



**DEPARTMENT OF THE ARMY**  
MISSISSIPPI VALLEY DIVISION, CORPS OF ENGINEERS  
P.O. BOX 80 VICKSBURG, MISSISSIPPI 39181-0080

REPLY TO  
ATTENTION OF:

CEMVD-PD-N

12 DEC 2012

MEMORANDUM FOR Commander, New Orleans District  
(ATTN: CEMVN-PM-B)

SUBJECT: Medium Diversion at White Ditch, Plaquemines Parish,  
Louisiana - Construction Engineering and Design - Peer Review  
Plan (RP)

1. References:

- a. Memorandum, CEMVN-PM-B, 10 December 2012, SAB  
(encl 1).
- b. Memorandum, CEIWR-RMC, 11 December 2012, subject: Risk  
Management Center Endorsement - Louisiana Coastal Area Medium  
Diversion at White Ditch, LA Review Plan (encl 2).
- c. Engineering Circular (EC) 1165-2-209, Change 1, Civil  
Works Review Policy, dated 31 January 2012.

2. The subject RP provided under Reference 1.a. was reviewed and endorsed for approval by the Risk Management Center. The RP includes agency technical review and Type II Independent External Peer Review. The RP is consistent with the purpose and policy of EC 1165-2-209.

3. I hereby approve this RP, which is subject to change as circumstances require, consistent with study development under the Project Management Business Process. Substantial revisions to this RP or its execution will require new written approval from this office.

4. The RP is to be posted to the District website.

5. The POC for this action is Mr. Jim Wojtala, CEMVD-PD-N, at (601) 634-5931.

A handwritten signature in black ink, appearing to read "Edward E. Belk, Jr.", written in a cursive style.

EDWARD E. BELK, JR., P.E., SES  
Director of Programs

2 Encl

CF:  
CECW-MVD (J. Redican)

## REVIEW PLAN

**Louisiana Coastal Area Medium Diversion at White Ditch**  
**Plaquemines Parish, Louisiana**

**Preconstruction Engineering and Design Report**

**Mississippi Valley Division – New Orleans District**

MSC Approval Date: Ecosystem PCX Approval Date: 19 Aug 2010

Last Revision Date: None



US Army Corps  
of Engineers ®

**REVIEW PLAN**

**Louisiana Coastal Area (LCA) Medium Diversion at White Ditch – Plaquemines Parish, Louisiana**  
**Preconstruction Engineering and Design Phase**

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## 1. PURPOSE AND REQUIREMENTS

a. **Purpose.** This Review Plan defines the scope and level of peer review for the LCA Medium Diversion at White Ditch (MDWD) ecosystem restoration project. It is located on the eastbank of the Mississippi River in Plaquemines Parish, Louisiana, near the community of Phoenix. This Review Plan applies to carry-over tasks from the feasibility study and preconstruction engineering and design (PED) activities.

### b. References

- (1) Engineering Circular (EC) 1165-2-209, Civil Works Review Policy, 31 Jan 2010
- (2) EC 1105-2-412, Assuring Quality of Planning Models, 31 Mar 2011
- (3) Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006
- (4) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007
- (5) LCA MDWD Project Management Plan, Aug 2011
- (6) Mississippi Valley Division Regional Planning and Environment Division South Quality Management Plan, undated
- (7) ER 1110-2-1150, Engineering and Design of Civil Works Projects
- (8) DIVR 1110-1-13, Cofferdams for Construction Affecting Levees
- (9) DIVR 1110-1-403, Mississippi Valley Division/Mississippi River Commission Policy on River Diversions, 23 Mar 2011

c. **Requirements.** This review plan was developed in accordance with EC 1165-2-209, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design, construction, and operation, maintenance, repair, replacement and rehabilitation (OMRR&R). The EC outlines four general levels of review: District Quality Control/Quality Assurance (DQC), Agency Technical Review (ATR), Independent External Peer Review/Safety Assurance Review (IEPR/SAR), and Policy and Legal Compliance Review. In addition to these levels of review, decision documents are subject to cost engineering review and certification (per EC 1165-2-209) and planning model certification/approval (per EC 1105-2-412).

## 2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO is responsible for managing the overall peer review effort described in this Review Plan. The RMO for implementation documents is typically either a Planning Center of Expertise (PCX) or the Risk Management Center (RMC), depending on the primary purpose of the decision document. The RMO for the peer review effort described in this Review Plan is the Mississippi Valley Division (MVD) with support on project levee features that require SAR from the RMC.

