



DEPARTMENT OF THE ARMY

MISSISSIPPI VALLEY DIVISION, CORPS OF ENGINEERS

P.O. BOX 80

VICKSBURG, MISSISSIPPI 39181-0080

REPLY TO  
ATTENTION

CEMVD-PD-N

25 Oct 2010

MEMORANDUM FOR Commander, New Orleans District

SUBJECT: Review Plan for Agency Technical Reviews of Hurricane and Storm Damage Risk Reduction System National Flood Insurance Program Levee System Evaluation Reports

1. References:

a. Memorandum, CEMVD-RB-T, 20 Oct 10, SAB.

b. Memorandum, CEMVN-ED-E, 22 Jul 10, Subject: Review Plan for Agency Technical Reviews (ATRs) of Hurricane and Storm Damage Risk Reduction System (HSDRRS), Levee System Evaluation Reports (LSERs).

2. I hereby approve subject Review Plan (RP) and concur in the conclusion that the ATR is appropriate and an external peer review is not required for the HSDRRS LSERs for the East and West Bank polders. The proposed RP has been coordinated with the Flood Risk Management Center of Expertise through the MVD Regional Business Directorate, and concurrence for approval by CEMVD-RB-T is referenced in 1.a.

3. The District should take steps to post the RP to its website and to provide a link to the FRM-PCX and CEMVD-RB-T for their use.

4. Point of contact is Mr. Brian Chewing, Program Manager, CEMVD-PD-N, at (601) 634-5836.

MICHAEL J. WALSH  
Major General, USA  
Commanding



REPLY TO  
ATTENTION OF:

## DEPARTMENT OF THE ARMY

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

CEMVD-RB-T

20 October 2010

MEMORANDUM FOR Commander, Mississippi Valley Division

SUBJECT: Review Plan for Agency Technical Reviews (ATR's) of Hurricane and Storm Damage Risk Reduction System (HSDRRS) NFIP Levee System Evaluation Reports (NLSEER's)

1. References:

- a. Memorandum, CEMVN-ED-E, 22 July 2010, subject as above.
- b. EC 1110-2-6067, 31 August 2010, Engineering and Design USACE Process for the National Flood Insurance Program (NFIP) Levee System Evaluation.
- c. EC 1165-2-209, 31 January 2010, Civil Works Review Policy.

2. RB-T staff has reviewed the subject review plan and coordinated with the Flood Risk Management Planning Center of Expertise (FRM-PCX) concerning its review.

3. The NLSEER process for HSDRRS provides information for preparation of flood insurance rate maps and does not directly reflect life safety issues. Therefore, recommend approval of the ATR review plan for HSDRRS East and West Bank Polders as submitted.

A handwritten signature in black ink, appearing to read "Robert H. Fitzgerald".

ROBERT H. FITZGERALD  
Chief, Regional Business Technical  
Division

CEMVN-ED-E

July 22, 2010  
Glos/x2833

MEMORANDUM FOR: QUALITY MANAGEMENT, MISSISSIPPI VALLEY DIVISION  
(ATTN: MS. YOLANDA ARTHUR)

SUBJECT: Review Plan for Agency Technical Reviews (ATRs) of Hurricane and Storm  
Damage Risk Reduction System (HSDRRS), Levee System Evaluation Reports (LSER)

1. Request the attached Review Plan be approved for execution of ATRs for the subject. This work is to recommend certifications of the East Bank (includes LPV and MRL projects) and West Bank (includes WBV and MRL projects) Levee Systems to FEMA.
2. This Review Plan details the requirements to perform ATRs for all the engineering documents prepared for the subject project in accordance with EC 1165-2-209, dated 31 January 2010.
3. This Review Plan will be incorporated into the next update of the Programmatic HSDRRS, Levee System Evaluations for the National Flood Insurance Program, PMP.
4. In accordance with prior coordination with your office, New Orleans District has contacted other USACE offices outside MVN to determine if they can support performance of this required ATR. The review Plan Leader will be Mike Deering (CEIWR).
5. Point of contact is George Glos, 504-862-2833.

