

MISSISSIPPI RIVER AND TRIBUTARIES PROJECT
CHANNEL IMPROVEMENT FEATURE
REGULATING WORKS PROJECT
REVIEW PLAN

Mississippi Valley Division

St. Louis District
Memphis District
Vicksburg District
New Orleans District

1 December 2012

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MISSISSIPPI RIVER AND TRIBUTARIES PROJECT CHANNEL IMPROVEMENT FEATURE AND REGULATING WORKS REVIEW PLAN

Reviews of documents and process

1. General. This Review Plan will be performed to be in compliance with the EC 1165-2-214 dated 15 December 2012. Documents and processes related to the feature are discussed below.
2. Program Description. The Channel Improvement and Regulating Works Projects are two of several components, which together comprise the plan of improvement for navigation and flood risk management on the middle and lower Mississippi River. Other components include: Mississippi River Levees, South Bank Arkansas and South Bank Red River Levees, the Atchafalaya Basin, Atchafalaya Basin Floodway System, Old River and a few miscellaneous items.

The Mississippi River Commission (MRC) has a proud heritage that dates back to its creation by an act of Congress on 28 June 1879. Congress established the Commission with the mission to transform the Mississippi River into a reliable commercial artery, while reducing the risk of flooding to adjacent towns and fertile agricultural lands. The 1879 legislation that created the Mississippi River Commission granted the body extensive planning authority and jurisdiction on the Mississippi River stretching from its headwaters at Lake Itasca to the Head of Passes, near its mouth at the Gulf of Mexico. The Mississippi River Commission quickly assumed the role of an active Federal agent capable of transcending the regional issues that had previously hampered the development of a more effective river improvement system. The Commission began improving the navigation channel to promote commerce, setting standards for levee construction and holding public hearings to give local interests a greater voice in shaping federal policy. The Flood Control Act of 15 May 1928 authorized the Flood Control, Mississippi River and Tributaries (MR&T) Project. The MR&T Project in the alluvial valley between Head of Passes, Louisiana, and Cape Girardeau, Missouri, provides flood risk management by means of levees, floodwalls, floodways, reservoirs (in the Yazoo and St. Francis Basins), bank stabilization and channel improvements in and along the river and its tributaries and outlets insofar as affected by backwater of the Mississippi River. When completed, 23,620 square miles will be protected from the MR&T project flood. The project also provides for a 12- by 300-foot navigation channel between Baton Rouge, Louisiana, and Cairo, Illinois; for salinity control structures; and for channel realignment and improvement including bank stabilization and dikes to reduce flood heights, control the natural tendency of the river to lengthen by meandering, and protect levees from being destroyed by caving banks. Construction of the existing project began in 1928 and has continued throughout ensuing years. The entire project is approximately 88% complete.

The Rivers and Harbors Acts of 1910, 1927, and 1930, authorized the Regulating Works Project of the Upper Mississippi River. This authorization requires the development and maintenance of a navigation channel nine feet deep and not less than 300 feet wide with additional width in bends as needed. The project limits are from the mouth of the Ohio River to the mouth of the Missouri River, a distance of approximately 195 miles. Authorized channel dimensions are achieved by means of river training structures, revetments, construction dredging, and rock removal. The project is approximately 84% complete.

Authorized project operations below Cape Girardeau are conducted by District Engineers of New Orleans, Vicksburg, Memphis and St. Louis Districts within the areas described above, in accordance with approved directives and programs and congressional appropriations. The banks are protected with stone and articulated concrete mattress (ACM) composed of concrete blocks assembled together with stainless steel and copper coated wire. The ACM is placed on the river banks using specialized government-owned and operated floating plant and equipment. The stone is placed by contractors. The dikes are constructed by contractors using quarry run stone barged downstream from Missouri and Kentucky. The dikes or wing-dams, as they are sometimes called, direct flow into the navigation channel as stages fall to scour the channel naturally maintaining authorized navigation depths with minimum dredging required. The revetments and dikes work together to stabilize the river channel for flood risk management and navigation which neither could accomplish alone.

Authorized project operations above Cape Girardeau are conducted by the District Engineer of the St. Louis District in accordance with approved directives and programs and congressional appropriations. Revetments protect the banks from lateral migration and the river training structures maintain the authorized river width and depth. A well graded quarry run stone is used for revetments and river training structures and is placed by contractors with floating plant capability. The river training structures consist of dikes or wing-dams, chevrons and bendway weirs. The purpose of these structures is to direct flow into the navigation channel and as stages fall to deepen the channel naturally, maintaining the authorized navigation depths with minimum dredging required. The revetments and dikes work together to stabilize the river channel for navigation.