The RMO will coordinate with the Cost Engineering Directory of Expertise (DX) to ensure the appropriate expertise is included on the review teams to assess the adequacy of cost estimates, construction schedules and contingencies. A review plan for the feasibility study was approved by the Ecosystem Restoration PCX in August 2010. The PED phase will involve creating designs for modifying the Mississippi River levee to insert and construct the sediment diversion structure. Therefore, the RMC will need to perform a SAR even though MVD is the RMO that will be reviewing this project.

### 3. STUDY INFORMATION

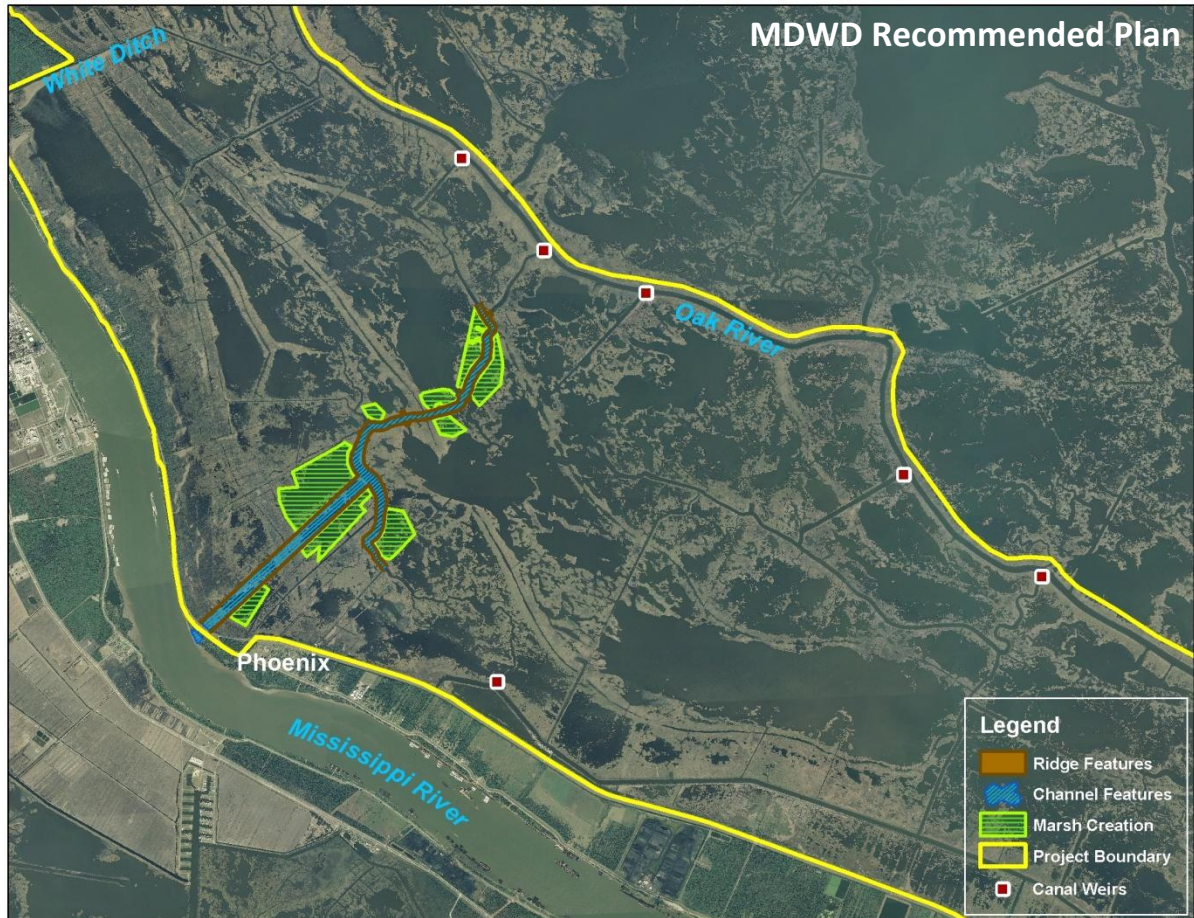
- a. **Implementation Document.** The recommended project consists of a structure in the Mississippi River levee and outfall channel to divert water, sediments, and nutrients for marsh creation and nourishment. It will be located on the left-descending bank of the river near the community of Phoenix in Plaquemines Parish, Louisiana. Because of the high project cost, a congressional reauthorization of the project budget is needed to get to construction.

