



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

REPLY TO  
ATTENTION OF:

13 DEC 2012

CEMVD-PD-SP

MEMORANDUM FOR Commander, Rock Island District

SUBJECT: Lockport Pool Major Rehabilitation Stage 1C-Forebay  
Wall Project Review Plan

1. References:

a. Memorandum, CEMVR-PM-M, 10 December 2012, subject:  
Lockport Pool Major Rehabilitation Stage 1C-Forebay Wall Project  
Review Plan (encl 1).

b. Memorandum, CEMVK-RB-T, 13 December 2012, subject:  
Lockport Pool Major Rehabilitation Stage 1C-Forebay Wall Project  
Review Plan (encl 2).

c. EC 1165-2-209, 31 January 2010, subject: Civil Works  
Review Policy.

2. The enclosed Review Plan (RP) for Lockport Pool Major  
Rehabilitation Stage 1C-Forebay Wall, Lockport, Illinois, has  
been prepared in accordance with EC 1165-2-209. The RP has been  
coordinated with the Upper District Support Team and the Regional  
Business Technical Division who concurred with the plan in  
reference a. of the enclosed memorandum.

3. I hereby approve this RP, which is subject to change as  
circumstances require, consistent with study development under  
the Project Management Business Process. Subsequent revisions to  
this RP or its execution will require new written approval from  
this office. Non-substantive changes to this RP do not require  
further approval. The District should post the approved RP to  
its web site.

4. The MVD point of contact is Mr. Gabe Harris, CEMVD-PD-SP,  
(601) 634-5926.

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

2 Encls

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



DEPARTMENT OF THE ARMY  
CORPS OF ENGINEERS - ROCK ISLAND DISTRICT  
PO BOX 2004 CLOCK TOWER BUILDING  
ROCK ISLAND, ILLINOIS 61204-2004

DEC 10 2012

CEMVR-PM-M

MEMORANDUM FOR Commander, US Army Corps of Engineers, Mississippi Valley Division (CEMVD-PD-SP/Gabe Harris), P.O. Box 80, 1400 Walnut Street, Vicksburg, Mississippi 39181-0080

SUBJECT: Lockport Pool Major Rehabilitation Stage 1C – Forebay Wall Project Review Plan

1. The subject Project Review Plan is submitted for your review and approval. An electronic copy has been sent to Mr. Gabe Harris, CEMVD-PD-SP.
2. The points of contact are Mr. Andrew Barnes, Major Rehabilitation Program Manager, (309)794-5640, or email: [andrew.g.barnes@usace.army.mil](mailto:andrew.g.barnes@usace.army.mil) or Mr. Stephen Russell, Project Manager, (309)794-5847, or email: [stephen.s.russell@usace.army.mil](mailto:stephen.s.russell@usace.army.mil).

FOR  


Encl

MARK J. DESCHENES  
COL, EN  
Commanding

MEMORANDUM FOR CEMVD-PD-SP (Charles Barton)

SUBJECT: Lockport Pool Major Rehabilitation Stage 1C- Forebay  
Wall Project Review Plan

1. Reference memorandum, CEMVR-PM-M, 10 December 2012, subject as above.
2. This office concurs with subject Review Plan.
3. The RB-T point of contact is Mr. Will Bradley, 601-634-5644.

  
FOR  
ROBERT H. FITZGERALD, P.E.  
Chief, Business Technical  
Division



**US Army Corps  
of Engineers** ®  
Rock Island District

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## Review Plan

# Lockport Pool Major Rehabilitation Stage 1C – Forebay Wall

## Lockport, Illinois

Engineering, Design, and Construction  
Phase

MSC Approval Date:    )

Last Revision Date: None

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Review Plan  
Lockport Pool Major Rehabilitation  
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## 1 Purpose and Requirements

### 1.1 Purpose

This QC Review Plan defines the scope and level of quality management activities for the Lockport Pool Major Rehabilitation Stage 1C – Forebay Wall in Lockport, Illinois. The purpose of this Review Plan (RP) is to define the scope and level of review for implementation documents for the Lockport Pool Major Rehabilitation Stage 1C – Forebay Wall in Lockport, Illinois. At some time in the future an Operating Project Review Plan for the Lockport Forebay Wall Major Rehabilitation project will be developed, but until then review plans will be developed for each individual project. This RP is a standalone document but is also included in an appendix of the subject Project Management Plan (PMP).

### 1.2 Documents for Review

The project is in the implementation phase. The implementation documents are the 100% plans, specifications, design documentation report, and updates (as required) to the Lockport Forebay Wall Major Rehabilitation project, and operations and maintenance manual.

### 1.3 Review Requirements

This Review Plan (RP) was developed in accordance with EC 1165-2-209, which establishes the procedures for ensuring the quality and credibility of US Army Corps of Engineers (USACE) decision and implementation documents through independent review. This RP describes the scope of review for the current phase of work. All appropriate levels of review (DQC, ATR, IEPR and Policy and Legal Review) will be included in this RP. The RP identifies the most important skill sets needed in the reviews and the objective of the review and the specific advice sought, thus setting the appropriate scale and scope of review for the individual project.

