



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

7 June, 2012

MEMORANDUM FOR COMMANDER, New Orleans District

SUBJECT: Mississippi River Gulf Outlet (MRGO) Ecosystem  
Restoration, Louisiana Review Plan

1. References:

a. Memorandum, CEMVN-PM-B, 29 May 2012, subject:  
Mississippi River Gulf - Outlet (MRGO) Ecosystem Restoration  
Plan Feasibility Study Review Plan Approval (encl).

b. Engineering Circular (EC) 1165-2-209, Change 1,  
31 January 2012, subject: Civil Works Review Policy.

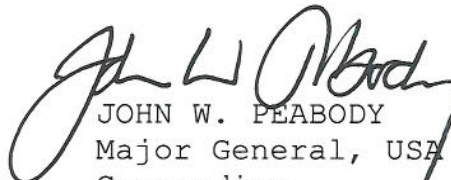
2. The subject review plan provided under reference 1.a. was  
reviewed by Mississippi Valley Division staff upon receipt.  
The Review Plan is consistent with the purpose and policy of  
EC 1165-2-209. Therefore, the review plan is approved.

3. The Review Plan is to be posted to the District website.

4. The POC for this action is Mr. Jim Wojtala at  
(601) 634-5931.

Building Strong!

Encl

  
JOHN W. PEABODY  
Major General, USA  
Commanding

# REVIEW PLAN

*Mississippi River Gulf Outlet(MRGO)*  
*Ecosystem Restoration Plan Feasibility Study*

*New Orleans District*

MSC Approval Date: *June 7, 2012*

Last Revision Date: *None*



US Army Corps  
of Engineers ®

**REVIEW PLAN**

**Mississippi River Gulf Outlet (MRGO)**  
**Ecosystem Restoration Plan Feasibility Study**

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## 1. PURPOSE AND REQUIREMENTS

a. **Purpose.** This Review Plan defines the scope and level of peer review for the [Mississippi River Gulf Outlet \(MRGO\) Ecosystem Restoration Plan Feasibility Study](#).

### 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) [MRGO Ecosystem Restoration Plan Feasibility Study PMP](#)

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 (IEPR), and Policy and Legal Compliance Review. In addition to these levels of review, decision documents are subject to cost engineering review and certification (per EC 1165-2-209) and planning model certification/approval (per EC 1105-2-412).

## 2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO is responsible for managing the overall peer review effort described in this Review Plan. The RMO for decision documents is typically either a Planning Center of Expertise (PCX) or the Risk Management Center (RMC), depending on the primary purpose of the decision document. The RMO for the peer review effort described in this Review Plan is [the National Ecosystem Restoration Planning Center of Expertise \(ECO-PCX\)](#).

The RMO will coordinate with the Cost Engineering Directory of Expertise (DX) to ensure the appropriate expertise is included on the review teams to assess the adequacy of cost estimates, construction schedules and contingencies. [The Walla Walla District \(NWW\) Cost Engineering Branch Directory of Expertise will be used for this process.](#)

## 3. STUDY INFORMATION

a. **Decision Document.** [In accordance with the Water Resources Development Act of 2007 \(Public Law 110-114\), the MRGO navigation channel was deauthorized from the GIWW to the Gulf of Mexico in June 2008 with the submittal of a Report of the Chief of Engineers to the U.S. Congress. The USACE previously completed a plan to close the MRGO by constructing a rock closure structure across the channel. In addition, the Water Resources Development Act of 2007 \(WRDA 2007\) also authorized the development and execution of a MRGO Ecosystem Restoration Plan. Congressional authority calls for including channel modification, natural feature restoration, prevention of salt water intrusion, native vegetation plantings, and fresh water diversions as potential features of the plan.](#)

A portion of WRDA 2007 Section 7013 states:

The Secretary shall carry out a plan to close the Mississippi River-Gulf Outlet and restore and protect the ecosystem substantially in accordance with the plan required under paragraph (3), if the Secretary determines that the project is cost-effective, environmentally acceptable, and technically feasible.

Therefore, this project is conditionally authorized for construction and the decision document does not require Congressional authorization. This feasibility study is anticipated to result in a Chief of Engineers Report containing a recommended MRGO Ecosystem Restoration Plan which can be carried out by the Secretary of the Army pursuant to the authorization on WRDA 2007 Section 7013. The feasibility study will be accompanied by an Environmental Impact Statement (EIS).

