

# Locks and Dams 2, 3, and 4 Monongahela River, PA

## Review Plan

MAY 2012



Approved 4 May 2012

Revision #000 (zero), 4 May 2012

Refer to Appendix "F" for a summary description of the Amendment/Addition/Revision

**US Army Corps of Engineers  
Pittsburgh District**

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# Transmittal Memorandum – LRP Request for Review and Approval



REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
PITTSBURGH DISTRICT, CORPS OF ENGINEERS  
WILLIAM S. MOORHEAD FEDERAL BUILDING  
1000 LIBERTY AVENUE  
PITTSBURGH, PA 15222-4186

CELRP-PM-PM

12 March 2012

MEMORANDUM FOR Great Lakes and Ohio River Division; CELRD-RBT (Attn: Mr. Roger Zemba)

SUBJECT: Locks and Dams 2, 3, and 4 Monongahela River Project; Review Plan; Review and Approval

1. The enclosed review plan, for the subject project, has been prepared in accordance with EC 1165-2-209 and is submitted for review and approval.
2. This review plan will be expanded and revised, as necessary, as the project's products are developed for acquisition.
3. Project Activity "RevPlan 0100" has been established in P2 for your review. If you require any specific resourcing for this effort, please advise.
4. Please complete your review and approval within the next 30 days.
5. Any questions may be directed to the undersigned at [steve.fritz@usace.army.mil](mailto:steve.fritz@usace.army.mil) or 412.395.7273

A handwritten signature in blue ink that reads "Stephen R. Fritz".

STEPHEN R. FRITZ, PE, PMP  
Project Manager  
Locks and Dam 2, 3, 4 Monongahela River

CF: (pdf of attachment provided via email):  
Mark Jones, Chief, CELRP-EC  
Stephen Stoltz, Chief, CELRP-EC-N  
Brian McFarland, Project Engineer, CELRP-EC-NS

# Transmittal Memorandum – LRP Request for Review and Approval



REPLY TO  
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WILLIAM S. MOORHEAD FEDERAL BUILDING  
1000 LIBERTY AVENUE  
PITTSBURGH, PA 15222-4186

CELRP-PM-PM

17 April 2012

MEMORANDUM FOR Great Lakes and Ohio River Division; CELRD-RBT (Attn: Mr. Roger Zemba)

SUBJECT: Locks and Dams 2, 3, and 4 Monongahela River Project; Review Plan; Review and Approval

1. The enclosed review plan, for the subject project, has been prepared in accordance with EC 1165-2-209 and is submitted for review and approval.
2. It is believed that all review comments have been addressed. See attached "Review Comments and Responses" (MS Word document).
3. This review plan will be expanded and revised, as necessary, as the project's products are developed for acquisition.
4. Project Activity "RevPlan 0100" has been established in P2 for your review. If you require any specific resourcing for this effort, please advise.
5. I look forward to the approval of this plan as soon as possible.
6. Any questions may be directed to the undersigned at [steve.fritz@usace.army.mil](mailto:steve.fritz@usace.army.mil) or 412.395.7273

A handwritten signature in blue ink that reads "Stephen R. Fritz".

STEPHEN R. FRITZ, PE, PMP  
Project Manager  
Locks and Dam 2, 3, 4 Monongahela River

CF: (pdf of attachment provided via email):  
Mark Jones, Chief, CELRP-EC  
Stephen Stoltz, Chief, CELRP-EC-N  
Brian McFarland, Project Engineer, CELRP-EC-NS

# Transmittal Memorandum - LRD Approval



REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
U.S. ARMY ENGINEER DIVISION, GREAT LAKES AND OHIO RIVER  
CORPS OF ENGINEERS  
P.O. BOX 1158  
CINCINNATI, OHIO 45201-1158

CELRD-RBT

04 May 2012

MEMORANDUM FOR Commander, Pittsburgh District

SUBJECT: Major Subordinate Command (MSC) Approval of the Review Plan for Locks and Dams 2, 3 and 4 Monongahela River, PA

1. The attached Review Plan for Locks and Dams 2, 3 and 4 Monongahela River, PA has been prepared in accordance with EC 1165-2-209.
2. The Review Plan has been coordinated with the Great Lakes and Ohio River Division, Business Technical Division which is the Review Management Organization for this plan. For further information, contact Roger F. Zemba, PE, Senior Regional Engineer, at (513) 684-3018.
3. This Review Plan will be expanded, and revised, as necessary as the project progresses. Key items to be reflected in future submissions include completed review milestones (reference Review Plan Summary). Also to be included in future submissions are work products, by discipline, that will be reviewed as part of a contract package.
4. Pursuant to EC 1165-2-209, subsequent revisions to this Review Plan, or changes in project execution, will require new written approval from this office.
5. The District is required to post the Review Plan to its web site and provide a link to the MSC and PCXIN for their use.
6. The project Point of Contact for this effort is Stephen R. Fritz, PE, PMP, Pittsburgh District (CELRP) Project Manager, at (412) 395-7273.
7. I hereby approve this Review Plan, which is subject to change as noted above.