### 1.4 References

a.	ER 1105-2-100	<i>Planning Guidance Notebook</i> , 20 November 2007
b.	ER 1110-1-12	<i>Engineering and Design - Quality Management</i> , 21 July 2006, incorporating Change 1, 30 September 2006
c.	ER 1110-2-1150	<i>Engineering and Design for Civil Works</i> , 31 August 1999
d.	ER 1110-2-1155	<i>Engineering and Design – Dam Safety Program</i> , 12 September 1997

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e.	EC 1105-2-408	<i>Peer Review of Decision Documents</i> , 31 May 2005
f.	EC 1105-2-410	<i>Review of Decision Documents</i> , 22 August 2008
g.	EC 1165-2-209	<i>Civil Works Review Policy</i> 31 January 2010, with Errata Sheet 1 dtd 15 July 2010
h.	WRDA 2007 H. R. 1495 Public Law 110-114, 8 Nov 2007	
i.	Army Regulation 15-1, <i>Committee Management</i> , 27 November 1992 (Federal Advisory Committee Act Requirements)	
j.	National Academy of Sciences, <i>Background Information and Confidential Conflict Of Interest Disclosure, BI/COI FORM 3</i> , May 2003	

## 2 Review Management Organization (RMO) Coordination

### 2.1 Mississippi Valley Division (MVD)

Mississippi Valley Division will serve as the RMO for this project, and MVD is responsible for:

- Approving the Review Plan
- Assisting in coordination with the National Dam Safety Production Center for ATR

### 2.2 National Dam Safety Production Center

The National Dam Safety Production Center will assist in the review activities for the project, and they are responsible for:

- Selecting the ATR Team for this project
- Overseeing the ATR and ensuring the review is properly conducted

### 2.3 MVD Dam Safety Production Center

The MVD Dam Safety Production Center will also assist in the review and they are responsible for:

- Coordinating with the MCX on development of the ATR team
- Providing ATR members as required

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### 3 Project Information

#### 3.1 Background

During the 1880's wastewater from metropolitan Chicago was discharged into the Chicago River and flowed into Lake Michigan, polluting the fresh water source for the city. The concept for a canal that would direct wastewater away from Lake Michigan was born out of this need. The Sanitary District of Chicago, now the Metropolitan Water Reclamation District of Greater Chicago (MWRD), began construction of the Chicago Sanitary and Ship Canal (CSSC) in 1892 and completed in 1900. The CSSC began at the South Branch of the Chicago River and ran southwest for 30 miles into Lockport. The river now flowed out of Lake Michigan, through the CSSC, and then into the Des Plaines River, ultimately flowing to the Mississippi River. During the period 1903-1907, the CSSC was extended two miles to its present configuration, which provided the ancillary benefit of a navigable connection between the Mississippi River and the Great Lakes. This extension projected above the surrounding topography, creating a 'perched' canal as much as 40 feet higher than the adjacent land and terminated at the Lockport Lock and Dam. Besides its original sanitary function, navigation, and hydropower, the CSSC is also a vital component of the storm water management system for the city of Chicago.

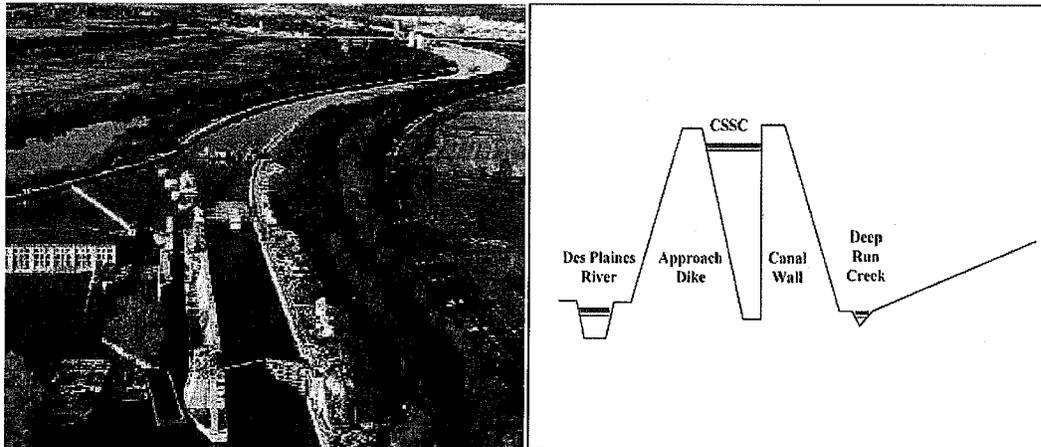


Figure 1: Aerial View of Lockport Pool. The Lock is in the foreground, looking upstream at the CSSC. The right descending bank approaching the powerhouse comprises the Forebay Wall addressed by this project. Section to the right in the figure above illustrates the 'perched' nature of the CSSC in the project area.

#### 3.2 USACE Involvement

The CSSC was operated and maintained by MWRD until a Memorandum of Agreement was executed in 1984 between MWRD and the Department of the Army (DA) that transferred many maintenance responsibilities of the CSSC to the DA. The Rock Island District (MVR) published a Rehabilitation Evaluation Report (RER) in 2004 for the Lockport Pool, essentially the area added to the CSSC from 1903-1907. This RER identified multiple deteriorated components and estimated a total cost of \$115M. The

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Lockport Pool System was evaluated in 2005 using the Screening Portfolio Risk Assessment (SPRA) process and was determined to have a Dam Safety Action Classification (DSAC) rating of 2, indicating a “confirmed (unsafe) or unconfirmed (potentially unsafe) dam safety issue.”

### 3.3 Lockport Project Component Status

A contract to repair the embankment portion of the Approach Dike was awarded in FY2007 and completed in FY2009. This contract installed a concrete cutoff wall to prevent through-seepage that had caused internal erosion of the embankment for years. Another contract was awarded in FY2009 to repair the Concrete Canal Wall along the left descending bank. This was accomplished by construction of a new pre-cast concrete panel wall in front of the existing gravity wall. This work was completed in FY2012. Another contract was awarded in FY2010 to rehabilitate the Controlling Works structure. This involved replacement of the brick façade and extensive tuck pointing of existing masonry and repair of concrete bull noses and bulkheads. This contract also completed in FY2012.

The remaining portion to be repaired prior to the review of the DSAC rating for this system involves the downstream portion of the Approach Dike. This concrete gravity wall extends upstream from the Lockport Powerhouse along the right descending bank in the area of the Powerhouse Forebay and is therefore designated the Forebay Wall (see Figure 2).

