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

REPLY TO
ATTENTION OF:

CEMVD-PD-SP

8 MAR '16

MEMORANDUM FOR Commander, Rock Island District

SUBJECT: Review Plan Approval for the Des Moines Levee System, Des Moines and Raccoon Rivers, IA, Feasibility Study

1. References:

a. Memorandum, CEMVR-PD-F, 17 December 2015, subject: Des Moines River Levee System Feasibility Study - Peer Review Plan (RP) (encl 1).

b. Memorandum, CESPD-PDP (FRM PCX), 25 November 2015, subject: Des Moines Levee System, Des Moines and Raccoon Rivers, IA Feasibility Study Review Plan (encl 2).

c. EC 1165-2-214, 15 December 2012, subject: Civil Works Review Policy.

2. The enclosed Review Plan (RP) (encl 3) for the Des Moines Levee System, Des Moines and Raccoon Rivers, IA, Feasibility Study has been prepared in accordance with EC 1165-2-214. The RP has been coordinated with the Upper District Support Team and the Flood Risk Management Planning Center of Expertise who concurred with the plan in reference 1.b.

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

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

3 Encls

MICHAEL C. WEHR
Major General, USA
Commanding

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

REPLY TO
ATTENTION OF

CEMVR-PD-F

DEC 17 2015

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

SUBJECT: Des Moines River Levee System Feasibility Study - Peer Review Plan (RP)

1. The subject RP (Enclosure 1) and RP Checklist (Enclosure 2) are hereby submitted for review and approval.

2. The Flood Risk Management Planning Center of Expertise has reviewed and endorsed the RP for approval by the MVD Commander (Enclosure 3).

3. The RP and RP Checklist follow the implementation documents in accordance with EC 1165-2-214. Electronic copies of these documents have been sent to Mr. George (Thatch) Shepard, CEMVD-PD-SP.

4. I recommend that this RP be approved as it has been endorsed and reviewed in accordance with EC 1165-2-214. The POC for this study is Mr. Marshall Plumley, Chief of Planning, (309) 794-5447 or e-mail: marshall.b.plumley@usace.army.mil.

Encl
as

Craig S. Baumgartner
COL, EN
Commanding

ENCL 1

REVIEW PLAN

Des Moines Levee System
Des Moines and Raccoon Rivers, IA
Feasibility Study

Rock Island District

MSC Approval Date: Pending
Last Revision Date: January 2016

US Army Corps
of Engineers ®

ENCL 3

REVIEW PLAN

Des Moines Levee System
Feasibility Study

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1. PURPOSE AND REQUIREMENTS

A. Purpose. This Review Plan defines the scope and level of peer review for the Des Moines Levee System Feasibility Report.

B. References

1. Engineering Circular (EC) 1165-2-214, Civil Works Review Policy, 15 December 2012
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. Des Moines Levee System; Des Moines and Raccoon Rivers, IA Feasibility Study Project Management Plan (PMP), December 2015
6. Mississippi Valley Division and Rock Island District Quality Management Plan(s)

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/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 1165-2-214) and planning model certification/approval (per EC 1105-2-412).

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 decision documents is typically either a Planning Center of Expertise (PCX) or the Risk Management Center (RMC), depending on the primary purpose of the decision document. The RMO for the peer review effort described in this Review Plan is the Flood Risk Management Planning Center of Expertise (FRM-PCX)

The RMO will coordinate with the Civil Works Cost Engineering and Agency Technical Review Mandatory Center of Expertise (MCX) to ensure the appropriate expertise is included on the review teams to assess the adequacy of cost estimates, construction schedules and contingencies. Due to the life safety risks associated with the project, the RMO will also coordinate with the RMC for this review plan, and potentially for required review efforts to include ATR, IEPR, etc., as it relates to levee safety. Because Type II IEPR is anticipated, the RMC will also serve as the RMO for implementation purposes.

3. STUDY INFORMATION

A. Decision Document. Per USACE Planning guidance and National Environmental Policy Act (NEPA) requirements, an integrated Feasibility Report (FR) and Environmental Assessment (EA), is being prepared for the *Des Moines Levee System Flood Risk Management Feasibility Study* to

determine if there is Federal interest in recommending additional flood risk management solutions for the City of Des Moines, IA. The report will document existing and future without project conditions, identify problems and opportunities; define study objectives and avoid study constraints. It will document the effects of the alternatives in accordance with NEPA and other environmental laws and regulations; and recommend a selected plan for flood risk management. This feasibility study will result in a Report to the Chief of Engineers and will require additional Congressional authorization to implement recommended actions.

B. Study Authority. The Authorities for this Feasibility Study will be conducted under the 1958 Congressional Resolution, which reads as follows:

> *"Resolved by the Committee on Public Works of the House of Representatives, United States, that the Board of Engineers for Rivers and Harbors be, and is hereby, requested to review the reports on the Des Moines River, contained in House Document 651, 78th Congress, with particular reference to the Upper Des Moines River and tributaries thereof, to determine the feasibility and justification of improvements for flood control and related purposes."* (Adopted July 1, 1958)

The report will also be prepared in response to the provision of funds in the Energy and Water Development Appropriations Act of 1998, under the authority of Section 216 of the 1970 Flood Control Act, which reads:

> *"The Secretary of the Army, acting through the Chief of Engineers, is authorized to review the operation of projects the construction of which has been completed and which were constructed by the Corps of Engineers in the interest of navigation, flood control, water supply, and related purposes, when found advisable due to significant changed physical or economic conditions, and to report thereon to Congress with recommendations on the advisability of modifying the structures or their operation, and for improving the quality of the environment in the overall public interest."*

This project was authorized for construction in the Water Resource Development Act (WRDA) of 2007, and funds were appropriated in the Energy and Water Development Appropriations Act of 2010. Funds for this study effort were received in WRDA 2014.