Attachment



JOHN C. ZIMMERMAN, P.E.  
Chief, Planning and Policy Division  
Great Lakes and Ohio River Division

## 1. PURPOSE AND REQUIREMENTS

**a. Purpose.** This Review Plan (RP) defines the overall scope and level of review necessary for the Locks and Dams 2, 3, and 4 Monongahela River Project (Project). Although this RP identifies all of the major project features, it cannot possibly address the specific acquisitions of these features at this time. Therefore, this RP is a foundation that will be utilized for project features. Quality Control Plans will be developed for specific features of work as funding is made available and the products necessary to acquire those specific features are developed. The distinction between this RP and other RPs is related to the fragmented funding which has significantly extended the project's completion and acquisition strategy. This RP is a living document, therefore, specific QCPs for remaining project features will be appended to this RP. Refer to Paragraph 2 for background information.

### b. References

- (1) Engineer Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006
- (2) EC 1165-2-209, Civil Works Review Policy, 31 January 2010 (expires 31 January 2013)
- (3) Document 14610 LRD-Preparation and Approval of Civil Works Review Plans, ID#4833, Revision #5, dated September 22, 2011, 7:33:59AM.
- (4) Project Management Plan

**c. Requirements.** This RP was developed in accordance with the references listed above which establish the procedures for ensuring the quality and credibility of U.S. Army Corps of Engineers (USACE) implementation documents for the Lower Mon Project through a rigorous review process. Reference #2 outlines the levels of review and describes the triggers associated with identifying the appropriate level of review. The types of reviews identified in reference #2 include: District Quality Control (DQC), Agency Technical Review (ATR), and Independent External Peer Reviews (IEPR). The objective of the RP is to provide a framework from which a quality product, in accordance with all applicable laws, regulations and guidelines, can be developed.

(1) District Quality Control (DQC). DQC is required for this project. 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 provided they are not directly involved in the development of the implementation documents, including contracted work that is being reviewed. Basic quality control tools include a Quality Management/Control Plan providing for seamless review, quality checks, and reviews (including quality control performed by contractors), supervisory reviews, Project Delivery Team (PDT) reviews, etc. Additionally, the PDT is responsible for a complete reading of the implementation documents to assure their overall integrity and technical competence. The Major Subordinate Command (MSC)/District quality management plans address the conduct and documentation of this DQC review, therefore, it is not discussed any further in this RP. DQC teams and schedules will be developed for each specific acquisition package. Approved quality control plans for this project are listed in Appendix H.

(2) Agency Technical Review (ATR). ATR is required for this project. ATR is an in-depth review, managed within USACE, and conducted by a qualified team outside of the home district that is independent of the staff preparing the implementation documents. The leader of the ATR team shall be from outside the CELRD. The purpose of this review is to ensure the proper application of clearly established criteria, regulations, laws, codes, principles, and professional practices. The ATR team reviews the various work products to assure a cohesive package. ATR teams will be comprised of senior USACE personnel, which may include Regional Technical Specialists (RTS) and other Subject Matter

Experts (SME). If ATR staff is unavailable, the ATR team may be supplemented with other appropriate staff either through other Government agencies or contracted forces. ATR teams and ATR schedules will be developed for each specific acquisition package.

(3) 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. IEPRs are broken into two specific categories. Each identified and described below:

(a) Type I IEPR. Type I IEPR is not required for this project. Type I IEPRs are conducted on project studies and those specific work products that support the project study in overall support of a decision document for the project. Decision documents and post authorization documents may require a Type I IEPR. These documents could include feasibility studies, reevaluation reports (both limited and general), and Post Authorization Change Requests (PACR), and potentially others. If the need arises for project authorization changes or if there are subsequent revisions to the current review policy, a Type I IEPR may be added to remain in compliance with the policy at that time.

(b) Type II IEPR Safety Assurance Review (SAR). Type II IEPR is not required for this project. The primary purpose of a Type II IEPR, per EC 1165-2-209, is to insure public health, safety, and welfare. Historically and presently, inland waterway navigation infrastructure projects, of this type, are not associated with potential hazards that pose significant threats to human life or the public at large. Furthermore, this project does not meet the definition of a “hurricane, storm risk management, or flood risk management project”. The dam associated with this project, which was completed in 2004, is strictly a “navigation” dam and is not intended nor can it effectively function as a flood/storm control structure.

(4) Bidability, Constructability, Operability, and Environmental (BCOE) Review. The items addressed by the RP, including the BCOE, address the life cycle approach to the project. The product, by having the RP implemented, addresses, design, construction, and operation of the project features.

#### **d. Implementation documents to be reviewed.**

(1) Specific QCPs will be developed for the acquisition of specific project features and each will be appended to this RP. The “umbrella” text of this RP need not be repeated in each specific work package QCP, but rather, QCPs for specific work packages will address the cost, schedule, and resourcing (team members) of the review for that specific feature of work.

(2) Specific QCP will address the scope of the review, plans, specifications, design documentation reports, (design requirements, assumptions, engineering considerations for construction, etc...), real estate acquisitions, environmental compliance, and construction acquisition. All of these documents and activities serve to provide a quality package that can be advertised for construction to build a specific feature of work.

(3) There has been significant segregation of the Lower Mon project, due to availability of funding. This trend is expected to continue for at least the next several years. This fact makes it impossible to determine the scope of specific acquisition packages at the time this RP was originally developed. Therefore, provided below, is a listing of the major features of work remaining necessary to complete the project. Sub features are also identified as these sub-features could be acquired separately

as funding permits. Acquisition packages, and their respective QCPs, will be assembled depending on the availability of funding.

