



DEPARTMENT OF THE ARMY  
U.S. ARMY ENGINEER DIVISION, GREAT LAKES AND OHIO RIVER  
CORPS OF ENGINEERS  
550 MAIN STREET  
CINCINNATI, OH 45202-3222

CELRD-PD-O

21 FEB 2013

MEMORANDUM FOR Commander, U.S. Army Corps of Engineer, Huntington District, Attn: [REDACTED] (CELRH-EC-Q), 502 Eighth Street, Huntington, WV 25701

SUBJECT: Review Plan for Town of Martin, Section 202 Nonstructural Flood Damage Reduction Project

1. The attached Review Plan (RP) for Town of Martin, Section 202 Nonstructural Flood Damage Reduction Project was presented to the Great Lakes and Ohio River Division for approval in accordance with EC 1165-2-214 "Civil Works Review" dated 15 December 2010.
2. The project is located in the geographic center of Floyd County in Eastern Kentucky. Martin developed along the banks of Beaver Creek, a tributary of the Levisa Fork River, in the Big Sandy River basin, and is approximately five miles upstream from the confluence of Beaver Creek with the Levisa Fork. The defined project area includes the entire corporation limits of Martin but the relocation sites are to be constructed only in the downtown portion of Martin.
3. The RP defines the scope and level of peer review for the activities to be performed for the subject project. The USACE LRD Review Management Organization (RMO) has reviewed the attached RP and concurs that it describes the scope of review for work phases and addresses all appropriate levels of review consistent with the requirements described in EC 1165-2-214.
4. I concur with the recommendations of the RMO and approve the enclosed RP for the Review Plan for Town of Martin, Section 202 Nonstructural Flood Damage Reduction Project.
5. The District is requested to post the RP to its website. Prior to posting, the names of all individuals identified in the RP and the dollar values of all project costs should be removed.
6. If you have any questions please contact [REDACTED] CELRD-PD-P, at [REDACTED].

[REDACTED]  
Colonel, USA  
Acting Commander

Encls

1. Memo: CELRH-EC, dated 24 October 2012
2. Review Plan



REPLY TO  
ATTENTION OF

**DEPARTMENT OF THE ARMY**  
HUNTINGTON DISTRICT, CORPS OF ENGINEERS  
502 EIGHTH STREET  
HUNTINGTON, WV 25701

CELRH-EC

24 October 2012

MEMORANDUM FOR CELRD-PDS-H ([REDACTED]), GREAT LAKES & OHIO RIVER  
DIVISION, 550 MAIN STREET #10032, CINCINNATI OH 45202-3222

SUBJECT: Revised Review Plans for the Monday Creek Ecosystem Restoration Project and the  
Town of Martin Section 202 Project

1. In Accordance with EC 1165-2-209, attached is the revised Review Plan for the Monday Creek Ecosystem Restoration Project for your approval. The review plan includes Agency Technical Review (ATR) outside of the District. Independent External Peer Review (IEPR) is not recommended since this ~~is~~ project is an ecosystem restoration project that does not pose a significant threat to human life.

Comments received from LRD have been addressed, and the draft Review Plan has been revised accordingly.

2. In Accordance with EC 1165-2-209, attached is the revised Review Plan for the Town of Martin Section 202 Project for your approval. The review plan includes Agency Technical Review (ATR) outside of the District. Independent External Peer Review (IEPR) is not recommended since this is project is nonstructural in nature and does not contain the typical risk associated with traditional flood damage reduction projects.

Comments received from LRD and the Risk Management Center (RMC) have been addressed, and the draft Review Plan has been revised accordingly.

3. Please direct any question or comments to [REDACTED]. After your approval, the Review Plan will be posted to the CELRH Intranet.

Encl

[REDACTED]  
/ Chief, Engineering and Construction Division  
Huntington District Dam Safety Officer