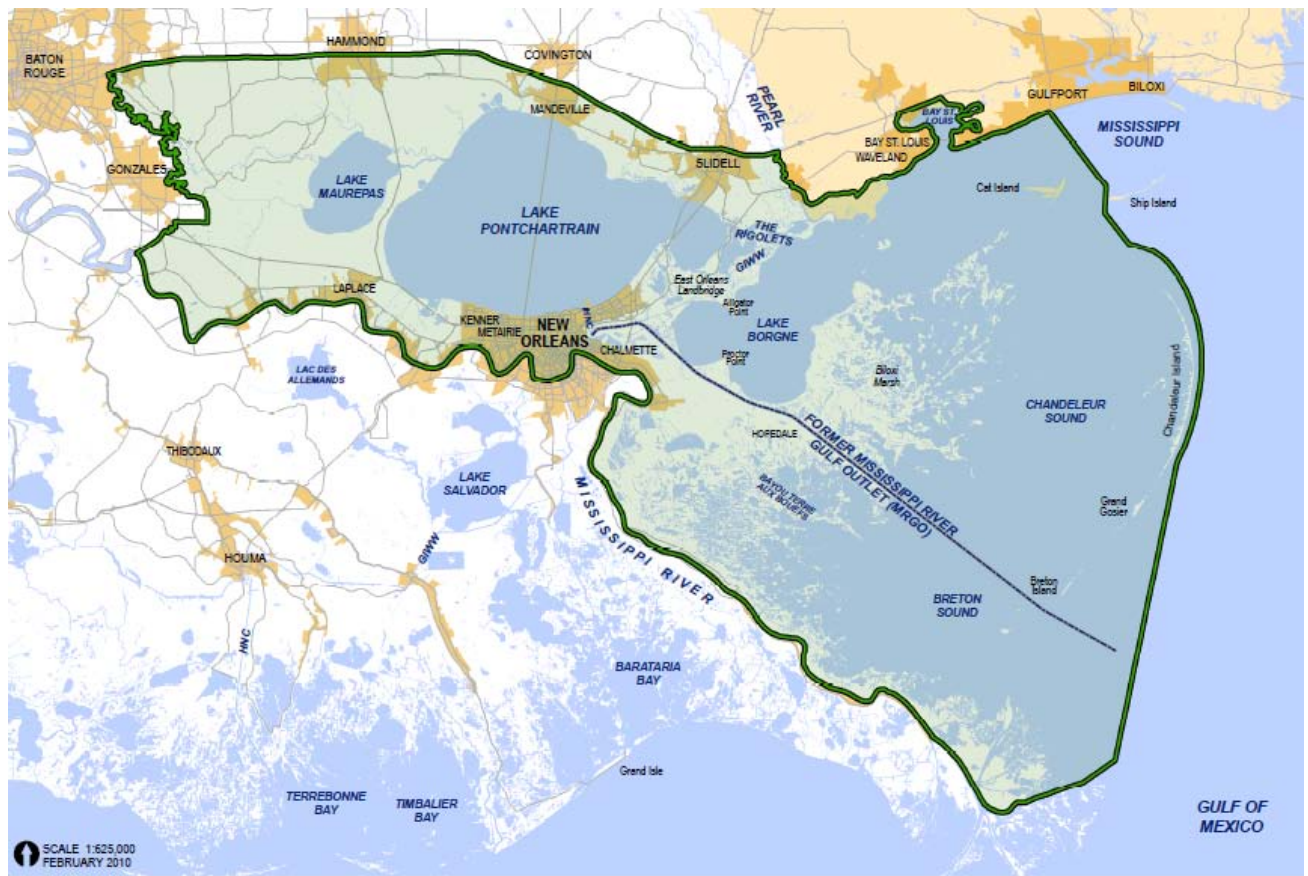
- b. Study/Project Description.** This section describes the feasibility study covered by this review plan. The MRGO Ecosystem Restoration Plan will be developed through the conduct of a feasibility study following ER 1105-2-100 (Planning Guidance Notebook) and other relevant regulations. The feasibility study is the decision document for the MRGO Ecosystem Restoration Plan. The study is to develop a comprehensive plan for the single purpose of ecosystem restoration for the Lake Borgne ecosystem and areas affected by the MRGO navigation channel. An interdisciplinary team has been formed from technical elements at the New Orleans District and the Mobile District. This team is charged with conducting the feasibility study in accordance with an approved project management plan and with frequent involvement of command and support elements at the Executive levels within the Districts, and from the MVN District Support Team at MVD and MVD Regional Integration Team at USACE HQ. Traditional study milestones will be scheduled to help verify and guide progress on the effort.