- (a) Charleroi River Chamber Completion
  - i. Middle wall drilled shafts
  - ii. Middle wall
  - iii. Filling and emptying system
  - iv. Floor system
  - v. Miter and guard sills
  - vi. Wall facing and armor
  - vii. Control Tower
  - viii. Electrical / Mechanical systems
  - ix. Footbridge
  - xi. Dam Stilling Basin
  - xii. Waterway safety signs
  - xiii. Install miter gates and valves
  - xiv. Stabilization of lower guard wall
  
- (b) Dredging Pool 3 to Create a Navigation Channel
  
- (c) Removal of Locks and Dam 3
  
- (d) Municipal Relocations
  - i. Port Perry Rail Road bridge
  - ii. Boat ramps (Forward twp, Mon City, PA Fish Com, etc...)
  - iii. Sewer adjustments (Mon City, Elizabeth twp, New Eagle, ...)
  
- (e) Port Perry Rail Road Bridge Relocation
  
- (f) Charleroi Land Chamber
  - i. Removal / stabilization of existing wall(s)
  - ii. Land Wall Foundation
  - iii. Land wall
  - iv. Filling and emptying system
  - v. Floor system
  - vi. Miter and guard sills
  - vii. Wall facing and armor
  - viii. Electrical / Mechanical systems
  - ix. Footbridge and tower

## 2. PROJECT INFORMATION

**a. Project Scope/Description.** Locks and Dams 2, 3 and 4 on the Monongahela River in Allegheny, Washington and Westmoreland counties in Southwestern Pennsylvania, are the three oldest currently operating navigation facilities on the Monongahela River. These locks experience the highest volume of commercial traffic on the entire Monongahela River Navigation System and the pools created by these facilities also provide industrial and municipal water, and are popular with recreational boaters.

The Lower Mon Project replaced the nearly 100 year-old fixed-crest dam at Braddock Locks and Dam with a gated dam, will remove Locks and Dam 3 in Elizabeth, and construct two new larger locks (Charleroi Locks) at Locks and Dam 4 in Charleroi.

These improvements will cause noteworthy changes to the Monongahela River. Removal of Locks and Dam 3 (at Elizabeth, PA) will create a single pool between Braddock and Charleroi, Pennsylvania. Between Braddock and Elizabeth, the river will rise a nominal 5'. From Elizabeth to Charleroi the river will drop a nominal 3.2'.

The Lower Mon Project will fund the design and relocation of municipal facilities along the Monongahela and Youghiogheny Rivers adversely affected by the project pool changes. However, all costs associated with changes to private or commercial facilities, along these navigable waterways, are the responsibility of the facility owner. Although this will involve some expense in the short term, cost-effective long-term advantages will result from a 30-mile unimpeded section of river between Braddock and Charleroi.

To provide the authorized nine (9) foot deep, 300 foot wide navigation channel, approximately 1.2 million cubic yards of river bed material, mostly sands, gravels, and coal fines, will be excavated from the river upstream of Elizabeth and downstream of Charleroi. These clean excavated materials will be taken to our project disposal area, near Victory Hills, PA. This site has been developed to receive clean project disposal materials.

**b. Project Authorization.** The Lower Mon project's feasibility study report was the decision document for the project. The feasibility report was approved in 1991 and the project received authorization in WRDA 1992.

**c. Factors Affecting the Scope and Level of Review.**

(1) The scope of each specific review can only be determined after the scope of the product is determined. The scope of the product is substantially based on the amount of funding available to assemble such a product for acquisition. Specific QCPs will be developed for each particular feature of work to address the required reviews.

(2) The scope and level of review are subject to change due to the potential for changing policies, regulations, or other factors over the life of a project. Major civil works projects include reconnaissance level studies, feasibility studies, PED, construction, operations, and eventually retirement and disposal or recapitalization. As these policies, etc..., continue to evolve, so will the scope and level of review.

(3) Redundancy. The project provides for redundant systems for items that address reliability. For example, the authorized project allows for the construction of two lock chambers at Charleroi. Each lock chamber has two filling and emptying systems that can be operated independently.

(4) Resiliency. Project features are designed to provide recovery as quickly as possible.

(5) Robustness. Project features are designed to provide for a wide range of operational conditions.

(6) The overall project does not involve innovative materials or techniques.

(7) Although there will be specific construction sequencing it is not considered unique for civil works projects such as this.

(8) Where applicable, instrumentation and monitoring will be included in product packages. During operation of the facilities records related to instrumentation and monitoring may be retained as necessary.

#### **d. Risk informed decision on level of review.**

Items discussed in paragraphs 2.C. (1) thru (8) provide insight as to the risks associated with this project. Inland Navigation civil works projects do not pose significant risks to the general public. During construction and operations of the project, specific processes are currently in place, or will be in place to address specific risks.

**e. In-Kind Contributions.** The Lower Mon Project is cost shared 50/50 with the Inland Waterways Trust Fund (IWTF).

**f. Product Delivery Team (PDT).** PDT members will be identified for each specific product and included in a table in the respective QCP. Appendix G provides PDT members that are generally involved in the day to day activities for the overall project.

### **3. AGENCY TECHNICAL REVIEW (ATR)**

**a. General.** ATR for non decision documents are managed by the MSC with appropriate consultation with the appropriate Communities of Practice such as engineering and real estate. The ATR shall ensure that the products are consistent 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 documents explain the analyses and the results in a reasonably clear manner for the public and decision makers. Members of the ATR team will be from outside the home district. The ATR team leader will be from outside the home MSC. The leader of the ATR team and other applicable team members may participate in team meetings, monthly vertical team meetings, and In Progress Reviews (IPRs) as applicable. Specific ATR leaders and members will be provided as part of the specific feature QCP.

