US Army Corps of Engineers®

PROJECT MANAGEMENT PLAN
ADDENDUM 1

WEST SHORE-LAKE PONTCHARTRAIN, LA
HURRICANE PROTECTION PROJECT
FEASIBILITY STUDY

May 2008

West Shore-Lake Pontchartrain, Louisiana
Hurricane Protection Project Feasibility Study

Project Management Plan
Addendum 1

This document has been prepared as an addendum to the *West Shore-Lake Pontchartrain, Louisiana Hurricane Protection Project Project Study Plan (PSP)*, which was originally signed and implemented on 13 January 1998. Where no changes are indicated, refer to the original plan cited above. This addendum has been prepared in accordance with the following guidance:

a. Engineering Regulation (ER) 1105-2-100: "Guidance for Conducting Civil Works Planning Studies", dated 22 April 2000.
b. ER 5-1-11: "U.S. Army Corps of Engineers Business Process", dated 01 November 2006.
c. ER 1110-2-1150: "Engineering and Design for Civil Works Projects", dated 31 August 1999.
d. ER 405-1-12: "Real Estate Handbook", dated 20 November 1985, as amended.
e. ER 1105-2-101: "Risk-Based Analysis for Flood Damage Reduction Studies", dated 3 January 2006.

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LIST OF ACRONYMS

ADCIRC	Advanced Circulation Model
ADH	Adaptive Hydrology/Hydraulics Model
AFB	Alternative Formulation Briefing
CAR	Coordination Act Report
CD	Consistency Determination
CPM	Critical-Path Method
CSDR	Coastal Storm Damage Reduction
CWRB	Civil Works Review Board
CZMA	Coastal Zone Management Act
DE	District Engineer
DEIS	Draft Environmental Impact Statement
DST	District Support Team
E&D	Engineering and Design
EA	Environmental Assessment
EC	Engineering Circular
EFH	Essential (Endangered) Fish Habitat
EIS	Environmental Impact Statement
EM	Engineering Manual
EP	Engineering Pamphlet
EPR	External Peer Review
EQ	Environmental Quality
ER	Engineering Regulation
FCSA	Feasibility Cost Sharing Agreement
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Act
FIA	Federal Insurance Administration
FONSI	Finding of No Significant Impact
FRC	Feasibility Review Conference
FS	Feasibility Study
FTL	Function Team Leader
FWOP	Future without Project
GIS	Geographic Information Systems
H&H	Hydrology and Hydraulics
HEC-FDA	Hydrologic Engineering Center's Flood Damage Analysis
HEP	Habitat Evaluation Procedure
HPS	Hurricane Protection System
HQUSACE	Headquarters, U.S. Army Corps of Engineers
HTRW	Hazardous, Toxic and Radioactive Waste
I-10	Interstate 10
IHR	In House Review
IHRT	In House Review Team

ITR	Independent Technical Review
ITRT	Independent Technical Review Team
IWR	Institute for Water Resources
LACPR	Louisiana Coastal Protection and Restoration
LDEQ	Louisiana Department of Environmental Quality
LDNR	Louisiana Department of Natural Resources
LERRD	Land, Easements, Rights-Of-Way, Relocation, and Disposal Areas
LIDAR	Light Detection and Ranging
LOE	Level of Effort
MCACES	Microcomputer Aided Cost Engineering System
MIPR	Military Interdepartmental Project Request
MSC	Major Subordinate Command
MVD	Mississippi Valley Division
MVN	New Orleans District
NAS	Network Analysis System
NED	National Economic Development
NEPA	National Environmental Policy Act
NOI	Notice of Intent
O&M	Operations and Maintenance
OPA	Office of Public Affairs
OSE	Other Social Effects
P&G	Water Resources Co`uncil's Principles and Guidelines
PDEIS	Preliminary Draft Environmental Impact Statement
PDT	Project Delivery Team
PED	Preconstruction Engineering and Design
PEX	Planning Center of Expertise
PGM	Policy Guidance Memorandum
PL	Public Law
PLD	Pontchartrain Levee District
PM	Project Manager
PMP	Project Management Plan (*this addendum*)
PPPMD	Planning, Programs and Project Management Division
PRB	Project Review Board
PRP	Peer Review Plan
PRT	Peer Review Team
PSP	Project Study Plan (*original plan approved in January 1998*)
QC	Quality Control
RAM	Responsibility Assignment Matrix
RED	Regional Economic Development
REP	Real Estate Plan
RIT	Regional Implementation Team
ROD	Record of Decision
RTK	Real-Time Kinetic
SCT	Study Coordination Team
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SHPO	State Historic Preservation Office

SOW	Scope of Work
STORET	Storage and Retrieval
T & E	Threatened and Endangered Species
TRM	Technical Review Manager
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environment Protection Agency
USFWS	U.S. Fish and Wildlife Service
USPAP	Uniform Standards of Professional Appraisal Practices
WBS	Work Breakdown Structure
WRDA	Water Resources Development Act
WSLP	West Shore Lake Pontchartrain
WVA	Wetland Value Assessment

West Shore-Lake Pontchartrain, Louisiana
Hurricane Protection Project Feasibility Study

Draft Project Management Plan
Addendum 1

1. INTRODUCTION

In January 1998, the U.S. Army Corps of Engineers (USACE), New Orleans District (MVN) and the Pontchartrain Levee District (PLD) approved the Project Study Plan (PSP) for the West Shore-Lake Pontchartrain Hurricane Protection Project feasibility study. Subsequently, work on the feasibility study (FS) was initiated and an initial recommendation regarding the project alignment was submitted to the PLD in January 2001. After reviewing the recommended alignment, the PLD proposed an alternative project alignment. From 2001 to 2003 MVN and the PLD discussed the merits of the two alternatives but could not agree on a mutually supportable plan. Consequently, the work required to complete the feasibility study was temporarily postponed.

In 2006, to reinitiate the project, the PLD proposed a second alternate alignment. This alternative attempted to address some of the concerns that had led to the previous impasse. As a result, MVN resumed work on the feasibility study by performing a "screening-level analysis" of the initially recommended alignment, as well as both alternatives proposed by the PLD. This analysis incorporated (1) the latest data regarding 100-year surge elevations in the study area, (2) enhanced modeling to assess the potential for wetland storage, and (3) lessons learned from hurricane Katrina applicable to engineering and design and evaluation of project benefits, including benefits associated with the key transportation route in the area, Interstate 10 (I-10).

The screening-level analysis was completed in November 2007. Based on the results of the analysis, MVN and the PLD agreed to complete the feasibility phase. The final feasibility study will evaluate the three alternatives considered in the screening-level analysis, as well as a fourth alternative that would provide additional protection to I-10. This revision to the PSP (now referred to as the Project Management Plan [PMP]) identifies the requirements to complete the feasibility study for the West Shore-Lake Pontchartrain Hurricane Protection Project.

2. STUDY AUTHORITY

No change to the previous study authority is made in this addendum.

3. GENERAL DESCRIPTION OF THE STUDY AREA

No change to the previous study area is being considered in this PMP addendum. The final feasibility study will evaluate alternatives to provide flood protection for portions of St. John the Baptist, St. James, and St. Charles Parishes (Figure 1, following page). One alternative to provide protection for the study area, (described in Section 4.4 as Alternative D), will extend the levee into Ascension Parish to tie into an existing non-Federal levee.

U.S. Army Corps of Engineers - New Orleans District

West Shore - Lake Pontchartrain Hurricane Protection Project; Alternative Alignments

0 0.5 1 2 3 4 Miles

N

Livingston Parish

Ascension Parish

Lake Maurepas

Lake Pontchartrain

KANSAS CITY SOUTHERN RR

Blind River

Hope Canal

Reserve Relief Canal

Alignment D

Alignment B

Alignment C

Alignment A

10 61 55 51

Laplace

Reserve

Garyville

Grammercy

Lutcher

Convent

ILLINOIS CENTRAL RR

Mississippi River

Bonnet Carre' Spillway

310

St. James Parish

St. John the Baptist Parish

St. Charles Parish

Lafourche Parish

Legend

- Alignment A
- Alignment B
- Alignment C
- Alignment D
- Non-Federal Levee
- Bonnet Carre Spillway Guide Levee
- Mississippi River Levee

Area of Detail

The vulnerability of the study area to hurricane surge can be demonstrated by the fact that there are an estimated 1,734 commercial structures and 14,660 residential structures within the study area. The equivalent annual damages for the without-project conditions are estimated at $20,362,600.