The PED work will be divided into two phases. Phase I consists of carryover tasks from the feasibility effort that will refine the exact location of the diversion structure and potentially its operational plan. This work consists of data collection in the Mississippi River and the surrounding estuary; using the Flow-3D model to determine the best location on the river for capturing sediment by a diversion structure; and initiating AdH sediment modeling in the diversion outfall areas. The goal of these efforts is to verify the diversion location recommended during the feasibility study is correct, and, if not, to identify the next best location. If these tasks indicate a change in location or operational plan is warranted, amendments to the feasibility study/EIS and updated costs will also be completed. This review plan recommends that ATR be completed on Phase I and II documents and SAR be completed for Phase II milestones.

Phase II will initiate with a new PMP and cost-share agreement (scheduled for May 2013). Customary milestones and deliverables that require DQC, ATR, and SAR will be produced during Phase II which consists of development of the traditional implementation documents. This review plan applies to Phase II and should be initiated at the completion of Phase I.

- b. **Project Description.** The Water Resources Development Act of 2007, Section 7006(e)(3)(B) calls for the Secretary to carry out the project in accordance with the plans and subject to the conditions recommended in a final report of the Chief of Engineers if a favorable report of the Chief is completed by 31 December 2010. The Chief's Report for MDWD was signed 30 December 2010 and the PMP for PED between the Corps and the Louisiana Coastal Protection and Restoration Authority (CPRA) was signed on 24 August 2011. The recommended plan is a single purpose ecosystem restoration project and would implement a 35,000 cubic feet per second maximum diversion with associated outfall management features. This project would provide a source of river sediment, freshwater and nutrients to the River aux Chenes sub-basin and other nearby portions of the upper Breton Sound Basin, to restore and protect marsh soils and vegetation and maintain a functional salinity regime. Additionally, 31 acres of ridge and 385 acres of marsh creation would occur by utilizing dredged material from an adjacent 223 acres of canal that would be dredged to convey sediments, freshwater, and nutrients. Notched weirs would be installed in outflow canals to restrict flow into the River aux Chenes and retain diverted water in the project area. The project would be expected to benefit approximately 98,000 acres of wildlife and fisheries habitat in this portion of the Breton Sound Basin. The fully funded cost of the Recommended Plan is estimated to be \$387,620,000. Currently, the annual operation, maintenance, repair, replacement, and rehabilitation (OMRR&R) costs are estimated at \$1,467,836.
- c. **Factors Affecting the Scope and Level of Review: River Effects** - There are potential impacts to navigation on the Mississippi River both through the construction of the diversion structure and its operational plan. Induced shoaling effects that result from diverting water from the river and changes in deposition rates at and around the structure, though unlikely, will be examined during the PED phase. Additionally, the current location of the LCA Medium Diversion at Myrtle Grove with

Dedicated Dredging project is located within one mile across the Mississippi River from the MDWD location. Having both projects operational could be a concern for navigation (both projects have not yet been constructed however). Another LCA effort, the Mississippi River Hydrodynamic and Delta Management study is currently underway and will be tasked with evaluating the effects of multiple diversions on the Mississippi River and the surrounding estuaries. That study is currently developing tools to evaluate the effects diversions have on the river and MDWD must coordinate closely with that effort.



Graphic of the MDWD Recommended Project Features

**Environmental Benefits** - Although uncertainties exist in predicting habitat benefits for diversion projects, new research indicates that structure location on the Mississippi River plays a very important role in determining how much sediment can be diverted into surrounding marshes. Higher rates of sediment introduction should translate into faster rates of marsh creation as well as more effective retention of existing wetlands. Suspended sediment data collection in the Mississippi River has been completed over the last several years and during the initial phase of the PED effort. Additionally, 2D/3D sediment modeling will be completed to help determine the best location for the diversion and how much sediment it is able to capture and divert to the project area. Fisheries modeling is also scheduled to document how changes in salinity affect important fisheries species.

Controversy associated with diversion projects as an ecosystem restoration tool has been expressed. Existing diversion projects are criticized by some stakeholders and members of the public as being

inefficient at creating new marsh and incurring detrimental effects such as undesirable habitat changes. Numerous public scoping meetings held for this and other diversion projects indicate that not everyone agrees about what the proper techniques are for restoring coastal Louisiana. This could result in added scrutiny for the project. The MDWD feasibility study incorporated these concerns into the planning process and recommended a limited operational plan which would help minimize some of the controversial effects from reducing salinities in the Breton Sound basin.