C. Study Background and Project Description. The original Des Moines Local Flood Protection Project was constructed in the 1960s and 1970s and was expected to provide approximately 200-year flood risk management to the Des Moines area. Since initial construction completion, various modifications and reinforcements were conducted on the levee system with the most recent actions being completed at Birdland Park and Central Place, as recommended in the 2005 Feasibility Report titled "*Des Moines and Raccoon River Levee Feasibility Study*". Construction of closure improvements in the downtown levee system remained incomplete and after the 2008 floods a flow frequency study was conducted and completed in 2010 titled "*The Des Moines River Regulated Flow Frequency Study*" (DMRRFFS). The results of the 2010 flow frequency study show that flows used in the 2005 Feasibility efforts were not indicative of current conditions. The DMRRFFS data indicated that the project does not currently provide 100-year (1% Annual Chance Exceedance) risk reduction. The total area subject to flooding is nearly 4,800 acres and the total population at risk is estimated at 600,000. Portions of this area were flooded in the 1993 flood event and the levees were nearly overtopped again in 2008 and 2010. Continued flooding of these areas would result in extensive economic losses to the region and have resounding impacts nationally during a catastrophic flood event.

This Des Moines Levee System (DMLS) study would assess if modifications or improvements to the DMLS, including improvements to the Lake Red Rock Remedial Works Levee, are needed to reduce flood risk to critical infrastructure such as both the water and wastewater treatment plants for the Des Moines metropolitan area, a key fuel storage facility, businesses, residents, and numerous public buildings such as City Hall, Police/Fire Stations, and other public facilities in the downtown area. These modifications being studied may include channel improvements, removal or raising of impediments to flow such as bridges, new or higher levees, or some combination of these and other measures.

D. Study Area and Project Location. The study area encompasses the Des Moines River watershed which is a tributary of the Mississippi River. It is approximately 525 miles long and meanders from the upper Midwestern portion of the United States, draining areas north of central Iowa and southwest Minnesota. It also receives the Raccoon River from the west near Des Moines Central Business District and is impounded to create the Saylorville Lake reservoir (constructed in 1975) upstream of the City of Des Moines. Midway below Saylorville and above Ottumwa, near Pella, it is impounded to create the Lake Red Rock reservoir downstream of the City of Des Moines. Neither reservoir includes a flood-regulating operation system which causes the river to experience significant hydrologic fluctuation in water levels and flows. Additionally, major storm events can still cause significant flooding throughout the city due to poor drainage.

The project area is located in Polk County, Iowa and encompasses the levee system surrounding the City of Des Moines downtown area (Figure 1). It focuses on levied areas that experience frequent flood damages from the Des Moines and Raccoon Rivers, Walnut Creek, Fourmile Creek, and Leetown Creekway (formerly known as 7th Ward Ditch).