Encl:  
as

  
WALTER O. BAOMY, JR., P.E.  
CHIEF, ENGINEERING DIVISION

CEMVN-ED-E

July 22, 2010  
Glos/x2833

MEMORANDUM FOR: QUALITY MANAGEMENT, MISSISSIPPI VALLEY DIVISION  
(ATTN: MS. YOLANDA ARTHUR)

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Encl:  
as

WALTER O. BAUMY, JR., P.E.  
CHIEF, ENGINEERING DIVISION

Glos  
ED-E

Nunez  
ED-E

Dupuy  
ED-E

Thurmond  
ED

Baumy  
ED-E

8/27



**Review Plan**  
For the  
**HSDRRS East Bank and West Bank**  
**Levee System Evaluations Reports (LSERs)**

**New Orleans District**

**MSC Approval Date** \_\_\_\_\_

**Latest Revision Date:** None



**US Army Corps  
of Engineers** ®

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**Review Plan  
For the  
HSDRRS East Bank and West Bank  
Levee System Evaluations Reports (LSERs)**

## 1.0 General

The Agency performing the technical review in accordance with EC 1165-2-209 dated 31 January 2010 shall furnish all services, materials, supplies, plant, labor, equipment, superintendence, and coordination with Federal authorities as required for review of the Hurricane Storm Damage Risk Reduction System (HSDRRS), East and West Bank, Levee System Evaluation Reports (LSER). This Review Plan is part of the Project Management Plan (PMP), for the HSDRRS, LSERs, for the National Flood Insurance Program (NFIP).

The purpose of the review required by this plan is to ensure that the system meets the minimum requirements for 1% risk reduction, operation, and maintenance based on EC 1110-2-6067 guidance for the National Flood Insurance Program (NFIP) Levee System Evaluation, dated 30 July 2009.

## 2.0 Project Description

The project is referred to as the HSDRRS East Bank and West Bank Levee System Evaluation Reports. Two separate reports will be reviewed.

### East Bank LSER

The East Bank generally consists of the metropolitan area East of the Mississippi River, in and around New Orleans, LA including portions of St. Charles, Jefferson, Orleans, and St. Bernard. The East Bank System consists of approximately 85 segments, which comprise the perimeter protection. Segment features include levees, floodwalls, gates, pump stations, and locks.

### West Bank LSER

The West Bank generally consists of the metropolitan area West of the Mississippi River, in and around New Orleans, LA including portions of St. Charles, Jefferson, Orleans, and Upper Plaquemines Parishes. The West Bank System consists of approximately 77

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segments, which comprise the perimeter protection. Segments features include levees, floodwalls, gates, pump stations, and locks.

Levee evaluations are focused on the performance of the complete levee system. These evaluation reports are used by FEMA in the support of NFIP accreditations determinations. The evaluations are a statement that the analysis is accurate to the best of the reviewer's knowledge and analyses have been performed correctly and in accordance with sound engineering practice. Evaluations of as-built conditions are a statement that system features have been constructed in accordance with applicable plans and specifications is in-place, and is fully functioning.

The intent of the LSER is to demonstrate that the system designed and in-place will withstand the flood with a 1% annual chance of exceedance. The documents are not for decision or implementation.

### 3.0 References

An ATR team shall evaluate the features, assumptions, and criteria, of the various projects in accordance with the applicable provisions set forth in the engineering publications provided below.

- (1) Engineering Circular (EC) 1165-2-209, Civil Works Review Policy, dated 31 Jan 2010.
- (2) EC 1110-2-6067, Engineering and Design USACE Process for the National Flood Insurance Program (NFIP) Levee System Evaluation, dated 30 July 2009.
- (3) Code of Federal Regulations 44CFR 65.10.
- (4) Project Management Plan for the Hurricane Storm Damage Risk Reduction System (HSDRRS), Levee System Evaluation Reports, for the National Flood Insurance Program.
- (5) Engineering Management and Quality Control Plan for the Hurricane Storm Damage Risk Reduction System (HSDRRS), Levee System Evaluation Report, For the National Flood Insurance Program.
- (6) ER 1110-1-12, Engineering and Design, Quality Management, dated 30 September 2006.