The team will utilize collaborative planning principles involving other state and Federal resource agencies, local and state governments, environmental organizations, landowners, and interested citizens. Public participation will include venues under the NEPA scoping process, an interactive study web site, information exchange meetings, and an opportunity to submit draft and final report comments. Where possible the team will take advantage of existing information to expedite study phases and will employ technological tools to assist in planning, analysis, and decision making. Key technologies used in the effort will include information management systems such as GIS and ProjectWise.

The project is designed for ecosystem restoration and will calculate National Ecosystem Restoration (NER) benefits. Potential measures include ridge restoration, marsh and swamp creation and restoration, shoreline protection, oyster reef restoration and freshwater diversions. Potential cost could fall within the 1-4 billion dollar range. This feasibility study is 100% federally funded and a potential cost share partner will need to be identified in order to sign a Chief of Engineers Report. There is no 902b cost-cap adjustment for this project.

The study area is defined as the Lake Borgne ecosystem and areas affected by the MRGO navigation channel. The study area includes portions of the Mississippi River Deltaic Plain within coastal southeast Louisiana and parts of southwest Mississippi. The study area encompasses approximately

3.86 million acres of land and open water. Louisiana parishes in the study area include Ascension, Jefferson, Livingston, Orleans, Plaquemines, St. Bernard, St. Charles, St. James, St. John the Baptist, St. Tammany and Tangipahoa. Mississippi counties in the study area include Hancock and Harrison.



- c. **Factors Affecting the Scope and Level of Review.** *This project will produce an EIS due to the significant (positive) impacts to the environment, strong interagency interest, and the scope of the project. It is not likely that the project will have significant negative economic, environmental or social effects to the Nation. Significant adverse impacts on scarce or unique cultural, historic or tribal resources are not anticipated. Borrow material is expected to come from designated critical habitat for the threatened gulf sturgeon, but impacts are expected to be temporary in nature and not result in a jeopardy opinion. No other fish and wildlife impacts are expected. Changes in habitat type and species distribution in the Central Wetlands unit of the study area, are anticipated as a result of the freshwater diversion.*

A new Federal levee system is currently being designed and is expected to be under construction or complete by the time the MRGO study finishes. This will require certain considerations when planning for cost and design features, some of which may be unknown as the MRGO study progresses. Regardless of the phase the new levee work is in, the MRGO study will coordinate closely with the levee teams to ensure an awareness of project developments and to maximize efficiency. Since the focus of the MRGO project is ecosystem restoration, it is not expected that coordination with the Flood Risk Management PCX or the Inland Navigation PCX will be necessary.

Controversy associated with diversion projects has been expressed. Existing diversion projects are criticized by some stakeholders as being inefficient at creating new marsh and result in detrimental effects such as undesirable habitat changes. Public scoping meetings held in 2008 indicate that not everyone agrees about what the proper techniques are for restoring coastal Louisiana. This could result in added scrutiny of the project. Additionally, residents of St. Bernard Parish have expressed concern that constructing a new diversion canal in their parish may result in a perceived aesthetic issue that would separate the lower part of the parish from the upper part of the parish.

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. Uncertainties with sea level rise and how they will affect the closure of flood gates and Bayou Bienvenue and Bayou Dupre also exist and will need to be factored into the analysis. As with most ecosystem restoration projects, there is little risk to life safety inherent to the project. The team plans to reduce this risk by using standard and conservative designs for structures, utilizing a robust public involvement plan to articulate the proposed project features, and ensuring a transparent study process. Risk of project failure after implementation is expected to be minimal.

The MRGO study will rely heavily on lessons learned from existing ecosystem restoration projects as well as comments and recommendations during the evaluation and study phase for new diversions. The PDT is already actively involved in arranging and holding stakeholder update meetings to inform interested parties of project developments and to solicit expertise and opinion on certain proposed project features. Emphasis has been placed on keeping stakeholders updated on project developments to help minimize controversy and to ensure interest groups are aware of the project status. The MRGO channel construction is a major topic of conversation among citizens that were affected by Hurricane Katrina, and public interest is expected to be very large for this project.

The project design is not anticipated to require redundancy, resiliency, and/or robustness, unique construction sequencing, or a reduced or overlapping design construction schedule. Discussion of and details as to why or why not will be finalized as the study progresses in the PED phase.