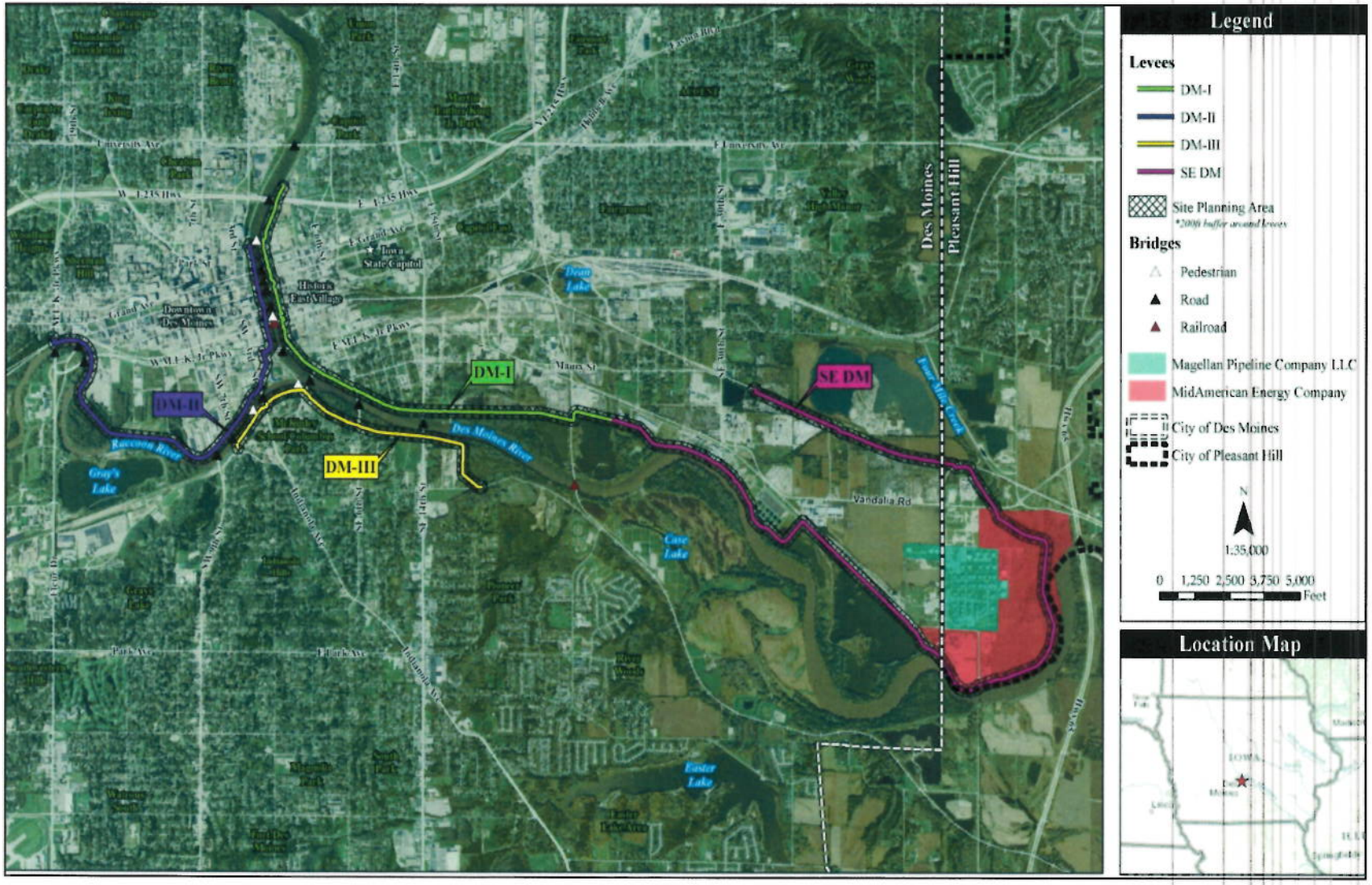

Figure 1: City of Des Moines Study Area

E. Study Purpose, Need, and Scope. The study purpose is to evaluate the impacts of the increased flood risk identified in the Corps of Engineers 2010 *Des Moines River Regulated Flow Frequency Report* and to assess updated analysis of the downtown levees as identified in the 2014 City of Des Moines contracted report titled *Des Moines Downtown Levee Systems Assessment*. There is a need to reduce the risk of damage from flood events to communities, businesses, and critical infrastructure in the area. The scope of this study will evaluate and identify potential planning solutions to identified problems that are economically justified, environmentally acceptable, and structurally sustainable.

A number of problems on the identified levee reaches (DM-I, DM-II, DM-3, and the SE-DM) have problems that include:

- Insufficient levee heights
- Floodwall/earthen embankment seepages
- Bankline erosion
- Pump Station modifications
- Bridge deficiencies
- Riprap issues
- Poor drainage
- Scour holes
- Unresolved Real Estate concerns
- HTRW concerns
- Closure/bridge deficiencies (railroad/road)
- Undocumented prehistoric/cultural/historical resources

This study will assess the above for each levee alignment and develop specific measures/alternatives that can be combined or used as standalone actions to address problems. The inventory of flood risk management efforts in the general vicinity of the project represent a ready resource for formulating, amending or adopting designs, estimating costs, as well as projecting impacts and outputs. Application of that body of applicable literature, including those generated by the non-Federal Sponsor, will allow the PDT to invoke professional judgment.

Therefore, the PDT will rely on available information, literature and data sources, as well as available professional expertise, especially during the early stages of alternative designs and evaluations. However, more detailed evaluations of features and alternatives, projected performance and benefits will be needed prior to identification of the preferred plan. These evaluations will include additional impact and benefit analyses for the alternatives, and presentation of these results using the documentation and public participation requirements of NEPA. Additionally, existing data for the study area, such as hydrologic and topographic surveys, geotechnical data, and cultural resource data, need to be obtained or updated. Any new applicable research or data that becomes available during the Feasibility Study process would be considered.

Alternative plan development and environmental and engineering studies performed for other similar flood risk management projects will be incorporated into the Feasibility Report as appropriate, along with updated information as needed to develop the proposed plan. The no-action alternative and the Tentatively Selected Plan (TSP) would be fully evaluated. Not all alternatives would be fully evaluated by all of the measures used in the planning process. Early in the process it will become apparent that some alternatives will not be feasible or implementable due to lack of compatibility with existing infrastructure or because they are not cost effective. Based on these considerations, alternatives determined not to be feasible or implementable will be documented and excluded from further analysis. The purpose of the economic analysis is to estimate the net National Economic Development benefits associated with flood risk management improvements, designed to reduce flood damages along the Des Moines and Raccoon Rivers.

F. Factors Affecting the Scope and Level of Review

Key Assumptions. During development of this RMP the PDT members have considered available information regarding the size of the proposed project, the complexity of the proposed project effort, and what applicable data are currently available. As required, where needed information was not available, the PDT made the following critical assumptions—assumptions that are of decisive importance to the planning process—to develop the scope, level of effort, budget, and schedule elements for inclusion in this RMP.

- This study will follow the SMART Planning process. It is anticipated that there will be no changes to applicable USACE policy or guidance while this project is underway.
- While it is anticipated that project activities will remain within identified project boundaries, there is a possibility that real estate may be required to obtain rights-of-entry onto private property. If this is necessary, this could result in a delay to the project schedule.
- As part of this project the City of Des Moines, as the non-Federal sponsor would be the responsible entity for all land, easements, rights of way, relocations, and disposals (LERRDs) costs associated with this project.
- It is assumed that no significant adverse environmental impacts would occur and that an Environmental Impact Statement would not be required. It is anticipated that a Finding of No Significant Impact (FONSI) will be approved.

Constraints. The potential constraints for this project include:

- Legal constraints may include those associated with impacting existing federally constructed projects and expanding the study area beyond the scope of the approved authority, including project areas not previously approved by MVD or HQ.

Risks. The study risks have been identified in the Risk Register. Items of low and medium risk are included in the register and will be made available to the ATR and IEPR teams. Those items ranked as high risk are summarized below:

Risk Rating – High

- *Civil & General Engineering*
  Risk identified include using existing data on levee heights, lengths and infrastructure across such a large system could result in uncertainty in cost estimates that could result in alternatives being screened incorrectly and cost increased and delays during implementation. Risk management options include acquisition of newer survey information during feasibility and additional design during feasibility which will require additional time in the schedule and cost. These uncertainties will be documented in the report and inform the cost risk analysis and cost, scope and schedule for PED activities. The PDT has determined that the risk is tolerable and to proceed with existing information.