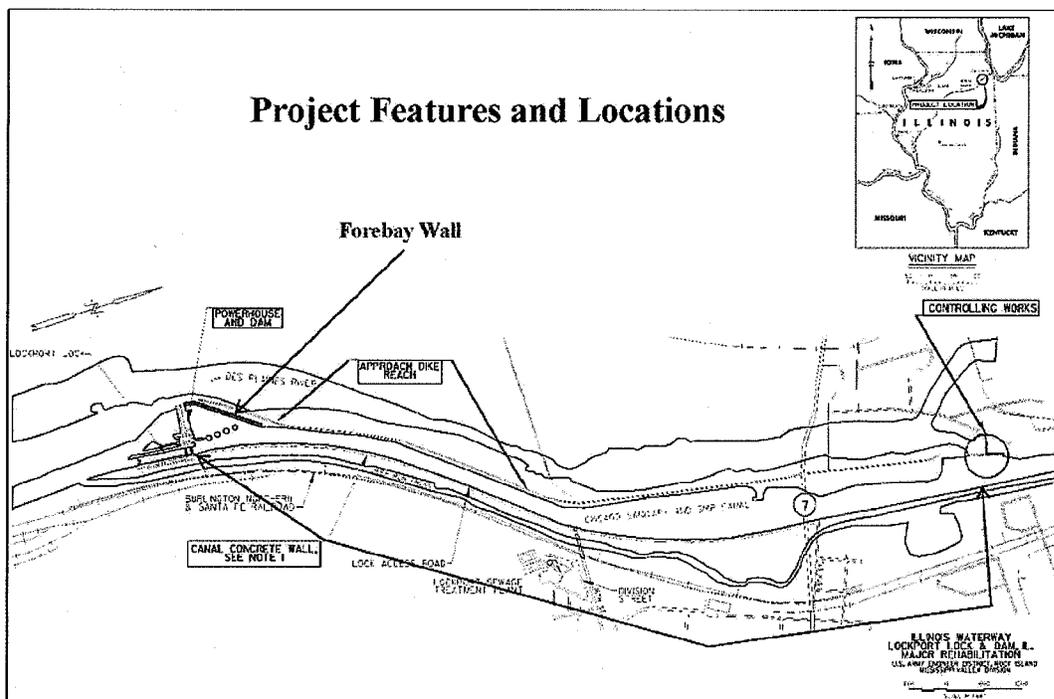


Figure 2. Project Site Plan showing various project components including the Approach Dike including the Forebay Wall.

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### **3.4 Project Description**

The construction project includes the following features:

- Demolition of the existing concrete forebay wall
- Construction of a new roller-compacted concrete wall to replace the existing concrete forebay wall
- Construction of a new permanent access roadway providing access to the existing parking lot at the Lockport Powerhouse
- Relocations of communications and electrical lines
- Construction of two rock dikes – one to provide access to the existing fender wall, and one to prevent barge access (similar to a dolphin structure)
- Construction of a new training wall at the Lockport Powerhouse
- Construction of two secant pile tie-in walls at the north and south ends of the project
- Construction of a temporary roadway for construction access
- Construction of a replacement maintenance shed
- Removal of existing buildings

Due to funding constraints, the project will be done in two phases under two separate contracts. The first phase will include the upstream tie-in secant pile wall, a portion of the RCC wall, construction of an access roadway, and the communication line relocation. The second phase will include the downstream tie-in secant pile wall, a portion of the RCC wall, the rock dikes near the existing fender wall and the training wall, construction of the temporary and permanent access roadways, existing building removal, construction of a new maintenance shed, construction of a new training wall at the controlling works, and demolition of the existing gravity wall.

### **3.5 Project Location**

This project is located along the Chicago Ship and Sanitary Canal in Lockport, Illinois upstream of the Lockport Lock and Dam Powerhouse between river miles 290.9 and 291.3.

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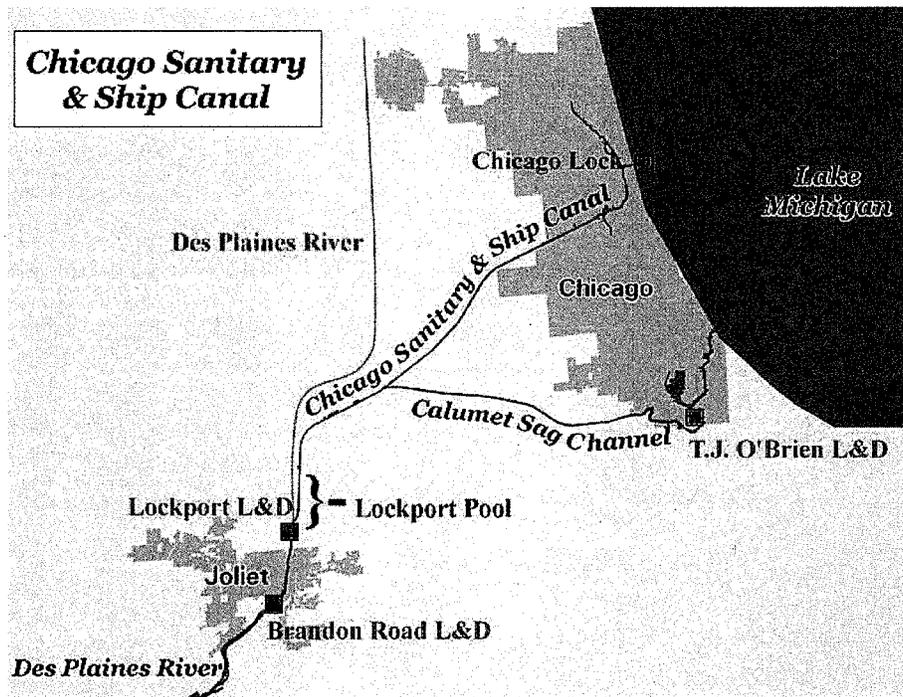


Figure 3: Lockport Pool in relation to the entire Chicago Sanitary and Ship Canal.