CF:  
CELRH-EC-Q  
CELRH-PM-PP-P

## REVIEW PLAN

### TOWN OF MARTIN SECTION 202 NONSTRUCTURAL FLOOD DAMAGE REDUCTION PROJECT

Design and Construction Activities

Huntington District

MSC Approval Date: Pending

Last Revision Date: None



US Army Corps  
of Engineers ®

**REVIEW PLAN**

**TOWN OF MARTIN  
SECTION 202 NONSTRUCTURAL  
FLOOD DAMAGE REDUCTION PROJECT  
Design and Construction Activities**

**TABLE OF CONTENTS**

1. PURPOSE AND REQUIREMENTS ..... 3

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION ..... 3

3. PROJECT INFORMATION ..... 4

4. DISTRICT QUALITY CONTROL (DQC) ..... 9

5. AGENCY TECHNICAL REVIEW (ATR) ..... 10

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR) ..... 12

7. POLICY AND LEGAL COMPLIANCE REVIEW ..... 14

8. COST ENGINEERING DIRECTORY OF EXPERTISE (DX) REVIEW AND CERTIFICATION ..... 14

9. REVIEW SCHEDULES AND COSTS ..... 15

10. PUBLIC PARTICIPATION ..... 15

11. REVIEW PLAN APPROVAL AND UPDATES ..... 15

12. REVIEW PLAN POINTS OF CONTACT ..... 16

ATTACHMENT 1: TEAM ROSTERS ..... 17

ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW ..... 19

ATTACHMENT 3: REVIEW PLAN REVISIONS ..... 20

## 1. PURPOSE AND REQUIREMENTS

- a. **Purpose.** This Review Plan defines the scope and level of peer review for the design and construction activities to be performed for the Town of Martin, Section 202 Nonstructural, Flood Damage Reduction Project in Martin, Floyd County, Kentucky. Downtown Martin is shown in Figure 1 below.



Figure 1 – Downtown Martin Kentucky

## b. References

- (1) Engineering Circular (EC) 1165-2-214, Civil Works Review, 15 Dec 2012.
- (2) Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006.
- (3) Town of Martin, Section 202 Nonstructural, Flood Damage Reduction Project, Project Management Plan.
- (4) Town of Martin Nonstructural Project, Detailed Project Report, Appendix T, Section 202 General Plan.

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

## 2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO is responsible for managing the overall peer review effort described in this Review Plan. The RMO for implementation documents is typically either a Major Subordinate Command (MSC) or the Risk Management Center (RMC), depending on whether a Type II IEPR SAR is required. The RMO for the peer review effort described in this Review Plan is the Great Lakes and Ohio River Division. This Review Plan will recommend that a Type II IEPR SAR is not required because the project does not pose a significant threat to human life.

The Flood Risk Management PCX, Ecosystem Restoration PCX, and the Cost Engineering DX were not involved in the development or review of the Detailed Project Report (DPR). The DPR was completed in 2000, prior to the requirements for PCX and DX involvement. Since this Review Plan is for the design and construction activities, the Flood Risk Management PCX and Ecosystem Restoration PCX will not review this Review Plan.

The RMO will coordinate with the Cost Engineering DX to ensure the appropriate expertise is included on the ATR teams to assess the adequacy of cost estimates, construction schedules and contingencies.

### 3. PROJECT INFORMATION

- a. **Decision Document.** The Town of Martin has experienced 37 major flood events since 1862, with the flood of record occurring in 1977 (see Figure 2 below). In a direct response to the 1977 flood, Congress passed the Energy and Water Development Appropriations Act of 1981 (PL 96-367). This act authorized the development of flood-protection measures for the Levisa and Tug Forks of the Big Sandy River Basin. Section 202 of this legislation directed the Secretary of the Army to initiate design and construction of flood damage reduction measures in those areas affected by the 1977 flood. Further, Section 105 of PL 104-206 (September 1996) added that “nonstructural flood control measures implemented under Section 202 of PL 96-367 shall prevent future losses that would occur from a flood equal in magnitude to the April 1977 flood by providing protection from the April 1977 flood level or the 100-year frequency event, whichever is greater.” Although the flood of record in Martin occurred in 1977, the established 100-year flood event is slightly greater and will be used for design.

Extensive evaluations showed that traditional flood protection solutions, such as ringwalls, levees and floodwalls, were not a viable solution for the Town of Martin. These alternatives would require too much real estate to construct and would leave too little to protect. The Detailed Project Report (DPR), completed in March, 2000, authorized a Nonstructural project that would provide for the phased relocation of the Town of Martin to a flood-safe elevation. An Independent Technical Review of the DPR was completed in April, 2000. A Policy and Legal Review of the DPR was completed in May, 2000. The Assistant Secretary of the Army for Civil Works approved the DPR in March, 2001.



Figure 2 – Martin during the 1977 Flood

- b. **Project Description.** The Town of Martin is situated in the geographic center of Floyd County in Eastern Kentucky. Martin is a “string” town that has developed along the banks of Beaver Creek, a tributary of the Levisa Fork River, in the Big Sandy River basin, and is approximately 5 miles upstream from the confluence of Beaver Creek with the Levisa Fork. Martin is serviced by two primary state routes, SR-80 and SR-1438. The defined project area includes the entire corporation limits of Martin, but the relocation sites are to be constructed only in the downtown portion of Martin.

The Town of Martin Project is not a traditional Local Protection Project. The selected plan calls for the phased relocation of the town to three floodsafe relocation sites. The initial phase of this project was the installation of a Flood Warning System to enhance life safety during implementation of the redevelopment project. This system was installed in 2003 and is operated by the Martin Police Department. This system provides an early warning to the town when a flood threat is imminent. The Martin Police can then assess the need to call for evacuations of the town or the partial evacuation of specific neighborhoods within the corporation limits.

