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

REPLY TO
ATTENTION OF:

04 NOV 2013

CEMVD-PD-N

MEMORANDUM FOR Commander, New Orleans District

SUBJECT: Review Plan - PCCP-01: Permanent Canal Closures and Pumps, Hurricane Storm Risk Reduction System, New Orleans, Louisiana

1. The subject Review Plan (RP) was reviewed and endorsed for approval by the Review Management Organization on 27 September 2013. The RP includes agency technical review and Type II Independent External Peer Review. The RP is consistent with the purpose and policy of EC 1165-2-209.

2. I hereby approve this RP, which is subject to change as circumstances require, consistent with study development under the Project Management Business Process. Substantial revisions to this RP or its execution will require new written approval from this office.

3. The RP is to be posted to the District website.

4. The POC for this action is Mr. Chris Koeppel, CEMVD-PD-N, at (601) 634-5931.

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

CF:
CECW-MVD (J. Redican)

**DEPARTMENT OF THE ARMY**
**RISK MANAGEMENT CENTER, CORPS OF ENGINEERS**
**12596 W. BAYAUD AVENUE SUITE 400**
**LAKEWOOD, CO 80228**

REPLY TO
ATTENTION OF
CEIWR-RMC-WD

CEIWR-RMC 27 September 2013

MEMORANDUM FOR: Commander, New Orleans District, ATTN: CEMVN-PM-OS

SUBJECT: Risk Management Center Endorsement – Permanent Canal Closures and Pumps (PCCP), Louisiana, Review Plan

1. The Risk Management Center (RMC) has reviewed the revised Review Plan (RP) for the Permanent Canal Closures and Pumps-01, revised September 2013, and concurs that this RP provides for an adequate level of peer review and complies with the current peer review policy requirements outlined in EC 1165-2-214 "Civil Works Review ", dated 15 December, 2012.

2. This review plan was prepared by the New Orleans District, reviewed by the Mississippi Valley Division and the RMC, and all review comments have been satisfactorily resolved.

3. The RMC endorses this document to be approved by the MSC Commander. Upon approval of the RP, please provide a copy of the approved RP, a copy of the MSC Commander's approval memorandum, and a link to where the RP is posted on the District website to Tom Bishop, RMC Senior Review Manager (thomas.w.bishop@usace.army.mil).

4. Thank you for the opportunity to assist in the preparation of this RP. Please coordinate all aspects of the ATR. For further information, please do not hesitate to contact me at (303) 963-4556.

Sincerely,

BISHOP.THOMAS.WALDRON.1228686030
Digitally signed by BISHOP.THOMAS.WALDRON.1228686030
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=BISHOP.THOMAS.WALDRON.1228686030
Date: 2013.09.26 14:01:35 -06'00'

THOMAS W. BISHOP, P.E.
Senior Review Manager
Risk Management Center

CF:
CEIWR-RMC-ZA (Mr. Snorteland)
CEMVD (Division Quality Manager)

**DEPARTMENT OF THE ARMY**
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

CEMVN-ED

MEMORANDUM FOR Commander, Mississippi Valley Division (CEMVD-RB-T/Robert Fitzgerald) 1400 Walnut Street, Vicksburg, MS 39180-3262

SUBJECT: Review Plan for PCCP-01: Permanent Canal Closures and Pumps (P2 #147621)

1. The review plan for Permanent Canal Closures and Pumps (PCCP-01) is enclosed for Mississippi Valley Division's review and approval. The Review Plan was prepared in accordance with EC 1165-2-214.

2. The Permanent Canal Closures and Pumps project is currently in the implementation phase. As required by EC 1165-2-214, request review and approval of the Review Plan.

3. The point of contact for this memorandum is Mr. Daniel F. Bradley, Senior Project Manager (CEMVN-PM-OS) at 504-862-2696.

Mark R. Hoague

MARK R. HOAGUE, P.E.
Chief, Engineering Division

Encl
as

# REVIEW PLAN FOR PCCP-01

## PCCP-01: Permanent Canal Closures and Pumps

## Mississippi Valley Division

## New Orleans District

## 1 Oct 2013

## MSC Approval Date: 4 Nov 2013

## Last Revision Date:

US Army Corps
of Engineers ®

**REVIEW PLAN**

**Permanent Canal Closures and Pumps (PCCP-01)**

## TABLE OF CONTENTS



## Attachments

## 1. PURPOSE AND REQUIREMENTS

**Purpose.** This Review Plan defines the scope and level of reviews as required by EC 1165-2-214 for the Permanent Canal Closures and Pumps (PCCP-01).

### a. References

(1) **Greater New Orleans Hurricane and Storm Damage Risk Reduction System-Peer Review Plan, dated 12 Dec 12.**

(2) **Engineering Circular (EC) 1165-2-214, Civil Works Review Policy, 15 Dec 2012**

(3) **EC 1105-2-412, Assuring Quality of Planning Models, 31 Mar 2011**

(4) **Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006**

(5) **ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007**

(6) **ER 5-1-1, Project Management Business Process (11/1/2006) http://140.194.76.129/publications/eng-regs/er5-1-11/entire.pdf**

(7) **ER 1110-2-1150, Engineering and Design for Civil Works Projects, 31 August 1999**

(8) **ER-1110-1-12 Quality Management (6/21/2006) http://140.194.76.129/publications/eng-regs/er1110-1-12/entire.pdf**

(9) **ES-08011 QA-QC Process for Study-Design,**

https://kme.usace.army.mil/CE/QMS/QMS%20Documents/2007-10/08011%20QC-QA%20Processes%20for%20Study-Design%20Phase.DOC

(10) **Manual, Proc 2000 PMP/PgMP Development http://bp.usace.army.mil/robo/projects/pmbp_manual/PMBP_Manual/proc2000.htm**

(11) **PMBP Manual, REF8008G Quality Management Plan**

http://bp.usace.army.mil/robo/projects/pmbp_manual/PMBP_Manual/REF8008G.htm

### b. Requirements

This review plan was developed in accordance with EC 1165-2-214. This plan provides a general outline of the District Quality Assurance (DQA), Agency Technical Review (ATR), and Policy and Legal Compliance Review requirements required by the EC. Independent External Peer Review (IEPR) requirements for PCCP-01 have been established in reference “a” and are being implemented as required by that plan. In addition to these review requirements, the implementation documents are subject to cost engineering review and certification per the EC.

### c. Quality Management Plan

A Quality Management Plan (QMP) will be developed depicting the details of the overall quality program requirements for PCCP-01. The QMP will be comprised of the following individual documents:

- PCCP JV Team – Design Quality Control Plan
- URS Design QA Team – Task Order Quality Control Plan
- ED QA Oversight Team – Quality Assurance Plan

## 2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO for the implementation documents for PCCP-01 described in this review plan is the Risk Management Center (RMC). The RMO is responsible for managing the review efforts described in this review plan. The RMO will coordinate with the Cost Engineering Directory of Expertise (DX) to ensure the appropriate expertise is included on the ATR review teams to assess the adequacy of cost estimates, construction schedules and contingencies.

## 3. PROJECT INFORMATION

### a. General

The PCCP-01 will provide risk reduction of storm surge in Lake Pontchartrain from entering the three outfall canals along 17$^{th}$ Street, London Avenue and Orleans Avenue created from a 1% storm event. The pumps will take storm water from the canals around the closures structures so that the interior drainage system can continue to function when the closure structures prevent direct discharge to Lake Pontchartrain. The Implementation Documents for the PCCP will include the following design packages:

- Pumps and Generators
- Foundation and Substructure
- Storm Surge Barrier and Gates
- Superstructure
- Levee/Floodwall Tie-Ins

### b. Project Description

The PCCP project is located along the 17$^{th}$ Street, Orleans Avenue, and London Ave Outfall Canals at or near Lake Pontchartrain, Orleans, and Jefferson Parishes, Louisiana. The proposed action consists of new permanent pump stations and closure structures at or near the mouth of each of the outfall canals operating in series with the existing Sewerage and Water Board of New Orleans (SWBNO) pump stations.