- *Environmental*
  Existing condition environmental data is lacking, inaccurate or outdated. This may lead to the wrong conclusions leading to a TSP and added costs to gather new information and resultant delays. Risk management options include the most conservative approach to impacts, early identification of environmental impacts, plan for mitigation, and validate exiting information quality and data gaps. The PDT has determined that data gaps will be identified and potential impacts assessed early in the planning process and decisions to adjust schedule and scope will be made at the Alternative and Tentatively Selected Milestones.

- *Cultural Resources*
  The project area currently contains 34 recorded sites, including burials, 5 National Register of Historic Places structures, and 1 Historic District. There are areas near levee's that have never been surveyed and numerous tribes have interests. During implementation, risks related to Iowa Burial Law and Phase II and III testing may be significant. Risk management options include early tribal and SHPO coordination, and early attempts to avoid significant properties. The PDT has determined that early coordination and avoidance will be pursued. Additionally, residual cost risk related to Phase II & III investigations need to be accounted for in the cost risk analysis of the TSP.

Factors. The primary review issues for the Des Moines Levee System Feasibility Study is the potential for life safety issues related to FRM, the level of detail utilized for engineering and cost estimates and cultural resources. Specific considerations include:

- There are not technically challenging aspects of this study. It consists of potential modifications to an existing flood risk management system that the District has over 60 years of experience both in its construction and consultation with the sponsor on operation. Rock Island District operates Saylorville Reservoir (upstream) and Red Rock Reservoir (downstream) of the project area and regularly coordinated operations with the City. The study will present a challenge due to a heavy reliance on non-Federal Sponsor provided technical information and an accelerated schedule (2 years). Additionally, the scale of potential cultural resources and real estate acquisition is large.

- The Des Moines Levee System protects nearly 600,000 residents, critical infrastructure and commercial businesses. The consequence of either exceedance or failure presents a significant risk to the economic performance of the project. The environmental consequences in the SEDM reach would also be significant due to large quantities of petroleum storage electrical generation present. Consistent with EC 1165-2-214, MVR Chief of Engineering and Construction, concurs with the assessment that there is potential life safety issues at this stage in plan formulation. During plan formulation, the study analyses will determine if the project requires redundancy, resiliency, and/or robustness measures that go beyond what is customary for a project of this type.

- Given the large population protected by the current system and the residual risk present in any FRM project, a Safety Assurance Review is warranted.

- No request by the Governor of Iowa for an IEPR has been submitted.

- Based on the experience with the 2005 Des Moines Feasibility Study, a significant public dispute as to the economic benefits of the project is not anticipated. Numerous community groups and affected neighborhoods have expressed strong support for this project to the City.

- The project design will likely be composed of features that Rock Island District and USACE have significant experience with and that have been designed, constructed and operated in the project area before.

G. In-Kind Contributions. Products and analyses provided by the non-Federal sponsor as in-kind services are subject to DQC, ATR, and IEPR. The following in-kind products are expected on this project:

1. Geotechnical Exploration of Southwest Des Moines Levee Systems (Section 408 Permit Documents)

2. Phase 1: Engineering Analysis for Southeast Des Moines Levee System
3. Phase 2: Design and Permitting Support for the Des Moines Levee System

The final WIK status of the above reports has not been determined. Any technical information that is used in the feasibility will be subject to ATR and IEPR as appropriate.

4. DISTRICT QUALITY CONTROL (DQC)

All decision documents (including supporting data, analyses, environmental compliance documents, etc.) shall undergo DQC. DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the PMP. The home district shall manage DQC. Documentation of DQC activities is required and should be in accordance with the Quality Manual of the District and the home MSC.

A. Documentation of DQC. DQC will be performed after the PDT has performed a thorough initial quality review. DQC will be documented in accordance with the MVS Process for District Quality Control either utilizing DrChecks or a Word document and a DQC completion memo will be generated. The completion memo and DrChecks report of all comments and responses will be provided to the ATR team at the start of any ATR.

B. Products to Undergo DQC. DQC will be completed for the draft and final reports (including the EA and all appendices).

C. Required DQC Expertise. All disciplines contributing to the report will have a corresponding DQC reviewer who has not been directly involved in the development of the product being reviewed. The DQC expertise will closely mirror the ATR expertise, which is described in Section 5.B. Quality checks may be performed by staff responsible for the work, such as supervisors, work leaders, team leaders, designated individuals from the senior staff, or other qualified personnel. However, they should not be performed by the same people who performed the original work, including managing/reviewing the work in the case of contracted efforts.

5. AGENCY TECHNICAL REVIEW (ATR)

ATR is mandatory for all decision 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. ATR will be performed for the Draft Report (including NEPA and supporting documentation), and Final Report (including NEPA and supporting documentation).

B. Required ATR Team Expertise. ATR expertise will be comprised of senior USACE personnel (Regional Technical Specialists, Subject Matter Experts, etc) and may be supplemented by outside experts as appropriate. The ATR team will be finalized by the FRM PCX. The disciplines

represented on the ATR team will reflect the significant disciplines involved in the planning, engineering, and design effort. The table below describes the ATR expertise required for the feasibility report.

