DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NORTHWESTERN DIVISION
PO BOX 2870
PORTLAND OR 97208-2870

CENWD-RBT

10 SEP 2012

MEMORANDUM FOR Commander, Kansas City District (CENWK-PM-CJ, Mr. LaLiberty)

SUBJECT: Revised Review Plan (RP) Approval for Swopes Park Industrial Area Flood Damage Reduction Project Implementation Documents, Kansas City District, Northwestern Division, 27 August 2012 Revised Review Plan Submittal

1. References:

a. Revised RP for Swopes Park Industrial Area Flood Damage Reduction Project (Encl. 1).

b. EC 1165-2-209, Civil Works Review Policy, 31 January 2010.

2. Reference 1.a. above has been prepared in accordance with reference 1.b. above.

3. The original RP was approved on 20 December 2011 by the Northwestern Division (NWD) Commander, U.S. Army Corps of Engineers. The RP includes District Quality Control, Agency Technical Review, and Type II Independent External Peer Review (IEPR). Coordination with the Risk Management Center (RMC) on the IEPR resulted in recommended revisions, which are incorporated in the revised RP. The RMC endorses the revised plan and recommends approval (Encl. 2).

4. The RMC would typically be the Review Management Office (RMO) during the implementation phase for a project which involves life safety concerns. However, due to workload and priorities, the RMC has recommended that NWD perform the RMO duties for this project, with the RMC providing assistance in coordinating and managing the IEPR. The RMO Point of Contact is Steve Bredthauer at (503) 808-4053.

5. I hereby approve this RP, which is subject to change as circumstances require, consistent with the study development process and the Project Management Business Process. Subsequent revisions to this Review Plan or its execution will require written approval from this office.

6. For further information, please contact Mr. Steve Bredthauer at (503) 808-4053.

2 Encls

ANTHONY C. FUNKHOUSER, P.E.
COL, EN
Commanding

REVIEW PLAN

Swope Park Industrial Area Flood Damage Reduction Project
Kansas City, Missouri
Implementation Phase

Kansas City District
Northwestern Division

P2#: *156415*
MSC Approval Date: *Pending*
Last Revision Date: *20 December 2011*

This review plan is an update of the previous one approved on 20 December 2011 by Northwestern Division. This update reformats the review plan using the Risk Management Center's (RMC) Decision Document Template dated 15 June 2011 (with modification for use with Implementation Documents) posted here: https://kme.usace.army.mil/Centers/IWR/RMC/External/Quality/Templates/Forms/AllItems.aspx and addresses comments from the RMC on the original review plan.

US Army Corps of Engineers ®

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, KANSAS CITY DISTRICT
601 E. 12TH STREET
KANSAS CITY, MISSOURI 64106-2896

REPLY TO
ATTENTION OF:

CENWK-ED

27 August 2012

MEMORANDUM FOR Commander, Northwestern Division, USACE, ATTN: Mr. Stephen Bredthauer

SUBJECT: Revised Swope Park Industrial Area Review Plan (P2# 156415), Kansas City, Missouri, Kansas City District

1. Enclosed for Major Subordinate Command (MSC) approval is the revised Swope Park Industrial Area Flood Protection Project review plan. The original review plan was approved on 20 December 2011 and is revised to reflect coordination with, and comments from, the Risk Management Center. This review plan was prepared in accordance with EC 1165-2-209, Civil Works Review Policy.

2. The Swope Park Industrial Area Flood Protection Project is currently in the implementation phase. As required by EC 1165-2-209, request review and approval of the revised Review Plan.

3. The point of contact for this memorandum is the project manager, Seth LaLiberty, at (816) 389-3023 or seth.j.laliberty@usace.army.mil

FOR

Encl

DAVID L. MATHEWS, P.E.
Chief, Engineering Division

REVIEW PLAN

Swope Park Industrial Area Flood Damage Reduction Project
Kansas City, Missouri
Implementation Phase

Kansas City District
Northwestern Division

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1. PURPOSE AND REQUIREMENTS

Purpose. This Review Plan defines the scope and level of review for the *Swope Park Industrial Area Flood Damage Reduction Project, Kansas City, Missouri, Implementation Phase, Kansas City Distric, Northwestern Division*

a. References

(1) Engineering Circular (EC) 1165-2-209, Civil Works Review Policy, 31 Jan 2010
(2) EC 1105-2-412, Assuring Quality of Planning Models, 31 Mar 2011
(3) Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006
(4) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007
(5) US Army Field Manual 5-19, Composite Risk Management, 21 August 2006
(6) Swope Park Industrial Area PMP dated 31 March 2011

b. Requirements. This review plan was developed in accordance with EC 1165-2-209, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design, construction, and operation, maintenance, repair, replacement and rehabilitation (OMRR&R). The EC outlines four general levels of review: District Quality Control/Quality Assurance (DQC), Agency Technical Review (ATR), Independent External Peer Review (IEPR), and Policy and Legal Compliance Review. In addition to these levels of review, decision documents are subject to cost engineering review and certification (per EC 1165-2-209) and planning model certification/approval (per EC 1105-2-412).

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO is responsible for managing the overall review effort described in this Review Plan. Typically the Risk Management Center would perform RMO duties for a project in the implementation phase involving life safety concerns, however, due to workload and priorities, the RMC recommends that Northwestern Division (NWD), perform the RMO duties for this project. The RMC will provide assistance in coordinating and managing the independent external peer review (IEPR).

3. STUDY INFORMATION

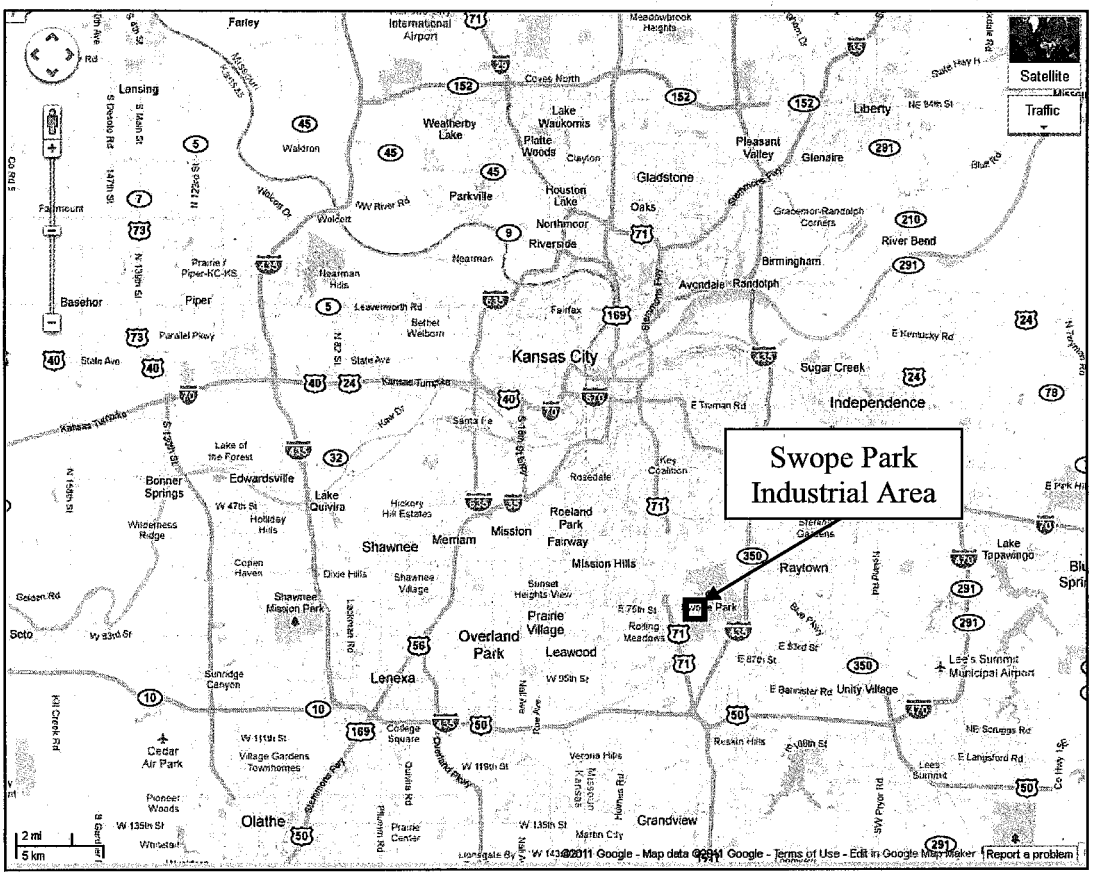
a. Implementation Documents. The implementation documents will be the updated environmental assessment (EA), plans, specifications, design documentation report (DDR), and the operations and maintenance (O&M) manual. There will be two sets of plans, specifications, and DDR; one set for the design-build effort to construct interior drainage pipes and the other set for the flood damage reduction features. An AE (Continental Consulting Engineers) will develop the interior drainage pipes design and another AE (Black and Veatch) will develop the flood damage reduction feature design. These documents will be used as a detailed plan for construction of the project features. They will be approved at the district level and do not require MSC approval. The documents will not require congressional authorization. National Environmental Policy Act (NEPA) documentation will include an updated Environmental Assessment (EA) to accompany the implementation documents.