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

Primary factors affecting the review for this project are:

- Design-Build procurement method
- Rapid implementation schedule

The design of the project elements in the design packages will precede the construction of those elements by a very short timeframe. In order for the project to be successful, the reviews must be comprehensive and effective to ensure a quality product is designed and delivered with little or no lost design effort. To accomplish this goal, designers and reviewers will work closely together to ensure that design decisions are in compliance/conformance with the RFP and D-B contractor's proposal (incorporated as part of the awarded contract). Each reviewer has been provided the awarded contract documents which will be the basis of determining if design and construction packages are in compliance/conformance. This type of review is often referred to as "over the shoulder" (OTS) and is conducted on a continuous basis by the Quality Assurance (QA) Team. In addition to the ongoing review, critical design packages have been identified for review by a separate independent team comprised of USACE personnel selected for the Agency Technical Review (ATR) team. Together, these two review methods (QA & ATR) will be used to ensure product quality while minimizing implementation time. An organizational chart which identifies the PCCP Project Delivery Team (PDT), including the review team members for the reviews described in this Review Plan, is included as Attachment 5.

### d. Project Delivery Team (PDT) Functions and Quality Assurance

#### (1) **Design-Build Coordinator**

The Design Build Coordinator from the PCCP JV Team will integrate the PCCP JV design and construction teams to meet the contract requirements.

The Design Build Coordinator along with the design and construction team members will meet weekly with USACE Project Management (PM), Engineering Division Quality Assurance (ED QA) Oversight, URS Design Quality Assurance (DQA) and the Non-Federal Sponsor (NFS) Teams to discuss the progress of the project.

#### (2) **URS Design QA Team**

The AE firm, URS, will be referred to as the "URS Design QA Team" associated with the PCCP-01 contract. They will review design and construction package submittals for conformance with the PCCP-01 contract requirements and all associated USACE design requirements. It will similarly review design revisions during construction for conformance as well. URS will report conformance of the D-B contractor's design and construction submittals as part of their QA function and will additionally report URS's conformance to the requirements of the task order for their services in accordance to its Quality Control Plan. All reports will be provided to the ED QA Oversight team TM and to the SPM. The URS Design QA Team is not involved in the actual design of the

PCCP-01 contract. The team is independent of the design-build contractor and will be functioning as the Design QA Team. The use of an AE firm to perform the Design QA enables the Project Delivery Team to ensure that the necessary specialized skills are readily available to perform the immediate and ongoing review of the design packages for this time critical design-build product delivery.

**a) Location of URS Design QA Team**

The DQA Team will be co-located with the Contractor's design teams and as such will be aware of day to day design decisions. Co-location will enable facilitation of daily communication, involvement in the design task team meetings, over-the-shoulder compliance reviews, and design decisions to meet the rapid implementation schedule.

(3) **ED QA Oversight Team**

The GO QA team is primarily responsible for overseeing the URS Design QA Team to assure it meets the requirements of their task order for QA services associated with the PCCP-01 contract. It will be engaged in technical reviews of design submittals to allow the team members to understand the design products. In addition to specified QA tasks and activities outlined in the Quality Assurance Plan to be developed for this project, the ED QA Oversight team will perform cursory reviews and spot checks of selected formal submittal packages identified by the ED QA Oversight team TM. The ED QA Oversight team, as time permits, will provide comments regarding conformance design guidance and major component calculations to the URS QA Team for consideration during the Dr Checks comment review period.

**a) Location of ED QA Oversight Team**

As the District's mission permits, specified members of the ED QA Oversight team may co-locate at the Design Center on days when design task team meetings and OTS reviews are scheduled.

(4) **URS Design QA Team Charge**

The URS Design QA team shall at all times be cognizant of their responsibility to review the design and construction package submittal for conformance with the awarded contract and all associated USACE design requirements. The individual reviewers shall offer no comment that extends beyond this authority.

- The Design QA Team Lead will:
    - Provide assistance to the USACE Senior Project Manager, and the Project Managers for 17th Street, Orleans Avenue, and London Avenue Canals as needed to facilitate timely and complete reviews of project submittals.
    - Provide updates on the status and progress of the reviews to the USACE's Senior PM, and PMs for the 17th Street, Orleans Avenue, and

London Avenue Canals including independent daily reports of current information, issues and resolutions, decisions and direction of design effort.

- Act as single POC for entering and back checking design submittal comments, provided by all other Team Leads, into DrChecks.
- Act as point of contact for providing information to the SPM and the ED QA Oversight team TM. The items provided may include:
  - Assurance that task team meeting minutes are accurate and complete
  - Weekly Update Briefing Meetings with SPM
  - Briefs and notifies SPM and the ED QA Oversight team TM when conformance issues arise in any of the Task Team meetings
- Insure team members are reviewing/revising DB task team meeting minutes on current information, decisions, action items, updated schedules, and submittal package progress.
- Provide a daily report to the SPM which includes the information received from the DB contractor, issues that were identified, outstanding issues, resolved issues, meetings attended by the DQA team members and additional remarks if required.

- Coordinate and direct the URS Design QA team throughout the project, including:
  - Working with team members to make sure their roles are understood
  - Providing guidance as needed
  - Obtaining updates on the status and progress of reviews from team members
  - Coordinate and manage submittal reviews of the QA team
- Review and compile comments from QA teams for:
  - Clarity
  - Comments outside of the scope of a conformance review
  - Duplicate comments from team members
  - Contradictory comments from team members
  - Tracking submittals and ensuring timely responses
  - Coordinate comments from QA Review team with comments from the ED QA Oversight team and the NFS team in coordination with the SPM; combine and condense comments; and enter all comments into Dr Checks

  - Coordinate and manage the startup and commissioning activities of the QA team
  - Identify key dates in the startup and commissioning process so that team members are available
  - Review and compile comments, in coordination with the SPM and the ED QA Oversight team TM, that may arise during startup and commissioning
  - Provide guidance and direction as needed
- The URS Design QA Team Members will:
  - Attend meetings as directed by the URS Design QA Team Lead, including over-the-shoulder reviews
- Review design submittals of all three project sites; review to include:
  - Check of general conformance with the contract design criteria
  - Insure betterments listed in the PCCP-JV proposal are incorporated
  - Criteria explicitly defined in the RFP
  - Criteria documents referenced in the RFP
  - Check of general conformance with the Design-Builder's proposal
  - Check for possible design issues
- Review calculations, checking for:
  - Proper application of criteria
  - That all necessary criteria has been addressed
  - Correct application of input parameters
  - Appropriate use of output data
  - Spot checks of calculations
- Review drawings, checking for:
  - Plans are within criteria parameters
  - Completeness
- Review specifications, checking for:
  - Completeness
  - Revisions are within criteria requirements
- Review construction submittals for:
  - Design items that have possible impacts on final construction
  - Design items that could impact safety
  - Possible impacts to design of final project features

- Quality assurance on reviews by the Design-Builder's design team

- Review all aspects of design related to their respective disciplines including but not limited to:

