures	\$614,000
Canals & Streams	\$101,000
On-Farm	\$856,000
Total	\$29,411,000
EXCESS BENEFITS	\$2,919,000
BCR	1.10

- Pg 54, Comment 5A; NER Requirement – Action complete.
- Pg 54, Comment 5b; Ecosystem Restoration Authority – Action complete.
- Pg 67, Comment 7a; PDEIS Page numbers – Action complete.

- Pg 67, Comment 7c; Mitigation Lands – Monitoring requirements and responsibilities have not been identified.

District Response: The local sponsor will be the responsible party for monitoring mitigation lands to ensure the success of the efforts. The monitoring responsibilities and requirements will be specified in the PCA.

6.134 HEP was used to determine the mitigation required for direct construction impacts to BLH; while HGM was used to assess hydrologic changes to project wetlands. Mitigation requirements for impacts to cleared lands were determined using an HGM-derived multiplier supplied by Dr. Charles Klimas. The total mitigation acreage required to offset impacts that would result from the implementation of the tentatively selected plan is 4,093 acres which would be acquired in fee title. The local sponsor will be the responsible party for monitoring mitigation lands to ensure the success of the efforts. The monitoring responsibilities and requirements will be specified in the PCA. Preference would be given to lands adjacent to current state holdings, such as the Bayou Meto WMA.

- Pg 71, Comment 8g; Prairie Restoration – Action complete.
- Pg 75, #86, Other Issues; Waterfowl Management Measures Ranking – Action complete.

Richard Hite
Environmental Team Leader

Real Estate PGM ITR Comments

From: Lawless, Vernon MVM
Sent: Friday, February 17, 2006 1:50 PM
To: Lloyd, James W MVM
Subject: Bayou Meto draft GRR PGM ITR - Real Estate

ITR attached

Vernon Lawless
Lead Appraiser, USACE, Memphis District
Tel: 901-544-0379 FAX: 901-544-4055
michael.v.lawless@mvm02.usace.army.mil

ITR – BAYOU METO DRAFT GRR SUPPLEMENT PGM 21 JUN 05, REV 19 JAN 06
REAL ESTATE COMMENTS
Provided By VERNON LAWLESS, RE-E

Page Para# Comment

33 30. 3s: Conservation Easement
37 31. 3t: Channel Improvement Easement
55 51. 5d: Ecosystem Restoration Conservation Easements
74 85. Other Issues – Willing Seller

The final District Actions taken with the issues in the above items were resolved and technically appropriate with the exception of the following HQ concerns:

Why is this a willing seller acquisition? And, approval for acquiring Fee vs. Easement?

After receiving the District responses, HQ replied that it is a policy question whether easements should be provided to the project for environmental purposes instead of fee, and whether the conservation and restrictive channel improvement easements are appropriate for the project.

Language was changed in both the conservation easement and restrictive channel improvement easement and submitted to HQ through MVD on June 20, 2005 via e-mail, but no response from HQ was forthcoming to date.

District Response: No action required.

39 33. 3v: Attorneys Opinions of Compensability

The final District Action was "Based on discussion with MVD Real Estate, attorney's opinions of compensability will be done prior to the construction of each feature of the project." This does not appear to be resolved with HQ and will be considered with the HQ approval of the GRR.

District Response: No action required.

Items Resolved and Technically Appropriate

Page Para# Comment

38 32. 3u: Aquaculture Pond Draining and Relocation

52 45. 4l: Non-Standard Channel and Levee Improvement Easement

Required Action: Amend the Non-Standard Channel and Levee Improvement Easement estate to delete the phrase “public roads and highways, public utilities...”.

District Response: Changes to this estate were overlooked in preparation of the report for public review. Changes to this estate will be made in the final submission of Volume 11 of the GRR.

53 46. 4m: Non-Standard Clearing and Snagging easement

Required Action: “Amend the Non-Standard Clearing and Snagging Easement estate to delete the word “construct” and the discussion of severance damages.

District Response: Changes to this estate were overlooked in preparation of the report for public review. Changes to this estate will be made in the final submission of Volume 11 of the GRR.

54 47. 4n: Title III Costs

56 52. 5e: Conservation Easements and Timber Harvest

ITR ISSUES NOT RESOLVED or ERRORS/OMMISSIONS

Page Para# Comment

57 53. 5f: Ecosystem Restoration Land Costs

This PGM comment includes RE costs in the overall context of the total project costs, and was addressed in Vol. 1 Main Report outside of the Real Estate Plans (REPs).

ITR: Since there are some acreage/cost discrepancies, need to recheck the costs for the LERRDS columns in Tables 85-88 on pages 303-306.

See comments following regarding acreage/cost discrepancies.

District Response: Revisions have been made and are reflected in the addendum and will be included in the final GRR.

66 67. 6l: Real Estate Interests

MVM and MVK prepared REPs for separate project components.

ITR: There are several discrepancies in acreage and associated costs between Vol. 1 Main Report and the REPs in App. G & H Vol. 11. They are as follows:

The draft GRR cites 2427 acres related to Flood Control for project construction on page 171 of Vol. 1 Main Report. The Flood Control REP states on page 2 of Vol. 11 App. H that project construction will require 2710 acres.

Chart of Accounts, App. G and H vs. table footnoted "BM Cost Est FF Oct 05 Revision (JSNM).xls" (supplied to me by Tracy James) used to supply Baseline Cost Estimates for the Main Report.

See summary table on following page.