**Real Estate** – Due to the large areas that could benefit from reduced salinities or sediment deposition, non-standard estates have been recommended to ensure benefits are protected from permitted activities, especially in areas where marsh creation would occur. These areas are relatively small (several hundred acres) compared to areas where salinity could change, perhaps over 300,000 acres. The Project Delivery Team (PDT) recommends review by specialists in real estate to ensure the proper estates and acquisition procedures are vetted.

**Safety** – As with most ecosystem restoration projects, there is little risk to life safety inherent with the project. However, significant construction time will be spent in and around the Mississippi River levee as well as the only road (state highway) to areas south of the project area. This road is the only evacuation route for residents when a tropical storm or hurricane approaches so its access must be maintained. Steps to maintain a minimum level of safety must be implemented during construction to ensure the integrity of the Mississippi River levee. Risk of project failure after project implementation is expected to be minimal.

- d. **In-Kind Contributions.** The Louisiana Coastal Protection and Restoration Authority (CPRA) is the non-Federal sponsor. Per the terms of the cost-share agreement they will be responsible for 35% of PED and construction costs.

#### 4. **DISTRICT QUALITY CONTROL (DQC)**

All implementation documents (including supporting data, analyses, environmental compliance documents, etc.) shall undergo DQC. DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). The home district shall manage DQC. Documentation of DQC activities is required and should be in accordance with the Quality Manual of the District and the home MSC.

- a. **Documentation of DQC.** DQC is the review of work products focused on fulfilling the quality requirements defined in the Quality Management Plan (QMP) portion of the PMP. The Plan Formulator is responsible for ensuring that the QMP includes the necessary procedures to achieve a quality product. Additionally, PDT members are responsible for delivering a quality project and monitoring the quality of their own work.

In accordance with District QMP's, internal reviews or design checks will constitute quality control for each deliverable product. It is the responsibility of each product development team member, their supervisors, and the project manager to ensure that every product receives an internal quality control review. It is the responsibility of the supervisor or section chief for each team member to ensure that a qualified DQC reviewer that has not been involved with the preparation of the technical product under review is selected and conducts a review of their product prior to delivery to the project manager, or prior to completion. In accordance with District QMP procedures, the

management of the review process will be coordinated by a designated Quality Control Review Leader (QCRL). The QCRL will compile all technical, grammatical, and editorial comments and will ensure DQC standards are met prior to submission of the implementation document to the Vertical Team. Dr. Checks will be used to document all DQC comments, responses, and associated resolution accomplished throughout the review process. Once the DQC process is complete, a Certificate of Quality Control Review will be provided to the ATR team lead.

- b. Products to Undergo DQC.** Products developed during Phase I will include modeling reports generated by the Flow-3D effort to determine the best location for the diversion structure on the Mississippi River. Results from the Flow-3D sediment modeling effort to determine how diverted sediments translate into marsh benefits will be reviewed. Any amendments that may be required to the feasibility study/EIS based on the modeling results will also be provided. DQC will also occur for milestones being considered during the Phase II SAR such as the record of final design in the Design Documentation Report; Geotechnical Reports; 90% Plans and Specifications; and Construction Cost Estimate; at the midpoint of construction for a particular contract; prior to final inspection; and at any critical design or construction decision milestone.

**5. AGENCY TECHNICAL REVIEW (ATR)**

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

- a. Products to Undergo ATR.** Products developed during Phase I will include modeling reports generated by the Flow-3D effort to determine the best location for the diversion structure on the Mississippi River. Results from the Flow-3D sediment modeling effort to determine how diverted sediments translate into marsh benefits will be reviewed. Any amendments that may be required to the feasibility study/EIS based on the modeling results will also be provided. ATR will also occur for milestones being considered during the Phase II SAR such as the record of final design in the Design Documentation Report; Geotechnical Reports; 90% Plans and Specifications; and Construction Cost Estimate; at the midpoint of construction for a particular contract; prior to final inspection; and at any critical design or construction decision milestone.
- b. Required ATR Team Expertise.** The expertise represented on the ATR team reflects the significant disciplines involved in the work effort and mirrors the expertise on the PDT. The RMO (MVD), in cooperation with the PDT and Vertical Team will determine the final make-up of the ATR team. Based on the disciplines indicated below, the study will require a minimum of eight reviewers.