The Martin Redevelopment Plan has four primary phases of implementation. The order of the phases was determined jointly with the project sponsor in order to maintain the livelihood and function of the town. Phase-1 of the project provides for the construction of a floodsafe commercial and municipal redevelopment site adjacent to the existing Downtown. The Phase-1 site was completed in 2008 and is shown in Figure 3 below.



Figure 3 – Phase 1 Redevelopment Site

The Phase 1 Redevelopment Site provides 6.5 acres of floodsafe land to relocate existing businesses and municipal facilities that are currently located in the Phase 2 construction area. This site is directly adjacent to the existing Downtown area and was excavated from a mountain, which required the excavation of over 800,000 cubic yards of rock. The excavated spoil material is being temporarily stored at the Mayo Hollow spoil site approximately one mile away. The elevation of the Phase-1 Redevelopment Site is over fifty feet higher than the 100-year floodplain elevation for Beaver Creek at Martin. The increased elevation of this site above the 100-year floodplain elevation results from the existing topography of the area and the cut/fill balance needed for the Phase 2 and 3 fills. The highwall cuts and benches were geologically designed for long term stability. All surface drainage from the highwalls is conveyed to a perimeter rock catchment/drainage ditch at the bottom of the cut. This ditch then combines with the roadway drainage system and is conveyed to Beaver Creek. The Phase 1 site was released to the project sponsor in 2010. The project sponsor (Floyd County Fiscal Court) is now responsible for all Operations, Maintenance, Repair, Replacement, and Rehabilitation (OMRR&R) at the Phase 1 site. An OMRR&R Manual has been provided to the sponsor that details the steps and procedures necessary to maintain the site improvements and the highwalls.

Following Phase 1 but prior to Phase 2, there are three public facilities to be relocated: Martin City Hall, the Floyd County Alternative School, and the Martin Fire Station. These facilities and the other commercial facilities in the Phase 2 area must be relocated to the Phase 1 site before construction of the Phase 2 Redevelopment Site can begin. Most of the design for these three relocations has been completed. However, only the Martin Fire Station is under construction due to funding constraints. Figure 4 below provides an illustration of the project after the commercial and municipal facilities have been relocated to the Phase-1 site. The greenspace at the left of the picture illustrates the Phase 2 area where the old structures have been demolished.



Figure 4 – Phase 1 completion with Phase 2 area relocations and demolitions complete

After the structures in the Phase 2 area are relocated and demolished, this area will be filled with spoil material from the temporary spoil site to an elevation above the 100-year flood. The fill depth averages 16-feet with a maximum of 24-feet. Once the Phase 2 area is filled and compacted, it will be developed with streets and utilities. After this infrastructure is installed, residents who live in the Phase 3 areas will begin relocating to the Phase 2 site. There is no Government involvement in the design and construction of new residential housing. This work is the responsibility of the home owner in coordination with Real Estate Division. Figure 5 below provides an illustration of the project after the Phase 2 area is filled and developed and the Phase 3 area residential relocations are complete.



Figure 5 – Phase 2 completion and Phase 3 area relocations and demolitions complete



After the structures in the Phase 3 area are relocated to Phase 2 and demolished, this area will be filled with the remaining spoil material to an elevation above the 100-year flood. The Phase 3 fill will adjoin the Phase 2 fill and make one large redevelopment site. Once the Phase 3 area is filled and compacted, it will be developed with streets and utilities. After this infrastructure is installed, residents who live in the Phase 4 areas will begin relocating to the Phase 3 site. Phase 4 includes all other residential flood-prone areas within the corporation limits of Martin. Once these residents are relocated to the Phase 3 area, the Phase 4 structures will be demolished and these flood-prone areas will be converted to permanent greenway areas. There are no project features in the Phase 4 areas. There is no Government involvement in the design and construction of new residential housing. This work is the responsibility of the home owner in coordination with Real Estate Division. Figure 6 below provides an illustration of the project after the Phase 3 area is filled and developed, the Phase 4 area residential relocations are complete, and the greenway areas are established. Note that only a few of the Phase 4 (greenway) areas can be seen in Figure 6. There are additional Phase 4 areas both upstream and downstream of the limits of this illustration.



Figure 6 – Phase 3 completion and Phase 4 area relocations and demolitions complete

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

The Town of Martin project is a nonstructural project that does not include any ringwalls, flood walls, or levees. The project is a large scale relocation of the existing town. The project was broken into phases to keep the town functional throughout construction and to create smaller construction contracts due to a lack of efficient funding.

Many of the Town of Martin project features have been partially designed, designed completely, and/or constructed. The following paragraphs indicate the current status of each project feature at the time of preparation of this review plan.