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR Lead should be a senior professional with extensive experience in preparing Civil Works decision 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 lead may also serve as a Reviewer for a specific discipline (such as planning, economics, environmental resources, etc). The ATR Lead will participate in all milestone reviews and in-progress reviews.
Planning	The Planning Reviewer should be a senior water resources planner with demonstrated formulation and review experience with Feasibility Studies and expertise in FRM planning.
Economics	The Economics Reviewer should be a senior economist experienced in FRM economics in urban settings.
Environmental Resources	The Environmental Reviewer must be experienced with National Environmental Policy Act (NEPA) compliance requirements and mitigation plan preparation.
Cultural Resources	The Cultural Reviewer must be experienced in cultural resources coordination and compliance.
Hydrology and Hydraulic Engineering	The Hydrology and Hydraulics Reviewer will be an expert in the field of hydrology and hydraulics and have a thorough understanding of open channel dynamics, application of detention/retention basins, application of levees and flood walls, interior drainage, non-structural solutions and computer modeling techniques using HEC-RAS or HEC-HMS.
Risk Analysis	The Risk Analysis Reviewer will be experienced with performing and presenting risk analyses in accordance with ER 1105-2-101 and other related guidance, including familiarity with how information from the various disciplines involved in the analysis interact and affect the results. This Reviewer may also serve as the Reviewer for another discipline such as economics or hydraulics.
Geotechnical Engineering	The Geotechnical Reviewer must be experienced in design requirements for levees, floodwalls, detention structures, bankline stabilization, and open channels.
Civil/Structural Engineering	The Civil Design Reviewer must have experience in a wide range of structural and non-structural FRM measures.
Electrical/Mechanical Engineering	The Electrical/Mechanical Reviewer must have experience with pump station design.
Cost Engineering	The Cost Reviewer must be familiar with cost estimating for similar civil works projects using MCACES. Reviewer will be a Certified Cost Technician, Certified Cost Consultant, or Certified Cost Engineer.
Real Estate	The Real Estate Reviewer must be experienced in civil works real estate laws, policies, guidance and experience working with sponsor real estate issues.
Hazardous, Toxic and Radioactive Waste (HTRW)	Team member should have the specific qualifications based on education, training and experience to assess property and meet the definitions of an Environmental Professional as defined under 40 CFR 312.

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 be properly followed;

3. The significance of the concern – indicate the importance of the concern with regard to its potential impact on the plan selection, recommended plan components, efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability; and

4. The probable specific action needed to resolve the concern – identify the action(s) that the reporting officers must take to resolve the concern.

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

The ATR documentation in DrChecks will include the text of each ATR concern, the PDT response, a brief summary of the pertinent points in any discussion, including any vertical team coordination (the vertical team includes the district, 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 Completion of Agency Technical Review* after each ATR event documenting that the issues raised by the ATR team have been resolved (or elevated to the vertical team). The District Leadership will provide *Certification of Agency Technical Review* in accordance with EC 1165-2-214. A sample Statement of Agency Technical Review and District Certification of Agency Technical Review is included in Attachment 2.

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

IEPR may be required for decision 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, are managed outside the USACE and are conducted on design and construction activities for hurricane, storm, and FRM 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. A Type I IEPR, including SAR, will be performed as part of the feasibility study process due to the life safety risks described in Section 3. A Type II IEPR will be conducted during PED should a recommended plan be authorized.

B. Products to Undergo Type I IEPR. The Draft Feasibility Report and technical appendices will be reviewed. The WIK products used in the study that is provided by the City of Des Moines will be provided to the panel for review. Future coordination between the PDT and the PCX will occur in early 2016 with scoping of the IEPR.

C. Required Type I IEPR Panel Expertise

IEPR Panel Members/Disciplines	Expertise Required
Economics	The economics panel member should have extensive experience/credentials in evaluating FRM project benefits in urbanized areas.
Environmental	The environmental panel member should have environmental expertise in NEPA, CWA, FWCA, and ESA. The reviewer should also have extensive experience in developing Environmental Assessments in support of FRM projects.
Civil/Structural Engineer	The Civil/Structural engineering reviewer should have extensive experience in the design and construction of levees, floodwalls and pump stations and other related FRM structures.
Hydraulic Engineer	The hydraulic engineering reviewer should have expertise in FRM in urbanized systems.
Geotechnical Engineer	The geotechnical engineering reviewer should have an extensive experience in geotechnical evaluation of FRM structures such as static and dynamic slope stability evaluation, evaluation of the seepage through the foundation of the FRM structures, including levees, floodwalls, and in settlement evaluation of the structures.
Cultural Resources	Panel member will have a master's degree or higher education in archeology or a related field and work experience of 20 + years in the discipline. Panel member will have knowledge and experience with National Historic Preservation Act (NHPA) processes and analysis. Panel members should be familiar with or have experience with USACE Civil Works policy and procedures.

D. Documentation of Type I IEPR. The IEPR panel will be selected and managed by an Outside Eligible Organization (OEO) per EC 1165-2-214, Appendix D. 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 4.D. 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.

The final Review Report will be submitted by the OEO no later than 60 days following the close of the public comment period for the draft decision document. USACE shall consider all recommendations contained in the Review Report and prepare a written response for all recommendations adopted or not adopted. The final decision document will summarize the Review Report and USACE response. The Review Report and USACE response will be made available to the public, including through electronic means on the internet.

7. POLICY AND LEGAL COMPLIANCE REVIEW

All decision documents will be reviewed throughout the study process for their compliance with law and policy. Appendix H, ER 1105-2-100 addresses guidance for policy and legal compliance reviews. 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.

8. COST ENGINEERING AND ATR MANDATORY CENTER OF EXPERTISE (MCX) REVIEW AND CERTIFICATION

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

9. 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, and ATR.

