

**REVIEW PLAN
IMPLEMENTATION PHASE**

**MILL CREEK, OH
FLOOD DAMAGE REDUCTION PROJECT**

**REMEDIAL REPAIRS FOR PREVIOUSLY CONSTRUCTED SECTIONS
1, 2, AND 4A**

LOUISVILLE DISTRICT

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**US Army Corps
of Engineers ®**

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1. PURPOSE AND REQUIREMENTS

a. Purpose. This Review Plan defines the scope and level of peer review for the design and construction activities associated with the Remedial Repairs for the Previously Constructed Sections 1, 2, and 4A at Mill Creek, OH. This project was suspended in the 1990's with approximately 50% of the originally authorized project constructed. However, none of the completed sections were turned over to the Non-Federal Sponsor for operation and maintenance (O&M). In August 1998, an O&M agreement was executed between the Corps of Engineers (COE) and the Sponsor that provided for the turnover of the completed project sections once the sections were restored by the COE to the original design standards and adequate maintenance access features were provided. Section 3 is the only section to date that has been turned over. Plans and specifications will be developed for these three previously constructed sections identifying areas that need to be repaired in order to turn these sections over to the Non-Federal Sponsor for O&M.

b. References

- (1) Engineering Circular (EC) 1165-2-214, Water Resources Policies and Authorities - Civil Works Review, 15 Dec 2012
- (2) Engineering Regulation (ER) 1110-1-12, Quality Management, 21 Jul 2006
- (3) Mill Creek, OH Local Flood Protection Project; Project Management Plan

c. Requirements. This review plan was developed in accordance with EC 1165-2-214, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design, construction, and operation, maintenance, repair, replacement and rehabilitation (OMRR&R). The EC outlines four general levels of review: District Quality Control/Quality Assurance (DQC), Agency Technical Review (ATR), Independent External Peer Review (IEPR), and Policy and Legal Compliance Review.

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 the peer review effort described in this Review Plan is the MSC since the only remaining work is the design and construction of remedial repairs for 3 previously constructed sections (Sections 1, 2, and 4A) and the project work does not pose a significant threat to human life.

3. STUDY INFORMATION

a. Implementation Document. The only remaining work is the design and construction of remedial repairs for 3 previously constructed sections (Sections 1, 2, and 4A). This will allow the Corps to turn these sections over to the Sponsor for operation and maintenance. The project received funding in the FY13 Work Plan.

The authorized project is "Mill Creek, Ohio – Local Flood Protection Project". The originally authorized flood damage reduction project includes 17.5 miles of channel improvement, 2

miles of levees, 3 pumping plants, modification of highway and railroad bridges, and the addition of 2 pumping units at the existing Mill Creek barrier dam. It should be pointed out that the levees and pumping plants were not constructed. As stated above, approximately 50% of the project was constructed. Remedial repairs need to be performed at previously completed sections 1, 2, and 4A in order to turn these sections over to the Non-Federal Sponsor for operation and maintenance. The COE has an agreement with the Non-Federal Sponsor that states that the COE would bring these previously constructed sections back to the same condition as when construction was just finished, provide adequate maintenance access, and then turn over to the Non-Federal Sponsor for O&M.

The Millcreek Valley Conservancy District (MVCD) is the Non-Federal Sponsor and is the responsible cooperating agency for all required assurances. An assurance agreement covering local cooperation requirements for the project was executed by the MVCD and the COE in March 1975. A recreation cost-sharing contract was executed in May 1975. Funds to initiate preconstruction planning were appropriated in FY 1972 and funds to initiate construction were appropriated in FY 1975.

b. Study/Project Description. The original project is located along a 17.5-mile length of Mill Creek and a $\frac{3}{4}$ mile length of East Fork in Hamilton County, Ohio. The project was authorized by the 1970 Flood Control Act and was not subject to the cost sharing provisions of the Water Resources Development Act (WRDA) of 1986 (PL 99-662). Project construction was suspended in 1991 at the direction of the ASA(CW), with four of the ten project sections completed and two others partially completed. In August 1998, two agreements were executed. The Contributed Funds Agreement, between the COE, the MVCD, and other local interests, provided for voluntary local contributions to the preparation of a General Reevaluation Report (GRR). The second agreement, between the Corps of Engineers and the Non-Federal Sponsor, provided for the turnover of the completed project sections once the sections were restored by the Corps of Engineers to the original design standards and adequate maintenance access was provided.