4. ALTERNATIVE PLAN DEVELOPMENT

The evaluations performed during the initial feasibility study activities and subsequent screening-level analysis have identified four alternative levee alignments that will be carried forward into the final feasibility phase study. These alternatives will be considered as well as the no-action (current condition) and non-structural alternatives in the feasibility study. The four levee alignments are show in Figure 1 (previous page) and are described in greater detail below:

4.1 Alternative A

Alternative A begins at the West Guide levee of the Bonnet Carre Spillway, north of the transmission and pipeline corridors. It extends west around the interstate interchange and along the wet/dry interface. At approximately the St. John and St. James Parish line and Hope Canal, the alignment turns in a southward direction until it reaches a ground elevation equal to or higher than the levee design crest elevation. Measures to protect wetlands enclosed within protected areas will be incorporated into this Alternative. This alternative would protect communities in St. John Parish from future flooding or storm surge events.

4.2 Alternative B

Alternative B also begins at the West Guide levee of the Bonnet Carre Spillway, north of the transmission and pipeline corridors, and extends west around the interstate interchange. Alignment B continues, north of the corridors until the corridors intersect with I-10. At the intersection of I-10, it extends west just slightly north of the interstate to the St. James Parish line, where it then turns southward and (overlapping the westernmost portion of Alternative A) extends to the location where the ground elevation is equal to or higher than the levee design crest elevation. Measures to protect wetlands enclosed within protected areas will be incorporated into this Alternative. This alternative would protect portions of I-10 and communities within St. John Parish from future flooding or storm surge events.

4.3 Alternative C

Alternative C follows the same alignment as Alternative B between the West Guide levee of the Bonnet Carre Spillway and the intersection with I-10. At I-10, Alternative C crosses the interstate, unlike Alternative B, and follows the pipeline corridor through the wetlands until it reaches the St. John / St. James Parish line. At that point the alignment turns southward and (overlapping the westernmost portion of Alternatives A and B) extends to the location where the ground elevation is equal to or higher than the levee design crest elevation. Measures to protect wetlands enclosed within protected areas will be incorporated into this Alternative. This alternative would protect St. John Parish from future flooding or storm surge events.

4.4 Alternative D

Alternative D is a westward continuation of Alternative B. The alignment follows the Alternative B alignment from the Bonnet Carre Spillway to the St. John / St. James Parish line. At the Parish line, Alternative D continues west just slightly north of I-10 until it reaches, approximately, Old New River, at which point it turns northward and continues to a tie-in location at an existing Ascension Parish non-Federal levee. Measures to protect wetlands enclosed within protected areas will be incorporated into this Alternative. Alternative D provides protection to communities in St. John and St. James Parishes in addition to providing protection to the I-10 hurricane evacuation route for nearby towns and the greater New Orleans Metropolitan area.

5. PROPOSED ACTION

The proposed action for this project remains unchanged from that specified in the PSP: conduct a feasibility study to evaluate alternatives which would provide protection from hurricane-induced flooding in the study area. The alternatives being considered to provide this protection have evolved from those presented in the original PSP. Alternatives that will be evaluated in the final feasibility study are described in Section 4 of this PMP Addendum.

6. SCOPE OF WORK

No change to the previous overall scope of work is made in this addendum.

7. SPECIFIC SCOPE OF WORK

The specific scopes of work (SOWs) for the tasks required to complete the final feasibility study is presented in Appendix A. Activities are grouped according to the Work Breakdown Structure (WBS). The associated labor level of effort (LOE), cost, and schedule duration required to accomplish each task are also presented in Appendix A. The cost details associated with each element of the WBS are provided in Appendix B.

8. WORK BREAKDOWN STRUCTURE

A revised WBS, outlining the tasks and subtasks required to complete the final feasibility study are listed in Appendix C.

9.0 ORGANIZATIONAL BREAKDOWN STRUCTURE

Appendix D contains a list of the various offices within the USACE New Orleans, as well as other organizations and agencies involved in the final feasibility study efforts.

10. RESPONSIBILITY ASSIGNMENT MATRIX

Each activity and product in the WBS is cross referenced with the revised Responsibility Assignment Matrix (RAM) in Appendix E.

11. BUDGET AND COST ESTIMATES

The baseline cost estimate for this feasibility study, prepared in 1998, was $2,610,000. To date, $3,068,000 has been spent. The current cost estimate to complete the feasibility study, as described in this PMP Addendum, is $3,914,089, resulting in a total revised cost estimate of $6,982,089. Table 1 presents the summary of costs to complete the feasibility study, with the proposed allocation between Federal and non-Federal organizations. A detailed cost estimate associated with additional feasibility study work effort is included in Appendix B. For tasks that are identified as non-Federal work-in-kind, the non-Federal sponsor will be responsible for planning and design; the Federal effort will include review and oversight, as well as coordination with other elements of the project. Table 2 presents the revised project budget totals.

Table 1: Remaining Costs to Complete FS and Federal/Non-Federal Allocation

DESCRIPTION	FEDERAL COST	NON-FEDERAL CASH	NON-FEDERAL WORK-IN-KIND	TOTAL COSTS
Technical Tasks				
Environmental Studies		654,950		654,950
Cultural & Recreational		118,592		118,592
Hazardous, Toxic and Radioactive Waste (HTRW) Assessment		35,893		35,893
Geotechnical Studies	52,879		237,911	290,789
Levees	14,798		66,588	81,386
Structures	23,950		107,922	131,872
Mechanical and Electrical	14,365		64,647	79,012
Hydrology and Hydraulics	524,680			524,680
Cost & Specifications	17,989		39,343	57,332
Surveying	21,237		95,594	116,831
Geospatial Engineering	58,552		10,575	69,127
Relocations	94,460		3,763	98,223
Economics	388,722		50,815	439,537
Real Estate	77,362		67,174	144,536
Operations & Maintenance (O&M)	1,212		10,908	12,120
Plan Formulation & Reporting		393,624		393,624
Project Management	176,336	43,808		220,144
Technical Reviews	323,003		100,000	423,003
Subtotal	**1,789,545**	**1,246,867**	**855,240**	**3,891,651**
Sponsor Administrative Tasks				
Study Coordination Team and Audit Support		22,438		22,438
Subtotal		**22,438**		
Total Cost to Complete	**1,789,545**	**1,269,305**	**855,240**	**3,914,089**

Table 2: Total Revised Project Costs

Total Revised Study Cost	**$6,982,089**
Portion Subject to 50/50 Cost Share [(1)]	**$6,787,089**
Sponsor Cost Share Responsibility (Total)	**$3,393,545**
Cash Contributions (Received for Prior Work)	$1,269,000
Cash Contributions (Planned for Future Work)	$1,246,867
Work-in-kind Contribution (Planned)	$855,240
Administrative Tasks (Planned)	$22,438
Federal Cost Share Responsibility (Total)	**$3,558,545**

(1) External Peer Review is a 100% Federal Cost

Further revisions to the PMP will be required if additional significant changes are made to the proposed action, the project SOW, or associated task-specific SOWs.

12. SCHEDULE

A revised Critical Path Method (CPM) network schedule showing the logical progression of all the activities required for the final feasibility study is presented in Appendix F. This schedule is based on the assumptions presented in the SOW (Appendix A), and detailed cost estimate (Appendix B). The current schedule assumes that the New Orleans District will receive approval to initiate the feasibility phase on May 30, 2008.

A schedule of critical milestones identified for the feasibility study is provided in Table 2 below.

Table 3: Milestone Schedule

MILESTONE	TARGET DATE
Execute Amended FCSA - Re-initiate Study	30 May 08
National Environmental Policy Act (NEPA) Public Scoping Meeting	1 August 08
Feasibility Briefing Meeting (w/ Independent Technical Review (ITR) & Mississippi Valley Division (MVD))	7 October 08
Alternatives Review Conference (w/ITR & MVD)	26 June 09
Alternatives Formulation Briefing with Headquarters, USACE (HQUSACE)	10 August 09
Notice of Draft FS and Environmental Impact Statement (EIS) in Federal Register (for public review)	9 October 09
Final FS and EIS to ITR	26 February 10
Final FS and EIS to Civil Works Review Board (CWRB)	30 March 10
Sign Chief's Report	9 July 10

13. CURRENT BENEFITS PLAN

No change to the previous current benefits plan is made in this addendum.

14. RESOURCE ALLOCATION PLAN

The Resource Allocation Plan is provided in along with the cost estimate detail in Appendix B. As recommended in ER 5-7-1, the plan includes activity identification and description, duration of each activity, the resource code and description, and costs. Start and finish dates for each activity are shown in the baseline project schedule (Appendix F).