Water Supply Lands & Damages from Vol. 11 App. G Chart of Accounts			
Item	Proj Cost	Oct 05 Rev	Diff
1	\$245,000	\$245,000	
2	\$1,079,000	\$1,079,000	
3A	\$804,000	\$804,000	
3B	\$957,000	\$909,000	-\$48,000
4	\$717,000	\$717,000	
5	\$4,044,000	\$4,044,000	
6	\$1,491,000	\$1,491,000	
7A	\$1,790,000	\$1,790,000	
7B	\$1,223,000	\$1,325,000	\$102,000
8	\$64,000	\$64,000	
9	\$387,000	\$387,000	
10	\$845,000	\$845,000	
11	\$678,000	\$678,000	
12	\$116,000	\$115,000	-\$1,000
13	\$69,000	\$69,000	
14	\$56,000	\$56,000	
15	\$130,000	\$130,000	
16	\$166,000	\$166,000	
17	\$1,988,000	\$1,988,000	
Mit	\$1,955,000	\$1,816,000	-\$139,000
Total	\$18,804,000	\$18,718,000	-\$86,000
Waterfowl	\$45,604,000	\$41,846,036	-\$3,757,964
Flood Control Lands & Damages from Vol. 11 App. H Chart of Accts			
Item	Proj Cost	Oct 05 Rev	Diff
1	\$49,965	\$27,291	-\$22,674
2	\$388,740	\$215,172	-\$173,568
3	\$84,965	\$82,509	-\$2,456
4	\$689,890	\$669,940	-\$19,950
5	\$299,323	\$290,662	-\$8,661
6	\$772,178	\$749,849	-\$22,329
7	\$161,790	\$157,492	-\$4,298
8	\$515,562	\$500,651	-\$14,911
9	\$199,023	\$193,261	-\$5,762
Mit	\$10,148,220	\$11,277,684	\$1,129,464
	\$13,309,656	\$14,164,511	\$854,855

Vol. 1 Main Report Table 10 on page 111 for the Water Supply Component contains a figure of \$18,718,000 for Account No 01 Lands and Damages. This matches the number above in Column "Oct 05 Rev" for the total. The REP chart of accounts in Vol. 11 App. G totals \$18,804,000, a difference of \$86,000.

Also, see comment below regarding acreage corrections for mitigation lands in Water Supply and Flood Control components.

Cost Engineering will be supplied with figures so their project cost tables match items 3B, 7B, and 12 of the water supply REP.

District Response: Revisions have been made and are reflected in the addendum and will be included in the final GRR.

67 72. 7c: Mitigation Lands

Required Action: Revise the report discussion on mitigation to (1) indicate that the lands will be acquired in fee title; (2) disclose the general location; (3) disclose the OMRR&R and monitoring requirements; and (4) address the related responsibilities.

District Action: The report was revised per comment. (See page 177 of the Main Report and paragraph 6.134 of DEIS).

ITR: For Water Supply, the draft GRR cites 1324 acres to be purchased in fee for mitigation on page 107 of Vol. 1 Main Report. Page 106 references 1178 acres of ag cropland to be acquired for mitigation purposes. The 1178 amount appears to be in error.

Vol. 11 App. G page 2 of the Water Supply REP cites 1189.5 acres to be acquired, but does not state in fee. It has been confirmed that the Gross Appraisal and Baseline Cost Estimate did calculate fee. This number of acres was based on a previous figure that was later revised to 1324 acres but not changed in either the REP or the Baseline Cost Estimate.

District Response: Appendix to the REP will include the revised mitigation acreage of 1324 with updated costs associated with this change. Cost Engineering will be supplied with the new mitigation cost.

ITR: For Flood Control, the draft GRR cites 2769 acres to be purchased in fee for mitigation on page 172 of Vol. 1 Main Report. Vol. 11 App. H pages 2 and 3 of the Flood Control REP cite 6578 acres to be purchased in fee for mitigation. This number of acres was based on a previous figure that was later revised to 2769 acres but not changed in either the REP or the Baseline Cost Estimate.

The corrected mitigation acres to be acquired in fee were confirmed with Ed Lambert, referencing an e-mail dated 8 Feb 06 "Bayou Meto Mitigation" whereby total project mitigation in fee for BLH (Bottomland Hardwoods) is 4093 acres (1324 + 2769).

District Action refers to paragraph 6.134 of DEIS. I found no such paragraph.

District Response: Revisions have been made and are reflected in the addendum and will be included in the final GRR.

70 77 8e: Historic Cemeteries

Required Action: "... the Real Estate Section of the draft report will need to describe how the cemeteries will be handled."

ITR: Vol. 11 App. H Flood Control REP does not address Cemeteries.

District Response: Cemeteries will be avoided and language will be added to the flood control REP.

Economics

PGM ITR Comments

From: Young, Douglas B MVM

Sent: Friday, February 17, 2006 2:59 PM

To: Lloyd, James W MVM; James, Tracy M MVM; Donlon, William E MVM; Young, Matt P MVM; Learned, Robert MVM

Subject: Economic ITR for the Bayou Meto Basin Policy Guidance Memorandum

Jim,

I have completed the Economic ITR for the Bayou Meto Basin Policy Guidance Memorandum (PGM).

My review of the comments and the final District action is attached.

Douglas Young

CEMVM-RE-E

17 February 2006

SUBJECT: ITR for the Bayou Meto Basin Policy Guidance Memorandum

I have completed ITR of the Policy Guidance Memorandum (PGM) for the Bayou Meto Basin Project Report. A review of the comments and final District Action follows:

(Page 9) - 12. Comment 3a: Socio-economic Profile. - The ownership distribution table needs to be added to the report.

District Response: Revisions have been made and will be included in the final GRR.