#### **4.0 DQC Reviews**

The DQC will be performed in accordance with EC 1165-2-209 and ER 1110-1-12. DQC reviews and review personnel are addressed in detail in the Quality Control Plan and will not be repeated here.

#### **5.0 Independent External Peer Reviews:**

The PDT recommends that Independent External Peer Reviews (IEPRs) not be required for this effort based on (EC 1110-2-6067). IEPR of HSDRRS components is being conducted separately in accordance with the HSDRRS Peer Review Plan and EC 1165-2-209.

#### **6.0 Documents Requiring ATR**

The CEMVN Engineering Division will prepare the LSERs for the HSDRRS East Bank and West Bank Systems. These are the reports requiring ATR. These reports will summarize much of the information with the remainder incorporated by reference. As previously stated, each system consists of numerous individual features most of which have a significant level of documentation associated with them. It is anticipated that each of the features may contain the following types of documents as referenced attachments. This list should not be considered all-inclusive or exclusive.

- a) Hydraulic Reports
- b) Geotechnical Report
- c) Design Criteria and Assumptions
- d) O&M and Water Control Manuals
- e) As-Built drawings and specifications
- f) Design Documentation Reports.(DDR)
- g) Construction Completion Reports
- h) Floodfight Reports, Periodic Inspection, and Annual Inspection Reports
- i) Miscellaneous other documents pertinent to the design of the segments which demonstrate their functionality in the context of the overall system.

All documents will be stored digitally and will be available to the review team via ProjectWise.

## 7.0 Specific Required Work Items

Specific work items shall include, but are not limited to the following:

7.1. Review of the Levee System Evaluations Reports.

7.2. Review of Design Criteria and Assumptions

7.3 Entering and resolving all review comments resulting from reviews via DrChecks.

7.4 ATR certification is required upon completion of each review. The ATR team leader will sign ATR certification. The ATR certificates shall be used for certifying the reviews. Each certification will include copies of DrChecks review comments showing that all comments are resolved and closed (see para.7.3). Forms are provided in Appendix A

7.5 ATR requirements will be coordinated with the POC identified in Section 14.0.

## 8.0 Objectives

The primary objectives of the review are to ensure that:

- a) The projects meet the Government's scope, intent, and quality objectives, and are suitable for use by FEMA in the development of NFIP in their revised Flood Insurance Studies.
- b) All assumptions and criteria used are valid.
- c) The features are safe, functional, and in-place.
- d) Appropriate methods of analysis were used.
- e) The source, amount, and level of data detail used in the analysis are appropriate for the complexity of the associated projects.
- f) The projects comply with accepted practice and design criteria used by the COE.
- g) All relevant engineering and scientific disciplines have been effectively integrated.
- h) Project documentation is appropriate and adequate.

## 9.0 Team Membership

Team members will demonstrate senior-level competence in their respective disciplines. Junior-level staff cannot serve as members of the team. All team members must have a minimum of 7

years experience within their discipline and are registered as appropriate in their field. Mr. Michael Deering of CEIWR has been selected as the ATR leader.

<b><u>ATR REVIEW TEAM</u></b>					
<b>Name</b>	<b>Professional Registration</b>	<b>Discipline</b>	<b>Office</b>	<b>Area of Responsibility</b>	<b>Years of Experience</b>
Michael Deering (Leader)	PE	Civil	HEC-WR	Policy	33
Michael Navin	PE	Hydraulics	MVS	Hydraulics	17
David Meadows	PE, PS	Hydraulics	LRH	Hydraulics	36
Mike Alexander	PE	Hydraulics	MVK	Hydraulics	29
Noah Vroman	PE	Geotech	MVK	Geotech	7
Greg Hensley	PE	Geotech	LRH	Geotech	23
Charley Bishop	PE	Civil	MVR	Geotech	15
Tim Grundhoffer	PE	Structural	MVP	Structural	18
Tom Ruf	PE	Structural	MVS	Structural	30
Jim Bartek	PE	Mech.	MVR	Mech.	26
Bryan Radtke	PE	Elect.	MVR	Elect.	21