- d. In-Kind Contributions.** Products and analyses provided by non-Federal sponsors as in-kind services are subject to DQC, ATR, and IEPR. The in-kind products and analyses to be provided by the non-Federal sponsor include: *The MRGO feasibility study is 100% federally funded, therefore there will not be any in-kind contributions.*

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

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

- a. Documentation of DQC.** DQC will be performed in advance of all milestones where ATR is required (Feasibility)

Scoping Meeting, Alternative Formulation Briefing, draft decision and NEPA documents, and final decision and NEPA documents). Prior to submittal of review products to the ATR team, the PDT will send all documents and report products to the Planning Division DQC team in Vicksburg for their review and approval. The division planning review team will check documents for quality and consistency with USACE standards and regulations. Upon acceptance of the decision documents and report products, the review team lead will notify the Chief of Planning that all documentation is acceptable within the realm of USACE standards, and documents will be approved to be released to the ATR team.

**b. Products to Undergo DQC.** The feasibility report and EIS, along with supporting appendices will be reviewed for DQC prior to ATR submittal. This includes all technical division materials.

**c. Required DQC Expertise.** N/A

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

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

**a. Products to Undergo ATR.** The feasibility report and EIS will be submitted to the ATR team for review. There are numerous appendices that will be included as part of the combined report that will also undergo ATR including the engineering appendix, environmental appendices to the EIS, and the real estate plan. All components of the report will be submitted to the ATR team for review in their current state of development. Currently, there are three ATR's scheduled for the following project milestones: 1) Feasibility Scoping Meeting, 2) Alternative Formulation Briefing, and 3) review of final draft report. Key members of the ATR team will also be asked to participate during interim milestones such as In-Progress Reviews.

**Required ATR Team Expertise.** The ATR team will be comprised of individuals that have not been involved in the development of the decision document and will be chosen based on expertise, experience, and/or skills. The members will roughly mirror the composition of the PDT. It is anticipated that the team will consist of 9-11 reviewers. For a list of ATR team members, please see attachment 1 of this review plan.

| ATR Team Members/Disciplines | Expertise Required   |
|------------------------------|--|
| <u>ATR Lead</u>              | <u>The ATR lead should be a senior professional with extensive experience in preparing Civil Works decision documents and conducting ATR. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. The ATR lead may also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc).</u> |
| <u>Planning</u>              | <u>The Planning reviewer should be a senior water resources planner</u>  |



|  |  |
|--|--|
|  | <u>with experience in coastal ecosystem restoration projects. This person should have good communication skills, extensive knowledge of the planning process and alternative formulation and comparison.</u>   |
| <u>Economics</u>                       | <u>Reviewer must be experienced in civil works and related ecosystem restoration projects, and have a thorough understanding of the IWR Planning Suite. This individual may also review the socio-economic evaluation if qualified.</u>  |
| <u>Environmental Resources</u>         | <u>Reviewer must be experienced with National Environmental Policy Act (NEPA) compliance and have a biological or environmental background that is familiar with coastal areas. Additionally, the reviewer must have experience with urban projects and impacts, evaluation of social impacts associated with ecosystem restoration projects, and public coordination.</u> |
| <u>Hydrology/Hydraulic Engineering</u> | <u>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 FVCOM, UNO Box Model, and Mike21.</u>  |
| <u>Geotechnical Engineering</u>        | <u>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.</u>  |
| <u>Civil Engineering</u>               | <u>Reviewer must have experience in dredged material placement, the construction of new wetlands, and the design and construction of shoreline protection and oyster reef restoration. A certified professional engineer is necessary.</u>   |
| <u>Cost Engineering</u>                | <u>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.</u>  |
| <u>Real Estate</u>                     | <u>Team member must be experienced in civil work real estate laws, policies and guidance and experience working with the purchase of easements and coastal property rights.</u>  |

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

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

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

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

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

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

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

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

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

IEPR may be required for decision documents under certain circumstances. IEPR is the most independent level of review, and is applied in cases that meet certain criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. A risk-informed decision, as described in EC 1165-2-209, is made as to whether IEPR is appropriate. IEPR panels will consist of independent, recognized experts from outside of the

USACE in the appropriate disciplines, representing a balance of areas of expertise suitable for the review being conducted. There are two types of IEPR:

- Type I IEPR. Type I IEPR reviews are managed outside the USACE and are conducted on project studies. Type I IEPR panels assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, economic analysis, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in the evaluation of environmental impacts of proposed projects, and biological opinions of the project study. Type I IEPR will cover the entire decision document or action and will address all underlying engineering, economics, and environmental work, not just one aspect of the study. For decision documents where a Type II IEPR (Safety Assurance Review) is anticipated during project implementation, safety assurance shall also be addressed during the Type I IEPR per EC 1165-2-209.
- Type II IEPR. Type II IEPR, or Safety Assurance Review (SAR), are managed outside the USACE and are conducted on design and construction activities for hurricane, storm, and flood risk management projects or other projects where existing and potential hazards pose a significant threat to human life. Type II IEPR panels will conduct reviews of the design and construction activities prior to initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health safety and welfare.