(Page 11) - 13. Comment 3b: Normalized Crop Prices. - PGM action complete - Volume 11 page F-25, states that, "...CACFDAS input data were calculated using FY 04 current normalized prices." (Note: FY 05 current normalized prices have been published and are available. Recommend revising only the recommended plan using FY 05 prices in an Addendum.)

District Response: Revisions have been made and will be included in the final GRR.

(Page 12) - 14. Comment 3c: Irrigation System Benefits. - Action complete - See Comment 16 for supporting information.

(Page 12) - 15. Comment 3d: Projected Crop Yields. - Action complete - Volume 11 page E-22, states that, "A detailed description of how these factors were derived can be found in Appendix F prepared by the Vicksburg District." The projection factors are presented in Table E-9.

(Page 15) - 16. Comment 3e: Projected Land Use. - Action complete - Volume 11 page E-5, the water budget analysis for both without-project and with-project conditions was based on the USGS study (Water-Resources Investigations Report 03-4109). The saturated thickness of the aquifer in the Bayou Meto project area for years 2009, 2019, 2029, 2039, and 2049 are shown in

Figures E-2 thru E-6. The present and projected demand and supply for irrigated water by decade for the project area and the projected water shortfalls is shown in Table E-2. The projected land use changes from irrigated to dryland crops are shown in Table E-3.

(Page 19) - 17. Comment 3f: Irrigation System Economic Justification. - Action complete – See Comment 16 for supporting information.

(Page 27) - 18. Comment 3g: On-Farm Storage and Retrofit Work. – Action complete - Volume 1 page 299, the Project Cooperation Agreement states that “NRCS has been tasked to act as the construction agent for the on-farm features.”

(Page 28) - 19. Comment 3h: On-Farm Legal Ramifications. – Action complete - Volume 1 page 299, the Project Cooperation Agreement states that “NRCS has been tasked to act as the construction agent for the on-farm features.”

(Page 28) - 20. Comment 3i: On-Farm OMRR&R Responsibilities. – Action complete - Volume 1 page 300, the Project Cooperation Agreement states that “The sponsor will be required to ensure OMRR&R for the on-farm features.”

(Page 29) - 21. Comment 3j: Rice Acreage Controls. – Action complete - Volume 1 page 16, the role of the Corps, and the possibility of the State of Arkansas being able to regulate ground water were discussed.

(Page 29) - 22. Comment 3k: Water Demand Forecast. – Action complete - Volume 1 page 47, states, “The existing or desired land use and the demand for irrigation water would not be expected to change at anytime in the foreseeable future. However, the availability of groundwater to sustain existing and future agriculture needs is expected to significantly decline as the aquifer is depleted.”

(Page 30) - 23. Comment 3l: Other Consumptive Uses of Water. – Action complete - Volume 1 page 47, states, “The groundwater model does include all water use, even though other water use is insignificant when compared to irrigation use.”

(Page 40) - 34. Comment 4a: Growth in Farm Productivity. – Action complete - Volume 1 pages 47-49, Figure 13 & Table 3 and Volume 11 Appendices E, pages E-5 – E-17 shows the future without-project conditions.

(Page 41) - 35. Comment 4b: Crop Productivity Increases. – Action complete - Volume 11 page F-29, Table F-15 shows the projected value of agricultural crops using constant dollars.

(Page 42) - 36. Comment 4c: Non-crop Productivity Increases. - No action required.

(Page 43) - 37. Comment 4d: Flood Damage Reduction NED Plan Designation. – Action complete - Volume 1 pages 167-168, Table 30 shows that the NED Plan with additional analysis is Plan FC3A with the greatest excess benefits.

(Page 44) - 38. Comment 4e: Flood Damage Reduction NED/NER Plan Selection. - Action complete, Volume 1 pages 287-288, Table 77.

(Page 51) - 43. Comment 4j: Waterfowl Benefits. – Action complete - Volume 1 page 119, Table 12 shows that there are \$0 Waterfowl Benefits.

(Page 54) - 48. Comment 5a: National Ecosystem Restoration (NER) Requirement. – Action complete - Volume 1 page 180, states, “although not authorized as an ecosystem project...”, the analysis can show them in the report.

(Page 61) - 58. Comment 6c: Cost Apportionment Displays. – Action complete - Volume 1 page 296, Table 84 costs were displayed for the three main components: (1) Aquifer Protection/Agricultural Water Supply, (2) Flood Control, & (3) Waterfowl Management.

(Page 72) - 80. Comment 9a: Discount Rate. – PGM action complete - Volume 11 page E-2, uses the FY-05 discount rate of 5-3/8 percent. (Note: As of 1 October 2005, the current FY-06 discount rate is 5-1/8 percent. Recommend revising prices for only the recommended plan using the 5-1/8 percent discount rate in an Addendum.)

District Response: Revisions have been made and will be included in the final GRR.

(Page 73) - 81. Comment 9b: Typical Life Span. - The report has project life or economic life on pages F-1, F-10, F-12, F-18, F-30, F-38, F-39, F-49, F-51, & F-52. The report should be revised using period of analysis.

District Response: Revisions have been made and will be included in the final GRR.

(Page 75) - 86. Other Issues - Waterfowl Management Measures Ranking. – Action complete - Volume 1 page 274, Figure 32 shows the Best Buy Plan.

Douglas Young
CAP Project Delivery Team

Cost Engineering PGM ITR Comments

From: Welch, Jerry R MVM
Sent: Tuesday, February 21, 2006 2:59 PM
To: Lloyd, James W MVM
Cc: James, Tracy M MVM; Welch, Jerry R MVM; McNutt, David L MVM
Subject: ITR Comments for Bayou Meto GRR Feb 06

Comments as Requested.