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead should be a senior professional with extensive experience in preparing Civil Works implementation documents and conducting ATR. The lead should also have the necessary



	skills and experience to lead a virtual team through the ATR process. The ATR lead may also serve as a reviewer for a specific discipline (such as economics, civil engineering, etc).
Hydrology/Hydraulic Engineering	The hydraulic engineering reviewer will be an expert in the field of hydraulics and have a thorough understanding of open/closed channel dynamics and systems, and/or computer modeling techniques that will be used such as RMA-2, RMA-4, and TABS. It is recommended that the reviewer have experience with sediment modeling, especially in the Mississippi River.
Geotechnical Engineering	Team member must be experienced in dredged material placement design and construction, and capable of evaluating impacts of wave energy and geomorphic processes to the proposed project features. A certified professional engineer is recommended.
Civil Engineering	Reviewer must have experience in dredged material placement, sediment transport, and shoreline restoration. A certified professional engineer is necessary.
Structural Engineering	Several proposed freshwater and sediment diversion structures may be utilized for this project. The reviewer should be familiar with how these different designs could influence the success of the project.
Cost Engineering	Reviewer must be familiar with cost estimating for similar civil works projects using MCACES. Reviewer will be a Certified Cost Technician, Certified Cost Consultant, or Certified Cost Engineer.
Construction/Operations	Reviewer must be familiar with standard operating procedures for construction sequencing, especially regarding the Mississippi River and its levee. A state highway will also be re-routed during construction and may become a feature of the diversion structure.
Real Estate	Team member must be experienced in civil work real estate laws, policies and guidance and experience working with sponsor real estate issues and coastal property rights. Protection of benefits from diversion projects and the use of non-standard estates have been discussed at length between the district and headquarters. The reviewer must be familiar with these recent developments.

**6. Documentation of ATR.** DrChecks review software will be used to document all ATR comments, responses and associated resolutions accomplished throughout the review process. Comments should be limited to those that are required to ensure adequacy of the product.

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

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

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

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

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

## **7. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)**

Type I IEPR for the feasibility study was completed in June 2010. Since project design and construction will require significant work in and around the Mississippi River risk reduction levee, Type II IEPR/Safety Assurance Review (SAR) will be required. MVD will coordinate this effort with the RMC at the appropriate time in the PED process.

- a. Decision on IEPR.** In order to insure public health, safety, and welfare, an external panel will review the design and construction activities prior to the initiation of physical construction and periodically thereafter. MVD is the RMO for the implementation documents. Since Phase I is an evaluation of data and subsequent modeling, Type II IEPR will not need to be completed at this stage. It will initiate during Phase II when the appropriate milestones are reached. MVD will coordinate with the RMC to complete this process.
- b. Products to Undergo Type II IEPR/SAR.** The SAR activities will be scheduled during development of the Phase II PMP and will occur at the record of final design in the Design Documentation Report; Geotechnical Reports; 90% Plans and Specifications; and Construction Cost Estimate; at the midpoint of construction for a particular contract; prior to final inspection; and at any critical design or construction decision milestone.
- c. Required Type II IEPR Panel Expertise.** The SAR activities will be coordinated with the Louisiana Water Resources Council (LWRC) in accordance with Section 7009 of the Water Resources Development Act of 2007. Areas of expertise required to properly review implementation document deliverables and construction products will mimic those outlined for the ATR teams. However, the LWRC is an independent council whose policies and procedures are not fully developed. As the RMO, MVD will lead the effort to coordinate with the RMC and the LWRC to ensure the SAR is satisfactorily completed. Currently, the LWRC is comprised of five members with backgrounds in civil

works planning, economics, hydrology/hydraulics, civil engineering/construction, and environmental/ecology.