**b. Products for Review.** Plans, specifications, design documentation reports, (design requirements, assumptions, engineering considerations for construction, etc...), construction cost estimates, real estate acquisitions, environmental compliance, and construction acquisition. All of these documents and activities serve to provide an acquisition package to build a specific feature of work as provided by the Project Authorization. The major features of work authorized for this project includes: New Gated Dam at Braddock, Extension of the Upstream Guard Wall at Braddock, New Twin 84' x720' Lock Chambers at Charleroi, Municipal Relocations, Rail Road Bridge Relocation, Dredging, Removal of Locks and Dam 3, and Extension of the Charleroi Dam Stilling Basin. Smaller features of work associated with those listed above are not specifically mentioned but are included within the authorization.

#### **c. Required ATR Team Expertise.**

(1) ATR teams may be comprised of senior USACE personnel, Regional Technical Specialists (RTS), and may be supplemented by outside experts as appropriate. The primary criterion for being a member of the ATR team is knowledge of the technical discipline for which they are responsible and relevant experience within that discipline.

(2) The disciplines represented on the ATR team will reflect the disciplines involved in the specific product development. These disciplines may include geotechnical, geology, structural, electrical, mechanical, cost, environmental, materials experts, real estate, and potentially others. To assure independence, the leader of the ATR team will be from outside of the home

district's MSC. All ATR team members, including the leader, will be identified in the specific QCP for each specific work package.

#### **d. Documentation of ATR.**

(1) 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:

- (a) The reviewers concern – identify the product's information deficiency or incorrect application of codes, policy, guidance, or procedures;
- (b) The basis for the concern – cite the appropriate law, code, policy, guidance, or procedure that has not been properly followed;
- (c) The significance of the concern – indicate the importance of the concern with regard to its potential impact on the construction, environment, real estate or other concerns such as safety; and
- (d) The probable specific action needed to resolve the concern – identify the action(s) that the PDT must take to resolve the concern.

(2) 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 necessary coordination, and lastly the agreed upon resolution. The ATR team will prepare a Review Report which includes a summary of each unresolved issue. Unresolved issues will be elevated to the appropriate office for resolution. Review reports will be considered an integral part of the ATR documentation and will also:

- (a) Disclose the names of the reviewers, their organizational affiliations, and include a short biography on both the credentials and relevant experiences of each reviewer;
- (b) Include the charge to the reviewers prepared by the Review Management Organization (RMO) ;
- (c) Describe the nature of their review and their findings and conclusions; and
- (d) Include a verbatim copy of each reviewer's comments and the PDT's responses.

(3) ATR Completion and Certification. The ATR is completed when all issues have been satisfactorily addressed as attested to by the signatures of the ATR team leader, the Project Manager, respective/responsible A/E(s), and finally the RMO. The ATR team leader shall certify the ATR for all final products. The ATR team leader, the project manager, the Project manager(s) from the respective A/E firms, and the RMO shall certify that all that all issues identified by the ATR team have been resolved. Certification of the ATR process should be completed for all specific work packages. The ATR process is certified as complete with the signature of the Chief of Engineering of the home district. The signature of the Chief of Planning is not required for implementation documents. Sample certifications are included in appendices E and F of ER 1110-1-12. Upon completion and certification of the ATR, all ATR certifications will be provided to the Great Lakes and Ohio River Division.

#### **e. ATR Team Members.**

ATR team members, including the ATR team leader, will be selected and identified for each specific acquisition package if required. Specific attributes required for each ATR team member will be identified by the specific QCP. ATR team members and the ATR team leader shall provide a biography and/or resume that highlights their knowledge and skills that demonstrates their qualifications to perform the review.

#### **f. ATR Schedule, resourcing, and cost.**

An ATR schedule and specific resourcing (cost) will be developed for each specific acquisition package. Schedules for each specific review will take into consideration the delivery date of that specific product.

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

**a. General.** IEPR is the most independent type review and is applicable in cases that meet certain criteria where the risk and magnitude of the proposed project are such that examination by a qualified team outside of the USACE is warranted. Refer to reference #2 for specifics on IEPRs.

#### **b. Decision on IEPR.**

(1) Type I IEPR. A Type I IEPR will not be conducted. Refer to Section 1.c.(3) a. for additional details. Type I IEPRs are conducted on project studies and decision documents. At this time, there is no need to conduct a Type I IEPR as the project received authorization via WRDA 1992. The authorizing document was Feasibility Study completed in December 1991. If necessary, at a later date, this decision may be revisited based on the project status and the potential need for reauthorization.

(2) Type II IEPR. Refer to Section 1.c.(3) b. for additional details. A Type II IEPR will not be conducted. Type II IEPRs shall be conducted on design and construction activities for hurricane and storm risk management and flood risk management projects, as well as other projects where potential hazards pose a significant threat to human life. This project is an inland waterways navigation infrastructure project that doesn't have potential hazards that pose a significant threat to human life.

### **5. MODEL CERTIFICATION AND APPROVAL**

Specific engineering models that will be utilized will be identified by specific QCPs consistent with the work package being developed. This may include engineering and cost models. Appropriate certifications for such models will also be addressed for the specific work packages.