15. LOCAL COOPERATION PLAN

No change to the previous local cooperation plan is made in this Addendum.

16. DATA MANAGEMENT AND DOCUMENT CONTROL PLAN

A combined Data Management and Document Control Plan will be prepared for the feasibility phase of this project. The plan will outline data and document management requirements to ensure that all electronic data, geospatial information, electronic documents, and hard-copy documents are obtained, developed, coordinated, presented, and stored in keeping with USACE requirements. The plan will also identify methods to effect efficient, collaborative use of electronic data and documentation that ensures data integrity and security. Geospatial data will be managed consistent with Engineering Manual (EM), 1110-1-2909, Geospatial Data and Systems.

17. ACQUISITION PLAN

No change to the previous acquisition plan is made in this Addendum.

18. REAL ESTATE PLAN

No change to the previous real estate plan is made in this Addendum.

19. QUALITY CONTROL PLAN

The guidance controlling peer review of work products generated during the final feasibility study is updated to meet the requirements of Engineering Circular (EC), 1105-2-408, Peer Review of Decision Documents. A revised Quality Control (QC) and Peer Review Plan have been prepared for the project reflecting the requirements of this guidance document. This revised plan is presented in Appendix G and replaces the plan presented in the original PSP.

20. VALUE ENGINEERING PLAN

No change to the previous value engineering plan is made in this Addendum.

21. SAFETY PLAN

No change to the previous safety plan is made in this Addendum.

22. SECURITY PLAN

No change to the previous security plan is made in this Addendum.

23. CULTURAL AND RECREATIONAL RESOURCES PLAN

No change to the previous cultural and recreational resources plan is made in this Addendum.

24. ENVIRONMENTAL PLAN

No change to the previous environmental plan is made in this Addendum.

25. OPERATIONS AND MAINTENANCE

The non-federal sponsor, the Pontchartrain Levee District, will review the alternative design features, determine the operational and maintenance requirements, recommend typical standard operating procedures and estimate the operation, maintenance, replacement, and rehabilitation costs. This effort will be coordinated with and approved by the New Orleans District Operations Division and Engineering Division.

26. MANAGEMENT CONTROL PLAN

Management of the final feasibility study will be conducted in accordance with the latest USACE guidance documents, as cited on the signature page of this revised PMP. No changes to other aspects of the Management Control Plan are made in this Addendum.

27. REPORTING REQUIREMENTS

Reporting requirements for the final feasibility study will be conducted in accordance with the latest USACE guidance documents, as cited on the signature page of this revised PMP.

28. CHANGE CONTROL PLAN

No change to the previous change control plan is made in this Addendum.

29. SCREENING AND SCOPE REVISIONS

As specified in the original PSP, the alternatives considered in the final feasibility study will be screened to determine the potential for Federal participation in future phases of the project. However, the basis for evaluating potential Federal participation will be revised and expanded. A residual risk method will be utilized to present cost and benefit data, replacing calculated benefit to cost ratios. Additionally, contributions to the Environmental Quality (EQ), Regional Economic Development (RED), and Other Social Effects (OSE) accounts will be considered in the final feasibility study.

30. RISK BASED ANALYSIS

The risk-based analysis identified in the original PSP will be expanded to include risk and reliability considerations for the engineering components (e.g. gates, transitions, pump stations, etc.) of the alternatives considered. This will allow for risks associated with component failures to be considered when assessing the degree of protection afforded by the alternatives being evaluated in the final feasibility study.

31. UNCERTAINTIES IN SCOPE OF WORK

The SOW presented in this revised PMP defines the tasks required to finalize the feasibility study for the West Shore-Lake Pontchartrain Hurricane Protection Project. These tasks reflect changes to the scope identified in the initial PSP. If additional changes are warranted, their scope and associated cost will be specified in a revision to this version of the PMP.

32. PUBLIC INVOLVEMENT AND COORDINATION PLAN

Public involvement planning should be incorporated in the overall planning process as it will be implemented throughout the feasibility phase. The objectives of the public involvement and coordination plan are (1) to provide information about USACE activities and proposed actions to the public; (2) make public desires, needs and concerns available to the decision-makers; (3) provide for adequate interaction with the public before decisions are made, and (4) to adequately account for the views of the public in making decisions.

The Office of Public Affairs (OPA) should be coordinated with to ensure a successful public involvement plan. OPA can provide resources including coordination with public communications media such as newspapers, radio, and television media; meeting support and coordination, publications such as newsletters, report, and bulletins; and current distribution lists. Participation and responsibilities associated with the Plan are described in Appendix A, Scope of Work, and in Appendix E, Responsibility Assignment Matrix.

Appendix A

Scope of Work

Appendix A
Scope of Work

WBS No.	Activities/Task	Scope of Work	LOE[1] (Hours)	Responsible Organization	Duration (workdays)	Cost ($)
1.0	**ENVIRONMENTAL**					
1.1	**Environmental Studies**					
1.1.1	Scoping Meeting Preparation & Assessment of Preliminary Alternatives	Begin preparation of EIS, review previous scoping meeting document, assess general environmental alternative plans to be considered. Prepare Notice of Intent (NOI) in preparation for public scoping meeting and have published in the Federal Register. Prepare and publish public notice announcing public scoping meeting 30 days prior to meeting.	184	CEMVN-PM-RS	23	19,929
1.1.2	Conduct Public Scoping Meeting	Conduct and facilitate one public scoping meeting to update public on intent and purpose of the project. Provide information to the public regarding the NEPA process, the importance of public input, and general approaches to meeting project objectiives. Provide mechanisms to obtain comments from the public regarding the project. Allow 30 days following meeting for public to provide comments.	20	CEMVN-PM-RS	3	5,786
1.1.3	Scoping Meeting Report	Compile and summarize all public comments. Prepare and review responses to comments to adequately address public concerns.	136	CEMVN-PM-RS	20	14,248
1.1.4	Develop Environmental Setting & Future Without	For affected areas, determine the significant resources to be discussed in the EIS and develop environmental settings (existing & future without), to include establishing the level of degradation of swampland habitat utilizing existing studies and data. Includes Affected Environment EIS review with MVD District Support Team (DST).	312	CEMVN-PM-RS	45	30,814
1.1.5	Develop Environmental Features For Alternatives	Develop features to avoid and minimize environmental impacts or enhance the natural environment.	248	CEMVN-PM-RS	15	25,925
1.1.6	Assess Biological Impacts of Alternatives	Assess the direct and indirect biological and habitat impacts associated with each alternative.	480	CEMVN-PM-RS	25	50,177
1.1.7	Conduct Habitat Evaluation	Conduct field work for Wetland Value Assessment (WVA) or Habitat Evaluation Procedure (HEP) analysis of areas impacted by alternative plans. Analyze data, prepare written report of habitat assessment.	264	CEMVN-PM-RS	33	26,073
1.1.8	USFWS Coordination Act Report	Coordination by USFWS in impact identification and analysis; WVA or HEP analysis, mitigation planning, and preparation of Coordination Act Report (CAR). Military Interdepartmental Project Request (MIPR) to USFWS.	16	CEMVN-PM-RS	133	116,073
1.1.9	Prepare Mitigation Plan	Determine and develop mitigation plans for each alternative alignment for impacts to fish & wildlife habitats.	512	CEMVN-PM-RS	45	50,613
1.1.10	Prepare 404(b)(1) Evaluation	Prepare 404(b)(1) water quality evaluation document using results from Hydrology and Hydraulics (H&H) water-quality evaluation for the recommended alternative only.	104	CEMVN-PM-RS	15	9,486
1.1.11	Prepare 404(b)(1) Public Notice	Prepare and mail 404(b)(1) Public Notice for 30-day review (recommended alternative only).	12	CEMVN-PM-RS	5	1,115
1.1.12	Obtain Water Quality Certification	Prepare application and coordinate with the Louisiana Department of Environmental Quality (LDEQ) (recommended alternative only).	48	CEMVN-PM-RS	5	4,325
1.1.13	Conduct T&E Species & EFH Coordination	Prepare application and coordinate with LDEQ (recommended alternative only).	84	CEMVN-PM-RS	10	7,742
1.1.14	Prepare Coastal Zone Consistency Determination	Prepare Coastal Zone Consistency documentation in coordination with the Louisiana Department of Natural Resources (LDNR) (recommended alternative only).	120	CEMVN-PM-RS	15	11,159
1.1.15	Prepare Air Quality Determination	Determine attainment status and complete applicability determination, as necessary, for recommended alternative only.	48	CEMVN-PM-RS	5	4,325