b. Project Description. The project consists of the design and construction of approximately 3,986 feet of reinforced concrete floodwall, approximately 2,851 feet of compacted earthen levee, as well as construction of an interior drainage system consisting of 1,030 feet of reinforced concrete pipe and a 2.47 acre interior storm water retention pond, a rolling gate enclosure, and fish and wildlife mitigation. The total project cost is currently estimated at $23,860,000 (FY13 Basis). The project is authorized by the Water Resources Development Act of 2007, Section 1001(29), Public Law 110-114. An AE firm (Black and Veatch) will complete the design via contract through the Kansas City District. The AE's design will undergo District Quality Control (DQC) and additional reviews as described in this review plan. The Kansas City District will execute the project and report to the Northwestern Division in Portland, Oregon. The project is cost shared with the local sponsor, the City of Kansas City, MO with a 65%/35% Federal and non-Federal split. Additional details on the floodwall and levee are below.

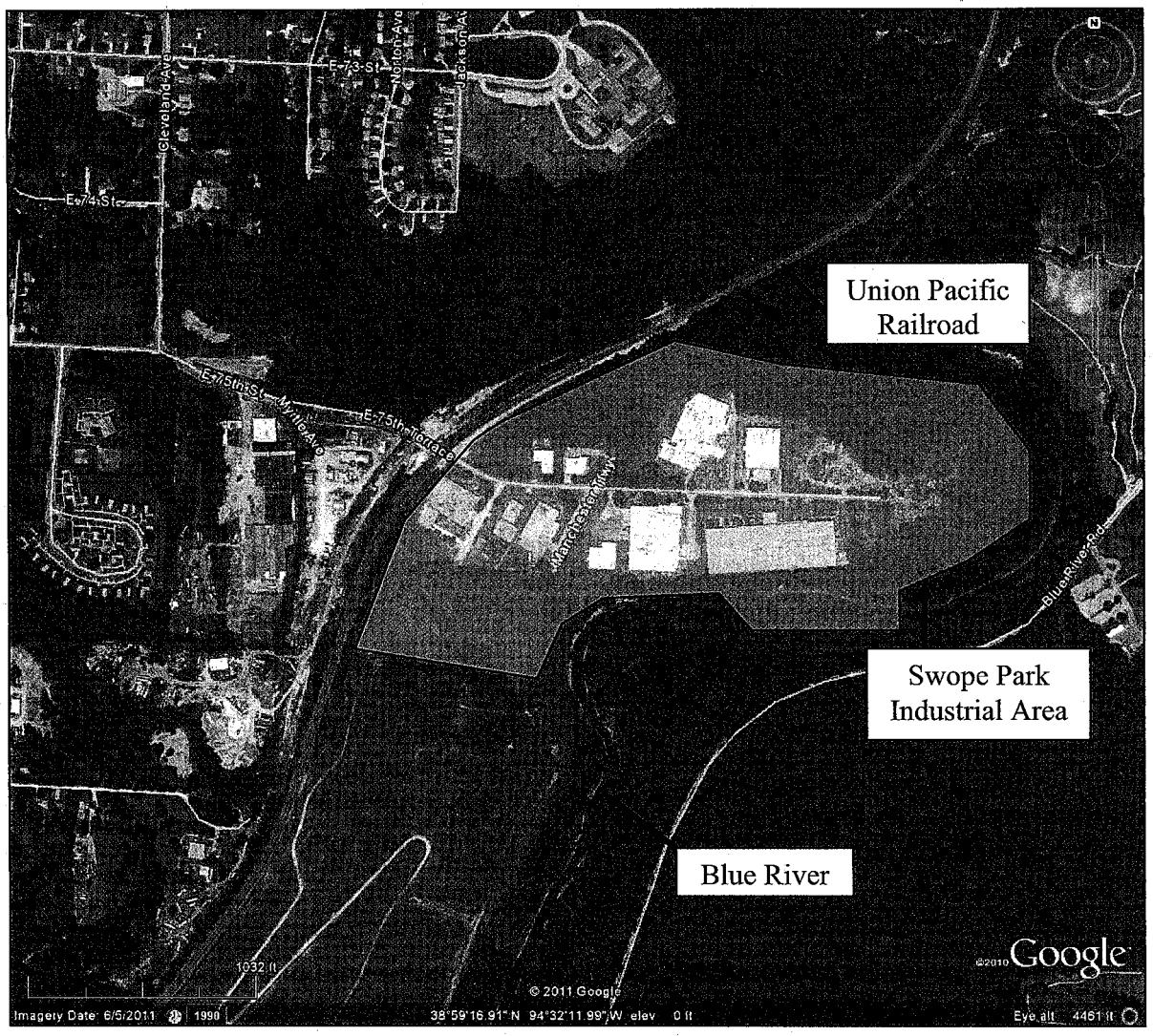
(1) Floodwall details. The floodwalls will be founded on auger cast piles and will have a top of floodwall elevation of 795.02' (approximately 13' above the existing ground level). The floodwall will be 1' wide at the top and 1.5' wide at ground level. The floodwall footing will be 12' wide by 2' thick. Underneath the footing, there will be a 30' deep, 1' diameter tension auger cast pile on the riverward side, a 6' deep sheetpile in the center, and a 50' deep, 1' diameter compression auge cast pile on the landward side.

(2) Levee details. The levee will be 10' wide on top with 3:1 sideslopes. The top elevation of the levee will be 793.35'. The levee height varies from 15' to 45', depending on the existing ground elevation.

Swope Park Industrial Area General Location



Swope Park Industrial Area, Project View



c. Project Status. As of June, 2012, the project is moving forward with completion and review of the flood damage reduction design and construction of a portion of the interior stormwater collection system. The project did not receive funding in the FY13 President's Budget and future funding is not guaranteed. For this reason, at least two separate phases are required for construction. Phase I (~$2.5M) will be construction of the interior stormwater collection pipes, which is currently underway. Sufficient funding isn't available to complete the full stormwater collection system, which also includes the detention pond and gatewell to discharge to the Blue River. The stormwater inlets and the pipe outlet to the future detention pond will be sealed until additional funding is received to complete the system. Phase II (~$15M) will complete the detention pond and gatewell, as well as construct the levees and floodwalls which provide the actual flood damage reduction (FDR) benefits.

d. Factors Affecting the Scope and Level of Review.