### **6. LEGAL AND PLANNING REVIEWS**

This project is in the implementation phase. There are certain tasks that Office of Council and Planning Division complete as part of the normal course of business. From the legal perspective, this would include items such as legal proficiency reviews of contract solicitation and award documents. From the planning perspective, continued compliance with the National Environmental Policy Act (NEPA) thru consultation during document preparation as well as BCOE (Biddability, Constructability, Operability, and Environmental) review.

## **7. REVIEW SCHEDULES AND COSTS**

**a. ATR Schedule and Cost.** The estimated cost and schedule for specific ATR's will be determined for those specific work packages and appended to this Project Review Plan.

**b. IEPR Schedule and Cost.** Not applicable.

## **8. PUBLIC PARTICIPATION**

**a. Review Plan -** Once approved, this RP will be posted on the Project's public web page and available for comment.

**b. Authorization -** The authorizing Feasibility Study, Environmental Impact Statement, and Supplemental Environmental Impact Statement were distributed (circa 1990-1991) for public review and comment previously. All comments related to the scope of the project were resolved at that time. The public comment period for the scope of this project is considered completed.

**9. REVIEW MANAGEMENT.** Generally, CELRD will act as the Review Management Organization (RMO) for the products to be completed for this project. If, in the event, the need for re-authorization is required the RMO will be the Planning Center of Expertise for Inland Navigation (PCXIN). The Pittsburgh District's Engineering Chief is responsible for ensuring this RP is implemented and coordinated with the Chief of Construction, Chief of Operations, and the Project Manager.

## **10. Corps of Engineers, Lakes and Rivers Division (CELRD) APPROVAL**

The MSC that oversees the home district is responsible for approving the RP. The US Army Corps of Engineers Lakes and River's Division (CELRD) retains the approval authority for this project. Approval is provided by the CELRD Commander. The commander's approval should reflect vertical team input as to the appropriate scope and level of review for the implementation documents. Like the PMP, a RP is a living document and is subject to change as the project progresses. Changes to the RP should be approved by following the process used for initially approving the plan. In all cases the CELRD will review the decision on the level of review and any changes made in updates to the project. A sample CELRD approval Memorandum is provided as Appendix B.

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

Questions and/or comments on this RP can be directed to the following points of contact:

Stephen R. Fritz, Pittsburgh District Project Manager 412-395-7273

Roger Zemba, Senior Regional Engineer, Lakes and Rivers Division, 513-684-3018

## Appendix A - Acronyms

ATR – Agency Technical Review  
ATRP – Agency Technical Review Plan  
CELRD – Corps of Engineers Lakes and Rivers Division  
CELRP- Corps of Engineers Lakes and Rivers Pittsburgh  
CQC – Contractor Quality Control  
DCQP- District Quality Control Plan  
DQC - District Quality Control  
DX - Directory of Expertise  
EC- Engineering Circular  
ER – Engineering Regulation  
IEPR – Independent External Peer Review  
IPR – In Progress Review  
IWTF – Inland Waterways Trust Fund  
L/D – Lock(s) and Dam  
LRD – Lakes and Rivers Division  
MSC – Major Subordinate Command  
NTR – Non Technical Review (municipal relocations only)  
ORD – Ohio River Division (now LRD)  
PCX- Planning Center of Expertise  
PCXIN - Planning Center of Expertise for Inland Navigation  
PDT – Product Delivery Team  
PED – Pre-Construction Engineering, and Design  
QC – Quality Control  
QCP – Quality Control Plan  
RIT – Vertical Integration Team  
RMO – Review Management Organization  
RP – Review Plan  
RTS – Regional Technical Expert  
SAR – Safety Assurance Review  
USACE – United States Army Corps of Engineers  
WRDA – Water Resources Development Act

## Appendix B - Draft Review Plan Approval Memorandum

CELRD-RBT

MEMORANDUM FOR Commander, Pittsburgh District

SUBJECT: Major Subordinate Command (MSC) Approval of the Review Plan for Locks and Dams 2, 3 and 4, Monongahela River, PA

1. The attached Review Plan for Locks and Dams 2, 3 and 4 Monongahela River, PA has been prepared in accordance with EC 1165-2-209.
2. The Review Plan has been coordinated with the Great Lakes and Ohio River Division, Business Technical Division which is the Review Management Organization for this plan. For further information, contact Roger F. Zemba, PE, Senior Regional Engineer, at (513) 684-3018.
3. This Review Plan will be expanded, and revised, as necessary as the project progresses. Key items to be reflected in future submissions include completed review milestones (reference Review Plan Summary). Also to be included in future submissions are work products, by discipline, that will be reviewed as part of a contract package.
4. Pursuant to EC 1165-2-209, subsequent revisions to this Review Plan, or changes in project execution, will require new written approval from this office.
5. The District is required to post the Review Plan to its web site and provide a link to the MSC and PCXIN for their use.
6. The project Point of Contact for this effort is Stephen R. Fritz, PE, PMP, Pittsburgh District (CELRP) Project Manager, at (412) 395-7273.
7. I hereby approve this Review Plan, which is subject to change as noted above.

Attachment

JOHN C. ZIMMERMAN, P.E.  
Chief, Planning and Policy Division  
Great Lakes and Ohio River Division

## Appendix C – Previously completed acquisitions and level of review

The table below lists many of the Project features that have previously been acquired and the types of reviews that were completed for each. The majority of this information is from memory. This table may be revisited if the resources are available in the future.