Appendix A
Scope of Work

WBS No.	Activities/Task	Scope of Work	LOE[1] (Hours)	Responsible Organization	Duration (workdays)	Cost ($)
1.1.16	Prepare PDEIS and Environmental Appendix	Prepare Preliminary Draft EIS (PDEIS). Include Prime & Unique Farmland Coordination, Section 404(b)(1) Eval, Water Quality Cert, Air Emissions & Coastal Zone Management Act (CZMA) Consistency Determination (CD). Prepare environmental input for draft feasibility report. Includes PDEIS Review Meeting with MVD DST.	700	CEMVN-PM-RS	21	72,491
1.1.17	Prepare DEIS and Environmental Appendix	Respond to issues and comments identified during ITR and the AFB concerning PDEIS, mitigation plans, or other environmentally related items. Respond to issues contained in the Policy Guidance Memorandum (PGM) concerning the EIS, mitigation plans, or other environmentally related items by modifying the PDEIS and other environmentally related sections of the report and appendices. Modify PDEIS and other environmentally related sections of the feasibility report and appendices. Prepare "camera-ready" copy of DEIS and environmental appendix, and environmental input for draft feasibility report.	620	CEMVN-PM-RS	22	66,503
1.1.18	Prepare FEIS and Environmental Appendix	Prepare responses to comments of other agencies and the public on the environmental document & mitigation plans for inclusion in the public views & comments appendix. Modify DEIS to address comments and prepare a "camera-ready" FEIS and environmental appendix. Assist in preparing the draft DE notice.	660	CEMVN-PM-RS	20	64,108
1.1.19	Record of Decision (ROD)	Prepare ROD using letters of comments by other Federal agencies, state agencies, and private & public letters of comments.	120	CEMVN-PM-RS	23	14,051
1.1.20	Supervision and Review	Provide supervision & administration of personnel/contractors assigned to environmental taskings. Review environmental products prior to release to ITR, Regional Implementation Team (RIT) Action Formulating Briefing (AFB), Public, State & Agencies, and other reviewers.	520	CEMVN-PM-RS	400	60,007
	Subtotal Environmental Studies		**5,208**			**654,950**
1.2	**Cultural, Socioeconomic & Recreational Resources**					
1.2.1	Cultural Resources Analysis	In consultation with State Historic Preservation Office (SHPO), design and implement studies necessary to evaluate the alternative plans in terms of relative impact on historic properties, to include performing a review of archaeological database and performing shovel test investigations. Evaluate results investigation and prepare report for inclusion in the EIS and feasibility report.	320	CEMVN-PM-RN	45	28,690
1.2.2	Land-Use History Evaluation	Conduct summary-level record search of previous land use history, using available resources, as appropriate and relevant to the determination of potential cultural, socioeconomic, or recreational impacts of proposes alternatives.	8	CEMVN-PM-RN	20	44,836
1.2.3	Socioeconomic & Recreation Resources Evaluation	Perform initial assessment of socioeconomic and recreation resource impacts of alternative plans. Update socioeconomic and recreation resources info previously identified in recon report.	72	CEMVN-PM-RN	30	5,813
1.2.4	Determine Significance of Resources	Determine significant socioeconomic & recreation resources to be discussed in EIS and prepare socioeconomic & recreation resource setting (existing conditions). Prepare probable future w/o project conditions for areas affected by alternatives under consideration. Receive input from MVN Economics.	32	CEMVN-PM-RN	15	2,929
1.2.5	Impacts to Resources	Consult with Statewide Comprehensive Recreation Plan (SCORP) and local agencies, and utilize census data, in identifying and locating recreation features and socioeconomic attributes. Determine & assess direct and indirect impacts of project alternatives to socioeconomic and recreation resources. Receive input from MVN Economics.	56	CEMVN-PM-RN	23	5,161

WBS No.	Activities/Task	Scope of Work	LOE[1] (Hours)	Responsible Organization	Duration (workdays)	Cost ($)
1.2.6	Incorporate Recreation Resources into Alternatives	Assess & determine recreation resource features and impacts which can be incorporated into project alternatives. Develop recreation resource features through use of existing information and results of recreation resource survey.	44	CEMVN-PM-RN	10	3,907
1.2.7	Cultural & Recreation Input to PDEIS	Prepare narrative for various sections of the PDEIS. Specifically, those covering socioeconomic and recreation resources.	200	CEMVN-PM-RN	10	16,927
1.2.8	Supervision and Review	Provide supervision & administration of cultural and recreational resource personnel/contractors. Review products prior to release to ITR, RIT (AFB), Public, State & Agencies, and other reviewers.	88	CEMVN-PM-RN	125	10,329
	Subtotal Cultural & Rec. Resources		**820**			**118,592**
1.3	**HTRW Assessment**					
1.3.1	Conduct HTRW Site Assessment	Conduct preliminary HTRW investigations for the study area. Update information developed during the recon phase of study and compile into Initial HTRW Site Assessment.	300	CEMVN-PM-RP	90	32,638
1.3.2	Supervision and Review	Provide supervision & administration of HTRW resource personnel/contractors. Review products prior to release to ITR, RIT (AFB), Public, State & Agencies, and other reviewers.	28	CEMVN-PM-RP	45	3,255
	Total HTRW Assessment		**328**			**35,893**
	TOTAL ENVIRONMENTAL		**6,356**			**809,435**
2.0	**ENGINEERING**					
2.1	**Geotechnical**					
2.1.1	Determine Boring Locations and Request Right-of-Entry	Choose boring location, boring type (undisturbed or general), and boring depths. Provide Real Estate with required locations.	24	CEMVN-ED-F	5	2,667
2.1.2	Drill Undisturbed Borings For Alignments B,C, and D	Drill 20 Undisturbed and General Type borings for Alignment B, C, D, and along the interstate to supplement existing boring logs within the study area. 5 of the 20 borings will be allocated to Alignment D. Add a contingency of 5 borings. The borings will be accomplished using a drill rig and following standard drilling procedures. Soil samples will be transported to a laboratory for testing.	40	CEMVN-ED-F	28	113,489
2.1.3	Visual Classification of Borings	Visual classification of 20 plus 5 (contingency) of undisturbed and general type borings.	350	CEMVN-ED-F	30	20,616
2.1.4	Choose Samples for Shear & Consolidation Testing	Select samples for shear and consolidation testing by using information from plots of soil boring logs.	48	CEMVN-ED-F	30	4,239
2.1.5	Laboratory Testing of Samples	Perform liquid & plastic limits, water content, UCT tests, sieve and other miscellaneous tests. Plot Mohr circles for each shear test specimen and furnish test sheets for each test samples. Accomplish by using triaxial and other state-of-the-art laboratory test equipment in accordance with various test procedures in Engineering Manual (EM) 1110-2-1906 date 20 Aug 1986.	24	CEMVN-ED-F	30	24,220
2.1.6	Determine Surface and Subsurface Geological Conditions	Determine existing surface & subsurface geological conditions by using previous data combined with new borings to develop site specific cross-sections which define the subsurface conditions at the project site. A feasibility scope write-up will describe the sections and discuss any findings which may impact levee design.	176	CEMVN-ED-F	15	18,714

WBS No.	Activities/Task	Scope of Work	LOE[1] (Hours)	Responsible Organization	Duration (workdays)	Cost ($)
2.1.7	Develop Geotechnical Design Parameters & Prepare Geotechnical Report	Develop shear strengths, overburden pressure, and define soil strata. Define soil reaches. Determine levee sections from survey cross sections. Perform levee stability analyses. Determine geotextile length and design strengths. Perform settlement analyses for levee embankments and for structural improvements. Perform T-wall stability analyses. Perform pile capacity analyses for T-walls, floodgates and pumping stations. Perform seepage analyses for T-walls, floodgates and pumping stations. Perform dewatering analyses for pumping stations. Prepare report of Geotechnical findings.	664	CEMVN-ED-F	15	63,661
2.1.8	Identify Potential Sources of Borrow for Levee Construction	Identify sources of borrow material for levee construction based on existing data.	224	CEMVN-ED-F	45	16,739
2.1.9	Supervision and Review	Provide supervision & administration of personnel assigned to geotechnical taskings. Review geotechnical products prior to release to ITR, RIT (AFB) and other reviewers. Attend meetings. Provide EIS input. Prepare input for feasibility report. Coordinate with other sections.	230	CEMVN-ED-F	30	26,444
	Subtotal Geotechnical		**1,780**			**290,789**
2.2	**Levees**					
2.2.1	Preliminary Levee Design	Analyze survey data, hydraulic and geotechnical parameters to design cost effective levee protection system consistent with engineering criteria. Prepare quantity estimates for embankment, determine borrow requirements and cost estimates for four alternative plans. Determine right-of-way required for levee protection. Prepare preliminary design showing alignment and typical cross-sections. Coordinate relocations efforts for pipelines and facilities affected by proposed features. Prepare written description of work for feasibility report.	656	CEMVN-ED-L	45	73,987
2.2.2	Supervision and Review	Provide supervision & administration of personnel assigned to levee design taskings. Review levee design products prior to release to ITR, RIT (AFB) and other reviewers. Attend meetings. Monitor expenditures.	56	CEMVN-ED-L	15	7,399
	Subtotal Levees		**712**			**81,386**