- Basis of design document
- Site civil layout
- Surveying (both topographic and bathymetric)
- Grading
- Utility relocations
- Landscape architecture
- O&M manuals
- Pumps and gear motors
- Generators
- Piping
- Plumbing
- Gate mechanisms
- HVAC
- Fire protection
- Substructure (pile foundations)
- Superstructure
- Hydraulic steel structures
- Reinforced concrete structures (both hydraulic and non-hydraulic)
- Cofferdams/temporary retaining structures
- Pile load tests
- Architectural items
- Corrosion protection
- Soils and foundations testing and analysis
- Soldier pile walls
- Excavations
- Pile foundations, including pile capacities
- Surcharge and permanent grading
- Stability analyses
- Seepage analyses
- Settlement analyses
- Power systems
- Building electrical systems (power, lighting, etc.)
- Hydraulic models (1-D, 2-D, 3-D, and physical models)
- Instrumentation and controls of individual items of equipment
- Integration of the complete operating system
- Integration of communications with local and remote control and monitoring with the existing drainage pump station operations
- Provide support with respect to testing and commissioning (Mechanical, Electrical and Instrumentation and Controls) as requested by the SPM
- Witness testing of pumps and hydraulic models
- Witnessing all testing and commissioning activities
- Provide recommendations with respect to acceptance or rejection of the systems provided.

(5) **Required Design QA Expertise**

| Design QA Team Members/Disciplines | Expertise Required |
|---|---|
| Design QA Team Lead | The Design QA team lead shall be a senior professional with necessary skills and experience to lead a team through the DQA process. |
| Hydraulic Engineering | The hydraulic reviewer shall be a senior hydraulic engineer with experience in large closure structures and/or pump stations. |
| Geotechnical Engineering | The Geotech reviewer shall be a senior geotechnical engineer with experience in pile founded structures and/or soil enhancement. |
| Civil Engineering | The Civil reviewer shall be a senior Civil Engineer with experience in civil site layout of large civil works facilities preferably pump stations, closure structures or navigation structures. |
| Cost Engineering | The cost reviewer shall be a Cost Pre-Certified Professional with experience preparing cost estimates large pump stations and other large civil works facilities. |
| Structural | The Structural reviewer shall be a senior structural engineer with experience in concrete and steel in water structures subject to hydrostatic and wind loading. |
| Mechanical Engineer | The mechanical Engineer shall be a senior mechanical engineer with experience in large pump stations. |
| Electrical Engineer | The Electrical Engineer shall be a senior electrical engineer with experience in large pump stations. |
| Instrumentation and Controls Engineer | The instrumentation and controls Engineer shall be a senior engineer with experience in instrumentation, controls and integration of the complete operating system for large pump stations. |
| Environmental Compliance | The environmental compliance specialist shall be a senior environmental engineer or specialist who is an expert in both USACE environmental regulations as well as environmental compliance in the state of Louisiana. |

| DQA Role on Project | DQA Team Members |
|---|---|
| Team Lead | Barry Fehl |
| Hydraulic Engineering | Herb Miller |
| Geotechnical Engineering | Bob SeGall |
| Civil Engineering | Clay Loyless |
| Cost Engineering | William Stevenson |
| Structural | Ryan Koenig |
| Mechanical Engineer | Lakhbir Chauhan |
| Electrical Engineer | Marty Ollinger |
| Instrumentation and Controls Engineer | LJ Franz |
| Environmental | Lee Walker |

(6) **Documentation of URS Design QA**

Documentation of Design QA activities is required. Each URS Design QA team member will provide comments to the URS Design QA team leader who will review and compile the team comments. The URS Design QA team leader will include any comments from the ED QA Oversight team and any NFS team comments and enter them into DrChecks for review and resolution. The team leader will also collate the comments and responses and use them as the basis of the briefings/comment coordination meetings with the SPM andED QA Oversight team TM. URS will provide a Certification of Quality Assurance Review for each final design package that will be signed by the URS QA Team lead, the ED QA Oversight team TM, the SPM and the MVN Chief of Engineering Division.

(7) **ED QA Oversight Team Charge**

The ED QA Oversight team is primarily responsible for overseeing the URS Design QA Team to assure it meets the requirements of their task order for QA services associated with the PCCP-01 contract. The ED QA Oversight team will perform oversight of the DQA team in performing periodic cursory and spot check reviews of the design packages during the design phase and cursory reviews of design revisions that occur during construction. Because of their oversight role, the team's output will not be on the compliance review critical path, but is only to spot check that the QA process is functioning appropriately. The GO QA team will monitor the URS Design QA team to assure they are assuring criteria, explicitly defined in the contract documents referenced in the awarded contract, are being met by the DB contractor. Although, the oversight

level of effort will be high in the initial phase of design development, the level of effort should moderate significantly as the 12 – 14 month project design effort progresses.

- The ED QA Oversight team TM will:
    - Serve as the Technical Manager (TM) of the ED QA Oversight Team -.
    - Provide a list of submittal packages to be spot checked by the ED QA Oversight team, the team member that will perform the spot check and provide comments to the URS Design QA team leader.
    - Assure the ED QA Oversight team is adequately staffed and timely in responses.
    - Review design suggestions and comments of the ED QA Oversight team members within the design task teams to assure preferential comments are excluded.
    - Track critical issues identified in task team and over the shoulder meetings to insure timely resolution. When issues are not resolved by the task teams in a timely manner, elevate the situation to the SPM.
    - Furnish an independent daily report and/ or meeting minutes to PM and ED to inform on the Government's prospective regarding the design packaging/submittal process, current information, decisions, action items, updated schedules, and direction of the design effort. These reports will provide PM and ED a perspective independent of the DQA reports.
    - Provide ED and PM a 2-4 week look ahead based on technical meetings, OTS reviews, and daily coordination with URS. This look ahead will provide manpower and time requirements of the ED QA Oversight team members for workload planning and preparation.
    - Monitor the ED QA Oversight team to ensure work efforts remain focused on compliance with the contract documents and brief the SPM and MVN ED Chief on the status of the oversight effort weekly.
    - Manage the work spaces, adjacent to the URS Design QA Team, to ensure efficient usage by the oversight team and facilitate communication between the URS Design QA team and ED QA Oversight team.
- The ED QA Oversight team members will:
    - Responsible for overseeing the URS Design QA Team to assure it meets the requirements of their task order for QA services associated with the PCCP-01 contract. .

- Confer with members of the design task teams regarding preliminary design submittal packages as they are being developed.

- Spot check calculations and design formulas, on submittals identified by the ED QA Oversight team TM, as needed to ensure compliance with the contract requirements leaving the more stringent review to the URS Design QA team during both the preliminary and formal design submittal process.

- Make site visits as requested by Construction Division.

- Support HDC and URS Design QA team involvement in Witness factory/field testing and start up activities of major mechanical and electrical equipment. This work will be performed to compliment the inspections done by HDC and URS Design QA Team.