Feature	Description	Approximate contract award	DQC/CQC	ORD	ITR	ATR	NTR	BCOE
Braddock, New Waterline	Construction of new waterline.	Mar-03	X		X			X
Locks 2 - Aux. Chamber. Floodway Bulkhead	Modifications to the Locks 2 auxiliary chamber floodway bulkhead.	Dec-94	X	X				X
Locks 2 - Upper Guardwall Renovation & Extension - PS31 Sheet Pile	Procurement of 750 tons of PS31 sheet pile for the renovation and extension of the Locks 2 upper guardwall.	Feb-96	X	?	?			X
Locks 2 - Upper Guardwall Renovation & Extension	Renovation and extension of the Locks 2 upper guardwall.	Apr-96	X	?	?			X
W. Elizabeth Borough - Sewer Relocation Design	Municipal Relocation	Jul-97	X				X	
Mon Valley Sanitary Authority - Municipal Sewer Line Submarine Crossing Relocation	Municipal Relocation	Aug-97	X				X	
W. Elizabeth Borough - Sewer Relocation Construction	Municipal Relocation .	Oct-97	X				X	
Dravosburg Borough - Sewer Relocation	Municipal Relocation	Dec-97	X				X	
Braddock Dam – Abutments	Construction of dam abutments; Braddock Dam basic contract.	Mar-98	X		X			X
Braddock Dam - Abutments - Sheet Pile	Procurement of sheet pile for Braddock Dam Abutments.	Apr-98	X		X			X
W. Elizabeth Borough - Sewer Relocation	Municipal Relocation .	Jun-98	X				X	

Feature	Description	Approximate contract award	DQC/CQC	ORD	ITR	ATR	NTR	BCOE
Braddock Dam - Abutments – Awardable Option	Construction of dam abutments; Braddock Dam awardable option.	Oct-98	X		X			X
Charleroi Borough Authority - Municipal Waterline Submarine Crossing Relocation	Municipal Relocation	Mar-99	X				X	
Braddock Dam - Construction of	Construction of Braddock Dam	Jul-99	X		X			X
Pool 3 Dredging, River Mile 40-41 - Phase 1 – Dredging	Phase 1 dredging of River Mile 40-41.	May-00	X		X			X
Charleroi, Upstream Training Dikes	Construction of submerged upstream training dikes.	Jun-00	X		X			X
McKeesport - Phase 2 - Design and Construction	Municipal Relocation	Nov-00	X				X	
Charleroi River Chamber Preparatory Contract	Demolitions, Geotech investigations, cell construction, and batch plant improvements	Jan-12	X		X			X
Braddock Dam Upstream Flow Control Dikes	Construct X dikes upstream of Braddock Locks	Mar-06	X		X			X
Charleroi River Chamber Mooring Bitts and Anchorage Fabrication	Mooring Bitts and Anchorage Fabrication.	Aug-07	X		X			X
Miter Lock Gates Fabrication	Miter lock gates fabrication.	Aug-07	X		X			X
Laydown Area	Laydown area for bulkhead storage.	Aug-08	X		X			X
Charleroi Locks Upper and Lower Guard Walls	Charleroi Locks Upper and Lower Guard Walls	Aug-09	X		X			X
Charleroi Locks - Site Development	Charleroi locks site development contract.	Sep-02	X		X			X
Charleroi Locks - River Chamber Demolition	Charleroi locks river chamber demolition contract.	Sep-03	X		X			X
Charleroi Locks - Contract 1 – River Wall	Charleroi Locks River Wall	Sep-04	X		X			X
Filling Valves Fabrication	Filling valves fabrication.	Sep-07	X		X			X

Feature	Description	Approximate contract award	DQC/CQC	ORD	ITR	ATR	NTR	BCOE
Maintenance Bulkheads Fabrication	Maintenance bulkheads fabrication.	Sep-07	X		X			X
Victory Hollow - Site Development	Victory Hollow site development.	Sep-07	X		X			X

DQC/CQC – District Quality Control/Contractor Quality Control. Typically performed by a technical peer and supervisor within the district or by a technical peer within the contractor’s own staff.

ORD – Ohio River Division. Technical review was most likely performed by the Division office.

ITR – Independent Technical Review. Technical review performed by those who were completely independent of the acquisition package. For many large acquisition packages, many of these reviewers were from outside the district. For smaller acquisition packages, these reviews could be completed within the district.

ATR – Agency Technical Review. Per EC 1165-2-209, technical review performed by those who are completely independent of the acquisition package and are not part of the district involved in the day-to-day production of the product. The ATR leader is from outside the division from where the day-to-day production of the product is being performed.

NTR – Non Technical Review. A non technical review is specifically associated with municipal and/or other relocations that are designed by the municipality (or other entity) requiring the relocation. Products undergoing a NTR are reviewed to ensure that the product being acquired is not a betterment. Some limited technical review is provided by the district.

? – Transition period between review types so currently uncertain as to which type of review would have been completed.

## Appendix D – Anticipated reviews

This table provides a listing of the potential future products for review. It will be adjusted as the acquisition for specific features are eminent.