- (1) **Phase 1.** Phase 1 of the project involved the construction of a 6.5 acre redevelopment site adjacent to the existing downtown. The Phase 1 Design Documentation Report (DDR) and plans and specifications were completed in 2003. An Independent Technical Review of the DDR and the Plans and Specifications was completed 2003 and 2004, respectively. Construction of the Phase 1 Redevelopment Site was completed in 2008.

- (2) **Martin Fire Station.** The Martin Fire Station is currently being constructed on the Phase 1 Redevelopment Site. The Relocations DDR was begun in 2002 and an Independent Technical Review completed in April, 2003. Due to lack of funding, plans and specifications were not developed until 2011. An Agency Technical Review of the 100% plans was completed on 01 August 2011.
- (3) **Martin City Hall.** The Martin City Hall will be constructed on the Phase 1 Redevelopment Site. The Relocations DDR was begun in 2003 and an Independent Technical Review completed in May, 2004. With slow funding, plans and specifications were not started until 2010; however, work was stopped at the 90% completion level due to lack of funding. An ATR of the plans and specification will be completed when work on this feature resumes. Due to its lower construction cost, the City Hall will most likely be the next project feature to be constructed; however, funding is not currently available or projected.
- (4) **Floyd County Alternative School.** The Floyd County Alternative School will be constructed on the Phase 1 Redevelopment Site. The Relocations DDR was prepared in 2003 and an Independent Technical Review completed in October, 2003. Plans and specifications were completed in 2005 and an Independent Technical Review completed in January 2006. Due to lack of funding, construction of the school has been delayed and is not scheduled at this time.
- (5) **Sanitary Bypass.** The Sanitary Bypass is essentially the first sub-phase of Phase 2. It provides for the maintenance of potable water and sanitary sewer service from other areas of town that flow through the Phase 2 and 3 project areas. It was split from Phase 2 as a separable element due to its lower construction cost and ability to stand as an independent feature. The Sanitary Bypass DDR was begun in 2008, but was stopped at the 90% completion level due to lack of funding. No work has progressed since that time. Agency Technical Reviews will be conducted on the DDR and Plans and Specifications when work on this feature resumes. With no funding anticipated in current projections, these phases are not scheduled at this time.
- (6) **Phase 2 & Phase 3.** Phases 2 and 3 of the project provide an area for residential redevelopment that is above the 100-year flood elevation. The identification of two separate phases for this work is necessary for residential relocation phasing. It is not required for design since both phases adjoin each other and comprise the same type of work. Consequently, one DDR is being prepared for both of these project phases. The Phase 2/3 DDR was begun in 2005, but was stopped at the 35% completion level due to lack of funding. No work has progressed since that time. Agency Technical Reviews will be conducted on the Phase 2/3 DDR, Phase 2 Plans and Specifications, and Phase 3 Plans and Specifications as work on these phases resume. With no funding anticipated in current projections, these phases are not scheduled at this time.
- (7) **Phase 4.** This phase only contains residential relocations from the Phase 4 areas (outside the relocation site) to the Phase 3 relocation site. There is no feature design or construction in this phase.

Unlike a traditional Corps project, the level of protection for the Phase 2 and 3 redevelopment areas is defined in public law. Section 105 of Public Law 104-206 (September 1996) states that "nonstructural flood control measures implemented under Section 202(a) of Public Law 96-367 shall prevent future losses that would occur from a flood equal in magnitude to the April 1977 flood by providing protection from the April 1977 flood level or the 100-year frequency event, whichever is greater." In Martin, the 100-year flood is slightly higher than the 1977 flood of record. Consequently, the 100-year flood event (1% exceedence level) controls the design elevation of the Phase 2 and 3 redevelopment sites. The project is not legally authorized to provide more than 100-year protection in the fill height, other than that necessary for superiority due to wave action, anticipated fill settlement, and that necessary for surface drainage. The elevation of the Phase-1 Redevelopment Site is over fifty feet higher than the

100-year floodplain elevation for Beaver Creek at Martin. The increased elevation of this site above the 100-year floodplain elevation results from the existing topography of the area and the cut/fill balance needed for the Phase 2 and 3 fills.

Phases 2 and 3 of the project involve the demolition of existing structures and the filling of the existing town to provide a floodsafe area for residential redevelopment. These phases will use the excess spoil material, from Phase 1, to fill the existing downtown area. The fills for Phases 2 & 3 will be shot rock and compacted appropriately and further armored with limestone riprap (of the appropriate size) on the stream side of the fill. The design parameters that will influence the level of review for Phase 2 and 3 are: (1) Are the compaction requirements appropriate? (2) Is the embankment slope stable? and (3) Is the bank protection (armoring) appropriate? From a life safety perspective, there is minimum risk. The features to be constructed as part of the project are not challenging from a design perspective. Again, this project is a nonstructural project and the threat to human life is not significant.