WBS No.	Activities/Task	Scope of Work	LOE[1] (Hours)	Responsible Organization	Duration (workdays)	Cost ($)
2.3	**Structures**					
2.3.1	Preliminary Structures Design (Levees & Floodwalls)	Perform preliminary designs for T-Walls, Roller Gate Monoliths, Structural Steel Gates, Gate Storage Monoliths, New Drainage Culverts and Modifications to Existing Drainage Facilities. Perform designs for 100-yr, 200-yr and 500-yr levels of protection along four separate alignments (to include Alignment D). Prepare narrative descriptions of all features, design considerations, criteria assumptions, review, comment, and resolve comments on final document. Attend meetings and conduct pertinent coordination.	528	CEMVN-ED-T	44	61,204
2.3.2	Preliminary Structures Design (Pump Stations)	Perform structural designs for Pumping Stations Facilities. Perform designs for 100-yr, 200-yr and 500-yr levels of protection along four separate alignments. Review existing maps and other available information regarding proposed alignments, develop survey requirements and assist in preparation of survey request, develop design conditions, coordinate receipt of required geotechnical and hydraulic data, perform feature designs, prepare quantity take-offs, prepare plates showing proposed structures and rights-of-way, prepare narrative descriptions of all features, design considerations, criteria assumptions, review, comment and resolve comments on final document. Attend meetings and conduct pertinent coordination.	560	CEMVN-ED-T	35	58,709
2.3.3	Supervision and Review	Provide supervision & administration of personnel assigned to structure design taskings. Review structure design products prior to release to ITR, RIT (AFB) and other reviewers. Attend meetings.	100	CEMVN-ED-T	15	11,959
	Subtotal Structural		**1,188**			**131,872**
2.4	**Mechanical & Electrical**					
2.4.1	Preliminary Pump Stations Design	Perform preliminary design of twelve 400-cfs pump stations for Alignment A; three 1,100-cfs pump stations and one 600-cfs pump station for Alignment B; four 600-cfs pump stations for Alignment C; and three 400-cfs pump stations for Alignment D. Perform preliminary design calculations, make tentative equipment selection based on preliminary design, estimate physical size of station, estimate equipment cost from equipment suppliers, attend meetings & resolve comments. Provide narrative descriptions, preliminary equipment selections, sectional views, single line diagrams, and equipment cost estimates appropriate for feasibility level effort for storm pumping stations.	660	CEMVN-ED-T	60	71,830
2.4.2	Supervision and Review	Provide supervision & administration of General Engineering personnel assigned to pump station design taskings. Review pump station design products prior to release to ITR, RIT (AFB) and other reviewers. Attend meetings. Monitor expenditures.	53	CEMVN-ED-T	15	7,182
	Subtotal Mechanical & Electrical		**713**			**79,012**

WBS No.	Activities/Task	Scope of Work	LOE[1] (Hours)	Responsible Organization	Duration (workdays)	Cost ($)
2.5	**Hydrology & Hydraulics**					
2.5.1	ADCIRC Modeling	Perform storm surge modeling using the ADCIRC model originally setup under the Federal Emergency Management Act (FEMA)-Louisiana Coastal Protection and Restoration (LACPR) initiative. Develop model grids for four cases: existing conditions, future-without-project condintions, and 2 new with-project conditions. Simulate 76 storm events for each condition. Perform statistical analyses to determine the 100, 200 and 500-yr storm events.	1,960	CEMVN-ED-H	87	185,517
2.5.2	Storm Surge & Wave Analysis With & Without Project	Using storm surge attributes extracted from ADCIRC modeling: 1) Establish surge levels for the 100, 200 and 500-yr events for without-project and improved conditions along the length of selected alignments; 2) determine heights of propagated waves for without-project and improved conditions along the length of the alignments; 3) determine acceptable critical overtopping rates for the proposed levee (consistent with MVN's Hurricane Protection System [HPS] Levee Design Guidelines); and, 4) develop levee design crest elevations for alternative plans along the length of the alignments for the 100, 200 and 500-yr surge events.	650	CEMVN-ED-H	75	61,830
2.5.3	Interior Hydraulic Analysis With & Without Project	Adapt the existing hydraulic analysis of interior drainage using the Adaptive Hydrology/Hydraulics (ADH) model for with and w/o project conditions for alternative alignments A, B, and C, and perform hydraulic analysis of the interior drainage for with and w/o project conditions for alternative alignment D. The analyses are to be performed for the purpose of designing drainage channels, sizing of pump stations, and maximizing storage areas to prevent project induced flooding. Determine the capacity of gravity drainage structures and pumps needed to maintain zero damage elevation, by using data provided from the reconnaissance report, local sponsors, and surveys, and by running the ADH model. Enter stage-frequency data into the Hydrologic Engineering Center's Flood Damage Analysis (HEC-FDA) modeling program to support economic analysis.	732	CEMVN-ED-H	70	82,996
2.5.4	Prepare Overflow Maps & Delineate Reach Boundaries - Moved from ECON.	Assemble maps of the study area showing the geographical extent of the 100, 200, and 500-yr flood based upon ADCIRC model outputs within the West Shore-Lake Pontchartrain (WSLP) study areas. Those portions of the study areas exhibiting unique stage-frequency characteristics will be identified as separate reaches.	64	CEMVN-ED-H	5	5,997
2.5.5	Water Quality Assessment of Alternatives	Perform water quality analysis based upon existing long term monitoring data obtained from the U.S. Environmental Protection Agency (USEPA) database Storage and Retrieval (STORET), and from results of sediment, water, and elutriate testing as conducted under this effort. Compare results with the State of Louisiana water quality criteria. Forecast sediment and storm water compound concentrations under future with and without project conditions.	112	CEMVN-ED-H	2	10,481
2.5.6	Water Quality Input - 404(b)(1)	Provide water quality input to the Section 404(b)(1) short form evaluation.	40	CEMVN-ED-H	15	4,062
2.5.7	Circulation and Water Quality Modeling (Enclosed Wetlands)	Utilizing the ADH model, determine the hydrodynamic circulation patterns and water quality under baseline and improved conditions for four alignment plans. The model(s) will be employed to allow for forecasting the performance of tidal exchange structures and to allow for assessing the feasibility of diverting freshwater flows from Hope Canal under a baseline condition scenario that assumes the Maurepas Diversion project is in place. This cost includes no data collection efforts; it is assumed that tidal and flow data for the wetlands of interest are already available from previously calibrated modeling efforts. The runs will include one without-project condition run, one run for each proposed alignment without pumping and with pumping and one tidal run for each proposed alignment with Hope Canal re-route with and without pumping. This is a total of 17 model runs (hydrodynamic and water quality). No additional data collection will be required under this WBS item.	1,080	CEMVN-ED-H	45	128,976