Feature and products for review	Description	DQC/CQC	ATR	NTR	BCOE	Estimated Acquisition **Note
Charleroi Locks Emptying Basin Design and P&S	Foundations elements, non-typical precast concrete elements, in the wet construction and assembly	Dec 11- Mar 12	Feb 12 – Mar 12		Feb 12 – Mar 12	Fiscal year 2012
Charleroi River Chamber Completion Contract Design and P&S	Middle wall foundation and concrete wall, filling and emptying system components, floor system, miter and guard sills, wall facing and armor, control tower, electrical and mechanical systems, foot bridge, dam stilling basin, waterway safety signs, install miter gates and valves, and stabilization of lower guard wall	2012-2013	2012-2013		2012-2013	Fiscal year 2013
Dredging pool 3 Design and P&S	Dredge pool 3 to capture the authorized 9' navigation channel	2015	2015		2015	Fiscal year 2016
Removal of Locks and Dam 3 Design and P&S	Demolition and removal of the river chamber and dam. Features to remain include landwall, approximately 100 feet of the existing dam adjacent to the abutment, and the dam abutment.	2016	2016		2016	Fiscal year 2017
Remaining Municipal Relocations	Boat ramps, sewers, outfalls, parks	various		various		Fiscal year 2014-2018

Feature and products for review	Description	DQC/CQC	ATR	NTR	BCOE	Estimated Acquisition **Note
Port Perry Rail Road Bridge Relocation	Elevate the bridge to comply with USCG clearance requirements	2018		2018		Fiscal year 2019
Charleroi Land Chamber Contract Design and P&S	Removal / stabilization of existing wall, Land Wall Foundation, Land wall, Filling and emptying system, Floor system, Miter and guard sills, Wall facing and armor, Electrical / Mechanical systems, Footbridge and tower	2018	2018		2018	Fiscal year 2019

\*\* Note: These estimated dates are based on a best case funding scenario.

ATR – Agency Technical Review. Per EC 1165-2-209, technical review performed by those who are completely independent of the acquisition package and are not part of the district involved in the day-to-day production of the product. The ATR leader is from outside the division from where the day-to-day production of the product is being performed.

NTR – Non Technical Review. A non technical review is specifically associated with municipal and/or other relocations that are designed by the municipality (or other entity) requiring the relocation. Products undergoing a NTR are reviewed to ensure that the product being acquired is not a betterment. Some limited technical review is provided by the district.

Appendix E – Review Plan Summary

REVIEW PLAN SUMMARY LOCKS AND DAMS 2, 3 AND 4 – MONONGAHELA RIVER, PA (Rev. 0, 27 Feb. 2012)																		
Project Scope		District Reviews				AE Reviews			Agency Technical Review		External Reviews		Contracting			Construction		
Feature	Description	DQC Complete Date	DQA Complete Date	DQC Doc's Complete Y/N	NTR	QC Complete Date	QA Complete Date	QC Doc's Complete Y/N	Completion of ATR Date	Certification of ATR Date	Type I IEPR Complete Date	Type II IEPR Complete Date	RMO Approval Date	BCOE Complete Date	Ready-to-Advertise Date	Construction Award Date	Contractor	CQCP Submittal Date
Charleroi Emptying Basin Contract	Design, Plans, and Specifications for the construction of the Locks emptying basin																	
Charleroi River Chamber Completion Contract	Design, Plans, and Specifications for the completion of the Charleroi River Chamber. Includes middle wall, floor, walls, F/E system, installation of previously acquired components, control tower and shelters, and footbridge.																	
<b>SEE NOTES AND KEY NEXT PAGE</b>																		

**NOTES AND KEY:**

- 1) Per EC 1165-2-209, all Civil Works work products will undergo necessary and appropriate DQC and ATR. ATR shall not serve as a Substitute for DQC.
- 2) Table cells should show actual completion dates – with individual’s initials indicating overall responsibility for a given action.
- 3) Please note that the Summary is a “living document” and is subject to revision, as necessary, and updating periodically.
- 4) NTR – Non Technical Review. A non technical review is specifically associated with municipal relocations that are designed by the municipality requiring the relocation. Products undergoing an NTR are reviewed to ensure that the product being acquired is not betterment. Some limited technical review is provided by the District.
- 5) ATR – Agency Technical Review. Per EC 1165-2-209, technical review performed by those who are completely independent of the acquisition package and are not part of the District involved in the day-to-day production of the product. The ATR Leader is from outside the Division where the day-to-day production of the product is being performed.
- 6) RMO – Review Management Organization. Per EC 1165-2-209, with the exception of DQC/QA, all reviews shall be managed by an office outside The home District and shall be accomplished by professionals that are not associated with the work that is being reviewed. Different levels of review and reviews associated with different phases of a single project can have different RMOs.
- 7) DQC – District Quality Control. All work products and reports, evaluations and assessments shall undergo necessary and appropriate District Quality Control/Quality Assurance (DQC). The home District shall manage DQC.
- 8) Type I IEPR and Type II IEPR reviews are only as applicable. If not applicable, place NA in the appropriate cells.
- 9) BCOE – Biddability, Constructability, Operability and Environmental Review shall be performed in accordance with ER 415-1-11.
- 10) Contractor Quality Control Plan (CQCP) shall be prepared and submitted in accordance with ER 1180-1-6, Construction Quality Management.

## Appendix F – Summary of Review Plan Amendments /Addition/ Revisions

Rev #	Date	General description of Amendment / Addition / Revision
0	4 May 2012	Review plan approved 4 May 2012. Transmittal memorandums attached at front of document. Review comments attached as appendix K.