IEPR Panel Members/Disciplines	Expertise Required
Hydrology/Hydraulic Engineering	The hydraulic engineering reviewer will be an expert in the field of hydraulics and have a thorough understanding of open/closed channel dynamics and systems, and/or computer modeling techniques that will be used such as RMA-2, RMA-4, and TABS. It is recommended that the reviewer have experience with sediment modeling, especially in the Mississippi River.
Geotechnical Engineering	Team member must be experienced in dredged material placement design and construction, and capable of evaluating impacts of wave energy and geomorphic processes to the proposed project features. A certified professional engineer is recommended.
Civil Engineering	Reviewer must have experience in dredged material placement, sediment transport, and shoreline restoration. A certified professional engineer is necessary.
Structural Engineering	Several proposed freshwater and sediment diversion structures may be utilized for this project. The reviewer should be familiar with how these different designs could influence the success of the project.
Cost Engineering	Reviewer must be familiar with cost estimating for similar civil works projects using MCACES. Reviewer will be a Certified Cost Technician, Certified Cost Consultant, or Certified Cost Engineer.
Construction/Operations	Reviewer must be familiar with standard operating procedures for construction sequencing, especially regarding the Mississippi River and its levee. A state highway will also be re-routed during construction and may become a feature of the diversion structure.

**d. Documentation of Type II IEPR/SAR.** Documentation of findings will focus on any potential changes from the assumptions that formed the basis for conceptual design during the feasibility study. The LWRC will provide a report on the project relevant in scale to the corresponding phase of design or construction. The report will be provided to the MVN Chief of Engineering who shall consider all comments contained in the report and prepare a written response for all comments. The Chief will also note all concurrence and subsequent action or non-concurrence with an explanation. The Chief shall submit the Council's report and responses to the MSC commander for approval. The final reports and all responses will be made available on the District website.

The IEPR panel will be selected and managed by an Outside Eligible Organization (OEO) per EC 1165-2-209, Appendix D. Panel comments will be compiled by the OEO and should address the adequacy and acceptability of the economic, engineering and environmental methods, models, and analyses used. The OEO will prepare a final Review Report that will accompany the publication of the final decision document and shall:

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

The final Review Report will be submitted by the OEO no later than 60 days following the close of the public comment period for the draft decision document. USACE shall consider all recommendations contained in the Review Report and prepare a written response for all recommendations adopted or not adopted. The final decision document will summarize the Review Report and USACE response. The Review Report and USACE response will be made available to the public, including through electronic means on the internet.

## **8. POLICY AND LEGAL COMPLIANCE REVIEW**

All implementation document products and milestones will be reviewed throughout the PED process for their compliance with law and policy. Guidance for policy and legal compliance reviews is addressed in Appendix H, ER 1105-2-100. These reviews culminate in determinations that the recommendations in the reports and the supporting analyses and coordination comply with law and policy, and warrant approval or further recommendation to higher authority by the home MSC Commander. DQC and ATR augment and complement the policy review processes by addressing compliance with pertinent published Army policies, particularly policies on analytical methods and the presentation of findings in decision documents.

## **9. COST ENGINEERING DIRECTORY OF EXPERTISE (DX) REVIEW AND CERTIFICATION**

Cost certification from the Cost Engineering DX was completed during the feasibility study. If Phase I efforts suggest the diversion location and outfall channel should change, it may be necessary to revisit cost certification since project features and materials will probably change. Additionally, since the project requires a new congressional authorization due to its cost, coordination between the Cost Engineering DX, the PDT, the RMO, and the Vertical Team should be aligned prior to an official request for construction funding. The RMO is responsible for coordination with the Cost Engineering DX.

## **10. MODEL CERTIFICATION AND APPROVAL**

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

- a. **Planning Models.** No planning models will be used for the implementation documents.

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

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Approval Status
AdH	AdH is a multi-dimensional modeling system for saturated and unsaturated groundwater, overland flow, three-dimensional Navier-Stokes flow, and two- or three-dimensional shallow water problems. It will have a sediment tracking module added to document deposition and distribution rates ( <a href="http://chl.ercd.usace.army.mil/adh">http://chl.ercd.usace.army.mil/adh</a> ).	Supported by the Coastal & Hydraulics Laboratory
DELFT-3D*	Delft-3D is a world leading 3D modeling suite to investigate hydrodynamics, sediment transport and morphology and water quality for fluvial, estuarine and coastal environments ( <a href="http://delftsoftware.wldelft.nl/">http://delftsoftware.wldelft.nl/</a> ). It will be used to document diversion effects in the Mississippi River.	Not on the supported list of the Coastal & Hydraulics Laboratory
FLOW-3D	FLOW-3D provides flow simulation solutions for engineers investigating the dynamic behavior of liquids and gases in a wide range of physical processes. It specializes in the solution of time-dependent (transient), free-surface problems in one, two and three dimensions, and models confined flows and steady-state problems ( <a href="http://flow3d.com">http://flow3d.com</a> ).	Not on the supported list of the Coastal & Hydraulics Laboratory
HEC-6T*	HEC-6T is titled "Sedimentation in Stream Networks (HEC-6T)." It is an enhancement of the Corps program HEC-6 (Scour and Deposition in Rivers and Reservoirs) but is proprietary and is owned by MBH Software ( <a href="http://www.mbh2o.com/hec6t.html">http://www.mbh2o.com/hec6t.html</a> ).	Not on the supported list of the Coastal & Hydraulics Laboratory (but HEC-6 is supported)