- Life Safety. The project includes levees and floodwalls that protect human life. It is critical that these features are designed to current criteria, and are designed, constructed and ultimately perform as intended.
- Project Cost. The total cost of the project is authorized at $23,860,000 (FY13 Basis). This cost includes preliminary engineering and design ($1.38M), completion of the design, reviews required by law, construction supervision and administration, contracting costs, project management, quality assurance labor costs, LERRD (lands, easements, rights of way, relocations, and disposal) costs, project coordinatin team costs, and construction.
- Public Support. There is strong public support for this project. The project features will help protect businesses and infrastructure from flooding, which in turn helps support jobs in the area. While there are always a few members of the public opposed to any project of this type, no negative public comments have been received to date and few are expected.
- Project Visibility and Area Disturbed. The project will result in a visible floodwall and levee in an industrial area. However, they will be constructed in areas that are not readily visible from private residences due to significant tree cover and vegetation. During construction a larger area will be disturbed, but this will be temporary and is not expected to impact, either visibly or audibly, private residences.

e. Factors considered but not deemed influential. The engineering employed to support the implementation documents is structural design, hydraulics and hydrology, biology, geotechnical evaluation, and civil engineering. The design and design methods in the implementation documents are not be based on novel methods, do not present complex challenges for interpretation, do not contain precedent-setting methods or models, and do not present conclusions that are likely to change prevailing practices. This project does not have significant environmental impacts nor does it disturb known cultural or historically significant sites. Little to no public controversy is expected.

f. In-Kind Contributions. Products and analyses provided by non-Federal sponsors as in-kind services are subject to DQC, ATR, and IEPR. The in-kind products and analyses to be provided by the non-Federal sponsor include: None.

4. DISTRICT QUALITY CONTROL (DQC)

All implementation documents (including supporting data, analyses, environmental compliance documents, etc.) will undergo DQC. DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). The home district will manage DQC. Documentation of DQC activities is required and will be in accordance with the Quality Manual of the District and the home MSC. DQC will be overseen by the District's Quality Assurance Team (QAT), which consists of representatives from several disciplines. DQC is conducted at a different level for AE-developed products and District-developed products.

a. Conduct of DQC, AE-Developed Products. For AE-developed products, the AE will develop a quality control plan (QCP)that will be reviewed by the Quality Assurance Team (QAT) and approved by the District's contracting officer's representative of the design contract. The QAT will ensure the QCP meets the necessary criteria and standards for the conduct of quality control. The QCP will, at a minimum, include an independent technical review by the AE. When the AE submits their design products, the QAT will conduct a quality assurance (QA) review to ensure the QCP was followed and the terms of the contract are met by the deliverables. The QAT will enter any comments they may

have at this time into DrChecks (see paragraph below). The AE will respond to the DrChecks comments and the comments will be resolved by the AE prior to submitting the products for ATR review. The AE's independent technical review comments (which often take the form of marked-up drawings) and the QAT's DrChecks comments from the QAT review will be provided to the ATR team.

b. Conduct of DQC, District-Developed Products. For products developed by the District, the District will conduct both QC and QA. QC at this level will be conducted by the QAT and includes peer review and an interdisciplinary review, with a focus on ensuring the design meets current criteria and standards, and is technically acceptable. QA will be conducted by the District vertical team and includes oversight on the quality control processes, a legal review, and a Biddability, Constructibility, Operability, and Environmental (BCOE) review prior to advertisement of a construction contract. Comments from the interdisciplinary review will be posted on DrChecks and provided to the ATR team.

c. Documentation of DQC. DQC will be documented in DrChecks (website: www.projnet.org). Comments will be provided to the ATR team at the start of the ATR review. Basic quality tools used on the project include a Quality Management Plan, quality assurance team (QAT) reviews, a (BCOE) review, AE product development checklists, and established Business and Quality Procedures (BQPs) used to ensure quality procedures are followed. The implementation documents will be produced by an AE with quality procedures followed as described in the AE's (QCP). Per the district BQP's, the AE's QCP will be reviewed by the QAT and approved by the Contracting Officer's Representative.

d. DQC Review Descriptions.

(1) Peer Reviews. Both AE's and the District conduct peer reviews as part of DQC. The peer review is conducted by a peer in the same discipline who double checks calculations, criteria, assumptions, and other design details used in the design, specifications, and DDR. A certification will be prepared once issues raised by the reviewers have been addressed to the review team's satisfaction. Indication of this concurrence will be documented by the signing of the following quality assurance certification statement by the AE or the District's QAT leader: *"This product was completed and reviewed in accordance with Our Company's Quality Control Plan. It is believed to be in compliance with all applicable criteria and this contract's scope of work."*

(2) A/E's Product Reviews. The AE will conduct daily checks to check work progress and accuracy, compliance reviews to ensure products meet criteria and scope requirements, and an independent technical review (ITR). The ITR will verify the technical applicability and accuracy of the work, assumptions, information and design clarity, technical coordination, compliance with the technical requirements in the scope and associated critera documents, quality of biddability and constructability. The ITR is performed by qualified professionals independent of the task order. The ITR comments are provided to the District.

(3) Interdisciplinary Review. The District conducts an interdisciplinary review on District-developed products. This review ensures the work developed by one discipline does not conflict or interfere with the work of another discipline. As the project progresses, check prints or draft documents will be provided to all members of the PDT. Each member will check other discipline's work for coordination with their work and comment on work by

other team members that does not appear to satisfy criteria or client requirements. Included is a review of correctness of application of mehods, validity of assumptions, adequacy of basic data, correctness of calculations (error free), and completeness of documentation, compliance with guidance and standards, and BCOE considerations. Before the ATR review, the QAT will review the product. The term "interdisciplinary review" for the purpose of this document is synonymous to the internal portion of the "PDT Review" defined in Chapter 3 of ER 1110-1-12.

(4) Plan in hand Review. Before a construction contract is advertised, the QAT (and AE, if applicable) will conduct a plan in hand review. Aptly named, this review is conducted onsite with the plans "in hand". The QAT, including construction branch and field office representatives, will conduct the review. This review is to determine if any significant changes to the site have occurred since the last site visit and to visualize the completed plan from the perspective of standing at the site. Following the plan in hand, the QAT lead will produce a memorandum to document comments and the planned resolution of any issues.

e. Products to Undergo DQC. The EA update, both sets of plans, both sets of specifications, both sets of DDR, and the O&M manual will receive DQC.

f. Timing of DQC. DQC on each product will be completed prior to ATR of the particular product, with the exception of the plan in hand review, which is completed after ATR but before advertisement of a construction contract.

5. AGENCY TECHNICAL REVIEW (ATR)

ATR is mandatory for all implementation documents (including supporting data, analyses, environmental compliance documents, etc.). The objective of ATR is to ensure consistency with established criteria, guidance, procedures, and policy. The ATR will assess whether the analyses presented are technically correct and comply with published USACE guidance, and that the document explains the analyses and results in a reasonably clear manner for the public and decision makers. 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. The EA update, both sets of plans, both sets of specifications, both sets of DDR, and the O&M manual will receive ATR.

b. Timing of ATR. ATR on the interior drainage stormwater pipes design-build package will occur in FY12. ATR of the EA update and FDR design package will occur in FY13. Both ATR's will occur after DQC of the review products. The team will try to align the ATR and Type II IEPR of the design products simultaneously to make the review process more efficient and try to prevent iterations of changes to the review products, however if schedules and/or budgets don't allow simultaneous reviews, IEPR would follow ATR in either FY13 or FY14.

c. Required ATR Team Expertise.