The structures to be designed and constructed through relocation contract, Martin City Hall, Martin Fire Station, and the Floyd County Alternative School, will be constructed on the Phase-1 Redevelopment Site, which is 50+ feet above the 100-year floodplain, and consequently, pose no threat to human life. These features have or will be designed and constructed to applicable building standards and in accordance with current Kentucky Building Codes.

- d. **In-Kind Contributions.** The Non Federal Cost Share Sponsor for this project is the Floyd County Fiscal Court, Floyd County, Kentucky. There are no in-kind services anticipated as part of the cost share.

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

All implementation documents shall undergo DQC. DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). The Huntington District shall manage DQC. Documentation of DQC activities is required and shall be in accordance with the Quality Manual of the District and the Great Lakes and Ohio River Division (LRD) as managed in Qualtrax.

DQC is completed in accordance with the [LRD Regional Business Processes Manual](#) (the Regions Quality Management Plan). The [LRD Regional Business Processes Manual](#) is an ISO 9001 certified Quality Management System. DQC includes Quality Production, Internal Quality Checks and Reviews, Design Checks, and Project Delivery Team (PDT) Reviews as described in procedure [08504 LRD - QC / QA Procedures for Civil Works](#).

- a. **Documentation of DQC.** In accordance with [08504 LRD - QC / QA Procedures for Civil Works](#), All drawings, computations, quantity estimates, and analyses provided to the DQC team for review will be annotated to show the initials of the designer and the checker and the date of the action.
- b. **Products to Undergo DQC.** All DDRs and Plans & Specifications will undergo DQC in accordance with [08504 LRD - QC / QA Procedures for Civil Works](#).
- c. **Required DQC Expertise.** In accordance with [08504 LRD - QC / QA Procedures for Civil Works](#), anyone conducting design checks and reviews will be qualified to originate the type of design that they are checking, even though they cannot serve as DQC for designs that they originated. The disciplines

involved in the DQC review will depend on the project feature being designed but will generally follow those presented in Table 2 of Attachment 1.

## 5. AGENCY TECHNICAL REVIEW (ATR)

ATR is mandatory for all implementation documents per EC 1165-2-214 (Note that DDRs and P&S produced before the implementation of EC 1165-2-206, 31 January 2010, underwent Independent Technical Review in accordance with the quality control requirements in effect at the time). The objective of ATR is to ensure consistency with established criteria, guidance, procedures, and policy. The ATR will assess whether the analyses presented are technically correct and comply with published USACE guidance, and that the document explains the analyses and results in a reasonably clear manner for the public and decision makers. ATR is managed within USACE by the designated RMO and is conducted by a qualified team from outside the home district that is not involved in the day-to-day production of the project/product. ATR teams will be comprised of senior USACE personnel and may be supplemented by outside experts as appropriate. The ATR team lead will be from outside the home MSC.

### a. Products to Undergo ATR.

- (1) **Phase 1.** Phase 1 will not undergo ATR. The Phase 1 DDR and P&S underwent Independent Technical Review (ITR) in August 2003. Phase 1 has been constructed.
- (2) **Phase 2 & Phase 3 Redevelopment Sites.** The DDR and P&S for both Phase 2 and Phase 3 will undergo ATR.
- (3) **Sanitary Bypass.** The DDR and P&S for the Sanitary Bypass will undergo ATR.
- (4) **Martin City Hall.** The P&S for the City Hall will undergo ATR. The Relocations DDR underwent ITR in May 2004.
- (5) **Floyd County Alternative School.** The Floyd County Alternative School will not undergo ATR. The Relocations DDR underwent ITR in October 2003. P&S underwent ITR in January 2006.
- (6) **Martin Fire Station.** ATR of the Fire Station P&S was completed on 01 August 2011. The Relocations DDR underwent ITR in April 2003. The Martin Fire Station is currently under construction.

### b. Required ATR Team Expertise.

ATR Team Members/Disciplines	Expertise Required
ATR Lead - all project features	The ATR lead will be a professionally-registered senior professional with extensive experience in preparing Civil Works Design Documentation Reports (DDR) and Plans and Specifications (P&S), and conducting ATR reviews. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. The ATR lead may also serve as a reviewer for a specific discipline.
Civil Engineer - all project features	The civil engineering reviewer will be a senior professional in the field of civil engineering and have a thorough understanding of civil/site work and layout, including site development and relocation contracts. The reviewer will have considerable experience in earthwork modeling and grading, and the design of drainage systems, potable water systems, storm and sanitary sewers, public areas, and street and highway pavements.