### 3.6 Project Authority

The Lockport Forebay Wall Project is authorized by the Lockport Pool Major Rehabilitation Evaluation Report (RER) approved 23 November 2004. The RER was prepared under the authority of the Rivers and Harbors Act of 1930. The RER authorizes funding of the project as a 50/50 cost share between the Construction General appropriation and the Inland Waterway Trust Fund.

### 3.7 Product Information

The results of the Implementation Phase of the Project will be design, specifications, and supporting documentation for the project to go to solicitation. Implementation documents include the plans, specifications, design documentation report (DDR), and any required updates to the dam Operations and Maintenance (O&M) Manual. The purpose of implementation documents is to provide a detailed plan for construction. The plans, specifications, and DDR will be developed by a USACE project delivery team (PDT). A construction contractor will complete the construction.

### 3.8 Scope

All work products will undergo District Quality Control (DQC) and Agency Technical Review (ATR). It is anticipated that a Type II IEPR will not be required for the final implementation products. Each level of review and how it applies to the project is explained below.

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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 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. 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 Commander's approval memorandum, should be posted on the home district's webpage. The latest Review Plan should also be provided to vertical team members (i.e. the RMO, RMC, and home MSC).

#### **4 District Quality Control (DQC)**

DQC is the review of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). It is managed in the home district and may be conducted by staff in the home district as long as they are not doing the work involved in the study. The design products for the Lockport Forebay Wall Major Rehabilitation Project were developed entirely internal to the Corps of Engineers by the project delivery team. Basic quality control tools used on the project include a Quality Management Plan providing for seamless review, peer quality checks and reviews, supervisory reviews, project delivery team (PDT) reviews, a biddability, constructability, operability, and environmental (BCOE) review, in-house product development checklists, and established Business Quality Practices (BQPs) used to ensure quality procedures are followed. DQC also includes certification of the plans, specifications, and DDR by a BCOE signoff certification, which includes the chiefs of construction, engineering, and operations divisions and the chiefs of the civil construction and geotechnical functional elements.

DQC efforts include the necessary expertise to address compliance with published Corps policy. When policy and/or legal concerns arise during DQC efforts that are not readily and mutually resolved by the PDT and the reviewers, the district seeks issue resolution support from Mississippi Valley Division and Headquarters, U.S. Army Corps of Engineers (HQUSACE) in accordance with the procedures outlined in Appendix H, ER 1105-2-100 or other appropriate guidance.

The Mississippi Valley Division and Rock Island District Quality Management Plans (QMPs) address the conduct and documentation of this fundamental level of review. DQC is required for this project.

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**4.1 District Quality Control POC's**

Rock Island District Quality Control Manager	Mr. Ronald Mott	309-794-5425
Rock Island District Design Branch Chief	Mr. Roger Less	309-794-5664
Rock Island District Engineering and Construction Chief	Mr. Denny Lundberg	309-794-5226

**4.2 Peer Reviews (District Quality Control Review)**

Prior to ATR, all implementation documents will receive a peer review as stated above. The peer review is conducted by a peer in the same discipline and double checks calculations, assumptions, and other design details used in the design and specifications. A certification will be prepared once issues raised by the reviewers have been addressed to the review team's satisfaction. Indication of this concurrence will be documented by the signing of a quality assurance certification statement by the MVR Chief of Engineering and Construction Division. This certification will state that the PDT team concurs with the project design and that it is ready for advertising. The Technical Project Leader for each review will have the same role as the Lead Engineer as defined in ER-1110-2-1156. Peer review disciplines and individuals are listed in Attachment 1.

**4.2.1 BCOE Review**

The BCOE review reviews all aspects of the documents used to bid for a construction contract to ensure they will result in a biddable and constructible project. BCOE occurs prior to advertising the contract for bids. The BCOE review disciplines and individuals are listed in Attachment 1.

**5 Agency Technical Review (ATR)**

ATR is an in-depth review undertaken to ensure the quality and credibility of the government's scientific information, managed within USACE, and conducted by a qualified team outside of the home district that is not involved in the day-to-day production of the project/product. ATR is mandatory for all decision and implementation documents. For other work products, a case specific risk-informed decision is made as to whether ATR is appropriate. The purpose of ATR is to ensure proper application of clearly established criteria, regulations, laws, codes, principles and professional practices. The ATR team reviews the various work products and assures that all the parts fit together in a coherent whole. ATR teams are comprised of senior USACE personnel and may be supplemented by outside experts as appropriate. To assure independence, the leader of the ATR team is selected from outside the Mississippi Valley Division.

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**5.1 ATR POC's**

Mississippi Valley Division National Dam Safety Production Center POC – Vicksburg,	Mr. Chuck Mendrop	601-631-5208
National Dam Safety Production Center POC – Huntington District	Mr. Pat Morgan	304-399-5221

**5.2 Required ATR Team Expertise**

The ATR team shall consist of 6 members including the ATR team leader. The following paragraphs describe the list of required disciplines as well as the experience required by each of the ATR team members. Other disciplines/functions may be added to the ATR team as necessary, in which case the added team member(s) will have the appropriate experience and educational requirements. See Attachment 1 for a list of the assigned ATR team members.

**5.2.1 Hydraulics**

The reviewer for hydraulics shall be a registered professional engineer with a minimum of a BS degree or higher in engineering science. The reviewer shall have a minimum of 10 years experience in hydrologic analysis and design of hydraulic structures as they relate to dam safety projects. Reviewer should have experience in the analysis and design using hydrology models HEC-HMS and hydraulic models HEC-RAS. This member should also be knowledgeable in the coincidence of frequency and the application of USACE risk and uncertainty analyses on dam safety projects. Reviewer shall be experienced with similar projects in an urban setting.