PE: Professional Engineer PS : Licensed Land Surveyor

### 10.0 Comments

The ATR Team in the formal review of the documents will use the DrChecks review tool. A CEMVN POC will facilitate DrChecks setup and use for these reviews. All comments will give a clear statement of the concern, the basis of the concern, and when appropriate, the actions necessary to resolve the concern. Comments will cite appropriate references. The CEMVN Evaluation Team Responses will clearly state concurrence or non-concurrence with the comment. Concurrences shall include what the corrective action is and where and when it will be performed. The COE Evaluation team will evaluate and respond to each comment in Dr. Checks. Non-concurrences will require a mutual resolution between the designer and the ATR Evaluation Team, before the ATR Team's Statement of Agency Technical Review is signed. A printout of all DrChecks comments together with the Statement will be incorporated into the QA/QC binder that includes this review plan and Engineering Management/QCP plan. A Certification template is attached in Appendix A.



### **11.0 CEMVN Evaluation Guidelines**

The Levee System evaluations reports shall be evaluated as described in the following documents, along with any additional clarifications that may be available at the time of the review.

1. EC 110-2-6067, Engineering and Design USACE Process for the National Flood Insurance Program (NFIP) Levee System Evaluation 30 July 2009.
2. Code of Federal Regulations 44CFR 65.10.

### **12.0 Schedule**

The work is anticipated to be performed the first or second quarter of 2011.

### **13.0 Review Plan Updates**

Minor changes to the review plan are to be documented on the form provided in Appendix A. Major changes to the document will require re-approval of the document by the MSC Commander.

### **14.0 Points of Contact**

The CEMVN technical point of contact for this work is George Glos, phone (504) 862-2833. The ATR Team leader is Mr. Michael Deering of CEIWR who will serve as a single point of contact and liaison between the New Orleans District.



## APPENDIX A

**This Appendix contains the following documents:**

- 1. Completion of Agency Technical Review and Certifications of Agency Technical Review East Bank**
- 2. Completion of Agency Technical Review and Certifications of Agency Technical Review West Bank**
- 3. Review Plan Revisions**

**COMPLETION OF AGENCY TECHNICAL REVIEW**

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

\_\_\_\_\_  
*Michael Deering, P.E.*  
*ATR Team Leader*  
*CEIWR*

\_\_\_\_\_  
*Date*

\_\_\_\_\_  
*Brian Gannon, P.E.*  
*MVN-ED-HSDRRS-LSER-COORD*

\_\_\_\_\_  
*Date*

\_\_\_\_\_  
*SIGNATURE*  
*[Name]*  
*Review Management Office Representative*  
*MVD*

\_\_\_\_\_  
*Date*

**CERTIFICATION OF AGENCY TECHNICAL REVIEW**

Significant concerns and the explanation of the resolution are as follows:  
[Describe the major technical concerns and their resolution]  
As noted above, all concerns resulting from the ATR of the project have been fully resolved.

\_\_\_\_\_  
*SIGNATURE*  
*[Name]*  
*Chief, Engineering Division (home district)*  
*[Office Symbol]*

\_\_\_\_\_  
*Date*

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**COMPLETION OF AGENCY TECHNICAL REVIEW**

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

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*Michael Deering, P.E.*  
*ATR Team Leader*  
*CEIWR*

---

*Date*

---

*Brian Gannon, P.E.*  
*MVN-ED-HSDRRS-LSER-COORD*

---

*Date*

---

*SIGNATURE*  
*[Name]*  
*Review Management Office Representative*  
*MVD*

---

*Date*

**CERTIFICATION OF AGENCY TECHNICAL REVIEW**

Significant concerns and the explanation of the resolution are as follows:

[Describe the major technical concerns and their resolution]

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

---

*SIGNATURE*  
*[Name]*  
*Chief, Engineering Division (home district)*  
*[Office Symbol]*

---

*Date*

**Review Plan Revisions**

Revision Date	Description of change	Page/Paragraph Number