Jerry R. Welch, CCC.

Lead Cost Engineer, MVMEC-D
U.S. Army Corps of Engineers
167 N. Main B202, RM 758
Memphis, TN 38103-1894
901-544-3236

jerry.r.welch@usace.army.mil

Cost Comments from the Policy Compliance Memorandum Supplement, dated 21 June 05,
Revised 19 Jan 06 for the Bayou Meto Basin GRR Project Report

Jerry Welch, CCC, ITR Reviewer.

27. Comment 3p: Total Project Cost for Irrigation.

Table 12 is on page 111 in the main report. There is a \$134,000 discrepancy between the Cost Appendix table and this table. The Cost Appendix table was adjusted and footnoted to agree with the Main Report table. Action complete.

44. Comment 4k: Total Project Cost for Flood Damage Reduction.

The MCACES total (Vol. 9, Append C, Sec VII) for the flood control portion was \$61,150,510 dated Oct 2003. The Main Report (Vol 1) First cost in Table 30, p 168 was \$51,214,000 dated April 2004. Table 32 had the same cost (Incl mitigation) and the same price level date, Apr 2004. The PMP, Vol 1-3, Appendix 3D, Cost Summary first page had \$54, 886,316, a 7.2% escalation for six months. The CWCCIS for the year is about 3.4%.

a. No Cost Engineering documentation could be found to describe the differences between the main report table and the Cost Appendix Gold printout. Recommend including Cost Engineering documentation to meet ER 1110-2-1302, Appendix C, Par 3.(4) incorporating a table and documentation to show adjustments so costs can be tracked from the Gold printout to the report cost tables.

b. Reconcile costs from Table 30 to the PMP Cost Summary page or explain.

District Response: Revisions have been made and are reflected in the addendum and will be included in the final GRR.

82. Comment 9c: Inflation.

The MCACES estimate was done to a price level dated Oct 2003. The Main report Table 10 on page 111 has the same costs to a price level of Oct 2004. The economic analysis used the Main report Table 10 costs. A supplement to the economic analysis will be added which will correct for the price level difference and also for 2005 crop pricing.

District Response: Revisions have been made and are reflected in the addendum and will be included in the final GRR.

83. Comment 9d: Sales Tax.

The District response is a correct assessment and either way is acceptable. Action complete.

84. Comment 9e: Equipment Rates.

The Memphis EP's and Data bases used were the most current as of the Oct. 2003 price levels and are correct. Action complete.

Other: The Memphis District quality control checklist was used to evaluate the addition of detailed Wildlife Management Plan alternatives and is attached.

COST ENGINEERING STUDY CHECKLIST for WMA STUDIES

a. Does the cost estimate presented have the endorsement of the Cost Engineer assigned to the study team?

The assigned Cost Engineer saw most but not all of the final draft of the Cost Appendix. He does see needed revisions after the final report was assembled to incorporate the wildlife management area changes and reference cost tables in the technical write up.

District Response: The Cost Engr. Appendix will be edited to incorporate WMA studies.

b. Does the cost estimate presented reflect the recommended plan with all revisions?

After looking at the Cost Tables in the PMP Vol 1-3 I would say yes. These tables need referenced in the Cost Engr. Text. The alternatives selected also need to be indicated so costs can be followed.

District Response: The Cost Engineering Appendix will reference the PMP Vol 1-3 Cost Tables and indicate which Bayou Meto NER Features were included in the selected plan. The Bayou Meto NER table will also be made larger so it can be more easily read.

c. Is the project estimate divided according to the anticipated construction contracts?

The Main Report, Construction Schedule, Page 126. says project completion is six years. Table 14 and 15 indicates seven years. Resolve.

District Response: The tables are correct. The text will be revised to read seven construction years as indicated in Tables 14 & 15.

d. Are all the expected cost elements present for this type project (see code or chart of accounts)? An example would be turfing for channel backfill and berm areas.
Appear OK. PMP Cost tables helped clear this up.

District Response: The PMP Cost tables will be referenced in the Cost Appendix.

e. Are the unit costs for the cost elements in a comparable range with the Memphis District Historic Cost Item data base?
Yes.

e. Does the cost estimate technical documentation compare favorably with the general report project description?
Needs further explanation.

District Response: The Cost Engr. Appendix will be edited to incorporate WMA studies.

f. Do the presented design quantities, especially for the major determining cost elements, appear proportionate and reasonable?
OK.

g. Do they agree with other quantities listed in the technical appendices of other disciplines, such as turfing acres verses right of way acres vs. environmentally impacted acres?
OK.

h. Are the units of measure consistent with normal bidding practice?
Yes.

i. Were proper ER procedures followed and professional cost engineering principles used?
Yes.

j. Have poor job access or remote site locations been accounted for, such as extra costs for road construction, labor per diem, and product delivery?
Yes.

k. Are contingency factors appropriate for the level of risk perceived in the project construction cost?
Contingency for the mitigation estimates was 25% since they were rougher designs and more unknowns were involved.

District Response: The Cost Engr. Appendix will be edited to explain the various contingencies used.

j. Were weather factors or possible flooding of the job site taken into account?
Yes, for the mitigation measures it shouldn't be a problem.

k. Were dewatering or unwatering costs applied where necessary?

Yes, costs were minimal for mitigation estimates.

l. Were proper labor rates and overburden/overtime percentages applied?

Mitigation estimates were unit priced due to the uncertainty and flexibility in the designs.

m. Were overhead, profit, and mob & demob properly applied to the general contractor and his subcontractors?