- a. **Decision on IEPR.** [This feasibility report will present the details of a feasibility study undertaken to solve a water resource problem as described in Section II. A Type I IEPR will be conducted for the following reasons:](#)

[1\) Cost – The total project cost will exceed \\$45 Million - Estimated implementation cost is \\$4 billion.](#)

[2\) Environmental Impact Statement – The study will produce an EIS.](#)

[3\) Significant Public Dispute as to the size, nature and scope – Significant public dispute as to the size, location and presence of the freshwater diversion is expected.](#)

[Restoration of coastal areas requires assessment of complex natural systems, including wave patterns; wind patterns; ocean, inlet and bay currents; sediment transport and placement; vegetative colonization; salinity changes due to freshwater inflow and marine forcing; and dynamics of the Mississippi River due to project influences. The IEPR will focus on the formulation of the restoration plan and will address these principles. The review panel will be composed of at least 4 individuals with expertise in coastal geomorphology and processes, tidal habitat, coastal engineering and others. The District requests assistance from the ECO-PCX in determining the appropriate qualifications for panel members. The public will not be asked to nominate panel members. The entire feasibility report with appendices will be provided to the IEPR panel. It is recommended that the panel conduct a site visit if possible.](#)

[WRDA 2007 Section 7009 establishes a specific requirement for external peer review of LCA projects. The law notes that a Louisiana Water Resources Council “shall serve as the exclusive peer review panel for activities conducted by the Corps of Engineers in the areas in the State of Louisiana declared as major disaster areas in accordance with section 401 of the Robert T. Stafford Disaster](#)

Relief and Emergency Assistance Act (42 U.S.C. 5170) in response to Hurricane Katrina or Rita of 2005, in accordance with the requirements of section 2034.” The Louisiana Water Resources Council has been established, and should be the lead for the MRGO project IEPR.

Type II IEPR will not be conducted on the MRGO project as this is an ecosystem restoration project and failure of the project will not result in any life safety issues.

**b. Products to Undergo Type I IEPR.** The draft feasibility report and EIS will be submitted to the IEPR team for review. There are numerous appendices that will be included as part of the combined report that will also undergo IEPR including the engineering appendix, multiple appendices associated with the EIS, and the real estate plan. All components of the report will be submitted to the IEPR team for review in their current state of development.

**Required Type I IEPR Panel Expertise.** The IEPR team will be comprised of technical experts that are selected as members of the Louisiana Water Resource Council. The number of reviewers and technical expertise will be left up to the ECO-PCX in conjunction with the Outside Eligible Organization (OEO).

| IEPR Panel Members/Disciplines | Expertise Required   |
|--------------------------------|--|
| <u>Economics</u>               | <i>The Economics Panel Member should be experienced in civil works and related ecosystem restoration projects, and have a thorough understanding of the IWR Planning Suite. This individual may also review the socio-economic evaluation if qualified</i>   |
| <u>Environmental</u>           | <i>Reviewer must be experienced with National Environmental Policy Act (NEPA) compliance and have a biological or environmental background that is familiar with coastal areas. Additionally, the reviewer must have experience with urban projects and impacts, evaluation of social impacts associated with ecosystem restoration projects, and public coordination.</i> |
| <u>Engineering</u>             | <u>Civil Engineer must have expertise in the restoration of coastal wetlands and coastal engineering practices. Reviewer should have experience in dredged material placement, sediment transport, and shoreline restoration. A certified professional engineer is necessary.</u>  |
| <u>Planning</u>                | <u>Reviewer must have strong planning background related to coastal ecosystem restoration projects, good communication skills, extensive knowledge of the planning process and experience with alternative formulation and comparison.</u>   |

**c. Documentation of Type I IEPR.** 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. IEPR comments should generally include the same four key parts as described for ATR comments in Section 4.d above. 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.

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

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

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

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

## **9. MODEL CERTIFICATION AND APPROVAL**

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

users and is subject to DQC, ATR, and IEPR (if required).

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

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

Ecosystem Output Model –

The Wetland Value Assessment (WVA) methodology is a quantitative habitat-based assessment methodology developed for use in determining wetland benefits of project proposals submitted for funding under the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA). The WVA quantifies changes in fish and wildlife habitat quality and quantity that are expected to result from a proposed wetland restoration project. The results of the WVA, measured in Average Annual Habitat Units (AAHUs), can be combined with cost data to provide a measure of the effectiveness of a proposed project in terms of annualized cost per AAHU gained. In addition, the WVA methodology provides an estimate of the number of acres benefited or enhanced by the project and the net acres of habitat protected/restored.