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 following planning models (and as necessary habitat evaluation models) are anticipated to be used in the development of the decision document:

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification / Approval Status
HEC-FDA 1.4 (Flood Damage Analysis)	The Hydrologic Engineering Center's Flood Damage Reduction Analysis (HEC-FDA) program provides the capability for integrated hydrologic engineering and economic analysis for formulating and evaluating FRM plans using risk-based analysis methods. The program will be used to evaluate and compare the future without- and with-project plans to aid in the selection of a recommended plan to manage flood risk.	Certified
HEP/HSI Models fish/wildlife species (Habitat Evaluation Procedure / Habitat Suitability Indices)	USFWS HEP evaluates the quality and quantity of available habitat for selected wildlife species. The HEP delivers Habitat Suitability Indices (HSI), which measure habitat suitability of a sample plot relative to optimum habitat suitability for a species in a defined region.	Approved for Use

B. Engineering Models. The following engineering models are anticipated to be used in the development of the decision document:

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification/ Approval Status
HEC-RAS 4.1 (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 Des Moines River and its tributaries.	HH&C CoP Preferred Model
TRACES MII 4.1 (Tri-Service Automated Cost Engineering Systems)	TRACES is an integrated suite of cost engineering tools designed to support the cost engineers throughout the USACE, Air Force, and Navy. MCACES (Micro-Computer Aided Cost Estimating System) MII is a second generation module of TRACES used by the USACE for the preparation of detailed construction cost estimates. MCACES MII will be used to evaluate capital costs for the Recommended Plan.	CoP Preferred Model

10. REVIEW SCHEDULES AND COSTS

A. ATR Schedule and Cost.

Product	Start Date	Duration	Cost Estimate
Draft Report	July 2016	4 weeks	$55,000[1]
Final Report	April 2017	4 weeks	$25,000[2]

[1] $5,000 is reserved for the participation of the ATR Lead in study Milestones and IPR's with the vertical team.
[2] $10,000 is reserved for the review and certification of the TPCS by the Cost DX.

B. Type I IEPR Schedule and Cost. The IEPR is expected to commence in July 2016 and cost approximately $150,000.

C. Model Certification/Approval Schedule and Cost. All of the models anticipated to be used are already certified or approved for use.

11. PUBLIC PARTICIPATION

As required by EC 1165-2-214, the approved Review Plan will be posted on the District public website (http://www.mvr.usace.army.mil/pm/pmPeerReview.html). Information will 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 Rock Island District's website. The feasibility report and EA will undergo a 30-day public review period. Comments received during the public review will be provided to the ATR team during their reviews.

12. REVIEW PLAN APPROVAL AND UPDATES

The Mississippi Valley Division Commander is responsible for approving this Review Plan. The Commander's approval reflects vertical team input (involving district, MSC, RMO, and HQUSACE members) as to the appropriate scope and level of review for the decision document. Like the PMP, the Review Plan is a living document and may change as the study progresses. The home district is responsible for keeping the Review Plan up to date. Attachment 3 documents minor changes to the Review Plan since the last MSC Commander approval. 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.

13. REVIEW PLAN POINTS OF CONTACT

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

- Project Manager, Rock Island District, 309-794-5802
- District Support Team, Mississippi Valley Division, 601-634-5226
- Deputy Director, Flood Risk Management Planning Center of Expertise, 415-503-6852

ATTACHMENT 1: TEAM ROSTERS

PROJECT DELIVERY TEAM

Name	Discipline	Office
Robert Savage	Program Manager	MVR PM-F
Marshall Plumley	Plan Formulation	MVP PD-F
Don Ewan	Program Analyst	MVR PM-F
Joseph Jordan	Biologist (NEPA)	MVR PM-EP
Rachel Fellman	Civil/Drawings	MVR EC-D
Michael Cummings	Cost Estimator	MVR EC-TE
Joshua Hendricks (TBD)	Geotech	MVR EC-GH
Matt Zager	Hydrology	MVR EC-HH
Shirley Johnson	Hydraulic Design	MVR EC-HD
Duane Johnson	Construction	MVR EC-C
Aaron Sickels	Structural Engineer	MVR EC-DS
Stephen Gustafson	HTRW	MVR EC-HQ
Cindy Peterson	Cultural Resources	MVR EC-Z
Brandon Stevens	Geospatial Engineering	MVR EC-S
Dennis Johnson	Economics	MVP PD-E
Alex Gau	Real Estate	MVR RE-P
Bonnie Tanamor	Appraiser	MVR RE-P
Brett Call	Operations Manager	MVR OD-NR
Perry Thostenson	Operations	MVR OD
Paul St. Louis	Operations	MVR OD
Mellie Billingsly	Office of Counsel	MVR OC

VERTICAL TEAM
(Division and Headquarters)

Name	Discipline	
Fay Lachney	Planning	MVD
Lee Robinson	Economics	MVD
Gary Young	Environmental	MVD
Thatch Shepard	Upper DST	MVD
Gabe Harris	Upper DST	MVD
Charlie Hanneken		HQ MVD RIT
Jeff Strahan	Economics	HQ OWPR
Mark Matusiak	Planning and Policy	HQ
Gary Hardesty		HQ
John Cline	Real Estate	HQ
Scott Murphy	OC	HQ

AGENCY TECHNICAL REVIEW TEAM

Name	Discipline	Office
TBD	ATR Lead	
	Plan Formulation	
	Economics	
	Environmental/NEPA	
	Risk Analysis	
	Real Estate	
	Geotechnical Engineering	
	Cost Estimates	
	Civil/Structural Engineering	
	Mechanical/Electrical Engineering	
	Hydrology and Hydraulics	
	Cultural Resources	
	HTRW	

ATTACHMENT 2: STATEMENT OF TECHNICAL REVIEW FOR DECISION 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 1165-2-214. 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[sm].