Mob & Demob was considered and other factors were included in the unit pricing.

n. Were proper equipment and/or rental rates applied and adjusted for current fuel and overtime ?

See m. above.

o. Have annual operation and maintenance costs been properly assigned and included in the project costs?

Yes, in the Cost Technical Appendix for the mitigation estimates.

District Response: The O&M Cost tables will be referenced in the Cost Appendix.

p. Have the project costs been properly escalated to agree with current cost and bidding climates?

The mitigation estimates were current as of the date prepared. Escalation has been high since then, but CWCCIS should account for this.

q. Have the controlling construction cost elements been developed in sufficient detail to assure the accuracy of the construction cost?

The mitigation estimates were unit priced which is appropriate for the design accuracy involved.

r. Do cost summary tables and cost extensions presented check arithmetically?

Table in appendix for the Water Supply portion does. The WMA tables in the Cost Appendix for the selected plan and adding the Little Bayou Meto Pump Station (flood control) and associated ditch work would add up close to PMP Table 2D-3.

District Response: The Cost Engr. Appendix text and table will be edited to show which costed alternatives were used and make it easier to track costs to PMP Table 2D-3.

s. Did the Cost Engineer visit the project site?

Yes.

Plan Formulation

PGM ITR Comments

From: Bright, Kenneth M MVM
Sent: Monday, February 27, 2006 8:11 AM
To: Lloyd, James W MVM
Subject: RE: BAYou Meto ITR

Subject documents have been reviewed. Essentially all MVM actions in response to CECW-PC comments have been completed and revisions to the report have been accomplished.

EXCEPTIONS: Any administrative and needed report revisions were noted and are provided on the provided document under separate cover.

Thanks,

Ken Bright
Ken Bright
Project Operations Branch
Memphis District, USACE

Kenneth.M.Bright@mvm02.usace.army.mil
Phone: 901-544-4016
FAX: 901-544-3875

Cultural Resource PGM ITR Comments

From: Roemer, Erwin J MVM
Sent: Wednesday, March 08, 2006 10:17 AM
To: McNeil, Jimmy D MVM
Cc: James, Tracy M MVM; Lloyd, James W MVM; Cornett, Ann M MVM; Lambert, Edward P MVM
Subject: modified EIS text for cultural resources Mar2005

Attached are suggested changes related to the HQ 21 June 2005 memo and ITR comments I provided to you. I will copy this to Tracy now. If you have any changes needed, please copy ASAP to me and Tracy. The only aspect of (my) ITR input I did not have time to do is the time line of coordination to date (to Dec 2005) I suggested to put in the NHPA documentation of Volume 10, Appendix D, Cultural Resources. That would take going back through all your records of email and telephone conversations, etc., (esp. for tribes) and merging that time line with the formal letters currently provided in the appendix. There's just not time to do that. I still think it's a good idea, and model on what you sent to ACHP for Grand Prairie NHPA coordination history.

thanks, Erwin 0704

Affected Area, Cultural Resources (page 61 of Dec 2005 draft EIS; this section is a description of what's out there, known to date, regarding cultural resources that may be affected by the project; take the text and table below, and entirely replace that on same page in Dec draft)

CULTURAL RESOURCES

5.83 Existing information on cultural resources is relatively limited for this project's regional setting and its specific project area. However, insight for the region's cultural history, in general, may be found in work of Nassaney (1994), Rolingson (1998), McNutt (1996), and Arkansas' state cultural resources protection plan (Davis 1982). The Bayou Meto project area, overall, is estimated at ca. 800,000 acres across the Arkansas Lowland and Grand Prairie natural areas (Saucier 1994:I:26-27). Across these areas there is evidence of human occupation spanning the Late Glacial era (ca. 10,000 to 12,000 years ago) through historic times to the present. Albertson and Buchner (2005) provide a culture history statement pertinent to the project.

The affected area, i.e. Area of Potential Effects (APE), for cultural resources is best viewed as the spatial limits for this project's existing conditions for cultural resources, where significant cultural resources (i.e. *historic properties* defined under the National Historic Preservation Act; {following should be footnoted; typical EIS reader otherwise doesn't know what it means: "*Historic property* means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian Tribe [or Native Hawaiian organization] and that meet the National Register criteria. 36 CFR Part 800, Protection of Historic Properties, § 800.16(l)(1)."} may be impacted by the proposed undertaking. Although an APE is areal in concept, potential impacts also include a vertical sub-surface disturbance such as construction often brings. The Bayou Meto project is best viewed within three sub-APEs: (1) Agricultural Water Supply, associated with canals, ditches, pipeline, and other structures, groundwater protection, conservation, reservoirs for regulation of water supply and on-farm storage, and

acquisition/development land for wildlife habitat mitigation, (2) Flood Control, associated with construction of a pump station and other engineering structures including levees, excavation and cleanout of channels, etc., and (3) Waterfowl Management and Ecosystem Restoration, associated with engineering work including an inlet channel and pump, channel cleanout and clearing, and levee degrading at Bayou Meto WMA, herbaceous wetland complex (HWC) restoration, bottomland hardwood (BLH) rehabilitation, riparian buffers, and moist soil treatment areas. At present only the Agricultural Water Supply APE has received field inventory specific to this project's study. The overall status of these three sub-APEs are best depicted in Table ____.