The WVA has been developed strictly for use in determining the wetland benefits of proposed CWPPRA projects; it is not intended to provide a detailed, comprehensive methodology for establishing baseline conditions within a project area. Some aspects of the WVA have been defined by policy and/or functional considerations of the CWPPRA; therefore, user-specific modifications may be necessary if the WVA is used for other purposes.

The WVA is a modification of the Habitat Evaluation Procedures (HEP) developed by the U.S. Fish and Wildlife Service (U.S. Fish and Wildlife Service 1980). HEP is widely used by the Fish and Wildlife Service and other Federal and State agencies in evaluating the impacts of development projects on fish and wildlife resources. A notable difference exists between the two methodologies, however, in that HEP generally uses a species oriented approach, whereas the WVA utilizes a community approach.

| Model Name and Version                         | Brief Description of the Model and How It Will Be Applied in the Study  | Certification / Approval Status   |
|--|---|---|
| <a href="#">IWR Planning Suite</a>             | <a href="#">IWR has developed IWR-PLAN Decision Support Software to assist with the formulation and comparison of alternative plans. IWR-PLAN can assist with plan formulation by combining solutions to planning problems and calculating the additive effects of each combination, or "plan." IWR-PLAN can assist with plan comparison by conducting cost effectiveness and incremental cost analyses, identifying the plans that are the best financial investments and displaying the effects of each on a range of decision variables.</a>           | <a href="#">Certified</a>   |
| <a href="#">Wetland Value Assessment (WVA)</a> | <a href="#">The WVA will quantify changes in fish and wildlife habitat quality and quantity that are expected to result from this wetland restoration project. The results of the WVA, measured in Average Annual Habitat Units (AAHUs), will be combined with cost data to provide a measure of the effectiveness of the project in terms of annualized cost per AAHU gained. In addition, the WVA methodology will provide an estimate of the number of acres benefited or enhanced by the project and the net acres of habitat protected/restored.</a> | <a href="#">Approved for regional use. Coastal Marsh model approved for single use on this project.</a> |

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

[MCACES: This is a cost estimating model that was developed by Building Systems Design Inc. The Army Corps of Engineers began using this model in 1989.](#)

[SAND II Model - The methodology was developed to estimate the benefits of nutrients and sediments introduced into coastal marshes and to improve the predictability of coastal restoration alternatives. The methodology employs commonly used quantifiable measures to characterize various wetland types and to predict trends of wetland condition. Because soil and vegetation are the primary components that form the structure of the wetland area, those components are used to establish the minimum requirements to sustain a wetland. This model is currently under development by ERDC and has been used on other LCA projects.](#)

| Model Name and Version                              | Brief Description of the Model and How It Will Be Applied in the Study  | Approval Status  |
|---|---|--|
| <a href="#">HEC-RAS 4.0 (River Analysis System)</a> | <a href="#">The Hydrologic Engineering Center's River Analysis System (HEC-RAS) program provides the capability to perform one-dimensional steady and unsteady flow river hydraulics calculations. Long-term simulations (on the order of months) will be completed using unsteady flow</a> | <a href="#">Supported by the Coastal &amp; Hydraulics Laboratory</a> |

|   |  |  |
|---|--|--|
|   | <a href="#">to size the channel and structures of the proposed Violet Freshwater Diversion. The model will also be used to determine the viability of using the existing Violet Canal for the diversion (instead of constructing a new channel).</a>   |  |
| <a href="#">Mike 21</a>                                       | <a href="#">MIKE 21 Flow Model is a modeling system for 2D free-surface flows. It is applicable for the simulation of hydraulic and environmental phenomena in lakes, estuaries, bays, coastal areas and seas. It may be applied wherever stratification can be neglected. The Mike 21 model will be used in the alternative evaluation phase in order to determine stages and salinity regime within the Central Wetlands upon operation of the freshwater diversion.</a> | <a href="#">Not on the supported list of the Coastal &amp; Hydraulics Laboratory</a> |
| <a href="#">University of New Orleans, Mass Balance Model</a> | <a href="#">The Mass-Balance model performs 1st-order approximations of mass transfer of physical inputs such as water level, flow, and salinity; in one dimension. The model allows the simulation of a large number of alternatives on a large time scale. The model will be used during long-term freshwater diversion alternative evaluation to simulate salinity variations expected to occur with the operation of the diversion alternatives.</a>                   | <a href="#">Not on the supported list of the Coastal &amp; Hydraulics Laboratory</a> |
| <a href="#">FV-COM</a>  | <a href="#">FV-COM (Finite Volume Coastal Ocean Model) is a, finite-volume, free-surface, 3-D, circulation model. It is solved numerically by running second-order accurate, discrete flux calculations over an unstructured triangular grid. The model will be used to better understand high frequency variability of salinity, and refine error bands contained in the Mass Balance model simulations.</a>  | <a href="#">Not on the supported list of the Coastal &amp; Hydraulics Laboratory</a> |