Construction on the Section 3 Punch List/ Maintenance Work Contract was awarded in February 2003 and completed in May 2004. Section 3 was turned over to the Non-Federal Sponsor for Operation and Maintenance in October 2004. The Flood Warning System (FWS) was approved in December 2003 at 100% federal funding. The installation of the FWS was completed in September 2004. A General Reevaluation Report was completed on 1 March 2005. Design work was initiated for the remedial repairs at the other previously completed sections of Mill Creek (1, 2, and 4A) with the remaining Federal funds available.

c. Factors Affecting the Scope and Level of Review. The initial design and construction of this project was completed prior to 1993. The only remaining work is the design and construction of remedial repairs for 3 previously constructed sections (Sections 1, 2, and 4A). This will allow the COE to turn these sections over to the Sponsor for operation and maintenance.

A final cost estimate of the remedial repairs will not be complete until further field verification and design can occur, but it is expected to be in the range of \$5-10 million. If funding is not provided, the remedial repair work will be delayed and responsibility for O&M will not be transferred to the Sponsor.

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: Not Applicable. There are no in-kind services anticipated as part of this project.

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. Basic quality control tools include a Quality Management Plan providing for seamless review, quality checks and reviews, supervisory reviews, Project Delivery Team (PDT) reviews, etc. Quality checks may be performed by staff responsible for the work, such as supervisors, work leaders, team leaders, designated individuals from the senior staff, or other qualified personnel. However, they should not be performed by the same people who performed the original work, including managing/reviewing the work in the case of contracted efforts. Additionally, the PDT is responsible to ensure consistency and effective coordination across all project disciplines during project design and construction management. See Tables 1 and 2 on Attachment 1 for PDT and DQC members and disciplines.

a. Documentation of DQC. Documentation of DQC activities is required and should be in accordance with the Quality Manual of the District and the home MSC. DrChecks review software will be used to document comments to the plans and specs.

b. Products to Undergo DQC. The plans and specs for the remedial repairs for 3 previously constructed sections (Sections 1, 2, and 4A) will undergo DQC.

5. AGENCY TECHNICAL REVIEW (ATR)

ATR is mandatory for all implementation 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. Management of ATR reviews is dependent upon the phase of work and the reviews are 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. See Table 3 on Attachment 1 for ATR members and disciplines.

The only remaining work is the design and construction of remedial repairs for 3 previously constructed sections (Sections 1, 2, and 4A). This will allow the Corps to turn these sections over to the Sponsor for operation and maintenance. The project received funding in the FY13

Work Plan. Additional funding will be required to perform the construction of the remedial repairs.

a. Products to Undergo ATR. The final set of plans and specs for the remedial repairs for previously constructed Sections 1, 2, and 4A.

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 will 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 been 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 includes 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 sample Statement of Technical Review for the final set of plans and specs is included in Attachment 2.

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

IEPR may be required for implementation documents under certain circumstances. IEPR is the most independent level of review, and is applied in cases that meet certain criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. A risk-informed decision, as described in EC 1165-2-214, is made as to whether IEPR is appropriate. IEPR panels will consist of independent, recognized experts from outside of the USACE in the appropriate disciplines, representing a balance of areas of expertise suitable for the review being conducted. There are two types of IEPR:

- Type I IEPR. Type I IEPR reviews are managed outside the USACE and are conducted on project studies. Type I IEPR panels assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, economic analysis, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in the evaluation of environmental impacts of proposed projects, and biological opinions of the project study.
- Type 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 Type I IEPR. A Type I IEPR will not be performed during the Implementation Phase on the final set of plans and specifications for remedial repairs to 3 previously constructed sections (Sections 1, 2, and 4A) since the project's decision document was completed in 1975. In addition, there were no requests by the Governor of Ohio or heads of Federal or state agencies to conduct a Type I IEPR, nor are there significant public issues or complex design methods that warrant review.

Decision on Type II IEPR. A Type II IEPR will not be performed during the Implementation Phase on the final set of plans and specifications for remedial repairs for 3 previously constructed sections (Sections 1, 2, and 4A). A risk-informed decision was made as to whether IEPR is appropriate based on the factors to consider for conducting a Type II IEPR review that are outlined in EC 1165-2-214, Appendix E, Section 2 (a) thru (c). These factors are discussed in greater detail in the next paragraph. It should be pointed out that the remedial repairs to be performed are for channel modification work only. There are no levees or floodwalls. While the originally authorized project description references levees,

the levees were never part of the completed construction. The design and construction of the remedial repair work covered under this Review Plan does not pose a significant threat to human life should it fail. Therefore, there is not a life safety issue. Also, since the project was designed, and more importantly constructed, long before the implementation of EC 1165-2-214, and the only remaining work is the design and construction of remedial repairs for 3 previously constructed sections (Sections 1, 2, and 4A), an IEPR will not be required.

A risk informed decision was made that this project would NOT pose a significant threat to human life (public safety). The project does NOT involve the use of innovative materials or techniques where the engineering is based on novel methods; does NOT present complex challenges for interpretations; does NOT contain precedent-setting methods or models; and does NOT present conclusions that are likely to change prevailing practices. Also, the design for this project does NOT require redundancy, resiliency, and robustness.