A stable river channel is crucial for the integrity of the flood risk management system and the navigation system. A failure of either would have significant consequences to the Nation's economy. Depending on numerous factors, a potential failure could occur at any point on the river within the project limits. Depending on location and timing of the failure, the severity of the impacts could range from a minor delay to the navigation industry to a levee failure resulting in flooding to large areas of the Valley.

This project is in compliance with the 1976 Mississippi River and Tributaries, Levees and Channel Improvement Environmental Impact Statement and the 1976 Mississippi River between the Ohio and Missouri Rivers (Regulating Works) Environmental Impact Statement.

The Channel Improvement feature and the Regulating Works Project are managed through DIVR 1110-2-8 which outlines Engineering Actions (E-Actions) by which the districts propose a 5-year construction plan. The 5-year plan is revised and reviewed annually by MVD's river engineering Project Delivery Team (PDT) as a part of each district's DQC process. The annual E-Action Process culminates in the E-3 Document which details the current year's work as well as the work proposed for the next 5 years. The E-3 Document serves as the Channel Improvement Annual Work Plan. In addition, the PDT has developed a Master Plan of all work required for project completion. The Master Plan is updated periodically. This Review Plan has

been developed for these three implementation documents: each District's general work plan, the Master Plan and typical plans and specifications.

Plans and specifications for the contracted work are prepared based on the approval of the E-3 Annual Work Plan by the President of the Mississippi River Commission. Similarly, preparations are made for hired labor revetment work based on this approval.

The current cost estimate for the Channel Improvement portion of the MR&T program is \$4,238,000,000.

The current cost estimate for the Regulating Works Channel Improvement Project is \$323,000,000.

3. References.

- a. MVD PgMP, Channel Improvement Project (DRAFT), September 2012.
- b. MVD DIVR 1110-2-8, Channel Improvement Engineering and Design Activities, 27 October 2005.
- c. EC 1165-2-214, Water Resources Policies and Authorities. Civil Works Review, 15 December 2012.
- d. ER 5-1-1, Project Management Business Process, 1 November 2006.
<http://140.194.76.129/publications/eng-regs/er5-1-11/entire.pdf>
- e. ER 1110-2-1150, Engineering and Design for Civil Works Projects, 31 August 1999.
- f. ER-1110-1-12, Quality Management, 21 June 2006,
<http://140.194.76.129/publications/eng-regs/er1110-1-12/entire.pdf>
- g. ES-08011 QA-QC Process for Study-Design,
<https://kme.usace.army.mil/CE/QMS/QMS%20Documents/2007-10/08011%20QC-QA%20Processes%20for%20Study-Design%20Phase.DOC>
- h. PMBP Manual, Proc 2000 PMP/PgMP Development
http://bp.usace.army.mil/robo/projects/pmbp_manual/PMBP_Manual/proc2000.htm
- i. PMBP Manual, REF8008G Quality Management Plan.
http://bp.usace.army.mil/robo/projects/pmbp_manual/PMBP_Manual/REF8008G.htm
- j. Armoring Team PgMP (DRAFT), September 2009.
- k. Hurricane Storm Damage Risk Reduction System PgMP, June 2010.

l. National Historical Preservation Act of 1966 as amended through 2006.
<http://www.achp.gov/docs/nhpa%202008-final.pdf>

m. Archaeological Resources Protection Act of 1979 as amended.
http://www.nps.gov/history/local-law/fhpl_archsrcsprot.pdf

4. Requirements. This review plan was developed to be in compliance with the intent of EC 1165-2-214, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design, construction, and operation, maintenance, repair, replacement and rehabilitation (OMRR&R).

5. Plan for Review. The items listed below will be reviewed. The current Master Plan will be reviewed. After future periodic revisions, the Master Plan will be reviewed. Typical plans and specifications will be reviewed. Thereafter they will be reviewed only if significant changes are made. Each District's current general work plan will reviewed annually.

a. Items Requiring Review.

- (1) The Master Plan
- (2) Each District's general work plan.
- (3) Typical plans and specifications.

b. Levels of Review.

(1) District Quality Control (DQC). Each District's Channel Improvement Coordinator will submit the District's general work plans to personnel in the District office not involved in the plans' development for review and comment. This review team will be composed of senior members of the Hydraulics and Hydrology and river engineering disciplines. The initial formal DQC will take place prior to the 2013 E-Action meeting.

(a) Documentation. The Channel Improvement Coordinator will prepare a report discussing all comments and the resolution to those comments. The report will include a schedule for the submission of any clearance or documentation needed to advertise or start construction for each dike and revetment item.