(8) **Documentation of ED QA Oversight Team**

Documentation of ED QA Oversight team activities will be provided bi-weekly to ED upper management and SPM and will include a narrative of the major component calculation spot checks and cursory reviews of design packages. The narrative shall include a general description of the submittal package, the major component calculation spot checks, and a summary of the cursory reviews. The ED QA Oversight team TM will insure team members are reviewing/revising DB task team meeting minutes on current information, decisions, action items, updated schedules, and submittal package progress. These meeting minutes will be uploaded into ProjectWise by the TM. The TM will inform the SPM when conformance issues arise. Witness ED QA Oversight team members providing support to HDC and the URS Design QA team for witness factory/field testing and start-up activities will furnish field reports which document testing procedures, results and trip activities.

| **ED DQA Oversight Role on Project** | **ED DQA Oversight Team Members** |
|---|---|
| Technical Manager | Jennifer Kline CEMVN |
| Structural Engineering | Denis Hoerner CEMVN |
| Hydraulic Engineering | Clyde Barre CEMVN |
| Geotechnical Engineering | Danny Haggerty CEMVN |
| Mechanical Engineer | Brian Bell CEMVN |
| Electrical Engineer | John Vititoe CEMVN |
| Civil Engineer | Jason Binet CEMVN |

### (10) Design Reviews

Design reviews are coordinated by the Designer of Record (D-B contractor). Members of the ED QA Oversight team, the URS Design QA Team, NFS and ATR Team and PCCP JV design and construction members will participate in the reviews. These reviews are planned to discuss preliminary design submittals in an effort to expedite the review process and to minimize comments during the formal review of the submission in the Dr Checks system. These discussions and consensus/ non-consensus will be documented with decision logs which will be provided for review as part of the formal design package submittals.

### (11) USACE DQA Reviews

All design packages (implementation documents that include supporting data, analyses, environmental compliance documents, RFP, design briefs, final design packages etc.) shall undergo USACE DQA. USACE DQA 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 USACE DQA review effort will be performed by a team of multi-disciplinary engineers and professionals comprised of the URS Design QA team with oversight by the ED QA Oversight team.

### (12) Products to Undergo USACE DQA Review

All Design submittals, design decisions, and equipment and material selections and the effective compliance with applicable standards shall be reviewed throughout the Design – Build process. Decisions regarding these product elements will be collated at each submission during the design development stage. Once collated, the decisions will be reviewed system wide to ensure conflicting decisions have been resolved and final decisions are in compliance/conformance with the RFP and Proposal. The information compiled will be made available to the ATR team, with the understanding that it will likely be incorporated into the ATR report.

### (13) Resolution of Potential “fatal design flaws”

If either the URS Design QA Team or the ED QA Oversight team identifies a possible non-conforming (or fatal flaw) in an element of a submittal, the SPM will immediately be notified. The SPM and the ED QA Oversight team TM will convene a meeting with all appropriate leads of the URS Design QA Team, NFS Team, and/or ATR Team to discuss the issue and reach consensus on resolution of the potential non-conformance. The ED QA Oversight team TM and SPM will also convene a meeting of all appropriate team leads when there is non-consensus on an issue of compliance between teams.

## 4. DESIGN QUALITY CONTROL (QC)

Due to the nature of the Design Build project delivery method which places the design responsibility on the Designer of Record (the Design Build Contactor) and the complexity of the project, the Design Builder is required to implement a quality control program to assure that all design products and services required by the contract are performed and delivered in a manner that meets professional engineering and architectural standards.

## 5. AGENCY TECHNICAL REVIEW (ATR)

### a. ATR Requirement

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; to ensure design quality and technical adequacy; and to ensure design will result in products that satisfy the physical requirements of the sponsor. 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.

The Designer of Record (Design Build Contractor) is required to perform a separate Independent Technical Review (ITR) on their work products. USACE is required by EC 1165-2-214 to perform a separate Agency Technical Review (ATR).

### b. ATR Goals.

The goals of the ATR are:

- Ensure design quality and technical adequacy.
- Ensure design will result in products that satisfy the physical requirements of the sponsor.

In order to conduct the DQC-QA, ITR and ATR reviews efficiently, a high level of coordination will be required. Although EC 1165-2-214 clearly states that all planning, engineering and scientific work will undergo a dynamic and rigorous review process, the execution of this process for Design Build projects is not clearly defined. Therefore the following execution plan is proposed:

- ATR team members will observe by teleconference the individual design task team's weekly coordination meeting.
- ATR team members will review design documents and the issue/decision resolution logs for their individual disciplines no less than weekly enabling them to track design decisions.

- ATR team members will be available to the URS Design QA and ED QA Oversight teams to answer technical questions but will otherwise maintain independence from the design process.
- ATR team members will discuss, without delay, any design element that they believe will lead to an ATR comment with the URS Design QA and ED QA Oversight team leads during the design process rather than wait until the ATR review period.
- When necessary, the ATR team members will attend initial, interim and final design conferences.
- The ATR team will conduct their formal reviews during the allotted government review process period prior to the release for construction.

This process is intended to allow the ATR team to perform their mission of ensuring design integrity without delaying the design process.

### c. ATR Team

The ATR team will be comprised of senior USACE engineers with extensive experience in their discipline. The proposed team consists primarily of specialized engineers from the Hydro-Electric Design Center (the Pump Station Center of Expertise) and Portland District. Additional disciplines will be filled by senior USACE engineers from Northwest Division.

### d. ATR Charge

The ATR review team shall review the design to ensure the quality and credibility of the government's scientific information in accordance with EC 1165-2-214 and the QM of the home MSC. The ATR team will assess whether the analyses presented are technically correct and comply with published USACE guidance. The ATR team's comments should be limited to those that are required to ensure the adequacy of the presented methods, assumptions, criteria, decision factors, applications and explanations.

### e. ATR Timing

The ATR team members will observe by teleconference the individual design task team's weekly coordination meeting. When necessary, the ATR team members will attend initial, interim and final design conferences. ATR team members will discuss, without delay, any design element that they believe will lead to an ATR comment with the URS Design QA and ED QA Oversight team leads during the design process rather than wait until the ATR review period. Some of the packages identified for ATR will have an expedited (18 day) review period; however, most of the packages identified for ATR will have a 30 day review period. The 30 days include review, comment and comment

resolution. The ATR team will conduct their formal reviews during the allotted government review process period prior to the release for construction.

### f. Products to Undergo ATR

The ATR team will be monitoring the progress of the project through close communication with the URS Design QA and ED QA Oversight teams. ATR will be performed on the specific critical design items within the design package submissions listed below. Additional critical items may be identified for ATR during the design process. Due to the nature of Design-Build, where elements of the design will need to be reviewed prior to subsequent elements being selected, it is necessary to provide ATR when needed and without delay. The following elements have been identified for ATR:

- Main Storm Water Pump Units
- Pump Intake and Discharge Designs
- Diesel Engine Generators
- Electric Drivers/Motors/Gearboxes
- Gate Open and Closure System
- Power Systems that are required to actuate, start, or operate the PCCP pumping units or gates
- Temporary Cofferdams and bypasses
- Structural Elements of Buildings and Barriers

### g. Required ATR Team Expertise.

The PCCP is a large civil works project that will construct critical public infrastructure intended to safeguard the lives of residents. The ATR team will consist of senior engineers with a high level of demonstrated technical competency in their field. The extensive amount of review that will be necessary during the execution phase of the Design-Build project will require that the systems be analyzed by teams rather than individuals. Therefore, during the reviews, the subject matter experts will enlist other technically qualified engineers and specialists to assist them in the review. The individuals listed on the chart below will be in charge of the review in their discipline and will either conduct or thoroughly oversee the review.

| ATR Team Members/Disciplines | Team Member | Years of Experience |
|---|---|---|
| ATR Lead | Mark W. Brodesser PE Chief Civil-Environmental Design CENWP | 21 |
| Hydraulic Engineering | Chris NyGaard P.E. CENWP | 11 |
| Mechanical Engineering Pumps | Donald R. Courson P.E. Chief Mechanical Section HDC | 14 |
| Geotechnical Engineering | Jeremy Britton PE Chief Geotechnical Design CENWP | 10 |
| Civil Engineering | Derek McCurdy P.E. CENWP EC-DC | 18 |
| Structural Engineering | Matthew D. Hanson P.E. Chief Structural Design CENWP EC-DS | 30 |
| Electrical Engineering Pumps | Don J. Campbell Hydro-Electric Design Center | 31 |
| Construction / Flood Reduction Structures | Jerry Christenson P.E. USACE HQ | 35 |

**h. 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:

- 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 been 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)

A Type II, Design and Construction, IEPR as described in the ”Implementation of Section 2035 of WRDA 2007 for the Greater New Orleans (GNO) Hurricane and Storm Damage Risk Reduction System (HSDRRS) Review Plan”, approved 12 Dec 12 is being performed on the PCCP project.