Redundancy is the duplication of critical components of a system with the intention of increasing reliability of the system, usually in the case of a backup or failsafe. Resiliency is the ability to avoid, minimize, withstand, and recover from the effects of adversity, whether natural or manmade, under all circumstances of use. Robustness is the ability of a system to continue to operate correctly across a wide range of operational conditions (the wider the range of conditions, the more robust the system), with minimal damage, alteration or loss of functionality, and to fail gracefully outside of that range. In addition, this project does NOT have unique construction sequencing or a reduced or overlapping design construction schedule; for example, significant project features accomplished using the Design-Build or Early Contractor Involvement (ECI) delivery systems.

b. Products to Undergo Type I IEPR. Not Applicable.

Products to Undergo Type II IEPR. Not Applicable.

c. Required Type I IEPR Panel Expertise. Not Applicable.

Required Type II IEPR Panel Expertise. Not Applicable.

d. Documentation of Type I IEPR. Not Applicable.

Documentation of Type II IEPR. Not Applicable.

7. POLICY AND LEGAL COMPLIANCE REVIEW

All implementation documents will be reviewed throughout the project 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.

8. REVIEW SCHEDULES AND COSTS

- a. ATR Schedule and Cost.** The ATR schedule will be determined after the PDT performs a site visit for all 3 sections and a detailed project schedule is prepared. The cost for the ATR is approximately \$20,000 for each section for a total cost of \$60,000.
- b. IEPR Schedule and Cost.** Not Applicable.

9. PUBLIC PARTICIPATION

Not Applicable.

10. REVIEW PLAN APPROVAL AND UPDATES

The Great Lakes and Ohio River Division Commander is responsible for approving this Review Plan. The Commander's approval reflects vertical team input (involving district, MSC, RMO, and HQ members) as to the appropriate scope and level of review for the implementation documents. 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 will be 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.

11. REVIEW PLAN POINTS OF CONTACT

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

Louisville District POC: Barry J. Schueler, P.E.; Project Manager; (502) 315-6780
Louisville District Technical POC: Isaiah A. Weilbaker; Project Engineer; (502) 315-6433
Great Lakes and Ohio River Division POC: Robert Iseli; (513) 684-2997

ATTACHMENT 1: MILL CREEK, OH TEAM ROSTERS

TABLE 1: Product Delivery Team (PDT)		
Functional Area	Name	Office
Project Manager	[REDACTED]	CELRL-PM-C
Project Engineer	[REDACTED]	CELRL-ED-T-C
Civil Design	[REDACTED]	CELRL-ED-T-C
Geotechnical	[REDACTED]	CELRL-ED-T-G
Structural	[REDACTED]	CELRL-ED-D-S
Cost Engineering	[REDACTED]	CELRL-ED-M-C
Construction	[REDACTED]	CELRL-CD-W-W
Real Estate	[REDACTED]	CELRL-RE-C

TABLE 2: District Quality Control (DQC) Team		
Functional Area	Name	Office
Civil Design	[REDACTED]	CELRL-ED-T-C
Geotechnical	[REDACTED]	CELRL-ED-T-G
Structural	[REDACTED]	CELRL-ED-D-S
Cost Engineering	[REDACTED]	CELRL-ED-M-C
Construction	[REDACTED]	CELRL-CD-W-W
Real Estate	[REDACTED]	CELRL-RE-C
* Operations & Maintenance / Inspection of Completed Works	[REDACTED]	CELRL-ED-T-G

* [REDACTED]

TABLE 3: Agency Technical Review (ATR) Team		
Functional Area	Name	Office
ATR Lead	[REDACTED]	CEMVP-EC-D
Civil Design	[REDACTED]	CELRP-EC-NC
Geotechnical	[REDACTED]	CELRC-TS-D-G
Structural	[REDACTED]	CEMVP-EC-D
Cost Engineering	[REDACTED]	CELRH-DSPC-TS
Real Estate	[REDACTED]	CELRH-RE-P

ATTACHMENT 2: STATEMENT OF TECHNICAL REVIEW FOR IMPLEMENTATION DOCUMENTS – ATR REVIEW CERTIFICATION

**COMPLETION OF AGENCY TECHNICAL REVIEW
MILL CREEK, OH**

The Agency Technical Review (ATR) has been completed for the Plans and Specs for the Mill Creek, OH Flood Damage Reduction Project. The ATR was conducted as defined in the project’s Review Plan to comply with the requirements of EC 1165-2-214. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer’s needs consistent with law and existing US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrCheckssm.

ATR Team Leader

Date

Project Manager

Date

CERTIFICATION OF AGENCY TECHNICAL REVIEW

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

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

Chief, Engineering Division

Date

ATTACHMENT 3: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number