WBS No.	Activities/Task	Scope of Work	LOE[1] (Hours)	Responsible Organization	Duration (workdays)	Cost ($)
2.5.8	Supervision and Review	Provide supervision & administration of H&H personnel assigned to hydraulic and water quality analyses taskings. Review hydraulic and water quality analyses products prior to release to ITR, RIT (AFB) and other reviewers. Attend meetings.	398	CEMVN-ED-H	45	44,821
	Subtotal Hydrology & Hydraulics		**5,036**			**524,680**
2.6	**Design Services - Cost & Specifications**					
2.6.1	Develop Construction Cost Estimate	Develop preliminary construction cost estimates for the 4 alternatives with pumping stations, and relocation cost estimates for the proposed action. Utilize the screening level cost estimates as basis for developing estimates for each alternative plan. Use parametric estimating techniques where applicable. Perform sensitivity analysis on cost variability to determine which cost elements have the greatest impact on total cost. Develop detailed estimates for high-impact cost elements as necessary to reduce estimating risk.	520	CEMVN-ED-S	21	43,714
2.6.2	Microcomputer Aided Cost Engineering System (MCACES) (Tentatively Selected Alignment)	Provide an MCACES estimate, including risk analysis, for the tentatively selected alignment.	80	CEMVN-ED-S	10	8,363
2.6.3	Supervision and Review	Provide supervision & administration of personnel assigned to cost estimating task.	44	CEMVN-ED-S	5	5,255
	Subtotal Cost & Specifications		**644**			**57,332**
2.7	**Design Services - Surveys**					
2.7.1	Surveys	Conduct Surveys Along Alignment D, Interstate 10, Interstate Overpasses, and Tie-In Reaches for each Alternative. Establish ground elevations for study area by utilizing existing corrected Light Detection and Ranging (LIDAR) surveys, along with ground-truthing LIDAR elevations by performing conventional Real-Time Kinetic (RTK) surveying of 23 transects at 400-ft lengths along Alignment D and 10 survey transects along the tie-in reach for Alignments A, B, and C.	224	CEMVN-ED-S	30	106,216
2.7.2	Supervision and Review	Coordinate Engineering Division's technical work for the study effort, provide Engineering & Design (E&D) & Construction costs input to Cost Engineering, and provide engineering scope to the Preconstruction Engineering and Design (PED) PMP. Assist Project Manager (PM) in development of project network. Coordinate Engr Div's review of PMP and revised PMP. Assemble comments to PM. Provide supervision & administration. Attend meetings.	156	CEMVN-ED-S	5	10,615
	Subtotal Surveys		**380**			**116,831**
2.8	**Design Services - Geospatial Engineering**					
2.8.1	Prepare Data Mgmt/Document Control/ Geographic Information System (GIS) Plans	Prepare plans to specify minimum requirements for management of survey results, geospatial data, and non-geospatial data required to support the project.	116	CEMVN-ED-S	20	11,750
2.8.2	GIS Support	Provide GIS support during execution of the work, to include development of maps, integration of geospatial data, data querries, and support of data analysis, public outreach, and information management. Develop efficient processes as required for improved data management, GIS development, and geospatial data analysis.	480	CEMVN-ED-S	500	51,116
2.8.3	Supervision and Review	Provide oversight of GIS and data management efforts throughout execution of the project to ensure compliance with District requirements. Attend meetings and provide support as necessary to clarify GIS and data management needs.	56	CEMVN-ED-S	500	6,261
	Subtotal Geospatial Engineering		**652**			**69,127**

Appendix A
Scope of Work

WBS No.	Activities/Task	Scope of Work	LOE[1] (Hours)	Responsible Organization	Duration (workdays)	Cost ($)
2.9	**Design Services - Relocations**					
2.9.1	Relocations Input for Initial Evaluation	Provide summary-level input for preliminary evaluation of relocation requirements for initial alternatives. Base input and consultation on existing data sources and knowledge of site conditions within study area.	40	CEMVN-ED-S	20	4,181
2.9.2	Relocations for Preferred Alternative	Research existing maps and files for pertinent information; prepare new files using information still current such as survey data; visit site to verify/identify facilities: conduct investigations to identify the owners and possible affected facilities; request from owners detailed drawings, locations, and description of their facilities. After getting the detailed designs, the specific project requirements, and applying the District's relocations criterion to the existing facilities - identify the affected utilities and determine the extent of the relocation. Request relocation plans and /or costs from facility owners where applicable. Request a Compensable Interest Report from the Office of Counsel. Prepare a relocations write-up for input into the feasibility report. Included in this write-up are procedures for accomplishing the relocations and identify the parties responsible for the relocations cost.	880	CEMVN-ED-S	30	85,194
2.9.3	Supervision and Review	Provide technical review consisting of a single level of review performed by Relocations Team personnel independent of this particular study. The reviewer will participate in Technical Review meetings, and will provide comments to the Relocations team member, who, in turn, will resolve and provide responses to the comments generated in the Technical Review, and amend the report as required. Participate in coordination efforts through correspondence and meetings with District personnel. Attend Project Delivery Team (PDT) meetings.	80	CEMVN-ED-S	15	8,848
	Subtotal Relocations		**1,000**			**98,223**
	TOTAL ENGINEERING		**12,105**			**1,449,252**
3.0	**ECONOMICS**					
3.1	Document Historical Flood Damages	Collect historical data on major floods from data sources to include FEMA flood claim records, Red Cross surveys, conversations with local officials, post-flood data compiled by the Corps, and newspaper articles for the study area.	56	CEMVN-PM-AW	10	5,161
3.2	Collect Residential Structure Inventory for Alignment D	Using fieldwork and available GIS databases to update inventory of all residential structures within the overflow boundaries for the WSLP study area and to collect inventory for all residential structures within the overflow boundaries for the study area. The inventory will consist of a single record for each structure. Each record will contain information with respect to the particular structural characteristics to include residential structure type, quality of construction, square feet of living area, effective age, condition, number of stories, type of heating & cooling equipment, composition of exterior wall, composition of roof, number of fireplaces, type of garage, and square feet of garage space. The local address, associated study reach, ground elevation for each structure record will also be included.	80	CEMVN-PM-AW	10	7,255

WBS No.	Activities/Task	Scope of Work	LOE[1] (Hours)	Responsible Organization	Duration (workdays)	Cost ($)
3.3	Collect Commercial Structure Inventory For Alignment D	Using fieldwork and available GIS databases to update inventory of all commercial structures within the overflow boundaries for the WSLP study area and to collect inventory for all commericial structures within the overflow boundaries for the study area. The inventory will consist of a single record for each structure. Each record will contain information with respect to the particular structural characteristics to include commercial structure class, quality of construction, square feet of interior area, occupancy classification, shape, effective age, condition, number of stories, story height, type of heating & cooling equipment, availability of elevators, and existence of sprinkler systems. The local address, associated study reach, ground elevation for each structure record will also be included. For industrial structures, a field count will be conducted, followed by a direct mail survey in order to acquire detailed structural characteristics that cannot be ascertained by field inspection.	40	CEMVN-PM-AW	10	3,628
3.4	Compile Inventory for Future Development	Residential, commercial, and industrial structures that are expected to be constructed in the study area during the period of analysis will be included in the inventory. These structures will be assigned to selected study reaches and placed at the appropriate ground and first floor elevations according to the prevailing floodplain development regulations. Evolving patterns of land use will be investigated. Historical land use patterns; current trends; and natural and regulatory constraints on development will be used to predict future land use. Consistent with results of the land use survey, projections will be made of population and housing in the study area. Housing growth trends will be developed using U.S. Department of Commerce, Bureau of the Census data and other appropriate sources. Results will be compared with projections made by university research departments and local planning agencies.	192	CEMVN-PM-AW	45	19,240
3.5	First Floor Elevation Survey	First floor engineering will be conducted to determine first floor elevations and other attributes for a sample of 300 to 500 residential structures to compare against local benchmarks and to establish statistical first floor elevations for the remaining residential structures and a standard deviation in feet will be calculated. The sample will be selected from structures in the economic structure inventory. Conduct preliminary field screening surveys to obtain first floor elevations and other attributes for 100% of the public, commericial and industrial structures and facilities. Note: field screening surveys will be accomplished to provide rough estimate of elevation using hand-held equipment; no registered land surveyor will be required.	660	CEMVN-PM-AW	15	45,578
3.6	Determine Structure Values	Estimate the depreciated replacement cost of all structures within the overflow boundaries (of Alignment D) by entering the characteristics for each structure in the inventory into the Marshall & Swift Valuation Service software application.	56	CEMVN-PM-AW	10	5,161
3.7	Conduct Net Benefit Analysis for Non-Structural Alternatives	Net benefits will be estimated for non-structural flood control alternatives which may include structure raising, flood proofing, structure relocation, and ring levees.	40	CEMVN-PM-AW	5	4,941
3.8	Develop Depth Damage Relationships	Determine depth-damage relationships for all 4 alignments based on new stage frequency curves.	88	CEMVN-PM-AW	7	11,059
3.9	Develop Contents-to-Structure Value Ratios	Develop contents-to-structure value ratios for all 4 alignments	40	CEMVN-PM-AW	5	4,941