## Appendix G – Project Delivery Team (General)

Name	Responsibility or Title	Phone number	Email Address	Office
Stephen R. Fritz, PE, PMP	Project Manager	412.395.7273	<a href="mailto:Steve.fritz@usace.army.mil">Steve.fritz@usace.army.mil</a>	CELRP-PM-PM
<b>Other names removed for security concerns. Please direct all questions to the Project Manager, Stephen Fritz</b>				

The persons listed in this table are the key project team members. PDT team members for specific acquisition packages are identified in those specific QCP for that feature.

## Appendix H – Approved Quality Control Plans

Description	Approval Date
Charleroi Locks Emptying Basin	9 January 2012
Charleroi Locks River Chamber Completion (in development)	TBD

Note that this table only lists quality control plans that were developed at the same time as this review plan and after.

## Appendix I – Agency Technical Review Certification (template)

Upon completion of each ATR for this project, the following template will be completed with appropriate descriptions and names.

### COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the <type of product> for Locks and Dams 2, 3, and 4 Project, Monongahela River. The ATR was conducted as defined in the project’s Review Plan to comply with the requirements of EC 1165-2-209. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer’s needs consistent with law and existing US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrChecks<sup>sm</sup>.

SIGNATURE

\_\_\_\_\_  
Name

\_\_\_\_\_  
Date

ATR Team Leader

Office Symbol/Company

SIGNATURE

\_\_\_\_\_  
Name

\_\_\_\_\_  
Date

Project Manager

Office Symbol

SIGNATURE

\_\_\_\_\_  
Name

\_\_\_\_\_  
Date

Architect Engineer Project Manager<sup>1</sup>

Company, location

SIGNATURE

\_\_\_\_\_  
Name

\_\_\_\_\_  
Date

Review Management Office Representative

Office Symbol

**CERTIFICATION OF AGENCY TECHNICAL REVIEW**

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

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

SIGNATURE

\_\_\_\_\_  
Name

\_\_\_\_\_  
Date

Chief, Engineering Division

Office Symbol

SIGNATURE

\_\_\_\_\_  
Name

\_\_\_\_\_  
Date

Chief, Planning Division<sup>2</sup>

Office Symbol

<sup>1</sup> Only needed if some portion of the ATR was contracted.      2. Decision documents only.

## Appendix J – Vertical Regional Integration Team (RIT)

The primary purpose of the vertical Regional Integration Team is the resolution of issues that cannot be attained between the District and the RMO (CELRD in this instance).

Name	Title	Location	Phone number
<b>Names removed for security concerns. Please direct all questions to the Project Manager, Stephen Fritz, 412.395.7273</b>			

## Appendix K – Review Plan Comments and Responses

Locks and Dams 2, 3, and 4

Monongahela River

Review Plan – Review Comments and responses.

Comment (R. Zemba)	Response (S. Fritz)
1) Attachment C-1 previously sent -- include as an Appendix.	Added as Appendix "I".
2) A different e-mail -- 8 pgs primarily to show typos.	All comments incorporated. RMO still shown as CELRD.
3) {Paragraph} 1.a of 8 pgs. Can this sentence be deleted? The RP DOES discuss some specific features?	The sentence has been revised to indicate that the RP identifies all major project features.
4) RMO was possibly the Inland Navigation PCX back in the planning stages? Anyone around that we could ask to confirm?	At the time this project was authorized, the Planning Center of Expertise for Inland Navigation (PCXIN) did not exist. The Planning documents for this project were completed and authorized for construction in WRDA 1992. Refer also to response to comment #5.
5) As it relates to the above, are there any old ATR certs (or ITR certs for the project)? This might confirm that the RMO was the PCXIN.	Independent technical reviews began in the 1994-1995 timeframe which came after project authorization. Similarly, ATR are much more recent, as spawned by WRDA 2007 and first enacted in the 2009-2010 timeframe. Refer to response for comment #4. CELRD (formerly CEORD "Ohio River Division") was the primary reviewer for the authorizing documents and the first of many design memorandums.
6) Delete the word, "water" from Commander Burcham's Memorandum.	"Water" deleted.
7) Can't remember what you told me. Can't we show both QCPs in Appendix H table? Just show one as TBD?	I have added the River Chamber Completion Quality Control Plan to the table with at TBD approval date.
8) I may have misled you -- but, I don't think I had seen any of the Appendices before, right? Let's discuss if needed. Am wondering. Can the table now shown on the cover be incorporated with Appendix H? We have basically the same information shown in 2 different places -- i.e., on the Cover and also in Appendix H. Again, I can't remember if I knew Appendix H was coming. This way, one table would show the complete history of the RP -- including the QCPs. Even though not "Approved" as the title to Appendix H shows -- TBD would legitimately caveat that.	Appendix H specifically identifies the approved (and or pending approval "TBD") of Quality Control Plans. The table on the cover will be removed and replaced with a date and version number. For example: Approved 23 February 2019, Rev #15. It will also "Reference Appendix "F" for a summary of the Amendment/Addition/Revision.

<p>9) Please proceed with the legal and policy paragraph -- basically the words that you used in your response to me. I am thinking a new Item 5. should come right after 4. in the TOC?? Not many words involved but I don't think it can fall under any of the current main number items, right?</p> <p>Related to the above -- sub-parts: a. Policy Reviews; b. Legal Reviews; c. Cost Reviews (some wording here from previous e-mails). -- OR one paragraph discussing all three parts.</p>	<p>Added Section "6", Legal and Planning Reviews.</p>
<p>10) We may need a Vertical Team Roster -- beyond just me currently reflected in the RP. I will try to send an example.</p>	<p>Incorporated</p>