ATR Team Members/Disciplines	Expertise Required

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR team leader shall hold a professional license in structural or civil engineering with a BS degree or higher in civil or structural engineering. The ATR leader shall have a minimum of 15 years of design experience and experience with multi-million dollar flood risk management projects. The team leader shall be a recognized leader with good communication skills to lead a diverse review team comprised of individuals located at various districts across the nation. The ATR lead should be a senior professional with extensive experience in preparing Civil Works implementation documents and conducting ATR. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. The ATR leader may also serve as a reviewer for one of the specific disciplines below, if applicable.
Environmental	The reviewer for environmental shall be an experienced environmental reviewer with at least 10 years of environmental experience and a BS degree or higher in the environmental field. Team member will be an expert in the environmental assessment process with knowledge of the NEPA process, cultural surveys, biological assessments, and endangered species.
Hydraulic Engineering	The reviewer for hydraulics shall be a registered professional engineer with a minimum of a BS degree or higher in engineering science. The reviewer shall have a minimum of 10 years experience in hydrologic analysis and design of hydraulic structures as it relates to riverine flood risk management projects. Reviewer should have experience in the analysis and design involving interior drainage and riverine models using hydrology models HEC-HMS, stormwater model SWMM, and hydraulic models HEC-RAS. This member should also be knowledgeable in coincidence of frequency and the application of USACE risk and uncertainty analyses on flood risk management projects. Reviewer should be experienced with similar projects in an urban setting and should have participated in review of riverine flood risk management projects.
Geotechnical Engineering	The reviewer for geotechnical features shall be a registered professional engineer with a minimum BS degree or higher in civil or geotechnical engineering. Reviewer shall have a minimum of 10 years experience in subsurface investigations, floodwall and levee design, auger cast pile foundations, seepage and slope stability evaluations, erosion protection design, and construction and earthwork construction. The reviewer must be familiar with USACE regulations and standards.

ATR Team Members/Disciplines	Expertise Required
Civil Engineering	The reviewer for civil features shall be a registered professional engineer with a minimum BS degree or higher in civil or construction engineering. The reviewer shall have a minimum of 10 years experience in the design, layout, and construction of a large urban flood risk management projects to include knowledge regarding levees, interior drainage facilities, earthwork, concrete placement, and relocation of underground utilities. The reviewer must be familiar with USACE regulations and standards.
Structural Engineering	The reviewer for structural features shall be a registered professional engineer with a BS degree or higher in civil or structural engineering. The reviewer shall have a minimum of 10 years experience in the design, layout, and construction of large flood risk management projects. Reviewer should be familiar with the design and construction of tall (15 feet high) flood walls, closure structures, interior drainage facilities, concrete placement, and relocation of underground utilities. The reviewer should have experience with USACE design regulations for Civil Works projects including soil-structure interaction evaluation and design.
Geology	The reviewer for geological project aspects shall be a registered geologist with a minimum BS degree or higher in geology or geotechnical engineering. Reviewer shall have a minimum of 10 years experience in subsurface investigations, auger cast pile foundations, and construction and earthwork construction. The reviewer should be familiar with the Kansas City geological area. The reviewer must be familiar with USACE regulations and standards.
Construction	The reviewer for construction shall posess a minimum BS degree or higher in civil or construction engineering. Reviewer shall have a minimum of 10 years experience with at least experience on one of each of the following types of project features: levees, floodwalls, pile foundations, gatewells, bank stabilization, and detention ponds. The reviewer must be familiar with USACE regulations and standards.
Operations	The reviewer for operations shall posess a minimum BS degree or higher in an engineering or economics-related field. Reviewer shall have a minimum of 10 years experience in the operation and maintenance of flood damage reduction projects, including floodwalls, levees, detention ponds, and gatewells. The reviewer must be familiar with USACE regulations and standards.

d. 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 QAT will work with the AE to ensure resolution of all issues raised by USACE reviews, as there may be times when

an ATR comment is beyond the scope of the AE's contract.The four key parts of a quality review comment will normally include:

- The review concern – identify the product's information deficiency or incorrect application of policy, guidance, or procedures;
- The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not be properly followed;
- 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
- The probable specific action needed to resolve the concern – identify the action(s) that the reporting officers must take to resolve the concern.

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

The ATR documentation in DrChecks will include the text of each ATR concern, the PDT response, a brief summary of the pertinent points in any discussion, including any vertical team coordination (the vertical team includes the district, RMO, MSC, and HQUSACE), and the agreed upon resolution. If an ATR concern cannot be satisfactorily resolved between the ATR team and the PDT, it will be elevated to the vertical team for further resolution in accordance with the policy issue resolution process described in either ER 1110-1-12 or ER 1105-2-100, Appendix H, as appropriate. Unresolved concerns can be closed in DrChecks with a notation that the concern has been elevated to the vertical team for resolution.

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

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

ATR may be certified when all ATR concerns are either resolved or referred to the vertical team for resolution and the ATR documentation is complete. The ATR Lead will prepare a Statement of Technical Review certifying that the issues raised by the ATR team have been resolved (or elevated to the vertical team). A Statement of Technical Review should be completed, based on work reviewed to date, for the AFB, draft report, and final report. A sample Statement of Technical Review is included in Attachment 2.

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

IEPR may be required for implementation documents under certain circumstances. IEPR is the most independent level of review, and is applied in cases that meet certain criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. A risk-informed decision, as described in EC 1165-2-209, 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. This project is not anticipated to require Type I IEPR because it is in the implementation phase and not the study phase.

- 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. Based on the analysis provided in Attachment 3, it is recommended that the SPIA project receive a Type II IEPR. The risk informed decision explicitly considered:

- Whether requests to conduct IEPR from a head of a Federal or state agency charged with reviewing the project. None were received.
- Whether the proposed project meets the criteria for conducting Type II IEPR described in Paragraph 2 of Appendix E of EC 1165-2-209, including:
  - Whether the Federal action is justified by life safety or the failure of the project would pose a significant threat to human life. Failure of the project would pose a significant threat to human life.
  - Whether the project involves the use of innovative materials or techniques where the engineering is based on novel methods, presents complex challenges for interpretations, contains precedent-setting methods or models, or presents conclusions that are likely to change prevailing practices. The project does not use innovative materials or techniques.
  - Whether the project design requires redundancy, resiliency, and robustness.

    (1) Redundancy. Redundancy is the duplication of critical components of a system with the intention of increasing reliability of the system, usually in the case of a backup or fail-safe. The design does require reduncancy.

    (2) Resiliency. Resiliency is the ability to avoid, minimize, withstand, and recover from the effects of adversity, whether natural or manmade, under all circumstances of use. The project will require resiliency.

    (3) Robustness. Robustness is the ability of a system to continue to operate correctly across a wide range of operational conditions (the wider the range of conditions, the more robust the system), with minimal damage, alteration or loss of functionality, and to fail gracefully outside of that range. The project will require robustness.