WBS No.	Activities/Task	Scope of Work	LOE[1] (Hours)	Responsible Organization	Duration (workdays)	Cost ($)
3.10	Prepare Estimates of Measurement Error	Evaluate and express measurement error associated with estimates of structure values, first-floor elevations, depth-damage functions, and content-to-structure value ratios in the form of probability distributions. These distributions, along with those that reflect measurement error for the stage-frequency curves, will be used to prepare a cumulative probability distribution for project benefits associated with each alternative plan. This "risk based" analysis will comply with requirements specified in Engineering Regulation (ER) 1105-2-100 and ER 1105-2-101. Measurement error for structure values will be obtained by consulting realty specialists who use alternative software applications in estimating the depreciated replacement costs.	64	CEMVN-PM-AW	5	7,415
3.11	Prepare Flood Damage Model Input File	Assemble input files for use with HEC-FDA modeling software, to include files containing structure characteristics; depth-damage functions & content-to-structure value ratios; and, stage frequency data for existing conditions and alternative plans.	80	CEMVN-PM-AW	7	9,065
3.12	Average Annual Future Without-Project Damages	Utilize HEC-FDA to estimate average annual damages under future w/o project conditions. If changes in the structure inventory or study area hydrology are anticipated, additional model runs will be conducted in order to estimate future damages by year. Once these additional runs are completed, separate estimates of future damages will be annualized.	56	CEMVN-PM-AW	5	6,099
3.13	Average Annual Future With Project Damages	Utilize HEC-FDA to estimate average annual damages under future with project conditions. Separate model runs will be conducted for each alternative plan, and within each plan, for designs which provide alternative degrees of flood protections. If changes in the structure inventory or study area hydrology are anticipated, additional model runs will be conducted in order to estimate future damages by year. Once these additional runs are completed, the separate estimates of future damages will be annualized.	280	CEMVN-PM-AW	10	31,318
3.14	Flood Damage Reduction Benefits for Structures & Contents	An estimate of benefits representing reduced flood damage to structures and their contents located within the study area will be prepared for each alternative plan, and within each plan, for designs which provide alternative degrees of flood protection.	24	CEMVN-PM-AW	5	2,638
3.15	Flood Damage Reduction Benefits for Vehicles	An estimate of benefits representing reduced flood damages to vehicles will be prepared by first, compiling an inventory of vehicles, estimate depreciated replacement costs for vehicles, and establish depth-damage functions. Then input files are assembled for use in flood damage analysis programs. Vehicle damages under w/o and with-project conditions are computed and compared to yield and estimate of vehicle benefits associated with each alternative plan.	72	CEMVN-PM-AW	15	6,870
3.16	Flood Damage Reduction Benefits for Transportation and a Traffic analysis to roads, highways, and railroads.	Estimate benefits of reduced flood damages to transportation corridors to include costs associated with maintenance and repair, and maintnenance of traffic rerouting features. The input files are assembled for use in flood damage analysis programs. Transportation damages under w/o and with-project conditions are computed and compared to yield and estimate of transportation benefits associated with each alternative plan. Based on actual damages that have occurred from previous events a depth-damage curve will be developed for raods, highways, and railroads. In addition, a traffic analysis will be conducted for the N.O. metro area to determine traffic rerouting and benefits to protecting the I-10 from hurricane surge. The value of time saved and the increased operatin cost per vehicle will be calculated with 1105-2-100 par. 6-158 and Institute for Water Resources (IWR) Report 91-R-12.	640	CEMVN-PM-AW	25	59,636

WBS No.	Activities/Task	Scope of Work	LOE[1] (Hours)	Responsible Organization	Duration (workdays)	Cost ($)
3.17	Flood Damage Reduction Benefits for Other Categories	Prepare an estimate of benefits for categories other than flood damage reduction. Additional categories include benefits associated with reduction of emergency costs, reoccupation costs, Federal Insurance Administration (FIA) operating costs, agricultural losses, loss of income, loss of public service, commuting delay costs, and casualties. Emergency costs are comprised of food, clothing, and personal items for victims; cleanup and debris removal; barricades and sandbags; overtime pay for law enforcement, emergency management, emergency operations, public works, and mosquito and rodent control employees; and flood damage surveys conducted by the American Red Cross and the Corps of Engineers. Reoccupation costs represent the time homeowners and business owners spend to contract, supervise, and inspect repairs; to clean and disinfect homes and business; and, the costs to process claims for casualty losses and flood damage assistance. FIA operating costs are the costs to administer the national flood insurance program, and can be lowered as fewer policies are maintained as structures are removed from the 100-yr flood plain by flood control projects.	840	CEMVN-PM-AW	23	85,280
3.18	Update Benefit Analysis for Alternative Plans	Flood damage reduction benefits for structures, vehicles, and other benefit categories will be combined in order to estimate total benefits attributable to each construction alternative.	24	CEMVN-PM-AW	7	2,638
3.19	Update Cost Analysis for Alternative Plans	Prepare estimates of the average annual cost required to implement each alternative plan. The total average annual project cost estimate will be the sum of the average annual first construction cost and the average annual O&M.	16	CEMVN-PM-AW	5	1,977
3.20	Update Net Benefit and Optimization Analyses	Prepare estimates of net benefits for each alternative plan. Estimates of average annual project costs will be subtracted from average annual project benefits for each construction plan to yield estimates of average annual net project benefits.	40	CEMVN-PM-AW	5	4,941
3.21	Evaluate and Update Project Benefits Under the Risk-Based Analysis Approach	Incorporating estimates of measurement error obtained in previous tasks, an estimate of net benefits and the corresponding benefit-to-cost ratio will be reported both as single expected value and on a probabilistic basis (value of the net benefit and its associated probability) for each alternative plan. The confidence, in probabilistic terms, that net benefits are positive and that the benefit-to-cost ratio is at or above 1.0 will be presented for each alternative.	160	CEMVN-PM-AW	5	19,767
3.22	Conduct Social Impact Analysis for Input into the EIS	Present a comparison of the social impacts associated with each project alternative to a no-action alternative.	120	CEMVN-PM-AW	5	12,370
3.23	Conduct Financial Analysis	Calculate the regional impacts and other social effects due to the alternative.	176	CEMVN-PM-AW	10	18,399
3.24	Prepare Economic Appendix	Report preparation consists of writing and editing a manuscript which describes the methodology used in the economic analysis and the conclusions of the investigation. The report narrative, tables, graphs and related documentation will be presented in a logical manner to illustrate study results. Included in the task are section and branch review of the economics report and district review of the feasibility report.	240	CEMVN-PM-AW	10	23,703
3.25	Supervision and Review	Study coordination includes: the planning and monitoring of study budgets and schedules; participation in staff meetings, interdisciplinary planning team meetings, in-progress review conferences, and ad-hoc meetings; staff supervision; the processing of official correspondence; and the preparation of inputs to meetings, conferences, and reviews to brief MVN, MVD, and HQUSACE on study issues and status. Included in this task are section and branch review of the economics report and district review of the feasibility report.	360	CEMVN-PM-AW	120	40,457
	TOTAL ECONOMICS		**4,444**			**439,537**