SIGNATURE _____ Date _____

Name
ATR Team Leader
Office Symbol/Company

SIGNATURE _____ Date _____

Name
Project Manager
Office Symbol

SIGNATURE _____ Date _____

Name
Review Management Office Representative
Office Symbol

CERTIFICATION OF AGENCY TECHNICAL REVIEW

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

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

SIGNATURE _____ Date _____

Name
Chief, Engineering Division
Office Symbol

SIGNATURE _____ Date _____

Name
Chief, Planning Division
Office Symbol

ATTACHMENT 3: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number

ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS

Term	Definition	Term	Definition
ASA(CW)	Assistant Secretary of the Army for Civil Works	MCX	Mandatory Center of Expertise
ATR	Agency Technical Review	MSC	Major Subordinate Command
DPR	Detailed Project Report	NEPA	National Environmental Policy Act
DQC	District Quality Control/Quality Assurance	OEO	Outside Eligible Organization
EA	Environmental Assessment	PCX	Planning Center of Expertise
EC	Engineer Circular	PMP	Project Management Plan
ER	Engineering Regulation	PL	Public Law
FEMA	Federal Emergency Management Agency	QA	Quality Assurance
FRM	Flood Risk Management	QC	Quality Control
Home District/MSC	The District or MSC responsible for the preparation of the decision document	RMC	Risk Management Center
HQUSACE	Headquarters, U.S. Army Corps of Engineers	RMO	Review Management Organization
IEPR	Independent External Peer Review	WRDA	Water Resources Development Act

Des Moines Levee System
Des Moines and Raccoon Rivers, IA
Feasibility Study

Review Plan Checklist

Date:	**November 2015**
Originating District:	MVR
Project/Study Title:	Des Moines Levee System Feasibility Study
P2# and AMSCO#:	
District POC:	Robert Savage
PCX Reviewer:	Michelle Kneip

Please fill out this checklist and submit with the draft Review Plan when coordinating with the MSC. Any evaluation boxes checked "No" may indicate the project may not be able to use the MVD Model Review Plan. Further explanation may be needed or a project specific review plan may be required. Additional coordination and issue resolution may be required prior to MSC approval of the Review Plan. The Checklist may be limited to Section I or Section II or Both, depending on content of the Review Plan (or subsequent amendments).

Section I - Decision Documents

REQUIREMENT	EVALUATION
1. Is the Review Plan (RP) for Flood Risk Management?	Yes ☒ No ☐
a. Does it include a cover page and list the project/study title, originating district or office, and date of the plan?	a. Yes ☒ No ☐
b. Does it include a table of contents?	b. Yes ☒ No ☐
c. Is the purpose of the RP clearly stated?	c. Yes ☒ No ☐
d. Does it reference the Project Management Plan (PMP) of which the RP is a component?	d. Yes ☒ No ☐
e. Does it succinctly describe the levels of review: District Quality Control (DQC), and Agency Technical Review (ATR)?	e. Yes ☒ No ☐
f. Does it include a paragraph stating the title, subject, and purpose of the decision document to be reviewed?	f. Yes ☒ No ☐
g. Does it list the names and disciplines of the Project Delivery Team (PDT)?*	g. Yes ☒ No ☐
Note: It is highly recommended to put all team member names and contact information in an appendix for easy updating as team members change or the RP is updated.* **Comments: Additional names will be added as the PDT team develops	

2. Is the RP detailed enough to assess the necessary level and focus of the reviews?	Yes ☒ No ☐
3. Does the RP define the appropriate level of review for the project/study?	Yes ☒ No ☐
a. Does it state that DQC will be managed by the home district in accordance with the MVD and district Quality Management Plans?	a. Yes ☒ No ☐
b. Does it state that ATR will be managed by MVD? **Comments:**	b. Yes ☒ No ☐
4. Does the RP explain how ATR will be accomplished?	Yes ☒ No ☐
a. Does it identify the anticipated number of reviewers?	a. Yes ☒ No ☐
b. Does it provide a succinct description of the primary disciplines or expertise needed for the review (not simply a list of disciplines)?	b. Yes ☒ No ☐
c. Does it indicate that ATR team members will be from outside the home district?	c. Yes ☒ No ☐
d. Does it indicate where the ATR team leader will be from?	d. Yes ☒ No ☐
e. If the reviewers are listed by name, does the RP describe the qualifications and years of relevant experience of the ATR team members?* **Note: It is highly recommended to put all team member names and contact information in an appendix for easy updating as team members change or the RP is updated.* **Comments:** ATR team members, once identified, will be from outside the home district and the ATR lead, once identified, will be from outside MVD. Names and qualifications will be added once ATR team members have been identified.	e. Yes ☐ No ☒
5. Does the RP address review of sponsor in-kind contributions?	Yes ☒ No ☐
6. Does the RP address how the review will be documented?	Yes ☒ No ☐
a. Does the RP address the requirement to document ATR comments using Dr Checks? **Comments:**	a. Yes ☒ No ☐
7. Does the RP address Policy Compliance and Legal Review?	Yes ☒ No ☐
8. Does the RP present the tasks, timing and sequence (including deferrals), and costs of reviews?	Yes ☒ No ☐
a. Does it provide a schedule for ATR including review of the Tentatively Selected Plan (TSP) draft report materials and final report?	a. Yes ☒ No ☐
b. Does it include cost estimates for the reviews?	b. Yes ☒ No ☐

9. Does the RP indicate the study will address Safety Assurance factors? Factors to be considered include: • Where failure leads to significant threat to human life • Novel methods\complexity\ precedent-setting models\policy changing conclusions • Innovative materials or techniques • Design lacks redundancy, resiliency of robustness • Unique construction sequence or acquisition plans • Reduced\overlapping design construction schedule	Yes ☐ No ☐ n/a ☒ **Comments:**
10. Does the RP address opportunities for public participation?	Yes ☒ No ☐
11. Does the RP indicate ATR of cost estimates will be conducted by pre-certified district cost personnel who will coordinate with the Walla Walla Cost DX?	Yes ☒ No ☐
12. Has the approval memorandum been prepared and does it accompany the RP?	Yes ☒ No ☐

DEPARTMENT OF THE ARMY
SOUTH PACIFIC DIVISION, CORPS OF ENGINEERS
1455 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94103-1399

REPLY TO
ATTENTION OF

CESPD-PDP-(FRM-PCX) 25 November 2015

MEMORANDUM FOR Mr. Thomas Crump, Chief, Regional Planning and Environment Division North, Mississippi Valley Division

SUBJECT: Des Moines Levee System, Des Moines and Raccoon Rivers, IA Feasibility Study Review Plan

1. The Flood Risk Management Planning Center of Expertise (FRM-PCX) has reviewed the review plan dated November 2015 for the subject project. The review plan satisfies the peer review policy requirements outlined in Engineering Circular (EC) 1165-2-214 Civil Works Review, dated 15 December 2012, and outlines an appropriate scope and level of review given the information in the plan.