## 7. 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

No Planning models are anticipated during the development of Plans and Specifications.

### b. Engineering Models

This project will contain Computer Fluid Dynamics Modeling for preliminary studies and verification with physical modeling.

## 8. REVIEW SCHEDULES AND COSTS

### Design QA Schedule and Cost

| Review Milestone | Review Products | Date Planned* |
|---|---|---|
| **Design QA review** | **Design Packages:** | |
| | Storm Surge Barrier and Gates | 4th Quarter 2013 |
| | Pumps and Generators | 4th Quarter 2013 |
| | Foundation and Substructure | 1st Quarter 2014 |
| | Superstructure | 2nd Quarter 2014 |
| | Levee/Floodwall Tie-Ins | 2nd Quarter 2014 |
| **Design QA Back Check** | **Design Packages:** | |
| | Storm Surge Barrier and Gates | 4th Quarter 2013 |
| | Pumps and Generators | 4th Quarter 2013 |
| | Foundation and Substructure | 1st Quarter 2014 |
| | Superstructure | 2nd Quarter 2014 |
| | Levee/Floodwall Tie-Ins | 2nd Quarter 2014 |
| **100% DQA review** | **Design Packages:** | |
| | Storm Surge Barrier and Gates | 4th Quarter 2013 |
| | Pumps and Generators | 4th Quarter 2013 |
| | Foundation and Substructure | 1st Quarter 2014 |
| | Superstructure | 2nd Quarter 2014 |
| | Levee/Floodwall Tie-Ins | 2nd Quarter 2014 |

***Actual dates dependent on proposed schedule submitted by Design Build Contractor and agreed to by the Government.**

| Review Milestone | #reviewers/total hours | Approximate cost/hr | Totals |
|---|---|---|---|
| Initial DQA Review | 9 x 160 | $150 | $216,000 |
| DQA Back check | 9 x 160 | $150 | $216,000 |
| 100% DQA | 9 x 120 | $150 | $162,000 |

**ATR Schedule and Cost**

| Review Milestone | Review Products | Date Planned* |
|---|---|---|
| **Initial ATR review** | **Design Packages:** | |
| | Storm Surge Barrier and Gates | 4th Quarter 2013 |
| | Pumps and Generators | 4th Quarter 2013 |
| | Foundation and Substructure | 1st Quarter 2014 |
| | Superstructure | 2nd Quarter 2014 |
| | Levee/Floodwall Tie-Ins | 2nd Quarter 2014 |
| **ATR Back Check** | **Design Packages:** | |
| | Storm Surge Barrier and Gates | 4th Quarter 2013 |
| | Pumps and Generators | 4th Quarter 2013 |
| | Foundation and Substructure | 1st Quarter 2014 |
| | Superstructure | 2nd Quarter 2014 |
| | Levee/Floodwall Tie-Ins | 2nd Quarter 2014 |
| **100% ATR review** | **Design Packages:** | |
| | Storm Surge Barrier and Gates | 4th Quarter 2013 |
| | Pumps and Generators | 4th Quarter 2013 |
| | Foundation and Substructure | 1st Quarter 2014 |
| | Superstructure | 2nd Quarter 2014 |
| | Levee/Floodwall Tie-Ins | 2nd Quarter 2014 |

***Actual dates dependent on proposed schedule submitted by Design Build Contractor and agreed to by the Government.**

| Review Milestone | #Disciplines/total hours | Approximate cost/hr | Totals |
|---|---|---|---|
| **Initial ATR review** | 8 x 160 | $140 | $179,200 |
| **ATR Back Check** | 8 x 80 | $140 | $89,600 |
| **100% ATR review** | 8 x 120 | $140 | $134,400 |
| **Travel** | 4 site visits | $40,000/visit | $160,000 |

### a. Type II IEPR Schedule and Cost.

**Type II IEPR Schedule**

| | Review Products | Date Planned |
|---|---|---|
| USACE | Storm Surge Barrier/Gates Submittals and Pumps/ Generators Submittals | 4th Quarter 2013* |
| Battelle | Submit Comments in DrChecks | Within 14 calendar days of receipt of material |
| USACE/Battelle | Comment Review Conference Call | Within 14 days of submission of comments |
| USACE | Foundation/Substructure Submittals | 1st Quarter 2014* |
| Battelle | Submit Comments in DrChecks | Within 14 calendar days of receipt of material |
| USACE/Battelle | Comment Review Conference Call | Within 14 days of submission of comments |
| USACE | Superstructure Submittals | 2nd Quarter 2014* |
| Battelle | Submit Comments in DrChecks | Within 14 calendar days of receipt of material |
| USACE/Battelle | Comment Review Conference Call | Within 14 days of submission of comments |
| USACE | Levee/Floodwall Tie-ins Submittals | 2nd Quarter 2014* |
| Battelle | Submit Comments in DrChecks | Within 14 calendar days of receipt of material |
| USACE/Battelle | Comment Review Conference Call | Within 14 days of submission of comments |
| Battelle | Submit Design Submittal IEPR Final Report | Within 30 calendar days of final design peer submittal. |
| Battelle | Construction Field Reports | Within 14 calendar days of construction site visits (2 construction field visits- TBD) |

***Actual dates dependent on development of design submittals by Design Build Contractor.**

**Type II IEPR Cost -**

| Review Milestone | Totals |
|---|---|
| **Initial IEPR*** | $114,134 |
| **Design IEPR*** | $320,319 |
| **Estimated Construction IEPR** | $283,000 |
| **Total** | $717,453 |

***Actual awarded contract costs.**

**b. Model Certification/Approval Schedule and Cost.** *Not Applicable*

## 9. PUBLIC PARTICIPATION

Submittal packages will be provided to the Non- Federal Sponsor (NFS), Coastal Protection and Restoration Authority Board of Louisiana (CPRAB) design review and task team members, who will be free to review and provide comments within the established review durations. CPRAB is also representing other NFS agencies such as the Sewerage and Water Board of New Orleans, Jefferson Parish, and South Louisiana Flood Protection Authority-East. Unless specifically requested, the public will not comment on the development of the Design Submittal Packages otherwise.

## 10. 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 implementation 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. 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.