<p>Geotechnical Engineer</p> <ul style="list-style-type: none"> <li>- City Hall</li> <li>- Phases 2/3</li> </ul>	<p>The geotechnical engineering reviewer will be a senior professional in the field of soils engineering and have a thorough understanding of earthwork construction methods, slope stability, consolidation, and bearing capacity. The reviewer will have considerable experience in the design of fills and embankments, streambank erosion control measures, and building foundations.</p>
<p>Electrical Engineer</p> <ul style="list-style-type: none"> <li>- all project features</li> </ul>	<p>The electrical engineering reviewer will be a senior professional in the field of electrical engineering and have a thorough understanding of the design of electrical facilities for public power distribution systems, pumping equipment, and institutional building construction. The reviewer shall have a working knowledge of State of Kentucky and International building codes.</p>
<p>Cost Engineer</p> <ul style="list-style-type: none"> <li>- all project features</li> </ul>	<p>The cost engineering reviewer will be a senior professional in the field of cost estimating and have a thorough understanding of quantity estimation, measurement and payment quantification, and MII cost estimating software, as applied to large scale earthwork projects and institutional building construction.</p>
<p>Hydraulic Engineer</p> <ul style="list-style-type: none"> <li>- Phases 2/3 only</li> </ul>	<p>The hydraulic engineering reviewer will be a senior professional in the field of hydrology and hydraulics and have a thorough understanding of river modeling, flood profiling, channel hydraulics, scour, and the design of streambank erosion control measures.</p>
<p>Architecture</p> <ul style="list-style-type: none"> <li>- City Hall only</li> </ul>	<p>The architecture reviewer will be a senior professional in the field of architecture and have a thorough understanding of institutional building layout and design, including structural building systems, veneers, roofing, interior and landscape design. The reviewer shall have a working knowledge of State of Kentucky and International building codes.</p>
<p>Structural Engineer</p> <ul style="list-style-type: none"> <li>- City Hall only</li> </ul>	<p>The structural engineering reviewer will be a senior professional in the field of structural engineering and have a thorough understanding of structural building systems, and building foundations, The reviewer shall have a working knowledge of State of Kentucky and International building codes.</p>
<p>Mechanical Engineer</p> <ul style="list-style-type: none"> <li>- City Hall</li> <li>- Sanitary Bypass</li> </ul>	<p>The mechanical engineering reviewer will be a senior professional in the field of mechanical engineering and have a thorough understanding of pumping equipment, building plumbing, and heating/ventilation/air conditioning systems. The reviewer shall have a working knowledge of State of Kentucky and International building codes.</p>

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

- (1) The review concern – identify the product’s information deficiency or incorrect application of policy, guidance, or procedures;
- (2) The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not 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 design personnel must take to resolve the concern.

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

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

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

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

ATR may be certified when all ATR concerns are either resolved or referred to the vertical team for resolution and the ATR documentation is complete. The ATR Lead will prepare a Statement of Technical Review certifying that the issues raised by the ATR team have been resolved (or elevated to the vertical team). A sample Statement of Technical Review is included in Attachment 2. All ATR review reports will be included in an appendix to this Review Plan as they are completed.

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

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

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

- **Type I IEPR.** Type I IEPR reviews are managed outside the USACE and are conducted on project studies. Type I IEPR panels assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, economic analysis, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in the evaluation of environmental impacts of proposed projects, and biological opinions of the project study. Type I IEPR will cover the entire decision document or action and will address all underlying engineering, economics, and environmental work, not just one aspect of the study. For decision documents where a Type II IEPR (Safety Assurance Review) is anticipated during project implementation, safety assurance shall also be addressed during the Type I IEPR per EC 1165-2-214.
  - **Type II IEPR.** Type II IEPR, or Safety Assurance Review (SAR), are managed outside the USACE and are conducted on design and construction activities for hurricane, storm, and flood risk management projects or other projects where existing and potential hazards pose a significant threat to human life. Type II IEPR panels will conduct reviews of the design and construction activities prior to initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health safety and welfare.
- a. **Decision on IEPR.** No IEPR review is recommended for the Town of Martin project. Although this project will reduce flood impacts to the town, the solution does not contain the typical risk associated with traditional flood damage reduction projects and does not pose a significant threat to human life. The Town of Martin project is nonstructural in nature. There are no ringwalls, floodwalls, levees, or dams. It is a relocation project. Since the project does not impound or control floodwater in any way, there are no downstream life safety impacts. The Town of Martin is being made flood safe by raising its elevation with shot rock fill. The only identified failure mode for the entire project is a slope failure on the stream side of the Phase 2/3 fill. This type of failure would affect a very local area, and because habitable structures will be required to be a minimum of 50' from the top of bank, it poses a very minor threat to inhabitants of those structures. The project has a very low design and construction risk. Consequently, an Independent External Peer Review is not warranted.