- Whether the project has unique construction sequencing or a reduced or overlapping design construction schedule; for example, significant project features accomplished using the Design-Build or Early Contractor Involvement (ECI) delivery systems. The project does not have a unique construction sequence or reduced/overlapping design construction schedule.

b. Products to Undergo Type II IEPR. The flood damage reduction feature plans, specifications, DDR, and O&M Manual. The interior drainage stormwater collection pipes will not receive IEPR before they are constructed. However, they will be considered as part of the larger flood damage reduction system and as such, would be subject to review during the IEPR.

c. Timing of IEPR. Type II IEPR will occur after DQC and either concurrent with ATR or after ATR, depending on schedules and budgets. The IEPR team shall perform reviews (and a site visits, as necessary) at the completion of the plans, specifications, at the midpoint of construction, and other important milestones as determined by the RMO. The current plan is to conduct Type II IEPR on the FDR design package in FY13, in order to have a fully reviewed design by the start of FY14 in anticipation of receiving additional Federal and Sponsor funds to resume construction. Type II IEPR of the construction and O&M manual is dependent on receipt of additional Federal and Sponsor funds.

d. Required Type II IEPR Panel Expertise. The IEPR team consists of approximately eight members. The A/E firm that is eventually selected to perform this project's IEPR will include a project manager who will serve as the team leader. See Attachment 1 for a list of the IEPR team members (not currently available, but will be updated when the panel is selected). The IEPR team will be coordinated through the Risk Management Center.

External panels will conduct reviews of the design and construction activities prior to the 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. The Review Management Organization (RMO) for Type II IEPR reviews is the Risk Management Center (RMC), and for all other Reviews the RMO is the MSC, NWD. Panel members will be selected using the National Academies of Science (NAS) policy for selecting reviewers. Type II IEPR is not exempted by statute from the Federal Advisory Committee Act (FACA).

The IEPR will be performed by an A/E firm, using a USACE Indefinite Delivery Indefinite Quantity (IDIQ) Contract. The A/E firm will provide the USACE with the final independent external expert reviewer list, including their credentials. Expert reviewers shall have experience in design and construction of projects similar in scope to the project. Expert reviewers shall be registered professional engineers in the United States, or similarly credentialed in their home country. The expert reviewers must have an engineering degree. A Master's degree in engineering is preferable, but not required, as hands-on relevant engineering experience in the listed disciplines is also important. Expert reviewers shall have a minimum of 15 years experience and responsible charge of engineering work in the following disciplines (at a minimum):

The Type II IEPR panel members will be comprised of individuals that have not been involved in the development of the decision document, meet the National Academy of Sciences guidelines for

independence, and will be chosen by and outside organization. The following types of expertise may be represented on the Type II IEPR team:

IEPR Panel Members/Disciplines	Expertise Required
Structural	The reviewer for structural features shall be a registered professional structural engineer with a MS degree or higher in civil or structural engineering. The reviewer shall have a minimum of 15 years experience in the design, layout, and construction of large urban flood risk management projects. Reviewer should be familiar with the design and construction of tall (15 feet high) flood walls, closure structures, interior drainage facilities, concrete placement, and relocation of underground utilities. The reviewer should have experience USACE design regulations for Civil Works projects including soil-structure interaction evaluation and design.
Geotechnical	The reviewer for geotechnical features shall be a registered professional engineer with a minimum BS degree or higher in civil or geotechnical engineering. Reviewer shall have a minimum of 15 years experience in subsurface investigations, floodwall and levee design, auger cast piles, seepage and slope stability evaluations, erosion protection design, and construction and earthwork construction. The reviewer must be familiar with USACE regulations and standards.
Hydraulics/Hydrology	The reviewer for hydraulics shall be a registered professional engineer with a minimum of a MS degree or higher in engineering science. The reviewer shall have a minimum of 15 years experience in hydrologic analysis and design of hydraulic structures as it relates to riverine flood risk management projects. Reviewer should have experience in the analysis and design involving interior drainage and riverine models using HEC-RAS, stormwater models using SWMM, and hydrology models using HEC-HMS. This member should also be knowledgeable in coincidence of frequency and the application of USACE risk and uncertainty analyses on flood risk management projects. Reviewer should be experienced with similar projects in an urban setting and participated in review of riverine flood risk management projects.

e. Panel Selection

When selecting panel members, the National Academy of Sciences' policy for committee selection with respect to evaluating the potential for conflicts (e.g., those arising from investments; agency, employer, and business affiliations; grants, contracts and consulting income) shall be adopted or adapted. Peer reviewers shall not have participated in development of the submittal to be reviewed. External Reviewers will be paid labor and any necessary travel and per diem expenses in accordance with their contract.

Peer reviewers will be advised whether information about them (name, credentials, and affiliation) will be disclosed. The MSC shall notify reviewers in advance regarding the extent of disclosure and attribution planned by USACE. The MSC shall comply with the requirements of the Privacy Act. Review shall be conducted in a manner that respects confidential business information and intellectual property.

f. IEPR Panel Approval. The RMO will approve the panel members selected by the A/E. The RMO may only disapprove a selected panel member if the member does not meet the objective criteria established in this review plan.

g. IEPR Charge. The RMO will prepare the charge to the reviewers, containing the instructions regarding the objective of the peer review and the specific advice sought. Reviewers shall be charged with reviewing scientific and technical matters, leaving policy determinations for USACE and the Army. The charge should specify the structure of the review comments to fully communicate the reviewer's intent by including: the comment, why it is important, any potential consequences of failure to address, and suggestions on how to address the comment. It should include specific technical questions while also directing reviewers to offer a broad evaluation of the overall document. The charge should be determined in advance of the selection of the reviewers.

The District shall provide reviewers with sufficient information, including background information about the project, to enable them to understand the data, analytic procedures, and assumptions. Reviewers shall be informed of applicable access, objectivity, reproducibility and other quality standards under the federal laws governing information access and quality. Information distributed for review must include the following disclaimer: "This information is distributed solely for the purpose of pre-dissemination review under applicable information quality guidelines. It has not been formally disseminated by USACE. It does not represent and should not be construed to represent any agency determination or policy."

The panel of experts established for a review for a project shall:

- Conduct the review for the subject project in a timely manner in accordance with the study and RP schedule;
- Follow the "Charge", but when deemed appropriate by the team lead, request other products relevant to the project and the purpose of the review.
- Receive from USACE any public written and oral comments provided on the project;
- Provide timely written and oral comments throughout the development of the project, as requested;
- Assure the review avoids replicating an ATR and focuses on the questions in the "Charge", but the panel can recommend additional questions for consideration. The IEPR panel may recommend to the RMO additional or alternate questions.
- Offer any lessons learned to improve the review process.
- Submit reports in accordance with the review plan milestones.
- The team panel lead shall be responsible for insuring that comments represent the group, be non-attributable to individuals, and where there is lack of consensus, note the non-concurrence and why.
- Record of Review. The review team will prepare a review report. All review panel comments shall be entered as team comments that represent the group and be non- attributable to individuals. The team lead is to seek consensus, but where there is a lack of consensus,

note the non-concurrence and why. A suggested report outline is an introduction, the composition of the review team, a summary of the review during design, a summary of the review during construction, any lessons learned in both the process and/or design and construction, and appendices for conflict of disclosure forms, for comments to include any appendices for supporting analyses and assessments of the adequacy and acceptability of the methods, models, and analyses used. All comments in the report will be finalized by the panel prior to their release to USACE for each review plan milestone.

h. Documentation of Type II IEPR. The IEPR panel will be selected and managed by an Outside Eligible Organization (OEO) per EC 1165-2-209, Appendix E. Panel comments will be compiled by the OEO and should address the adequacy and acceptability of the economic, engineering and environmental methods, models, and analyses used. IEPR comments should generally include the same four key parts as described for ATR comments in Section 5.c above. The OEO will prepare a final Review Report that will accompany the publication of the final decision document and shall:

- 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; 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.

After receiving the report from the IEPR panel, the District will consider all comments contained in the report and prepare a written response for all comments and note concurrence and subsequent action or non-concurrence with an explanation. The District Chief of Engineering shall submit the panel's report and the Districts responses shall be submitted to the MSC for final MSC Commander approval, and then make the report and responses available to the public on the District's website (http://www.nwk.usace.army.mil/Missions/CivilWorks/CivilWorksProgramsandProjects/CivilWorksReviewPlans.aspx).