Cultural Resources Area of Potential Effect (via 3 sub-areas)	Estimated Acreage (typically construction right-of-way)	Status of Cultural Resources Inventory	Comments
<u>Agricultural Water Supply</u>			
new canals, pipelines, and modifying existing channels	9,721 acres	completed	report by Albertson and Buchner 2005; 216 archeological sites (incl. 9 historic cemeteries); 14 considered potentially significant
Pump stations and regulation reservoirs	unknown specific acreage	planned for	
new construction of bridges, inverted siphons, check structures, etc.	unknown specific acreage	planned for	A portion of this may be coincidentally covered by the Albertson and Buchner study.
fish and wildlife mitigation land acquisition/development	1,324 acres	planned for	location presently unknown; to be purchased in fee and reforested
on-farm storage reservoirs	8,832 acres total	planned for	specific locations presently unknown; NRCS construction agent
<u>Flood Control</u>			
all engineering construction	2,427 acres	planned for	this work generally located south of Bayou Meto WMA
fish and wildlife	2,769 acres	planned for	location presently

mitigation land acquisition/development			unknown; to be purchased in fee and reforested
<u>Waterfowl Management and Ecosystem Restoration</u>			
channel cleanout, clearing, etc. at Bayou Meto Wildlife Management Area	1,023 acres ROW for clearing	see comments	additional acreage possibly needed; determination on potential for impacts not clarified at present
recreate herbaceous wetland complex (HWC)	10,000 acres	planned for	location(s) presently unknown
bottomland hardwoods (BLH) rehabilitation	23,000 acres	planned for	location(s) presently unknown
riparian buffer creation	2,643 acres	planned for	100 ft corridors along channels and streams; location(s) presently unknown
moist soil habitat creation	240 acres	planned for	location(s) presently unknown

Table __, Summary table depicting cultural resources Area of Potential Effect.

Based on the project-specific cultural resources survey of Albertson and Buchner (2005; 9,721 acres) the ratio of sites and historic cemeteries per acres indicates that a substantial number of archeological and historic cemeteries, yet unidentified, may exist in the total APE for cultural resources. It is recognized that cemeteries are normally not considered for listing in the National Register of Historic Places, but they are inventoried in the broader sense of conducting cultural resources survey (1) to identify cultural features of interest to real estate planning purposes, (2) to gain insight on the culture of the project area, pertinent to evaluating related historic properties such as occupation sites, and (3) because their association with human remains is a highly sensitive aspect of the human environment. Regarding historic architectural structures of significance, it is currently assumed that relatively few exist in the project's APE. Bridge replacements will be of interest here where such structures are greater than 50 years in age. The NHPA coordination to date for inventory of existing conditions for cultural resources is reflected in the Environmental Effects, Cultural Resources section of this EIS, and in the summary of coordination section in Appendix D, Part II, Section C.

District Response: Revisions will be included in the final GRR by adding these paragraphs.

Environmental Consequences, Cultural Resources (page 79-80 of Dec 2005 draft EIS; this section describes what the impacts are to significant cultural resources in the project's APE; take the text and table below, and entirely replace that on same page in Dec draft)

CULTURAL RESOURCES

Water Supply Alternative 4B/ Flood Control Alternative 3A

6.76 The Area of Potential Effect (APE) for cultural resources is described in Table __ {new table from Affected Area}. While the National Historic Preservation Act (NHPA) planning process is ongoing, it is incomplete regarding full inventory of historic sites, assessment of effect, and protective measures (avoidance being the first choice). One location-specific NHPA coordination effort has occurred for project-related construction work already performed for existing levee and upgrade of flow structures at Bayou Meto WMA. Section 106 (NHPA) coordination with the State Historic Preservation Officer (SHPO) took place in April 2000. That work included a borrow site, but all impact areas were considered to have existing physical disturbance to the point that no field inventory or other actions were necessary (see Summary of Coordination section of this EIS, and letters pertinent to cultural resources). Also, in November 2003 some planning coordination was directed to the SHPO and some tribes reference Indian Bayou Cleanout and Wabbaseka Bayou Channel Improvement (see Summary of Coordination section of this EIS, and letters in Appendix D, Section II, Part C). This work was covered by the Albertson and Buchner (2005) survey described in the Affected Area of this EIS. However, these engineering projects did not move forward, the Section 106 coordination was not completed, and they are now proposed elements addressed in the present EIS.

6.77 The overall Identification of Historic Properties (36 CFR 800.3 in NHPA regulations Protection of Historic Properties, as amended effective August 5, 2004) process is ongoing for the total project. Full inventory of cultural resources remains to be completed. As a result, potential effects under the project's alternatives cannot be specified *in detail* for *specific* cultural resources at this time. Inventory would be followed by evaluation ("testing") of sites within the full inventory to determine those that are significant. Effects from specific aspects of the project then would be assessed relative to significant sites. After that, mitigation of adverse effects would be performed. The preferred choice for mitigation would be redesign of construction plans to simply avoid significant sites. If that is not possible, other means would be sought to minimize adverse effects, and otherwise compensate for adverse effects. This project's size and complexity does not support an absolute certainty that every historic property and/or human remains site can be avoided. Inadvertent discoveries are a reality of NHPA "post review" conditions, such as the project's lifetime of operation and maintenance. Where avoidance of impacts would be impossible, data-recovery archeological excavation is typically an option, but additional kinds of mitigative treatment would be considered. The nature of proposed work (see Table __ {in Affected Area}) is that NHPA will most likely need to be staged over years of coordination on a sequence of activities. For example, the precise APE for waterfowl management area(s) may not be explicitly known for some time regarding information on real estate tracts and details of potential impacts to the land. Completion of the NHPA coordination process cannot be made without such information. The anticipated cultural resources

Programmatic Agreement (PA) would address such sequenced coordination and study efforts. A summary of the NHPA coordination to date (December 2005) is found at the introduction to "Section IX, Cultural Resources" in Volume 10, Appendix D. Historic cemeteries (see Affected Area) would be identified and avoided through a combination of additional cultural resources surveys and Corps Real Estate coordination efforts. Through archeological survey techniques including non-intrusive remote sensing, archival, and informant interview efforts, substantial "buffer" or "no work" areas may be defined adjacent to cemeteries. Treatment of human remains, including those of importance to federally recognized tribes, will be addressed in a Programmatic Agreement (PA) under development (or other written plan coordinated with all applicable parties). The potential for coordination under the Arkansas Burial Law (Acts 753 and 1533) is recognized.