(b) Submittal. The report will be submitted to the MVD Channel Improvement Project Manager each year at the annual E-Action meeting. In addition, the District Channel Improvement coordinator will supplement the previously submitted report with any clearance or documentation needed to advertise or start construction for each dike and revetment item as it is developed.

(2) Agency Technical Review (ATR). The annual E-Action meeting is attended by the Channel Improvement Coordinators from each District, Design and Operations personnel from

each District associated with the Channel Improvement Project, personnel from the MVD Channel Improvement group and personnel from the MVD Civil Works Integration Division (approximately 50 personnel). A portion of the E-Action meeting will serve as the ATR each year with those attending serving as the ATR team. Team members will objectively review the other District's proposals. MVD will provide a leader for the ATR team from outside MVD to attend the E-Action meeting. MVD will serve as the Review Management Organization (RMO). The leader of the ATR team will complete the statement shown as Appendix A indicating completion of the review and resolution of comments.

(a) Documentation. EC 1165-2-214 specifies the use of DrChecks (Design Review and Checking System) to document comments and their resolutions for the ATR Process. The results of the discussions taking place at the annual E-Action meeting, including comments and resolutions, are currently documented in a report. This report will be inserted into DrChecks after the conclusion of the meeting.

(b) Submittal. The preliminary report documenting the review of the current year's proposals will be submitted to the Regional Channel Improvement Project Manager within 14 days after completion of the E-Action meeting. The final report containing documentation that any clearance or documentation needed to advertise or start construction for each dike and revetment item was accomplished will be submitted by 15 September.

c. Objectives of Review.

- (1) The project meets the Government's scope, intent and quality objectives.
- (2) Design concepts are valid, feasible, safe, functional and constructible.
- (3) Appropriate methods of analysis were used and basic assumptions are valid and used for the intended purpose.
- (4) The source, amount and level of detail of the data used in the analyses are appropriate for the complexity of the project.
- (5) The project complies with accepted practice and design criteria within the industry.
- (6) All relevant engineering and scientific disciplines have been effectively integrated.
- (7) Content is sufficiently complete for the current phase of the project and provides an adequate basis for future development effort.
- (8) Project documentation is appropriate and adequate for the project phase.

6. Independent External Peer Review (IEPR).

a. IEPR Type I. An IEPR Type I will not be performed for the channel improvement features since they are not a study and the project has been in progress for a number of years with successful results.

b. IEPR Type II. An IEPR Type II will not be performed for the channel improvement features since they are not a hurricane or storm risk management project. In the event of a failure of a revetment, there is ample time to make repairs unless the failure occurs during a high water event in which case there will not be time for an IEPR Type II. The majority of revetments are located large distances from the toe of levees, so a failure, in these cases would not pose a danger to the integrity of the levee. The Channel Improvement Project makes use of accepted methods and processes. An IEPR is not likely to result in any significant comments.

7. Review Management Organization (RMO) Coordination. The RMO is responsible for managing the overall peer review effort described in this review plan. MVD will be the RMO for this review effort. MVD will coordinate and approve the review plan and manage the ATR. Each District will post the approved review plan on its public website.

8. Point of Contact. The technical point of contact for this review plan is Ms. Carol Jones. The leader of the ATR team will serve as the point of contact and liaison between the reviewers and the PDT's and MVD on matters pertaining to the review.

Appendix A

**STATEMENT OF TECHNICAL REVIEW
COMPLETION OF QUALITY ASSURANCE REVIEW
AND AGENCY TECHNICAL REVIEW**

The Mississippi Valley Division has completed the Agency Technical Review of the MVD Channel Improvement Project. Notice is hereby given that (1) a Quality Assurance review has been conducted as defined in the Master Plan and (2) an agency technical review that is appropriate to the level of risk and complexity inherent in the project has been conducted as defined in the project's Master Plan. During the agency technical review, compliance with established policy, principles, and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the result, including whether the product meets the customer's needs consistent with law and existing Corps policy. The review also assessed the DQC documentation and made the determination that the DQC activities employed appear to be appropriate and effective. The agency technical review was accomplished by appropriate personnel from the St. Louis, Memphis, Vicksburg and New Orleans Districts, led by _____ . All comments resulting from QA and ATR have been resolved.

ATR Team Leader

Date

Regional Channel Improvement Project Manager

Date

MVD MR&T Program Manager

Date

**CERTIFICATION OF QUALITY ASSURANCE REVIEW
AND AGENCY TECHNICAL REVIEW**

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

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

MVD Chief, Engineering and Construction

Date

MVD Chief, Operations

Date