7. POLICY AND LEGAL COMPLIANCE REVIEW

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

8. MODEL CERTIFICATION AND APPROVAL

EC 1105-2-412 mandates the use of certified or approved models for all planning activities to ensure the models are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions. Planning models, for the purposes of the EC, are defined as any models and analytical tools that planners use to define water resources management problems and opportunities, to formulate potential alternatives to address the problems and take advantage of the

opportunities, to evaluate potential effects of alternatives and to support decision making. The use of a certified/approved planning model does not constitute technical review of the planning product. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

EC 1105-2-412 does not cover engineering models used in planning. The responsible use of well-known and proven USACE developed and commercial engineering software will continue and the professional practice of documenting the application of the software and modeling results will be followed. As part of the USACE Scientific and Engineering Technology (SET) Initiative, many engineering models have been identified as preferred or acceptable for use on Corps studies and these models should be used whenever appropriate. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

a. Planning Models. The project is in the implementation phase and therefore will not require planning models.

b. Engineering Models. The following engineering models are anticipated to be used in the development of the implementation documents:

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Project	Approval Status*
HEC-RAS 4.0 (River Analysis System)	The Hydrologic Engineering Center's River Analysis System (HEC-RAS) program provides the capability to perform one-dimensional steady and unsteady flow river hydraulics calculations. The program will be used for steady flow analysis to evaluate the future without- and with-project conditions along the Wild River and its tributaries. [For a particular study the model could be used for unsteady flow analysis or both steady and unsteady flow analysis. The review plan should indicate how the model will be used for a particular study.]	HH&C CoP Preferred Model
SWMM 5.0	The United States Environmental Protection Agency (EPA) Storm Water Management Model (SWMM) is a dynamic rainfall-runoff-subsurface runoff simulation model used for single-event to long-term (continuous) simulation of the surface/subsurface hydrology quantity and quality from primarily urban/suburban areas.	HH&C CoP Allowed for Use

*status as of 12 June 2012 on the Hydraulics, Hydrology, and Coastal Community of Practice website located here:
https://kme.usace.army.mil/NTCT/HHC/Shared%20Documents/Forms/AllItems.aspx?RootFolder=%2fNTCT%2fHHC%2fShared%20Documents%2fSET%20Software%20Lists&FolderCTID=0x012000D2CF8423183A2343BAFDBB7D760F0BBB&View=%7b72AF890D%2dC06F%2d46B2%2dAE69%2d5BC8A09BBB00%7d

9. REVIEW SCHEDULES AND COSTS.

The project will receive two ATR's and Type II IEPR on the design and construction phase. The two ATR's are necessary due to the progression of the design and a decision to award a design-build contract for the interior drainage pipes and inlets to progress the project with the limited available funds. Construction of the flood damage reduction features is dependent on receipt of additional Federal and

non-Federal funds. Sufficient funding is in hand to complete Type II IEPR on the design, but since it is unknown when additional construction funds will be received, the Type II IEPR contract must be broken into two separate contracts. Every effort will be made to keep the same AE and IEPR team through both contracts.

a. Interior Drainage Pipes ATR Schedule (FY12)

Action/Activity	Calendar Days After ATR Start
DQC Complete; review documents and ATR charge sent to ATR Team	0
ATR milestone to enter comments in DrChecks	14
Home District milestone to complete DrChecks evaluations	25
AE completes revisions	35
ATR DrChecks backchecks complete	40
ATR certification form signed	40
ATR final report complete	45
Report sent to RMO	45

b. Interior Drainage Pipes ATR Cost (FY12)[1]

Discipline	Estimated Labor Cost
ATR Team Lead	$10000
Supporting Disciplines	$3000 ea. @ 5 ea. =$15,000
TOTAL	$25,000

c. FDR Design (including EA Update) ATR Schedule (FY13)

Action/Activity	Calendar Days After ATR Start
DQC Complete; review documents and ATR charge sent to ATR Team	0
ATR milestone to enter comments in DrChecks	21
Home District milestone to complete DrChecks evaluations	31
AE completes revisions	41
ATR DrChecks backchecks complete	51
ATR certification form signed	51
ATR final report complete	56
Report sent to RMO	56

[1] ATR Costs are cost shared per the project partnership agreement.

d. FDR Design (including EA Update) ATR Cost (FY13)

Discipline	Estimated Labor Cost
ATR Team Lead	$10000
Supporting Disciplines	$5000 ea. @ 5 ea. =$25,000
TOTAL	$35,000

e. Design Phase Type II IEPR Schedule (FY13)

Action/Activity	Calendar Days After NTP
Design Phase Type II IEPR Safety Assurance Review NTP	0
Submit Final Peer Review QCP (PRQCP)	14
Submit list of final IEPR expert reviewers	14
Expert reviewers under contract	21
Peer Review Critical Items List	28
Corps provides materials for Orientation Briefing	28
Orientation Briefing at Federal Building and Project Site in Kansas City, MO	35
Final Charge to Expert Reviewers	42
Corps provides 95% Plans & Specs and Design Documentation Report to IEPR Contractor	42
95% Plans & Specs and Design Documentation Report Review Complete	56
95% Plans & Specs and Design Documentation Report Review Comments Closed in DrChecks	60
Comment Review Conference Call	60
Submit IEPR Review Report on 95% Plans & Specs and Design Documentation Report	74
Project Closeout	80

f. Construction Phase Type II IEPR Schedule (Start date dependent on available funds)

Action/Activity	Calendar Days After NTP
Construction Phase Type II IEPR Safety Assurance Review NTP	0
Submit Final Peer Review QCP (PRQCP)	14
Submit list of final IEPR expert reviewers	14
Expert reviewers under contract	21
Corps provides 50% Construction Documentation to IEPR Contractor	25
50% Construction Site Visit	35
50% Construction Documentation Review Complete	45
50% Construction Documentation Review Comments Closed in DrChecks	59
Comment Review Conference Call	60

Action/Activity	Calendar Days After NTP
Submit IEPR Review Report on 50% Construction Documentation	75
Corps provides 95% Construction Documentation to IEPR Contractor	365
95% Construction Documentation Review Complete	380
95% Construction Documentation Review Comments Closed in DrChecks	394
Comment Review Conference Call	395
Submit IEPR Review Report on 95% Construction Documentation	410
Corps provides OMRR&R Documentation to IEPR Contractor	500
OMRR&R Documentation Review Complete	514
OMRR&R Documentation Review Comments Closed in DrChecks	528
Comment Review Conference Call	530
Submit IEPR Review Report on OMRR&R Documentation	544
Submit Final IEPR SAR Report	600
Project Closeout	720

g. Type II IEPR Cost. The IEPR is expected to cost between $150,000 - $250,000. Type II IEPR costs are cost shared between the Federal and Non-Federal sponsor in accordance with the project partnership agreement.

h. Model Certification/Approval Schedule and Cost. Not applicable.