6.78 Regarding compliance with NHPA and other federal and state laws applicable to cultural resources, the NRCS would be responsible for ensuring compliance for NRCS-led construction, or other NRCS services, implemented under provisions of this PCA. The Memphis District would be responsible for NHPA and related compliance for all other aspects of the project.

6.79 The following activities would occur after the completion of the final EIS and ROD:

1. The Memphis District would conduct additional appropriate actions and consultation under the NHPA and other applicable federal laws, regulations, and guidance, and under pertinent state and local laws.
2. A Programmatic Agreement (PA) would be strived for, as requested by the SHPO (see Summary of Coordination section of this EIS, and Appendix D, Section II, Part C, letter dated 18 November 2004). As a valid procedural option for large projects like the present one (36 CFR 800.14), a PA would streamline remaining planning efforts (i.e. through project design and construction phases) for completing inventory, evaluating sites, assessing effects, and ensuring mitigation. It also would address the project in its entirety, including design, construction, and operation, and the role of other parties involved in these activities. Its development could result in commitment to special technical studies (e.g. geomorphology, historic ethnic groups/communities, etc.) which would benefit inventory, evaluation, etc. of historic properties). After a period of reasonable time and effort in seeking to develop this PA, if it appears implementation is unachievable, the Memphis District would revert to basic procedures of 36 CFR 800.
3. A plan would be developed for protection of significant cultural resources, and potential inadvertent discoveries, relative to the project's lifetime of operations and maintenance. This plan may require a separate PA or amendment of the above referenced PA. Such a plan would be coordinated to work with (or within) other land management plans such as those for Waterfowl Management and Ecosystem Restoration.

District Response: Revisions will be included in the final GRR by adding these paragraphs.

On page 79 of the Dec05 draft EIS, replace 6.76 through 6.79 with the following. Note a section # dropped out, as text became shortened.

CULTURAL RESOURCES

Water Supply Alternative 4B/ Flood Control Alternative 3A

6.76 The Area of Potential Effect (APE) for cultural resources is described in Table ___ {see above}. The National Historic Preservation Act (NHPA) planning process is ongoing, and thus it is incomplete regarding inventory of historic properties, and other cultural resources such as historic cemeteries, and assessment of effect. The preferred choice for protection of historic properties (and historic cemeteries) would be redesign of construction plans to simply avoid significant sites. If that is not possible, other means would be sought to minimize adverse effects, and otherwise compensate for adverse effects. This may include data-recovery excavation, but additional kinds of mitigative treatment would be considered. For additional insight on this topic, refer to the cultural resources discussions under this EIS' sections on Affected Area and Environmental Consequences.

6.77 Regarding compliance with the National Historic Preservation Act (NHPA) and other federal and state laws applicable to cultural resources, the Memphis District would ensure NHPA compliance is adequate related to the NRCS-led construction of on-farm reservoirs.

6.78 The following activities would occur after the completion of the final EIS and ROD:

1. The Memphis District would conduct additional appropriate actions and consultation under the NHPA and other applicable federal laws, regulations, and guidance, and under pertinent state and local laws.
2. A Programmatic Agreement (PA) would be strived for, as requested by the SHPO (see Summary of Coordination section of this EIS, and Appendix D, Section II, Part C, letter dated 18 November 2004).
3. A plan would be developed for protection of significant cultural resources, and potential inadvertent discoveries, relative to the project's lifetime of operations and maintenance.

District Response: Revisions will be included in the final GRR by adding these paragraphs.

In the RE appendix of Volume (ask Eric Greever for specific vol/page), where it simply states (existing draft) sentence to effect "All cemeteries will be avoided."

Add sentence following above sentence:

The approach to ensuring this is explained in the Cultural Resources discussion of the EIS' Environmental Consequences section.

District Response: Revisions will be included in the final GRR by adding this sentence.

On pages 308-309 of the draft Dec05 GRR, add following sentences as indicated below.

Under Other Federal Agencies.

The Advisory Council on Historic Preservation (ACHP) potentially may become a party to a cultural resources Programmatic Agreement (PA) developed under provisions of the National Historic Preservation Act (NHPA). At this point in the NHPA and NEPA processes, consultation with the ACHP is preliminary in nature.

Under State and Local Agencies.

Under provisions of NHPA and NEPA, the State Historic Preservation Officer (SHPO) has been coordinated with. The SHPO will be a key party in execution of any cultural resources PA.

Add new heading: Federally Recognized Tribes

Coordination, primarily under provisions of the NHPA, has occurred with a number of federally recognized tribes. While tribal lands do not exist in the project area, the Corps is required to consult federally recognized tribes in reference to historic properties that may be of religious and cultural significance to the tribes.

District Response: Revisions will be included in the final GRR by adding these paragraphs.

Under Public Involvement starting on page 103 of Dec05 EIS draft, add following new paragraph (will need a #).