Major risk factors considered include:

- (1) This project does not meet the intent of the "innovative materials or techniques" factor. It will use standard excavation methods and rock excavated from the phase 1 site to construct the Phase 2 and 3 redevelopment sites. This project is not based upon novel methods, does not presents complex challenges for interpretations, does not contains precedent-setting methods or models, and does not present conclusions that are likely to change prevailing practices.
- (2) The project design does not require redundancy, resiliency, and robustness.
  - (i) This project is not "redundant" in nature. There is only one fill site and it is only being filled to one elevation. Due to its nonstructural nature, the project cannot have redundant features.
  - (ii) The project does not have any operational features in which to instill "resiliency." There are no ringwalls, flood walls, levees, or flood gates. Only standard municipal

infrastructure, including streets, curbs, sidewalks, waterlines, sewer lines, etc., will be designed and constructed.

- (iii) This project is not "robust" in nature. A perceived failure would occur during a flood greater than the 100-year event. However, this failure would not be due to the design or construction of the project, but due to its limiting legislative authorization.
- (3) Although this project is sequenced in its approach, it does not meet the intent of the "unique construction sequencing" factor. The two primary reasons for the phasing of this project are (1) to keep the town functional throughout construction and (2) the availability of funding. Phasing is not needed for any design or construction related component of the project. The project does not have a reduced or overlapping design/construction schedule, nor does it use Design-Build or Early Contractor Involvement (ECI) delivery systems.

Further, an incomplete project, which could result from a lack of project funding, does not contain more risk to human life or life safety than the without-project condition. The implementation of the project will not be segmented further than described previously or otherwise changed such that the risk to life safety is increased. At the time of this Review Plan, funding has been obtained to construct the Martin Fire Station on the completed Phase 1 redevelopment site. However, the project objective of a floodsafe redevelopment area for the entire town will not be met until the project obtains efficient funding and all phases of construction are complete.

- b. **Products to Undergo Type I IEPR.** Not applicable. The Detailed Project Report (DPR) was completed in 2000 prior to the requirements of EC 1165-2-214.
- c. **Products to Undergo Type II IEPR SAR.** Not Applicable. A Type II IEPR is not recommended for the Town of Martin project.

## 7. POLICY AND LEGAL COMPLIANCE REVIEW

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

The Detailed Project Report (DPR), completed in 2000, authorized a Nonstructural project that would provide for the phased relocation of the Town of Martin to a flood-safe elevation. An Independent Technical Review of the DPR was completed in April, 2000. A Policy and Legal Review of the DPR was completed in May, 2000. The Assistant Secretary of the Army for Civil Works approved the DPR in March, 2001.

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

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



The Detailed Project Report (DPR), completed in 2000, authorized a Nonstructural project that would provide for the phased relocation of the Town of Martin to a flood-safe elevation. The DPR was not coordinated with the Cost Engineering DX. As stated above, the DPR was completed in 2000, prior to the requirement for Cost Engineering DX involvement.

The RMO will coordinate with the Cost Engineering DX to ensure the appropriate expertise is included on the ATR teams to assess the adequacy of cost estimates, construction schedules and contingencies.

**9. REVIEW SCHEDULES AND COSTS**

a. **ATR Schedule.** At this time there are no established schedules for ATR. The Town of Martin project is experiencing funding issues and constraints. For example, the plans and specifications for the Alternative school have been completed since 2006, but it has not yet been constructed due to lack of efficient funding. The only current scheduled activity is the construction of the Martin Fire Station. This review plan will be updated when funding becomes available and subsequent activities are scheduled.

b. **ATR Cost.** Estimated costs for ATR are:

City Hall - ATR Milestones	
100% Plans & Specifications	Cost: \$30,000.

Sanitary Bypass - ATR Milestones	
100% Design Documentation Report	Cost: \$20,000.
100% Plans & Specifications	Cost: \$20,000.

Phase 2/3 - ATR Milestones	
100% Design Documentation Report	Cost: \$75,000.
100% Phase 2 Plans & Specifications	Cost: \$50,000.
100% Phase 3 Plans & Specifications	Cost: \$50,000.

**10. PUBLIC PARTICIPATION**

As part of the peer review, opportunities were and will continue to be provided for the public to comment on the study and decision documents that are to be reviewed. The Huntington District made the draft Town of Martin DPR/EA document available to the public for comment and sponsored several public meetings and workshops prior to its approval. Several NEPA public scoping meetings were held presenting information at various stages during the feasibility study to receive input from the public. Information obtained during public meetings was used to assist in plan formulation and to complete the draft environmental documents necessary to meet both Federal and State requirements. This includes State and Federal agency reviews as well. Additional public meetings will be conducted, as necessary, through the DDR, plans and specifications, and construction phases. Information will also be conveyed to the public through the use of press releases and media interviews as necessary and through the use of posting information to the Huntington District’s web site. The project manager will also schedule office hours at the project site after construction is initiated. There is no formal public review for the DDR, plans and specifications, and construction phases. However, the cost share partner, Floyd County, Kentucky, will have opportunities to review the DDR, plans and specifications and construction phases as part of the PDT. Public facility owners will also have opportunities for review per the relocation contracts. Upon

MSC approval of this Review Plan, the Review Plan will be posted on the Huntington District Internet for Public Review ([http://www.lrh.usace.army.mil/approved\\_review\\_plans\\_rps](http://www.lrh.usace.army.mil/approved_review_plans_rps)).