10. PUBLIC PARTICIPATION

Public comments are welcome on the review plan. The review plan is posted on the Kansas City District's web page located here:
http://www.nwk.usace.army.mil/Missions/CivilWorks/CivilWorksProgramsandProjects/CivilWorksReviewPlans.aspx.
The public comment period is 30 days. The Kansas City District will consider public comments and recommend changes to the review plan if necessary to the RMO. Significant and relevant public comments will also be provided to reviewers prior to conduct of the review. Also, due to changes in the project, the review plan may require updates. Updates are posted to the same website and the Public will have a similar opportunity to comment on review plan updates. The Public will not be asked to nominate potential reviewers because the decision has been made to use an independent A/E firm. Public comments on the review plan may be made by writing or emailing the following contact:

Kansas City District, Corps of Engineers
c/o Seth LaLiberty, CENWK-PM-CJ
601 E. 12th St.
Kansas City, MO 64106
Email: seth.j.laliberty@usace.army.mil

11. REVIEW PLAN APPROVAL AND UPDATES

The Northwestern Division Commander is responsible for approving this Review Plan. The Commander's approval reflects vertical team input (involving district, MSC, RMO, RMC, and HQUSACE

members as applicable) as to the appropriate scope and level of review for the implementation documents. Like the PMP, the Review Plan is a living document and may change as the project progresses. The home district is responsible for keeping the Review Plan up to date. Minor changes to the review plan since the last MSC Commander approval are documented in Attachment 3. Significant changes to the Review Plan (such as changes to the scope and/or level of review) should be re-approved by the MSC Commander following the process used for initially approving the plan. The latest version of the Review Plan, along with the Commanders' approval memorandum, should be posted on the Home District's webpage. The latest Review Plan should also be provided to the RMO and home MSC.

12. REVIEW PLAN POINTS OF CONTACT

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

District Quality Control		
Kansas City District	Mr. Seth LaLiberty	(816) 389-3023
Review Management Office		
Northwestern Division	Mr. Stephen Bredthauer	(503) 808-4053
Review Coordination		
Risk Management Center	Mr. Colin Krumdieck	(303) 963-4541

--Attachments follow--

ATTACHMENT 1: Team Rosters

District-level names will be redacted on the version posted for public comment to protect privacy.

AE Designers

Name	Product
Black and Veatch (Raul Filardi, PE)	Flood damage reduction plans (including levees, floodwalls, detention pond, rolling gate, and gatewell), specifications, DDR, O&M manual, and EA update
Continental Consulting Engineers (Justin Milburn, PE) under subcontract through Wolfe Construction, LLC	Interior drainage pipes and inlets plans, specifications, and DDR

Quality Assurance Team

Name	District	Discipline
[redacted]	CENWK	Project Management
	CENWK	Civil
	CENWK	Geotechnical
	CENWK	Environmental
	CENWK	Geology
	CENWK	Hydraulics/Hydrology
	CENWK	Structural
	CENWK	Cost Estimating

*Technical Lead

Vertical Team

Name	District	Discipline
Steven Bredthauer	CENWD	Quality Assurance Manager
Colin Krumdieck	CEIWR-RMC	Civil Engineer

Agency Technical Review Team (for both the Interior Drainage and Flood Damage Reduction designs)

Name	District	Discipline
Jennifer Savitz	CELRP	ATR Team Lead and Civil
Paul Surace	CELRP	Structural
Bruce Kish	CELRP	Environmental
James Kosky	CELRP	Hydraulics/Hydrology
Dave Hibbs	CELRP	Geotechnical
TBD		Geology
TBD		Construction
TBD		Operations

BCOE Certifiers

Name	District	Discipline
[redacted]	CENWK	Civil Works Branch Chief
	CENWK	Construction Branch Chief

Name	District	Discipline
[redacted]	CENWK	Construction Division Chief
	CENWK	Geotechnical Engineering Branch Chief
	CENWK	Engineering Division Chief

IEPR Reviewers (for both the design and construction phases)

Name	Firm	Discipline
TBD	[redacted]	IEPR Team Lead
		Structural
		Hydraulics/Hydrology
		Geotechnical

ATTACHMENT 2: Sample Statement of Technical Review for Implementation Documents

COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the *<type of product>* for *<project name and location>*. 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[sm].

SIGNATURE _____ Date _____

Jennifer Savitz
ATR Team Leader
CELRP-EC-NC

SIGNATURE _____ Date _____

Seth LaLiberty
Project Manager
CENWK-PM-CJ

SIGNATURE _____ Date _____

Stephen Bredthauer
Review Management Office Representative
CENWD-RBT

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 _____ Date _____

David Mathews
Chief, Engineering Division
CENWK-ED

ATTACHMENT 3: Documentation of Type II IEPR Risk-Informed Decision

The project is in the implementation phase and therefore does not require a Type I IEPR. This attachment documents the vertical team's risk informed recommendation to conduct Type II IEPR.

The following table, based on the US Army Field Manual 5-19, *Composite Risk Management*, was used to assess each identified risk.

Risk Assessment Matrix

	Risk Probability			
Risk Severity	**Frequent**	**Likely**	**Seldom**	**Unlikely**
Catastrophic	Extremely High	Extremely High	High	Moderate
Critical	Extremely High	High	Moderate	Low
Marginal	High	Moderate	Moderate	Low
Negligible	Moderate	Low	Low	Low

The following table details the risks, frequency, severity, risk assessment, and whether the risk contributes to the IEPR decision. The risks were developed by reviewing the IEPR triggers from EC 1165-2-209, Appendix E, paragraph 2.

Type II IEPR Risk Assessment

Risk	Risk Probability	Risk Severity	Risk Assessment	Risk Contributes to IEPR Decision?	Notes
Project poses a significant threat to human life	Seldom	Cata-strophic	High	Yes	The completed project will eventually fail in a storm event that exceeds the design storm. This failure could endanger human life, but since it is impossible to build a structure to resist every storm, some level of risk to human life must be accepted. Type II IEPR will verify the assumptions and design criteria used to design the project features to ensure an acceptable level of risk is mitigated.
Project involves the use of innovative materials or techniques	Unlikely	Critical	Low	No	This project does not involve any innovative materials or techniques based on novel methods or complex challenges.

Risk	Risk Probability	Risk Severity	Risk Assessment	Risk Contributes to IEPR Decision?	Notes
The project design requires redundancy, resiliency, and robustness	Likely	Critical	High	Yes	There is only one line of flood protection provided by the levees and floodwalls, which requires robustness and resiliency. The design must ensure these principles are communicated to the constructors. Type II IEPR will assess the design's is resiliency and robustness.
The project has unique construction sequencing or a reduced or overlapping design construction schedule	Unlikely	Critical	Low	No	
Risk of a faulty or incomplete design making it to construction	Seldom	Critical	Moderate	No	DQC and ATR by personnel with experience on similar projects will mitigate the risk of a faulty or incomplete design
Risk of contractor misinterpreting design which results in project failure	Unlikely	Cata-strophic	Moderate	No	Mature and well-established construction quality control procedures and oversight will mitigate this risk.

Based on the above assessment, it is the risk-informed recommendation of the vertical team that Type II IEPR is required for this project.

ATTACHMENT 4: Review Plan Revisions

Revision Date	Description of Change	Page / Paragraph Number
20 Dec 11	Original	N/A
27 Aug 2012	Complete reformatting to the RMC template, and resolution of numerous RMC comments that resulted from inadequate coordination with RMC on the original version	Throughout.

Bredthauer, Stephen R NWD

From: Krumdieck, Colin W RMC
Sent: Thursday, August 23, 2012 3:10 PM
To: Laliberty, Seth J NWK
Cc: Bredthauer, Stephen R NWD; Empson, William B RMC; Boyer, Douglas RMC; Bishop, Thomas W NWK
Subject: RE: Swope Park Review Plan for Review/Approval. (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Seth

THX for the opportunity to back-check the changes to the Swope Park RP that you made in response to my previous review comments.