**5.2.2 Structural**

The reviewer for structural features shall be a registered professional engineer with a BS degree or higher in civil or structural engineering. The reviewer shall have a minimum of 10 years experience in the design, layout, and construction of large urban dam safety projects. Reviewer should be familiar with the design of roller compacted concrete structures and typical structural components of a concrete structures (sheet pile design, h-pile design, shoring design, etc.). The reviewer should have experience with static and seismic design per industry code standards and USACE design regulations for Civil Works projects including soil-structure interaction evaluation and design. The reviewer shall also have a working knowledge of the software Mathcad 15, CWALSHT – USACE sheet pile design, CPGA – USACE pile group analysis, CFRAME – USACE frame analysis, CTWALL – USACE cantilever wall analysis, STAAD Pro-Finite element analysis, RISA-3D – Finite element analysis, and Microsoft Excel.

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### **5.2.3 Civil**

The reviewer for civil features shall be a registered professional engineer with a minimum of a BS degree or high in civil or construction engineering. The reviewer shall have a minimum of 10 years experience in the design, layout, and construction of large civil projects to include knowledge in access road design, interior drainage networks, earthwork, concrete placement, and relocation of underground utilities.

### **5.2.4 Geotechnical**

The reviewer for geotechnical features shall be a registered professional engineer with a minimum BS degree or higher in civil or geotechnical engineering. Reviewer shall have a minimum of 10 years experience in subsurface investigations, Roller Compacted Concrete placement, seepage and slope stability evaluations, erosion protection design, construction of structures on bedrock, dam safety, and assessing dam stability. The reviewer must be familiar with USACE regulations and standards.

### **5.2.5 Cost**

The reviewer for cost estimating shall be a registered or certified cost engineer with a BS degree or higher in engineering and construction management. Reviewer shall have a minimum of 10 years in cost estimating and have experience with estimating large civil rehabilitation projects. The reviewer shall have extensive knowledge of MII software and the Total Project Cost Summary (TPCS) as required during ATR. A certification from the Cost Directorate of Expertise (Dx) in Walla Walla is required.

## **5.3 Documentation of ATR**

EC 1105-2-408 requires the use of DrChecks (<https://www.projnet.org/projnet/>) to document all ATR comments, responses, and associated resolution accomplished. ATR team members must register with the DrChecks website and they will receive access to DrChecks through the project manager. A PDT member is assigned to take the lead in resolving comments for each of the primary project disciplines. It is the PDT member's responsibility to coordinate resolution of the comment with other team members as required, evaluate the DrChecks comment, enter the PDT's response into DrChecks, and ensure the ATR team member conducts a comment back check. It is the PDT member's responsibility to ensure all DrChecks ATR comments in their discipline are properly addressed, resolved, and closed.

### **5.3.1 ATR Issues Documentation, Issue Resolution, and Certification 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;

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- (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 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, MSC, RMC, 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, 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 is considered complete and 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 ATR certification is included as Attachment 1.

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### **5.3.2 ATR Completion**

ATR is considered complete and certified when all ATR concerns are either resolved or referred to HQUSACE for resolution and the ATR documentation is complete. A sample ATR certification is included as Attachment 1.

## **6 Independent External Peer Review (IEPR)**

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. Any work product that undergoes ATR may also undergo Type I and/or Type II IEPR. In general, decision documents undergo Type I IEPR and implementation documents undergo Type II IEPR (or Safety Assurance Review). Meeting the specific conditions identified for possible exclusions is not, in and of itself, sufficient grounds for recommending exclusion.

### **6.1 Type I IEPR**

This project will not require Type I IEPR because it is in the implementation phase and not the study phase.

### **6.2 Type II IEPR**

A Type II IEPR is conducted to insure public health, safety, and welfare. The circumstances requiring a Type II IEPR are described in Appendix E of EC 1165-2-209. Each of those circumstances is explicitly considered in developing a risk-informed rationale for determining the appropriate level of review, including the need for a safety assurance review.

#### **6.2.1 Basis for Decision on IEPR Recommendation**

It is recommended that a Type II IEPR is not required. Denny Lundberg, MVR Chief of Engineering and Construction discussed this project with the MVD chief of the Business Technical Division Bob Fitzgerald. He concurs that an IEPR Type II is not required for this project. Please see Attachment 5 for the risk-informed IEPR decision documentation.

## **7 Policy Compliance and Legal Review**

The Rock Island District Office of Counsel is responsible for legal review of implementation documents and signs a certification of legal sufficiency prior to construction of the project. A sample legal certification sheet is provided as Attachment 2.

## **8 Review Schedule and Costs**

The recommended project schedule should show the timing and sequence of all reviews to include a milestone schedule with the critical features of the project design and construction.

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**8.1 District Quality Control Review Schedule**

The district quality control guidelines require a district quality control review (DQCR) and a biddability, constructability, operability, and environmental (BCOE) review. The district quality control review costs are paid from project funds. The schedules for completing the major reviews are:

DQC Review	Start: 1 Jan 12, End: 31 Jan 12
BCOE Review	Start: 1 Mar 13, End: 29 Mar 13

**8.2 ATR Schedule and Cost**

The ATR costs are paid from project funds. Following is the schedule for the ATR review:

**8.2.1 ATR Schedule**

MVD approves ATR Team1	TBD
Review documents and charge sent to ATR Team	1 Feb 2013
ATR DrChecks comments complete	15 Feb 2013
PDT DrChecks evaluations complete	22 Feb 2013
ATR backchecks complete; DrChecks closed	1 Mar 2013
ATR certification form signed	TBD
ATR final report complete	TBD
Report sent to MVD for approval	TBD
Report approved by MVD	TBD

**8.2.2 ATR Cost**

Discipline	Estimated Labor Cost
ATR Team Lead	\$10,000
Supporting Disciplines	\$3000 ea. @ 6 ea. =\$18,000
<b>TOTAL</b>	<b>\$28,000</b>

**8.3 Project Deliverable Schedules**

Plans and Specifications Complete (Phase 1)	1 April 2013
DDR Complete (Phase 1)	1 April 2013
Plans and Specifications Complete (Phase 2)	TBD
O&M Manual Complete (Both Phases)	TBD

Review Plan  
Lockport Pool Major Rehabilitation  
Stage 1C – Forebay Wall

**9 Review Plan Approval and Updates**

The MVD 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. Rock Island District is responsible for keeping the Review Plan up to date. Minor changes to the review plan since the last MVD 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 MVD 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 MVD.