## 11. REVIEW PLAN POINTS OF CONTACT

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

- Daniel Bradley 504-862-2696
- Jennifer Kline 504-862-1992
- Mincer Minor 601-634-5841
- Christopher Koeppel 601-634-5931
- Thomas Bishop 303-963-4556

**ATTACHMENT 1: TEAM ROSTERS**

| Name | Role | Contact |
|---|---|---|
| Daniel Bradley | Senior Project Manager | 504 862 2696 |
| Avis Gaines | Project Manager/Submittal Review Coordinator | 504 862 1519 |
| Charles Brannon | Project Manager | 504 862 2263 |
| Ana Petkova | Project Manager/Contract Conformance Coordinator | 504 862 2758 |
| Laura Lee Wilkinson | Environmental | 504 862 1212 |
| Todd Klock | Real Estate | 504 862 1920 |
| Robert Guillot | Resident Engineer | 504 862 1205 |
| Candida Wagner | Construction Management | 504 862 1101 |
| William Stevenson | Cost Engineering | 504 837 6326 |
| Lee Walker | Environmental | 504 862 1444 |

| Design QA Team Members | Role | Contact |
|---|---|---|
| Barry Fehl | DQA Team Lead | 504 837 6326 |
| Herb Miller | Hydraulic Engineering | 504 837 6326 |
| Bob SeGall | Geotechnical Engineering | 504 837 6326 |
| Clay Loyless | Civil Engineering | 504 837 6326 |
| Ryan Koenig | Structural | 504 837 6326 |
| Lakhbir Chauhan | Mechanical Engineer | 504 837 6326 |
| Marty Ollinger | Electrical Engineer | 504 837 6326 |
| LJ Franz | Instrumentation and Controls Engineer | 504 837 6326 |
| | | |

| ED QA OVERSIGHT Team Members | Role | Contact |
|---|---|---|
| Jennifer Kline | ED QA OVERSIGHT Technical Manager/ Technical Lead | 504 862 1992 |
| Denis Hoerner | Structural Engineering | 504 862 2659 |
| Jason Binet | Civil Engineer | 504 862 2127 |
| Clyde Barre | Hydraulic Engineering | 504 862 2429 |
| Danny Haggerty | Geotechnical Engineering | 504 862 2403 |
| Brian Bell | Mechanical Engineer | 504 862 1128 |
| John Vititoe | Electrical Engineer | 504 862 2138 |

| ATR Team Members | Role | Contact |
|---|---|---|
| Mark W. Brodesser | ATR Lead | 503 808 4914 |
| Chris NyGaard | Hydraulic Engineering | 503 808 4839 |
| Donald R. Courson | Mechanical Engineering Pumps | 503 808 4256 |
| Jeremy Britton | Geotechnical Engineering | 503808 4851 |
| Derek McCurdy | Civil Engineering | 503 808 4918 |
| Matthew D. Hanson | Structural Engineering | 503 808 4934 |
| Don J. Campbell | Electrical Engineering Pumps | 503 808 4254 |
| Jerry Christenson | Construction / Flood Reduction Structures | 503 351 1450 |

**ATTACHMENT 2: STATEMENT OF TECHNICAL REVIEW**

**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* _____ _____

*Name* Date
ATR Team Leader
*Office Symbol/Company*

*SIGNATURE* _____ _____

*Name* Date
Project Manager (home district)
*Office Symbol*

*SIGNATURE* _____ _____

*Name* Date
Architect Engineer Project Manager[1]
*Company, location*

*SIGNATURE* _____ _____

Nathan Snorteland Date
Review Management Office Representative
CEIWR-RMC

**CERTIFICATION OF AGENCY TECHNICAL REVIEW**

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

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

*SIGNATURE* _____ _____

*Name* Date
Chief, Engineering Division (home district)
*Office Symbol*

*SIGNATURE* _____ _____

*Name* Date
Chief, Planning Division[2] (home district)

*Office Symbol*

[1] Only needed if some portion of the ATR was contracted
[2] Decision Documents Only.

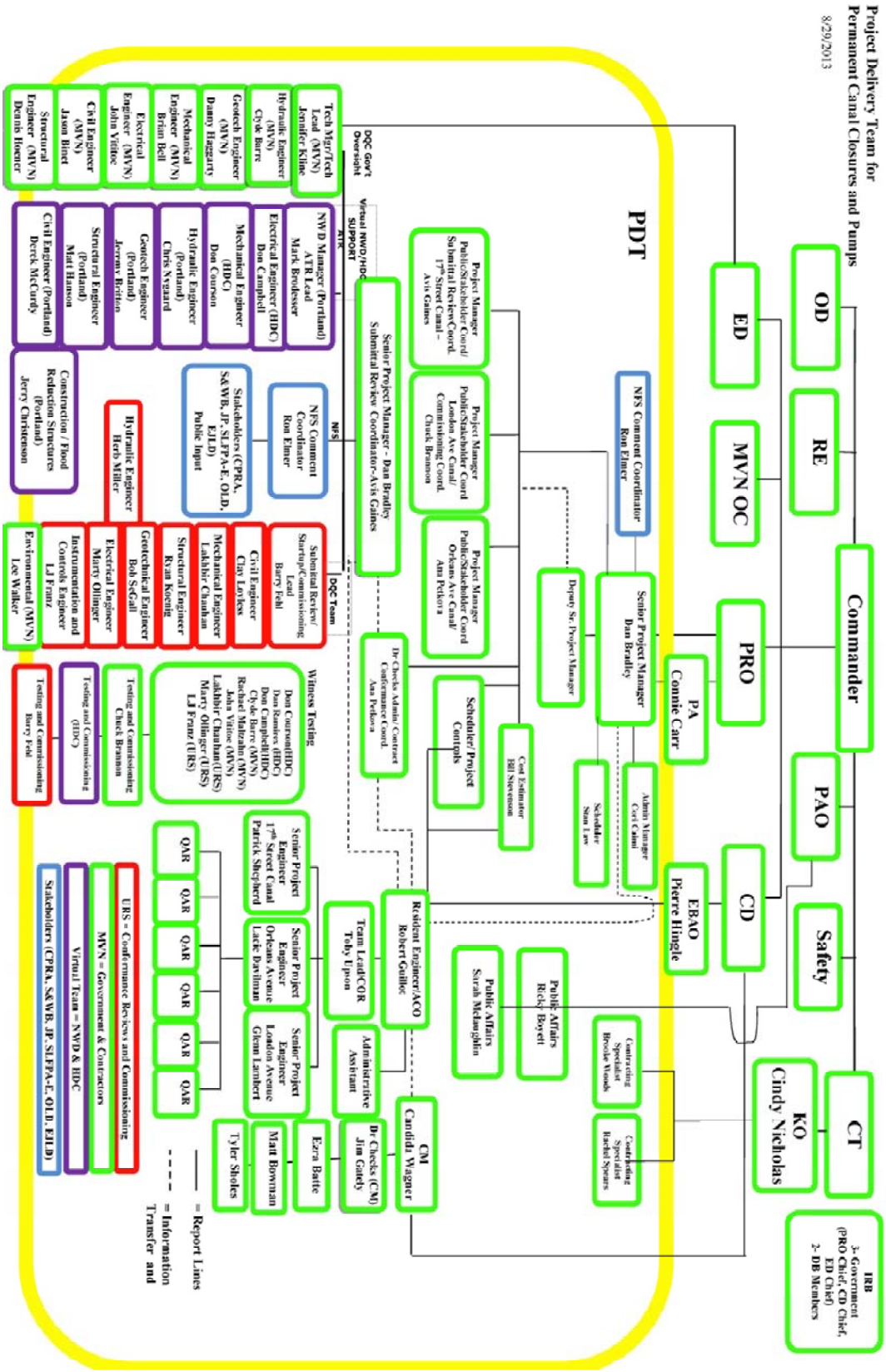
**ATTACHMENT 3: REVIEW PLAN REVISIONS**

| Revision Date | Description of Change | Page / Paragraph Number |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |

## ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS

| Term | Definition | Term | Definition |
|---|---|---|---|
| AFB | Alternative Formulation Briefing | NED | National Economic Development |
| ASA(CW) | Assistant Secretary of the Army for Civil Works | NER | National Ecosystem Restoration |
| ATR | Agency Technical Review | NEPA | National Environmental Policy Act |
| CSDR | Coastal Storm Damage Reduction | O&M | Operation and maintenance |
| DPR | Detailed Project Report | OMB | Office and Management and Budget |
| DQC | District Quality Control/Quality Assurance | OMRR&R | Operation, Maintenance, Repair, Replacement and Rehabilitation |
| DX | Directory of Expertise | OEO | Outside Eligible Organization |
| EA | Environmental Assessment | OSE | Other Social Effects |
| EC | Engineer Circular | PCX | Planning Center of Expertise |
| EIS | Environmental Impact Statement | PDT | Project Delivery Team |
| EO | Executive Order | PAC | Post Authorization Change |
| ER | Ecosystem Restoration | PMP | Project Management Plan |
| FDR | Flood Damage Reduction | PL | Public Law |
| FEMA | Federal Emergency Management Agency | QMP | Quality Management Plan |
| FRM | Flood Risk Management | QA | Quality Assurance |
| FSM | Feasibility Scoping Meeting | QC | Quality Control |
| GRR | General Reevaluation Report | RED | Regional Economic Development |
| Home District/MSC | The District or MSC responsible for the preparation of the implementation document | RMC | Risk Management Center |
| HQUSACE | Headquarters, U.S. Army Corps of Engineers | RMO | Review Management Organization |
| IEPR | Independent External Peer Review | RTS | Regional Technical Specialist |
| ITR | Independent Technical Review | SAR | Safety Assurance Review |
| LRR | Limited Reevaluation Report | USACE | U.S. Army Corps of Engineers |
| MSC | Major Subordinate Command | WRDA | Water Resources Development Act |
| | | | |

**ATTACHMENT 5: PCCP Project Delivery Team Organizational Chart**



**ATTACHMENT 6: Review Plan Checklist**

**Review Plan Checklist**

**For Implementation Documents**

**Date:** Oct 1, 2013

**Originating District:** New Orleans District (MVN)

**Project/Study Title:** PCCP-01: Permanent Canal Closures and Pumps

**Project #:** 147621

**District POC:** Daniel Bradley, SPM - Jennifer Kline, TM

Please fill out this checklist and submit with the draft Review Plan when coordinating with the appropriate RMO. For DQC, the District is the RMO; for ATR of Dam and Levee Safety Studies, the Risk Management Center is the RMO; and for non-Dam and Levee Safety projects and other work products, MVD is the RMO; for Type II IEPR, the Risk Management Center is the RMO. Any evaluation boxes checked 'No' indicate the RP possibly may not comply with EC 1165-2-214 and should be explained. Additional coordination and issue resolution may be required prior to MSC approval of the Review Plan.

| REQUIREMENT | REFERENCE | EVALUATION |
|---|---|---|
| **1. Is the Review Plan (RP) a standalone document?** | EC 1165-2-214,<br><br>Appendix B, Para 4a | ☑ **Yes** ☐ **No** |
| a. Does it include a cover page identifying it as a RP and listing the project/study title, originating district or office, and date of the plan? | | ☑ Yes ☐ No |
| b. Does it include a table of contents? | | ☑ Yes ☐ No |
| c. Is the purpose of the RP clearly stated and EC 1165-2-214 referenced? | EC 1165-2-214<br><br>Para 7a | ☑ Yes ☐ No |
| d. Does it reference the Project Management Plan (PMP) of which the RP is a component including P2 Project #? | EC 1165-2-214<br><br>Para 7a (2) | ☑ Yes ☐ No |

| REQUIREMENT | REFERENCE | EVALUATION |
|---|---|---|
| e. Does it include a paragraph stating the title, subject, and purpose of the work product to be reviewed? | EC 1165-2-214<br><br>Appendix B, Para 4a | ☑ Yes ☐ No |
| f. Does it list the names and disciplines in the home district, MSC and RMO to whom inquiries about the plan may be directed?*<br><br>**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.* | EC 1165-2-214, Appendix B, Para 4a | ☑ Yes ☐ No |
| **2. Documentation of risk-informed decisions on which levels of review are appropriate.** | EC 1165-2-214, Appendix B, Para 4b | ☑ **Yes** ☐ **No** |
| a. Does it succinctly describe the three levels of peer review: District Quality Control (DQC), Agency Technical Review (ATR), and Independent External Peer Review (IEPR)? | EC 1165-2-214<br><br>Para 7a | ☑ Yes ☐ No |
| b. Does it contain a summary of the CW implementation products required? | EC1165-2-214<br><br>Para 15 | ☑ Yes ☐ No |
| c. DQC is always required. The RP will need to address the following questions: | EC1165-2-214<br><br>Para 15a | ☑ Yes ☐ No |
| i. Does it state that DQC will be managed by the home district in accordance with the Major Subordinate Command (MSC) and district Quality Management Plans? | EC1165-2-214<br><br>Para 8a | ☑ Yes ☐ No |

| REQUIREMENT | REFERENCE | EVALUATION |
|---|---|---|
| ii. Does it list the DQC activities (for example, 30, 60, 90, BCOE reviews, etc) | EC 1165-2-214<br><br>Appendix B (1) | ☑ Yes ☐ No |
| iii. Does it list the review teams who will perform the DQC activities? | EC 1165-2-214<br><br>Appendix B, Para 4g | ☑ Yes ☐ No |
| iv. Does it provide tasks and related resource funding and schedule showing when the DQC activities will be performed? | EC 1165-2-214<br><br>Appendix B, Para 4c | ☑ Yes ☐ No |
| d. Does it assume an ATR is required and if an ATR is not required does it provide a risk based decision of why it is not required? If an ATR is required the RP will need to address the following questions: | EC1165-2-214<br><br>Para 15a | ☑ Yes ☐ No |
| i. Does it identify the ATR District, MSC, and RMO points of contact? | EC 1165-2-214<br><br>Para 7a | ☑ Yes ☐ No ☐ N/A |
| ii. Does it identify the ATR lead from outside the home MSC? | EC 1165-2-214<br><br>Para 9c | ☑ Yes ☐ No |

| REQUIREMENT | REFERENCE | EVALUATION |
|---|---|---|
| iii. Does it provide a succinct description of the primary disciplines or expertise needed for the review (not simply a list of disciplines)? If the reviewers are listed by name, does the RP describe the qualifications and years of relevant experience of the ATR team members?*<br><br>**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.* | EC 1165-2-214<br><br>Appendix B, Para 4g | ☑ Yes ☐ No ☐ N/A |
| iv. Does it provide tasks and related resource, funding and schedule showing when the ATR activities will be performed? | EC 1165-2-214<br><br>Appendix C, Para 3e | ☑ Yes ☐ No ☐ N/A |
| v. Does the RP address the requirement to document ATR comments using Dr Checks? | EC 1165-2-214<br><br>Para 7d (1) | ☑ Yes ☐ No ☐ N/A |
| e. Does it assume a Type II IEPR is required and if a Type II IEPR is not required does it provide a risk based decision of why it is not required including RMC/ MSC concurrence? If a Type II IEPR is required the RP will need to address the following questions: | EC1165-2-214<br><br>Para 15a | ☑ Yes ☐ No<br><br>Type II IEPR is being performed on this project as described in the "Implementation of Section 2035 of WRDA 2007 for the Greater New Orleans (GNO) Hurricane and Storm Damage Risk Reduction System (HSDRRS) Review Plan approved 12 Dec 12. |
| i. Does it provide a defensible rationale for the decision on Type II IEPR? | EC 1165-2-214<br><br>Para 7a | ☑ Yes ☐ No ☐ N/A |