Couple of minor comments for your consideration:
- Section 6.d. page 12, second sentence - confirm reference to paragraph 7.3 - do not believe this is the correct paragraph #
- suggest section 7.g. should follow section 7.d, and section 7.e. should follow section 7.h.
- minor typo - my name is misspelled on pages 21 & 22. The correct spelling is Krumdieck.
- minor typo - suggest heading for Attachment 3 should be changed to "Documentation of Type II IEPR Risk-Informed Decision"

You can consider RMC coordination complete. This email documents that the RMC has completed its review of the subject review plan, all comments have been satisfactorily resolved, and the RMC endorses and/or recommends approval of the review plan.

Please feel free to contact me if you have any further questions.
THX
-Colin

Colin Krumdieck
Senior Review Manager RMC-West
DDI 303.963.4541 | Cell 720.215.5545
colin.w.krumdieck@usace.army.mil

-----Original Message-----
From: Laliberty, Seth J NWK
Sent: Thursday, August 23, 2012 2:59 PM
To: Krumdieck, Colin W RMC
Cc: Bredthauer, Stephen R NWD; Empson, William B RMC; Boyer, Douglas RMC; Bishop, Thomas W NWK
Subject: RE: Swope Park Review Plan for Review/Approval. (UNCLASSIFIED)

Colin,

Please find the revised Swope RP attached for re-review/comment. Responses to your comments are below, with the responses numbered according to your comments:

1. Concur; changes made to designate NWD as the RMO.
2. Concur; changes made to clarify DQC and QAT involvement.

3. Concur; changes made to add more detail to project features.
4. Concur; changes made to clarify the timing of reviews.
5. Mostly concur; changes made to expand ATR reviewer descriptions and added geology, construction, and operations reviewers. Non-concur that a cost engineering reviewer is required as the project is in the implementation phase.
6. Mostly concur; changed ATR certification form to add current players, but Mr. Snorteland isn't the RMO leader. Per the first comment, that would now be Steve Bredthauer with NWD.
7. Concur; modified IEPR expertise descriptions to match Cedar Rapids RP.
8. Concur; changes made to reduce IEPR design review.

Minor typing issues: concur; all changes made as written.

As I understand from previous conversations, the next step would be to schedule another call after a few days (to allow time for review) between you, Steve, and myself to discuss the changes and any further comments. Please let me know if you were thinking of something different, otherwise I'll proceed with sending out a meeting request for next week.

v/r,

Seth J. LaLiberty, PE, PMP
Kansas City District
US Army Corps of Engineers
(c) 816.714.9027
(w) 816.389.3023

-----Original Message-----
From: Krumdieck, Colin W RMC
Sent: Wednesday, July 18, 2012 8:35 PM
To: Laliberty, Seth J NWK
Cc: Bredthauer, Stephen R NWD; Empson, William B RMC; Boyer, Douglas RMC
Subject: RE: Swope Park Review Plan for Review/Approval. (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Hi Seth

Finally got a chance to complete my review of your revised review plan. Unfortunately I still have several review comments.

For your reference, I have also attached a previously approved review plan from the Cedar Rapids FRM project as an example of a similar project involving floodwalls, levees, etc. Sorry I did not supply this earlier, but suggest that it might be useful for you to review several aspects of this RP in context with my comments below.

1. Before starting on my specific comments, Although I agree the RMC should be RMO since this project involves significant life safety, we are obviously struggling at the moment to integrate & perform RMO functions on levee projects. For this reason I suggest we should consider designating the NWD as the RMO for this project, with assistance from the RMC especially related to coordinating and managing the IEPR.

2. It is not clear from the project description that the project will not be designed by USACE staff. Having said this, the team rosters in Attachment 1 clearly indicate that the designs will be developed by two different AE firms. Recommend section 3b should be modified with a brief description to acknowledge this. This also needs to be clarified in the section discussing DQC requirements. It is not clear how or when the DQC will be performed. Assume

the current plan is too rely heavily on the AE's QCP, but it is not clear whether the QAT will be performing a DQC review. Suggest there should be further discussion of QAT's role and responsibilities. For example you indicate that DrChecks will be used to document the DQC review, but it is not clear whether the AE or the QAT will be entering the DQC comments into DrChecks or how the DQC comments will be resolved with the AE's products. The same holds true for the ATR comments, namely will the QAT be responsible to ensure the AE's PDT resolves any & all issues raised by USACE reviews. Also need to indicate when the DQC reviews will be completed.

3. I would also modify section 3b to describe the proposed project features in more detail, suggest you should describe the proposed heights and types of floodwalls and levee sections.

4. Suggest section 3c and section 7 need to be clarified to indicate that the schedule of reviews will be affected by available funding. Suggest the RP needs to clearly state what reviews are being performed this FY, and what reviews may be performed in FY13, FY14, etc. As it stands now it is not clear when any of the reviews will be accomplished. For example, it is not clear from the description provided whether there is any intention to perform ATR or IEPR design reviews on the Phase I design (interior storm water collection system). Would recommend it should undergo ATR, but delay any IEPR review until Phase II. Suggest we simply need to state what is being done and when.

5. Section on ATR expertise - suggest modifying the descriptions of required expertise to indicate what credentials the ATR needs to have. For example, we typically recommend ATR reviewers should be registered professionals with a min. number of years experience, especially for the critical reviewers. See descriptions provided in the Cedar Rapids RP. It is also recommended that the ATR team should be expanded to included the following disciplines: Geology, Construction (esp with floodwall construction experience), Operations (esp with floodwall experience), and Cost Engineering.

6. Suggest the ATR certification form included in Attachment 2 should be revised to reflect the actual players at this point in time. For example, the RMO representative will be Nathan Snorteland RMC Director, and there is no reason to include a signature line for the Chief of Planning Division for an implementation project.

7. Section on IEPR expertise - suggest modifying the descriptions of required expertise to match descriptions provided in the Cedar Rapids RP

8. IEPR Schedules - not sure why such long durations are used for the Design Phase IEPR review.

Minor typing issues
- I note there is something wrong in how the section headings have been assigned which needs to be fixed. As it is now, the section headings reset after section 3, so there are multiple sections 2 & 3.
- Would also suggest that section 3 should be re-titled Study Information.
- Subsection headings in section 3 are also screwed up.
- the word "decision" in the first sentence of each the DQC and ATR sections should be replaced with "implementation"
- reference is made to EC209 Appendix D in the IEPR documentation section - This refers to Type I IEPRs. It should be changed to Appendix E which relates to Type II IEPRs.

Let me know if you have questions
THX
-Colin

Colin Krumdieck
Senior Review Manager RMC-West
DDI 303.963.4541 | Cell 720.215.5545
colin.w.krumdieck@usace.army.mil

-----Original Message-----
From: Laliberty, Seth J NWK
Sent: Wednesday, July 11, 2012 1:50 PM
To: Krumdieck, Colin W RMC
Cc: Bredthauer, Stephen R NWD
Subject: Swope Park Review Plan for Review/Approval.

Colin,

Have you had a chance to review the Swope Park review plan?

-Seth

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-----Original Message-----
From: Laliberty, Seth J NWK
Sent: Tuesday, June 26, 2012 2:42 PM
To: Krumdieck, Colin RMC
Cc: Bredthauer, Stephen R NWD; Mathews, David L NWK; Bishop, Thomas W NWK
Subject: Swope Park Review Plan for Review/Approval.

Colin,

Please find the revised Swope Park Review Plan attached for review, comment, and/or approval. I've CC'd NWD and it was staffed and approved by our District today.

I believe I've addressed your comments from February in this version. Per your recommendation, this version follows the decision document review plan template from the RMC sharepoint page but with several changes to "convert" the template to a suitable implementation RP. I hope these changes are acceptable. I also ran it through the RMC RP Checklist and believe it meets the checklist's requirements.

-Seth

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Classification: UNCLASSIFIED
Caveats: NONE