## 10. REVIEW SCHEDULES AND COSTS

### a. ATR Schedule and Cost.

| <a href="#">Review Milestone</a>                           | <a href="#">Scheduled Date</a>           |
|--|--|
| <a href="#">ATR of Feasibility Scoping Meeting Package</a> | <a href="#">February 2009 (complete)</a> |
| <a href="#">Feasibility Scoping Meeting</a>                | <a href="#">April 2009 (complete)</a>    |
| <a href="#">ATR of Draft Report (pre AFB)</a>              | <a href="#">April 2010 (complete)</a>    |
| <a href="#">Alternative Formulation Briefing (AFB)</a>     | <a href="#">July 2010 (complete)</a>     |
| <a href="#">Public Review of Draft Report</a>              | <a href="#">December 2010 (complete)</a> |
| <a href="#">ATR of Final Report</a>                        | <a href="#">February 2012</a>            |
| <a href="#">Civil Works Review Board</a>                   | <a href="#">June 2012</a>                |
| <a href="#">State and Agency Review</a>                    | <a href="#">June-July 2012</a>           |
| <a href="#">Final Report Submission</a>                    | <a href="#">September 2012</a>           |

[The anticipated cost for three rounds of ATR is \\$130,000, including funds for the ATR lead to attend subsequent meetings such as the AFB and the Civil Works Review Board.](#)



**b. Type I IEPR Schedule and Cost.**

| <u>IEPR Milestone</u>                    | <u>Completion Date</u> |
|--|------------------------|
| <u>Initial Coordination with ECO-PCX</u> | <u>January 2011</u>    |
| <u>IEPR Scope of Work Prepared</u>       | <u>January 2011</u>    |
| <u>IEPR Contract Awarded</u>             | <u>February 2011</u>   |
| <u>IEPR Review Starts</u>                | <u>February 2011</u>   |
| <u>Final IEPR Report Submitted</u>       | <u>July 2011</u>       |

The anticipated cost for Type 1 IEPR is \$400,000, including the cost for in-house personnel to develop and respond to IEPR materials.

- 1. Model Certification/Approval Schedule and Cost.** *All planning models to be used in the MRGO project are either previously approved or have already begun the certification process under previous projects and thus funds are not needed to certify any models.*

**2. PUBLIC PARTICIPATION**

Release of the draft document for public review occurred after issuance of the AFB policy guidance memo and concurrence by HQUSACE. The district made the study documentation available to the public on the study website, and mailed copies to stakeholders and interested citizens. Copies of the documentation were also handed out at 3 public meetings held in Louisiana and Mississippi. 6 Hours of Public Testimony was held, and over 100 public citizens gave verbal comments on the recommended plan.

Public review of this document occurred after the completion of the AFB process and issuance of the HQUSACE policy guidance memo. The review period started in late December 2010 and was originally schedule for 45 days. However, after receiving multiple requests for extensions, the review period lasted 79 days. Over 25,000 comments were received and have been formally responded to in the final report documentation.

A formal State and Agency review will occur after the release of the final report is approved by the Civil Works Review Board. However, intensive coordination with these agencies will occur concurrently with the planning process. There may be possible coordinating parties' regarding this project but no specific issues have been raised to date. Upon completion of the review period, comments will be consolidated in a matrix and addressed. A summary of the comments and resolutions will be included in the final report documentation.

A website is maintained for the MRGO study and draft documents will be posted there for review and download. Additionally, there is expected to be a significant public outreach process that will allow the PDT to provide project updates directly to interested stakeholders and the general public. The MRGO PDT has stated that it will attend any meeting that it is invited to to address stakeholders and the general public about the status of the proposed restoration plan. Community outreach is a focus of the team as they move through the planning process.