**10 Review Plan Points of Contact**

Mississippi Valley Division DST	Mr. Gabe Harris	601-634-5926
Rock Island District Major Rehabilitation Program Manager	Mr. Andy Barnes	309-794-5640
Rock Island District Lockport Project Manager	Mr. Steve Russell	309-794-5847

Attachment 1 – Team Rosters

**Team Rosters**

**District Quality Control Activities**

This is the list of the review teams who will perform the DQC activities. The DQC will be managed by the home district in accordance with Major Subordinate Command (MSC) and District Quality Management Plans.

**Project Delivery Team**

<b>NAME</b>	<b>DISTRICT / ORGANIZATION</b>	<b>DISCIPLINE</b>
Andy Barnes	CEMVR-PM-M	Program Manager
Stephen Russell	CEMVR-PM-M	Project Manager
Eric Hackbarth	CEMVR-EC-G	Geotechnical
Felix Castro	CEMVR-EC-G	Geotechnical
Jon Fleischman *	CEMVR-EC-DM	Civil-Site
Andrew Goodall	CEMVR-EC-DM	Civil-Site
Emily Libbey	CEMVR-EC-HH	Hydraulics
John Lacina	CEMVR-EC-HH	Hydraulics
Brant Jones	CEMVR-EC-DS	Structural
Mike Cummings	CEMVR-EC-TE	Cost Estimating
Bryan Radkte	CEMVR-EC-DG	Electrical Engineer
Missi Brown	CEMVR-EC-DM	CADD
Arturo Rodriguez	CEMVR-EC-DM	CADD
Steve Marruffo	CEMVR-EC-TE	Specifications
Pat Flynn	CEMVR	Legal
* Technical Lead		

Attachment 1 – Team Rosters

**Peer Reviewers (District Quality Control Review)**

<b>NAME</b>	<b>DISTRICT / ORGANIZATION</b>	<b>DISCIPLINE</b>
Charlie Bishop	CEMVR	Geotechnical
Chad Goche	CEMVR	Civil-Site
Cory Delong	CEMVR	Structural
Matt Zager	CEMVR	Hydraulics
Anthony Heddleston	CEMVR	Environmental
Garrett Mattilla	CEMVR	Cost Estimating
Kent Rockow	CEMVR	Electrical
Fred Hanshaw	CEMVR	Specifications
Jeff Loebach	CEMVR	Architectural

**BCOE Reviewers**

<b>NAME</b>	<b>DISTRICT / SECTION</b>	<b>DISCIPLINE</b>
Mike Cox	CEMVR-OD	Operations Chief
Barb Lester	CEMVR-EC-C	Construction Branch Chief
Ken Barr	CEMVR-PD-E	Environmental Branch Chief
Roger Less	CEMVR-EC-D	Design Branch Chief
Tom Mack	CEMVR-EC-DG	Geotechnical Chief

**Drawing Approval for In-House Design**

<b>NAME</b>	<b>DISTRICT / SECTION</b>	<b>DISCIPLINE</b>
Denny Lundberg	CEMVR-EC	Engineering- Construction Division Chief
Kevin Landwehr	CEMVP-EC-H	Hydraulic Branch Chief
Roger Less	CEMVP-EC-D	Design Branch Chief
Tom Mack	CEMVP-EC-D-G	Geotechnical Branch Chief

Attachment 1 – Team Rosters

**Agency Technical Review**

<b>NAME</b>	<b>DISTRICT / ORGANIZATION</b>	<b>DISCIPLINE</b>
TBD	CEMVD	TBD
TBD	TBD	TBD
TBD	TBD	ATR Team Lead
TBD	TBD	Structural
TBD	TBD	Geotechnical
TBD	TBD	Hydraulics
TBD	TBD	Materials

**STATEMENT OF LEGAL REVIEW**

CERTIFICATION OF LEGAL REVIEW:

This product including all associated documents required by the National Environmental Policy Act, has been fully reviewed by the Office of Counsel, Rock Island District and is approved as legally sufficient.

\_\_\_\_\_  
Rian Hancks, District Counsel

\_\_\_\_\_  
Date

Attachment 3 – Review Plan Revisions

<b>Revision Date</b>	<b>Description of Change</b>	<b>Page/Paragraph Number</b>

Attachment 4 – Review Plan Checklist

**Review Plan Checklist**

**For Implementation Documents**

**Date:** 11/30/2012

**Originating District:** Rock Island District - MVR

**Project/Study Title:** Lockport Pool Major Rehabilitation Stage 1C Forebay Wall

**District POC:** Andy Barnes, Phone: 309-794-5640

Please fill out this checklist and submit with the draft Review Plan when coordinating with the appropriate RMO. For Dam and Levee Safety Studies, the Risk Management Center is the RMO; and for non-Dam and Levee Safety projects and other work products, MVD is the RMO; for Type II IEPR, the Risk Management Center is the RMO.