2. The FRM-PCX review was led by Ms. Michelle Kniep, FRM-PCX Regional Manager for the Mississippi Valley Division (MVD). A summary of the substantive review comments and District responses is enclosed. All PCX comments have been satisfactorily resolved.

3. The FRM-PCX endorses the review plan for approval by the MVD Commander. Please include this memorandum when transmitting the review plan for approval. Upon approval of the review plan, please provide a copy of the approved plan, a copy of the MVD Commander's approval memorandum, and the link to where the plan is posted on the District website to Ms. Kniep and me.

4. Thank you for the opportunity to assist in the preparation of the review plan. Please coordinate the peer review efforts outlined in the plan with Ms. Kniep at 314-331-8404.

E. THAUT

Digitally signed by THAUT.ERIC.WILLIAM.1231631824
Date: 2015.11.25 19:41:13 -08'00'

Encl

ERIC THAUT
Deputy Director, Flood Risk Management
Planning Center of Expertise

CF:
CEMVP-PD-F (Kniep)
CEMVP-PD-F (Plumley)
CEMVR-PM-M (Savage)

ENCL 2

FRM-PCX Review Plan Comments and PDT Responses

Project/Decision Document: Des Moines Levee System, IA, Feasibility Study
Program Code (CWIS or AMSCO): 450395
P2 Code: 450395
District Office: MVR
PDT POC: Marshall Plumley

Review Plan Version Date: October 15
FRM-PCX Reviewer: Michelle Kniep
Coordinating Centers and POC's: None

Review Plan submitted to PCX: 1 Oct 15
Funding Provided to PCX: 1 Oct 15
PCX comments provided: 14 Oct 15
PDT response provided: 13 Nov 15
PCX backcheck completed: 16 Nov 15

A. Substantive Comments

Substantive comments address issues associated with the identifying the correct scope and/or level of peer review or with significant policy requirements of EC 1165-2-214. Substantive comments need to be resolved prior to the PCX recommending approval of the review plan by the home MSC. The District should provide written responses to these comments below and provide a revised review plan to the PCX for backcheck. The substantive PCX comments are:

Comment 1: Section 3.b. Study/Project Description. (comments MRK 2, 3, 4, 5, 7, 8 and 9 in the review plan) The information in this section is presented in a confusing order and does not paint a clear picture of the study.

Basis: The nature of and relationships between existing projects in the area is unclear. The authority information is confusing.

Significance: A clear understanding of the study's scope is key to determining the make up of review teams and review requirements.

Recommended Action: Provide basic information about each of the relevant existing projects and their relationship to each other. Provide only authority info that is key to the study and present it in a logical order (probably by date).

PDT Response: Concur. The PDT has revised Section 3 and in particular the study/project description per the suggestions made by the PCX.

Comment 2: Section 3.c. Factors Affecting Scope and Level of Review. (comments MRK12 and 14 in the review plan). This section needs additional information required by the review plan template.

Basis: While Section 3.c. covers most of the eight topics required by the template, some required information is missing or not fully provided. Of particular concern, the required information about the life safety risks is critical to support determination of IEPR requirements in Section 6.a. Additionally, more information is needed regarding redundancy, resiliency and robustness.

Significance: A thorough discussion of all of these factors supports the recommended scope and level of review. Life safety residual risk in particular must be described so that decision makers can ascertain if the risk warrants Type I IEPR (with SAR), Type II IEPR, and if/how the RMC may be involved during the study phase.

Recommended Action: Reference Section 3.c. of the review plan template. The life safety discussion needs to be expanded to include (per the template) the possible consequences of non-performance (exceedance or failure), and the assessment of the District Chief of Engineering on whether there is (or there is the possibility) of a significant threat to human life associated with the project. Add a discussion about the project's need for redundancy, resiliency and robustness.

PDT Response: Concur. The section has been revised to more thoroughly address the eight factors present in the template.

Comment 3: Section 9.b. Engineering Models (comment MRK 28). The listed PCSSWMM model may be incorrectly identified as "preferred".

Basis: If the listed PCSWMM model is the same as the SWMM model listed in the HH&C CoP software list, it is "allowed for us" but not "preferred".

Significance: Per Enterprise Standard (ES) 08101, for "allowed" models "the requested use of the software must be justified in writing and its use approved by the ATR Team prior to its use during the feasibility study. The question that must be answered is, why not use a piece of software that is already "CoP Preferred?" This is not necessarily a complicated effort but it needs to be accounted for.

Recommended Action: If the PDT intends to use the model, include a statement similar to the above as a note under the table in 9.b. Also include the review of the justification under ATR products and in the review schedule table.

PDT Response: Concur. MVR Hydrology and Hydraulics as decided not to use the model at this time. Therefore, it has been removed from 9.b.

B. Non-substantive Comments

Non-substantive comments are provided for information only and may be minor policy concerns, editorial clarifications, etc. Written responses to the comments below ARE NOT REQUIRED. The District should consider these comments and make modifications to the review plan as appropriate prior to submittal to the home MSC for approval. The non-substantive PCX comments are:

Non-substantive comments have been provided via markups to the draft review plan.