#### 11. REVIEW PLAN APPROVAL AND UPDATES

The Great Lakes & Ohio River 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 project. Like the PMP, the Review Plan is a living document and may change as the study progresses. Huntington District is responsible for keeping the Review Plan up to date. Minor changes to the review plan since the last MSC Commander approval will be documented in Attachment 3. Significant changes to the Review Plan (such as changes to the scope and/or level of review) shall be re-approved by the MSC Commander following the process used for initially approving the plan. The latest version of the Review Plan, along with the Commanders' approval memorandum, will be posted on Huntington District's webpage. The latest Review Plan will also be provided to the RMO and MSC.

#### 12. REVIEW PLAN POINTS OF CONTACT

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

- [REDACTED] *CELRH, Project Manager,* [REDACTED]
- [REDACTED] *CELRH, Lead Engineer,* [REDACTED]
- [REDACTED] *CELRH, EC Quality Manager,* [REDACTED]
- [REDACTED] *CELRD, MSC/RMO POC,* [REDACTED]
- [REDACTED] *RMC, Senior Review Manager,* [REDACTED]

**ATTACHMENT 1: TEAM ROSTERS**

<b>TABLE 1: Product Delivery Team</b>		
<b>Functional Area</b>	<b>Name</b>	<b>Office</b>
Project Manager		CELRH
Lead Engineer / Civil Design / Relocations		CELRH
Real Estate		CELRH
Contracting		CELRH
Legal		CELRH
Public Affairs		CELRH
Architecture		CELRH
Geology		CELRH
Geotechnical (Soils)		CELRH
Surveys		CELRH
Hydrology and Hydraulics		CELRH
Cost Engineering		CELRH
Structural		CELRH
Electrical		CELRH
Mechanical		CELRH
HTRW		CELRH
Construction		CELRH
Specifications		CELRH
Environmental		CELRH
Operations		CELRH

<b>TABLE 2: District Quality Control Team</b>		
<b>Functional Area</b>	<b>Name</b>	<b>Office</b>
DQC Lead / Civil Design / Relocations		CELRH
Real Estate		CELRH
Contracting		CELRH
Architecture		CELRH
Geology		CELRH
Geotechnical (Soils)		CELRH
Surveys		CELRH
Hydrology and Hydraulics		CELRH
Cost Engineering		CELRH
Structural		CELRH
Electrical		CELRH
Mechanical		CELRH
HTRW		CELRH
Construction		CELRH
Specifications		CELRH
Environmental		CELRH

<b>TABLE 3: Agency Technical Review Team</b>		
<b>NAME</b>	<b>DISCIPLINE</b>	<b>OFFICE</b>
TBD	ATR Lead	TBD
TBD	Civil Engineer	TBD
TBD	Geotechnical Engineer (City Hall & Phases 2/3 only)	TBD
TBD	Electrical Engineer	TBD
TBD	Cost Engineer	TBD
TBD	Hydraulic Engineer (Phases 2/3 only)	TBD
TBD	Architecture (City Hall only)	TBD
TBD	Structural Engineer (City Hall Only)	TBD
TBD	Mechanical Engineer (City Hall & Sanitary Bypass Only)	TBD

Note: At this time no ATR members have been identified. The Town of Martin project is experiencing funding constraints and there is no indication of future funding. There are no established schedules for ATR of any project feature. Each year, all activities are slipped to the next fiscal year. Without schedules and funding identified, the naming of ATR members would be premature. Potential ATR member availability and workload cannot be determined at this time. This review plan will be updated when funding becomes available and activities are scheduled.

**ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW**

**COMPLETION OF AGENCY TECHNICAL REVIEW**

The Agency Technical Review (ATR) of the *<type of product>* for the *<Project Feature>* for the Town of Martin Section 202 Nonstructural Project, Martin, KY has been completed. The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-214. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrChecks<sup>sm</sup>.

*SIGNATURE*

Name

ATR Team Leader

Office Symbol/Company

Date

*SIGNATURE*

Project Manager

CELRH-PM-PP-P

Date

*SIGNATURE*

Senior Regional Engineer

CELRD-RBT

Date

**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*

Chief, Engineering Division

CELRH-EC

Date

**ATTACHMENT 3: REVIEW PLAN REVISIONS**

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

**ATTACHMENT 4: COMPLETED ATR REVIEW REPORTS**