### **3. 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.

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

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

- [MVN Planning Lead -Sean Mickal - \(504\) 862-2319](#)
- [MVD Support Team Lead – Jim Wojtala \(601\) 634-5931](#)
- [MVR Eco-PCX – Jodi Creswell \(309\) 794-5448](#)

**ATTACHMENT 1: TEAM ROSTERS**

**PDT:**

|                                 |                               |                |
|---------------------------------|-------------------------------|----------------|
| Shawn Phillips                  | Sr. Project Planner           | (901) 544-3321 |
| Caroline Lanford                | Project Planner(contractor)   | (504) 862-2641 |
| Joshua Carson                   | Resource Manager (contractor) | (504) 862-2318 |
| Tammy Gilmore                   | Environmental Manager         | (504) 862-1002 |
| Pam DeLoach                     | Engineering Lead              | (504) 862-2621 |
| Paula Feldmeier                 | Office of Council             | (504) 862-1114 |
| Erin Clark                      | Real Estate Lead              | (504) 862-2183 |
| Betty Brogna                    | Real Estate                   | (504) 862-1605 |
| Margie Sexton                   | Real Estate                   | (504) 862-2405 |
| Mark Haab                       | Economics Lead                | (504) 862-2497 |
| Matt Napolitano                 | Economics                     | (504) 862-2445 |
| Dan Whalen                      | Economics                     | (504) 862-2852 |
| Daimon McNew                    | Construction Lead             | (504) 862-2523 |
| Rene Poche                      | Public Affairs Office Lead    | (504) 862-1767 |
| Don Schneider                   | Operations Lead               | (504) 862-1828 |
| Ron Taylor                      | H&H                           | (504) 862-2440 |
| Del Britsch                     | GeoTech - Geology             | (504) 862-1022 |
| Kathryn Chaisson                | Geotech – Design              | (504) 862-2985 |
| Rick Broussard                  | Civil Engineering             | (504) 862-2402 |
| Keith O’Cain                    | Civil Engineering             | 504-862-2746   |
| John Petitbon                   | Cost Estimating               | (504) 862-2732 |
| Charles Brandstetter            | Structures                    | (504) 862-2501 |
| Ray Bender                      | Relocations                   | (504) 862-1020 |
| Gary DeMarcay                   | Cultural Resources            | (545) 862-2039 |
| Andrew Perez                    | Recreational Resources        | (504) 862-1442 |
| Kelly McCaffrey                 | Aesthetics                    | (504) 862-1927 |
| Christopher Brown               | HTRW                          | (504) 862-2508 |
| Libby Behrens                   | Mitigation/NMFS Coordination  | (504) 862-2025 |
| Jerica Richardson               | Environmental Justice         | (504) 862-2038 |
| <b>ATR Team:</b>                |                               |                |
| James Baker                     | ATR Lead                      | (904) 232-2698 |
| Martin Gonzalez/Debbie Peterson | Plan Formulation              | (904) 232-2336 |
| Michael Holland/Kevin Wittmann  | Economics                     | (904) 232-1972 |
| Jimmy Mathews                   | Engineering Lead              | (904) 232-2087 |
| Tom Martin/Kelly Legault        | Hydraulics                    | (904) 232-2428 |

|                                  |                                |                |
|----------------------------------|--------------------------------|----------------|
| James Henderson/Wally Brassfield | Cost Engineering               | Various        |
| John Hazelton                    | Hydraulic Modeling             |                |
| Thaddeus Zielonka                | Geotech                        |                |
| James Neubauer                   | Cost Engineering (Walla Walla) | (509) 529-1669 |
| Frank Yelverton                  | Environmental                  | (910) 251-4640 |
| Karl Nixon                       | Real Estate                    | (904) 232-2339 |
| <b>Vertical Team:</b>            |                                |                |
| Jim Wojtala                      | District Support Team Lead     | (601) 634-5931 |
| Beth Marlowe                     | Regional Integration Team Lead | (202) 761-0297 |

**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 \_\_\_\_\_ Date \_\_\_\_\_  
Name  
ATR Team Leader  
Office Symbol/Company

SIGNATURE \_\_\_\_\_ Date \_\_\_\_\_  
Name  
Project Manager  
Office Symbol

SIGNATURE \_\_\_\_\_ Date \_\_\_\_\_  
Name  
Architect Engineer Project Manager<sup>1</sup>  
Company, location

SIGNATURE \_\_\_\_\_ Date \_\_\_\_\_  
Name  
Review Management Office Representative  
Office Symbol

**CERTIFICATION OF AGENCY TECHNICAL REVIEW**

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

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

SIGNATURE \_\_\_\_\_ Date \_\_\_\_\_  
Name  
Chief, Engineering Division  
Office Symbol

SIGNATURE \_\_\_\_\_ Date \_\_\_\_\_  
Name  
Chief, Planning Division  
Office Symbol

<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> |
|----------------------|------------------------------|--------------------------------|
|                      |                              |                                |
|                      |                              |                                |
|                      |                              |                                |
|                      |                              |                                |
|                      |                              |                                |

**ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS**

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