REQUIREMENT	REFERENCE	EVALUATION
1. Is the Review Plan (RP) a stand alone document?	EC 1165-2-209, Appendix B Para 4a	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. Documentation of risk-informed decisions on which levels of review are appropriate.	EC 1165-2-209, Appendix B, Para 4b	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
a. Does it succinctly describe the three levels of peer review: District Quality Control (DQC), Agency Technical Review (ATR), and Independent External Peer Review (IEPR)?  b. Does it contain a summary of the CW implementation products required?  c. DQC is always required. The RP will need to address the following questions:  i. Does it state that DQC will be managed by the home district in accordance with the Major Subordinate Command (MSC) and district Quality Management Plans?  ii. Does it list the DQC activities (for example, 35, 65, 95, BCOE reviews, etc)	EC 1165-2-209 7a     EC1165-2-209 Para 15  EC1165-2-209 Para 15a  EC1165-2-209 Para 8a	a. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>     b. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>   i. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>  ii. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Attachment 4 – Review Plan Checklist

<p>iii. Does it list the review teams who will perform the DQC activities?</p>	<p>EC 1165-2-209 Appendix B (1)</p>	<p>iii. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
<p>iv. Does it provide tasks and related resource, funding and schedule showing when the DQC activities will be performed?</p>	<p>EC 1165-2-209 Appendix B 4g</p>	<p>iv. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
<p>v. Is The DQC documented to where it could be forwarded to ATR or SAR?</p>	<p>EC 1165-2-209 Appendix B Para 4c</p>	<p>v. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
<p>d. Does it assume an ATR is required and if an ATR is not required has it been approved by RB-T? If an ATR is required the RP will need to address the following questions:</p>	<p>EC1165-2-209 Para 15a</p>	<p>d. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
<p>i. Does it provide a succinct description of the primary disciplines or expertise needed for the review (not simply a list of disciplines)? Does the RP describe the qualifications and years of relevant experience needed for the ATR team members?*</p>	<p>EC 1165-2-209 Para 7a</p>	<p>i. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
<p>ii. Does it provide tasks and related resource, funding and schedule showing when the ATR activities will be performed?</p>	<p>EC 1165-2-209 Para 9c</p>	<p>ii. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
<p>iii. Does the RP address the requirement to document ATR comments using Dr Checks?</p>	<p>EC 1165-2-209 Appendix B 4g</p>	<p>iii. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
<p>e. Does it assume a Type II IEPR is required and if a Type II IEPR is not required does it provide a risk based decision of why it is not required? Has State of Rationale been included in RP? If a Type II IEPR is required the RP will need to address the following questions:</p>	<p>EC 1165-2-209 Appendix C</p>	<p>e. IEPR Type II Not Required</p>
<p>i. Does it provide a defensible rationale for the decision on Type II IEPR?</p>	<p>Para 3e</p>	<p>i. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
<p>ii. Does it provide tasks and related resource, funding and schedule showing when the</p>	<p>EC 1165-2-209 Para 7d (1)</p>	<p>ii. N/A</p>

Attachment 4 – Review Plan Checklist

<p>Type II IEPR activities will be performed?</p> <p>iii. Does the project address hurricane and storm risk management or flood risk management or any other aspects where Federal action is justified by life safety or significant threat to human life?</p> <p>iv. Does the RP address Type II IEPR factors?</p> <p>Factors to be considered include:</p> <p>v. Does the project involve the use of innovative materials or techniques where the engineering is based on novel methods, presents complex challenges for interpretations, contains precedent setting methods or models, or presents conclusions that are likely to change prevailing practices?</p> <p>vi. Does the project design require redundancy, resiliency and robustness</p> <p>vii. Does the project have unique construction sequencing or a reduced or overlapping design construction schedule; fro example, significant project features accomplished using the Design-Build or Early Contractor Involvement (ECI) delivery systems.</p> <p>f. Does it address policy compliance and legal review? If no, does it provide a risk based decision of why it is not required?</p>	<p>EC1165-2-209 Para 15a</p> <p>EC 1165-2-209 Para 7a</p> <p>EC 1165-2-209 Appendix B Para 4a EC 1165-2-209 Appendix B Para 4k (4)</p> <p>EC 1165-2-209 Appendix B, Para 4k(1) &amp; Appendix E, Para's 1a &amp; 7</p> <p>EC 1165-2-209 Para 6b (4) and Para 10b</p>	<p>iii. Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>iv. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>v. Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>vi. Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>vii. Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>f. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
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Attachment 4 – Review Plan Checklist

	<p>EC1165-2-209 Appendix E, Para 7c(1)</p> <p>EC1165-2-209 Appendix E, Para 5a</p> <p>EC1165-2-209 Appendix E Para 2</p> <p>EC 1165-2-209 Para 14</p>	
<p><b>3. Does the RP present the tasks, timing, and sequence of the reviews (including deferrals)?</b></p>	<p>EC 1165-2-209, Appendix B, Para 4c</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
<p>a. Does it provide an overall review schedule that shows timing and sequence of all reviews?</p> <p>b. Does the review plan establish a milestone schedule aligned with the critical features of the project design and construction</p>	<p>EC 1165-2-209, Appendix C, Para 3g</p> <p>EC 1165-2-209, Appendix E, Para 6c</p>	<p>a. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>b. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
<p><b>4. Does the RP address engineering model certification requirements?</b></p>	<p>EC 1165-2-209, Appendix B, Para 4i</p>	<p>N/A</p>
<p>a. Does it list the models and data anticipated to be used in developing recommendations?</p> <p>b. Does it indicate the certification /approval status of those models and if certification or approval of any model(s) will be needed?</p>		<p>a. Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>b. Yes <input type="checkbox"/> No <input type="checkbox"/></p>