\* - These models are being used under the LCA Mississippi River Hydrodynamic study.

## 11. REVIEW SCHEDULES AND COSTS

**a. Review Schedule and Cost.** A full accounting for ATR costs is dependent upon the frequency of reviews and the amount of time required per review. At this time it is too early to determine these variables. Coordination with the RMO is necessary to accurately capture how often and for how long the ATR team will be engaged with the implementation document process. Since the Phase II effort will initiate only after a new cost-share agreement and PMP are developed, detailed cost estimates and schedules will be finalized at that time. Initial estimates to carry out Review Plan tasks during Phase II include:

- MVN DQC: \$50,000
- ATR: \$150,000
- SAR: \$150,000

**b. Model Certification/Approval Schedule and Cost.** Although some of the engineering models used for this effort are not on an approved list for use in PED activities, models such as Delft-3D and Flow-

3D have been used on other LCA projects and are widely accepted by the engineering community. As of this date, there are no plans to officially certify either of these models.

## **12. PUBLIC PARTICIPATION**

Several public meetings were held during the MDWD feasibility study and PDT members often met with stakeholders to discuss the project. Key features such as the diversion operational plan reflect concerns raised during these meetings. Continued interaction with the public is necessary to ensure a transparent PED process, especially for diversions where the potential for controversy is significant. It is recommended that MDWD follow a stakeholder update process that the LCA Medium Diversion at Myrtle Grove is utilizing whereby important project updates are presented to stakeholders as they are developed. Informal meetings with interested parties should occur as they are requested.

## **13. REVIEW PLAN APPROVAL AND UPDATES**

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

## **14. REVIEW PLAN POINTS OF CONTACT**

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

- Andrew MacInnes – MVN Planner; (504) 862-1062 or [andrew.d.macinnes@usace.army.mil](mailto:andrew.d.macinnes@usace.army.mil)
- Daimia Jackson – MVN Project Manager (504) 862-2446 or [daimia.l.jackson@usace.army.mil](mailto:daimia.l.jackson@usace.army.mil)
- RMO contact TBD

**ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECISION DOCUMENTS**

**COMPLETION OF AGENCY TECHNICAL REVIEW**

The Agency Technical Review (ATR) has been completed for the <type of product> for <project name and location>. The ATR was conducted as defined in the project’s Review Plan to comply with the requirements of EC 1165-2-209. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer’s needs consistent with law and existing US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrChecks<sup>sm</sup>.

*SIGNATURE*

Name  
ATR Team Leader  
Office Symbol/Company

\_\_\_\_\_  
Date

*SIGNATURE*

Name  
Project Manager  
Office Symbol

\_\_\_\_\_  
Date

*SIGNATURE*

Name  
Architect Engineer Project Manager<sup>1</sup>  
Company, location

\_\_\_\_\_  
Date

*SIGNATURE*

Name  
Review Management Office Representative  
Office Symbol

\_\_\_\_\_  
Date

**CERTIFICATION OF AGENCY TECHNICAL REVIEW**

Significant concerns and the explanation of the resolution are as follows: Describe the major technical concerns and their resolution.

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

*SIGNATURE*

Name  
Chief, Engineering Division  
Office Symbol

\_\_\_\_\_  
Date

*SIGNATURE*

Name  
Chief, Planning Division  
Office Symbol

\_\_\_\_\_  
Date

<sup>1</sup> Only needed if some portion of the ATR was contracted

**ATTACHMENT 3: REVIEW PLAN REVISIONS**

<b>Revision Date</b>	<b>Description of Change</b>	<b>Page / Paragraph Number</b>
22 Oct 2012	MDWD PED Review Plan (Phases I & II) Initiation	All
07 Dec 2012	Identified MVD as the RMO; the RMC will support MVD's review	Throughout



**ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS**

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