| REQUIREMENT | REFERENCE | EVALUATION |
|---|---|---|
| ii. Does it identify the Type II IEPR District, MSC, and RMO points of contact? | EC 1165-2-214<br><br>Appendix B, Para 4a | ☑ Yes ☐ No ☐ N/A |
| iii. Does it state that for a Type II IEPR, it will be contracted with an A/E contractor or arranged with another government agency to manage external to the Corps of Engineers? | EC 1165-2-214<br><br>Appendix B, Para 4k (4) | ☑ Yes ☐ No ☐ N/A |
| iv. Does it state for a Type II IEPR, that the selection of IEPR review panel members will be made up of independent, recognized experts from outside of the USACE in the appropriate disciplines, representing a balance of expertise suitable for the review being conducted? | EC 1165-2-214<br><br>Appendix B, Para 4k(1) and Appendix E, Para's 1a & 7 | ☑ Yes ☐ No ☐ N/A |
| v. Does it state for a Type II IEPR, that the selection of IEPR review panel members will be selected using the National Academy of Science (NAS) Policy which sets the standard for "independence" in the review process? | EC 1165-2-214<br><br>Para 6b (4) and Para 10b | ☑ Yes ☐ No ☐ N/A |
| vi. If the Type II IEPR panel is established by USACE, has local (i.e. District) counsel reviewed the Type II IEPR execution for FACA requirements? | EC1165-2-214<br><br>Appendix E, Para 7c(1) | ☑ Yes ☐ No ☐ N/A |
| vii. Does it provide tasks and related resource, funding and schedule showing when the Type II IEPR activities will be performed? | EC1165-2-214<br><br>Appendix E, Para 5a | ☑ Yes ☐ No ☐ N/A |

| REQUIREMENT | REFERENCE | EVALUATION |
|---|---|---|
| viii. Does the project address hurricane and storm risk management or flood risk management or any other aspects where Federal action is justified by life safety or significant threat to human life? | EC1165-2-214<br><br>Appendix E, Para 2 | ☑ Yes ☐ No ☐ N/A |
| Is it likely? If yes, Type II IEPR must be addressed. | | ☑ Yes ☐ No |
| ix. Does the RP address Type II IEPR factors?<br><br>Factors to be considered include:<br>• Does the project involve the use of innovative materials or techniques where the engineering is based on novel methods, presents complex challenges for interpretations, contains precedent setting methods or models, or presents conclusions that are likely to change prevailing practices?<br>• Does the project design require redundancy, resiliency and robustness<br>• Does the project have unique construction sequencing or a reduced or overlapping design construction schedule; fro example, significant project features accomplished using the Design-Build or Early Contractor Involvement (ECI) delivery systems. | | ☑ Yes ☐ No ☐ N/A |
| f. Does it address policy compliance and legal review? If no, does it provide a risk based decision of why it is not required? | EC 1165-2-214<br><br>Para 14 | ☑ Yes ☐ No ☐ N/A |

| REQUIREMENT | REFERENCE | EVALUATION |
|---|---|---|
| **3. Does the RP present the tasks, timing, and sequence of the reviews (including deferrals)?** | EC 1165-2-214,<br><br>Appendix B, Para 4c | ☑ **Yes** ☐ **No** |
| a. Does it provide and overall review schedule that shows timing and sequence of all reviews? | EC 1165-2-214,<br><br>Appendix C, Para 3g | ☑ Yes ☐ No |
| b. Does the review plan establish a milestone schedule aligned with the critical features of the project design and construction? | EC 1165-2-214, Appendix E, Para 6c | ☑ Yes ☐ No |
| **4. Does the RP address engineering model certification requirements?** | EC 1165-2-214,<br><br>Appendix B, Para 4i | ☑ **Yes** ☐ **No** ☐ **N/A** |
| a. Does it list the models and data anticipated to be used in developing recommendations? | | ☐ Yes ☐ No ☑ N/A |
| b. Does it indicate the certification /approval status of those models and if certification or approval of any model(s) will be needed? | | ☐ Yes ☐ No ☑ N/A |
| c. If needed, does the RP propose the appropriate level of certification/approval for the model(s) and how it will be accomplished? | | ☐ Yes ☐ No ☑ N/A |

| REQUIREMENT | REFERENCE | EVALUATION |
|---|---|---|
| **5. Does the RP explain how and when there will be opportunities for the public to comment on the study or project to be reviewed?** | EC 1165-2-214, Appendix B, Para 4d | ☐ **Yes** ☐ **No** ☑ **N/A** |
| a. Does it discuss posting the RP on the District website? | | ☐ Yes ☐ No ☑ N/A |
| b. Does it indicate the web address, and schedule and duration of the posting? | | ☐ Yes ☐ No ☑ N/A |
| **6. Does the RP explain when significant and relevant public comments will be provided to the reviewers before they conduct their review?** | EC 1165-2-214, Appendix B, Para 4e | ☐ **Yes** ☐ **No** ☑ **N/A** |
| a. Does it discuss the schedule of receiving public comments? | | ☐ Yes ☐ No ☑ N/A |
| b. Does it discuss the schedule of when significant comments will be provided to the reviewers? | | ☐ Yes ☐ No ☑ N/A |

| REQUIREMENT | REFERENCE | EVALUATION |
|---|---|---|
| **7. Does the RP address whether the public, including scientific or professional societies, will be asked to nominate professional reviewers?*** | EC 1165-2-214,<br><br>Appendix B, Para 4h | ☐ **Yes** ☐ **No** ☑ **N/A** |
| a. If the public is asked to nominate professional reviewers then does the RP provide a description of the requirements and answer who, what, when, where, and how questions?<br><br>** Typically the public will not be asked to nominate potential reviewer* | | ☐ Yes ☐ No ☑ N/A |
| **8. Does the RP address expected in-kind contributions to be provided by the sponsor?** | EC 1165-2-214,<br><br>Appendix B, Para 4j | ☑ **Yes** ☐ **No** ☐ **N/A** |
| a. If expected in-kind contributions are to be provided by the sponsor, does the RP list the expected in-kind contributions to be provided by the sponsor? | | ☐ Yes ☐ No ☑ N/A |
| **9. Does the RP explain how the reviews will be documented?** | | ☑ **Yes** ☐ **No** |
| a. Does the RP address the requirement to document ATR comments using Dr Checks and Type II IEPR published comments and responses pertaining to the design and construction activities summarized in a report reviewed and approved by the MSC and posted on the home district website? | EC 1165-2-214,<br><br>Para 7d | ☑ Yes ☐ No ☐ N/A<br><br>Type II IEPR is being performed on this project as described in the "Implementation of Section 2035 of WRDA 2007 for the Greater New Orleans (GNO) Hurricane and Storm Damage Risk Reduction System (HSDRRS) Review Plan approved 12 Dec 12. |

| REQUIREMENT | REFERENCE | EVALUATION |
|---|---|---|
| b. Does the RP explain how the Type II IEPR will be documented in a Review Report? | EC 1165-2-214<br><br>Appendix B , Para 4k (14) | ☑ Yes ☐ No ☐ N/A |
| c. Does the RP document how written responses to the Type II IEPR Review Report will be prepared? | EC 1165-2-214<br><br>Appendix B, Para 4k (14) | ☑ Yes ☐ No ☐ N/A |
| d. Does the RP detail how the district/PCX/MSC and CECW-CP will disseminate the final Type II IEPR Review Report, USACE response, and all other materials related to the Type II IEPR on the internet? | EC 1165-2-214<br><br>Appendix B, Para 5 | ☑ Yes ☐ No ☐ N/A |
| **10. Has the approval memorandum been prepared and does it accompany the RP?** | EC 1165-2-214,<br><br>Appendix B, Para 7 | ☑ **Yes** ☐ **No** |