Attachment 4 – Review Plan Checklist

<p>c. If needed, does the RP propose the appropriate level of certification???</p> <p>/approval for the model(s) and how it will be accomplished?</p>		<p>c. Yes <input type="checkbox"/> No <input type="checkbox"/></p>
<p><b>5. Does the RP explain how and when there will be opportunities for the public to comment on the study or project to be reviewed?</b></p>	<p>EC 1165-2-209, Appendix B, Para 4d</p>	<p>N/A</p>
<p>a. Does it discuss posting the RP on the District website?</p> <p>b. Does it indicate the web address, and schedule and duration of the posting?</p>		<p>a. Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>b. Yes <input type="checkbox"/> No <input type="checkbox"/></p>
<p><b>6. Does the RP explain when significant and relevant public comments will be provided to the reviewers before they conduct their review?</b></p>	<p>EC 1165-2-209, Appendix B, Para 4e</p>	<p>N/A</p>
<p>a. Does it discuss the schedule of receiving public comments?</p> <p>b. Does it discuss the schedule of when significant comments will be provided to the reviewers?</p>		<p>a. Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>b. Yes <input type="checkbox"/> No <input type="checkbox"/></p>
<p><b>7. Does the RP address whether the public, including scientific or professional societies, will be asked to nominate professional reviewers?*</b></p>	<p>EC 1165-2-209, Appendix B, Para 4h</p>	<p>N/A</p>
<p>a. If the public is asked to nominate professional reviewers then does the RP provide a description of the requirements and answer who, what, when, where, and</p>		<p>a. Yes <input type="checkbox"/> No <input type="checkbox"/></p>

Attachment 4 – Review Plan Checklist

<p>how questions? * Typically the public will not be asked to nominate potential reviewers</p>		
<p><b>8. Does the RP address expected in-kind contributions to be provided by the sponsor?</b></p>	<p>EC 1165-2-209, Appendix B, Para 4j</p>	<p>N/A</p>
<p>a. If expected in-kind contributions are to be provided by the sponsor, does the RP list the expected in-kind contributions to be provided by the sponsor?</p>		<p>a. Yes <input type="checkbox"/> No <input type="checkbox"/></p>
<p><b>9. Does the RP explain how the reviews will be documented?</b></p> <p>a. Does the RP address the requirement to document ATR comments using Dr Checks and Type II IEPR published comments and responses pertaining to the design and construction activities summarized in a report reviewed and approved by the MSC and posted on the home district website?</p> <p>b. Does the RP explain how the Type II IEPR will be documented in a Review Report?</p> <p>c. Does the RP document how written responses to the Type II IEPR Review Report will be prepared?</p> <p>d.</p> <p>e. Does the RP detail how the district/PCX/MS and CECW-CP will disseminate the final Type II IEPR Review Report, USACE response, and all other materials related to the Type II IEPR on the internet?</p>	<p>EC 1165-2-209, Para 7d</p> <p>EC 1165-2-209 Appendix B Para 4k (14)</p> <p>EC 1165-2-209 Appendix B Para 4k (14)</p> <p>EC 1165-2-209 Appendix B Para 5</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>a. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>b. N/A</p> <p>c. N/A</p> <p>d. N/A</p>
<p><b>10. Has the approval memorandum been prepared and does it accompany the RP?</b></p>	<p>EC 1165-2-209, Appendix B, Para 7</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>

MEMORANDUM FOR RECORD

13 December 2012

SUBJECT: Lockport Stage 1C, Type II IEPR Determination

1. Purpose: The purpose of this memorandum is to document the decision process and final determination of whether a Type II Independent External Peer Review is required for the subject project in accordance with USCAE Civil Works Policy EC 1165-2-209, dated 31 Jan 2010. Paragraph 1 a. of Appendix E of EC 1165 -2 -209 requires type II IEPR be conducted for hurricane and storm risk management and flood risks management projects, as well as other projects where potential hazards pose a significant threat to human life.
2. Background The Lockport Forebay wall is over 100 years old and has experienced significant deterioration. The primary purpose of the Lockport project is to maintain a navigation pool, convey storm water out of Chicago, and produce hydropower benefits. Lockport was evaluated in 2005 using the Screening Portfolio Risk Assessment (SPRA) process and was determined to have a Dam Safety Action Classification (DSAC) rating of 2, indicating a “confirmed (unsafe) or unconfirmed (potentially unsafe) dam safety issue.” The primary areas of concern involved global stability and seepage issues. The probability of failure for this condition is likely in the future without the project improvements proposed. The hydraulic modeling performed as part of the Emergency Action Plan in 2011 confirmed that failure of the dam does not pose a significant threat to human life. This perched canal is located within the Des Plaines Floodplain and floodwaters attenuate very quickly. There is no residential, commercial or industrial facilities located within the downstream floodway. Loss of the upstream pool will have significant economic consequences for navigation and the industries that rely on waterway transportation.
3. Risk Assessment. A qualitative risk assessment was performed to understand the probabilities and consequences of a project failure for during construction and post construction phase.
  - a. During Construction. The Stage 1 C project involves construction of a setback Roller Compacted Concrete (RCC) section westward of the existing dam embankment. The tie-in to the upstream cutoff and downstream concrete dam will utilize secant piles that will tie into the RCC section. The design and specified construction sequencing reflect sufficient factors of safety to minimize the potential of failure during construction. The design and methods of construction are of standard practice in the industry and will not present unique challenges to a qualified contractor. Lessons learned from previous contracts at Lockport have been incorporated into this project. Contractor qualifications will be insured by the use of a Best Value type acquisition method. In the event a failure does occur during construction, the

Attachment 5 – IEPR Decision Documentation

consequences will be as outlined above. The resulting consequences will not pose a significant threat to human life.

b. After Construction. The probability of failure after the project is complete is very unlikely. In the event a failure does occur after construction, the consequences will be as outlined above, and will not pose a significant threat to human life. The materials and method of construction are robust, resilient and redundant and minimize potential consequences.

3. Conclusion. The subject project is not a hurricane and storm risk management or a flood risk management project; there is no significant threat to human life; the construction is conventional; and the construction sequence does not involve design build or early contractor involvement. These factors support the determination that a Type II IEPR is not required. This risk assessment has been discussed with Bob Fitzgerald, Chief Business Technical Division and he concurs in this determination.

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Denny Lundberg P.E.

Chief Engineering and Construction

Rock Island District