Input to matters related to cultural resources, particularly *historic properties* as defined under NHPA, has been sought during public scoping and related activities. This has included communications to the State Historic Preservation Officer, the State Archeologist, and a large number of federally recognized tribes. As a cultural resources Programmatic Agreement (PA) is strived for, additional public coordination will be required (under regulations of the NHPA).

On page 106-107, need to add these state agencies:

Mr. Ken Grunewald
Deputy State Historic Preservation Officer
Arkansas Historic Preservation Program
1500 Tower Building
323 Center Street
Little Rock, AR 72201

Dr. Ann Early
State Archeologist
Arkansas Archeological Survey
2475 N. Hatch Ave.
Fayetteville, AR 72704

District Response: Revisions will be included in the final GRR by adding these paragraphs.

Insert the following wording at the beginning of Section IX, Cultural Resources, in Volume Appendix D. This is, essentially, an introductory and summary statement for what following, and NHPA coordination to date.

The following documentation and information on cultural resources primarily reflects coordination and analyses to date (December 2005). It is described in the sequence presented in following pages.

-A copy of the Management Summary from the cultural resources survey report of October 2005, authored by Eric Albertson and Andrew Buchner, Panamerican Consultants, Inc., Memphis, under contract to the Corps Memphis District. This relates to a potential construction right-of-way for agricultural water supply (new canals, pipelines, and modifying existing channels) covering 9,721 acres. The study results inventoried 216 archeological sites (this count includes 9 historic cemeteries). Fourteen of the sites are considered potentially significant in nature. The full technical is available by contacting the Corps project archeologist, Mr. Jim McNeil, at 901-544-0710. However, note that the National Historic Preservation Act (NHPA) explicitly allows federal agencies to withhold specific information if its release might threaten adverse impacts to historic properties. The "no further work is required" statement at the end of the Summary is considered a recommendation made by the consultant. That is, it is subject to change dependent on continuing consultation underway among the Memphis District and a number of parties, including the State Historic Preservation Officer (SHPO), federally recognized tribes, and others.

-A draft Memorandum of Agreement (MOA). This is the initial draft of what is currently sought in terms of a Programmatic Agreement (PA) under provisions of the NHPA. It was distributed in November 2003. The document will become termed a PA, not an MOA. A more recent version of this document (now termed a PA) resulted from a meeting held with some federally recognized tribes in November 2005, at Tulsa, Oklahoma. However, that document was not available at the time of the present document's compilation. A copy of the most current PA, and further information on it, is available by contacting the Corps project archeologist, Mr. Jim McNeil, at 901-544-0710. In general, PAs are best described as a procedural option for consultation among the Memphis District (as lead federal agency) and other parties, made under provisions of the NHPA regulations, 36 CFR Part 800, Protection of Historic Properties. They govern the implementation of complex undertakings, such the Bayou Meto project, where multiple undertakings over a period of years is anticipated.

-Series of agency and tribal coordination letters, following the MOA document (above). A series of coordination letters are offered in chronological order, starting with the most recent letter (November 18, 2004) and beginning with a letter dated August 2, 2000. This reflects formal communications for NHPA coordination on this project, to date (December 2005). Of particular interest, note that in 2000, Memphis District consulted two federally recognized tribes, the Quapaw Tribe, and the Tunica-Biloxi Tribe. In 2001 the Mississippi Band of Choctaw Indians was communicated to, additionally. In 2004, the Eastern Shawnee Tribe of Oklahoma and the Osage Nation were added to the contact list. The present draft GRR/EIS was sent to these and an additional 24 federally recognized tribes, listed in the Public Involvement section of the draft EIS. This shift over time reflects Memphis District's efforts to comply with the NHPA, as amended (particularly after 1990) and to be inclusive in its approach to consultation with federally recognized tribes. The key concept for Memphis District in contacting tribes, the SHPO, and others under provisions of the NHPA is that of (1) seeking information on known or potential historic properties, and their significance, and (2) seeking advice on technical or other procedural approaches, protection of historic properties, human remains, etc. Communications among the Memphis District, these parties, and others also have occurred in the form of emails, telephone conversations, and meetings.

District Response: Revisions will be included in the final GRR by adding these paragraphs.

Additional: These references are in the Dec2005 and the current EIS, Affected Environment, Cultural Resources. They have to be cited somewhere!

Albertson, Eric and C. Andrew Buchner
2005 *Cultural Resources Survey of 9,721 Acres of ROW for the Bayou Meto Basin Irrigation Project*. Panamerican Consultants, Inc., Memphis. Prepared for the USACE, Memphis District.

Davis, Hester A. (editor)
1982 (revised 1994) *A State Plan for the Conservation of Archeological Resources in Arkansas*. Arkansas Archeological Survey Research Series 21. Fayetteville, Arkansas.

McNutt, Charles H.
1996 The Central Mississippi Valley: A Summary. In *Prehistory of the Central Mississippi Valley*, pp. 187-258. Edited by Charles H. McNutt. The University of Alabama Press, Tuscaloosa.

Nassaney, Michael S.
1994 The Historical and Archaeological Context of Plum Bayou Culture in Central Arkansas. *Southeastern Archaeology* 13(1):36-55.

Rolingson, Martha Ann
1998 *Toltec Mounds and Plum Bayou Culture: Mound D Excavations*. Arkansas Archeological Survey Research Series 54. Fayetteville, Arkansas.

Saucier, Roger T.

1994 *Geomorphology and Quaternary Geologic History of the Lower Mississippi Valley*. Two volumes. USACE, Mississippi River Commission, Vicksburg.

District Response: Revisions will be included in the final GRR by adding these references.