Appendix A
Scope of Work

WBS No.	Activities/Task	Scope of Work	LOE[1] (Hours)	Responsible Organization	Duration (workdays)	Cost ($)
4.0	**REAL ESTATE**					
4.1	Obtain Rights-of-Entry	Obtain Rights of Entry for Alternatives. Secure rights of entry to perform surveys, soil borings, hazardous, toxic, and radiological waste studies, environmental assessments, and cultural resources investigations for Alignments B, C, D, Interstate 10, and Interstate Overpasses. Coordinate efforts between Attorneys and Contracting Division to establish tract ownership data for areas in which the Government will obtain rights-of-entry. Send right-of-entry permits to the affected landowners for their signature and make follow-up contact as required. Once received, review rights-of-entry for legal sufficiency.	296	CEMVN-RE-E	24	28,489
4.2	Real Estate Cost Estimates for Alternatives & Mitigation	Prepare real estate cost estimates for alternative plan(s) and mitigation alternative plan(s) introduced during feasibility, to include value of Land, Easements, Rights-Of-Way, Relocation, and Disposal Areas (LERRDs), acquisition, real estate plan, gross appraisal, attorneys opinion of compensability, Public Law (PL) 91-646 relocation, and all hired labor charges. The scope and format of the estimate is directed by draft Chapter 12, ER 405-1-12, as amended. Inspect the properties impacted by the project, perform market research, and estimate property value. Analyze the impact of the estate(s) to be acquired for project purposes and estimate land costs for each alternative. Prepare an estimate of administrative costs associated with performing and reviewing appraisals for inclusion into the Chart of Accounts. Research the number of ownerships and utilities impacted by the project. Compile the LERRD's estimate, administrative acquisition costs, P.L. 91-646 relocation costs, and all hired labor costs and prepare the Chart of Accounts. Develop the administrative costs of acquiring the real estate interests necessary for each alternative.	232	CEMVN-RE-E	21	20,947
4.3	Prepare Gross Appraisal Report	The Gross Appraisal is prepared once the tentatively selected plan has been determined and once the preliminary drawings and identification of environmental mitigation areas (if required) are received from Planning, Programs and Project Management Division and/or Engineering Division. An Appraiser will inspect properties impacted by the project, research and verify comparable sales, and estimate the value of the real estate interest to be acquired. The appraiser will write the Gross Appraisal Report in accordance with Chapter 4 of ER 405-1-12 and Uniform Standards of Professional Appraisal Practices (USPAP). The Gross Appraisal is a stand-alone document that must be reviewed and approved by a Review Appraiser. Only after the estimate is approved can it be included in the Charts of Accounts and the Real Estate Plan (REP). The Review Appraiser reviews the REP once it is completed and ensures that the information in the REP agrees with that of the Gross Appraisal.	616	CEMVN-RE-E	24	57,784
4.4	Prepare Real Estate Plan (Input for Feasibility Report)	Prepare the REP for the feasibility study. The real estate plan and gross appraisal will be prepared for the tentatively selected alignment and mitigation area once it has been developed. The REP sets forth the plan for acquiring real estate needed for the project. It includes information regarding the project, its impact on privately and state owned lands, the estates that will be acquired, the capability of the non-federal sponsor to acquire the real estate and costs associated with the acquisition. Develop an acquisition schedule and acquisition costs for the selected plan. If the project will displace persons, businesses or farms, estimate the costs of relocating those persons in accordance with PL 91-646, title II.	280	CEMVN-RE-E	21	25,202
4.5	Supervision and Review	Attend meetings, including the Feasibility Review Conference, participate in field investigations, and other activities not directly related to one of the other Real Estate Division tasks. Respond comments, and/or revise real estate input to draft and final Feasibility Report and PMP, as necessary.	96	CEMVN-RE-E	15	12,114
TOTAL REAL ESTATE			**1,520**			**144,536**

Appendix A
Scope of Work

WBS No.	Activities/Task	Scope of Work	LOE[1] (Hours)	Responsible Organization	Duration (workdays)	Cost ($)
5.0	**O&M**					
5.1	Prepare O&M Cost Estimates	Prepare operation and maintenance estimates (O&M) for each alternative and for the selected plan. Participate in study team meetings as design activities progress. Develop estimates of the operating costs and routine maintenance costs for the proposed action based on its design and experience in similar projects. Review estimates for the selected plan and revise if necessary.	100	CEMVN-OD-W	10	12,120
	TOTAL O&M		**100**			**12,120**
6.0	**PLAN FORMULATION**					
6.1	Public Involvement - Communication Plans	A public involvement and communication plan, to include environmental outreach, will be developed and implemented through public meetings and other public involvement coordination activities. Public meetings will be conducted as required to provide and receive information to and from the public, formulate a consensus, and develop a method for future interaction. One public meeting will be scheduled subsequent to the public release of the draft feasibility report and environmental impact statement to present the study conclusions. Public meetings or workshops will be held during other stages of the study, if needed, to exchange information with the public. Recordings of the public meetings will be analyzed to ensure that the study is responsive to the needs and concerns of the public. Additional public coordination will include preparing correspondence to address individual issues and concerns, preparing and making presentations to business and civic groups interested in the study, and conducting meetings with local interests to determine their views and gather input to the study.	720	CEMVN-PM-W	20	73,605
6.2	Plan Formulation	Plan features will be refined, to the extent practical, to minimize costs and maximize benefits. Input from other District elements will be analyzed to assure that all plan features are developed to the appropriate scope; that plan features and analyses are consistent with each other; that any potential adverse effects of the plan that may require modifications to the project are identified; and that appropriate modifications are included in the plan. Other plans will be developed, if required, to assure that the locally preferred plan is identified, developed, and evaluated. Additionally, and Adaptative Monitioring and Management Plan will be developed through coordination with the PDT and resources agencies to assess the performance of wetlands that may be enclosed by the selected levee alignment. Significant public concerns will be considered in the development of all plans. The recommended plan will be developed through coordination with the PDT, the Project Review Board (PRB), the Local Sponsor, and other interests. This includes the development, presentation, and coordination of tentative study recommendations.	960	CEMVN-PM-W	280	117,108
6.3	Alternatives Formulation Briefing Document	Write and edit the preliminary draft main report in preparation for Alternatives Review and the Alternatives Formulation Briefing (AFB), coordinate the preparation of plates and other illustrations, compile and edit supporting appendices from other District elements, and assemble the report and its appendices. Coordinate the printing of the preliminary draft report. Coordinate report review and revisions in response to comments by District elements, higher authority, the Sponsor, other agencies, and the public. Coordinate review and response to the AFB review.	760	CEMVN-PM-W	58	94,036

Appendix A
Scope of Work

WBS No.	Activities/Task	Scope of Work	LOE[1] (Hours)	Responsible Organization	Duration (workdays)	Cost ($)
6.4	Draft Report	Coordinate PDT responses to PGM comments. Prepare responses to PGM comments, and work with PDT, MVD, and HQUSACE to ensure all policy comments are resolved in an incorporated into the draft report prior to public release. Coordinate the revisions of plates and other illustrations. Prepare revisions to the Main Section of the the Draft Report and coordinate changes from PDT members in preparation of the Draft Report. Includes Public Hearings/DEIS Review Meetings.	380	CEMVN-PM-W	69	58,719
6.5	Final Report	Write and edit the final main report sections, coordinate the preparation of plates and other illustrations, compile and edit supporting appendices from other district elements, and assemble the report and its appendices. Coordinate the printing of the final report. Coordinate report review and revisions in response to comments by District elements, higher authority, the Sponsor, other agencies, and the public.	360	CEMVN-PM-W	128	50,156
	TOTAL PLAN FORMULATION		**3,180**			**393,624**
7.0	**PROJECT MANAGEMENT**					
7.1	Project Management	Includes tasks such as document coordination & review, schedule & resource maintenance (P2), budgeting, conflict resolution, and coordination with the PDT, local officials, government officials, contractors, consultants, and technical specialists. In addition, participation in meetings including the PRB, technical review conferences, the Alternative Formulation Briefing (AFB), public/stakeholder meetings. Conduct the study in accordance with the PMP to analyze in design features identified in the screening level analysis through in coordination with the PDT. Review the completed study material to assure that conclusions and decisions reached are consistent with sound engineering and planning practices, conform to Corps and other governmental policies and requirements, and preparing and negotiating the Design Agreement, and developing the financing plan for the project. The Local Sponsor will appoint a point-of-contact who will coordinate Sponsor activities with the USACE, participate in the Study Coordination Team (SCT), and facilitate audits required under the Feasibility Cost Share Agreement, if any. This individual will be knowledgeable in local hurricane protection problems, needs, and opportunities.	1,120	CEMVN-PM-W	550	145,845
7.2	Program Management & Budget Preparation	Review, coordinate, and submit all budget documents and budget maps. Type and distribute all documents to numerous District elements. Determine reprogramming authority and preparation of reprogramming memoranda. Attend budget briefings and hearings. Review 2101's and cost estimates. Review and approve work orders.	520	CEMVN-PM-W	305	56,731
7.3	Prepare Draft PED PMP and Design Agreement	Prepare PED Project Management Plan to include: work breakdown structure charts; critical path networks, which incorporate estimates of the durations and costs of all activities required to complete PED, as provided by all required District elements; resource costs, milestones, and other reports; program requirements; and fully-funded estimates. Prepare and negotiate PED Design Agreement.	360	CEMVN-PM-W	22	40,006
	TOTAL PROJECT MANAGEMENT		**2,000**			**242,582**

Appendix A
Scope of Work

WBS No.	Activities/Task	Scope of Work	LOE[1] (Hours)	Responsible Organization	Duration (workdays)	Cost ($)
8.0	**TECHNICAL REVIEW**					
8.1	Technical Review of Initial Feasibility Study Data	Perform comprehensive technical review of project history and documentation to date. Develop specific work efforts for non-Federal sponsor activities. Define objectives and develop integrated process for non-Federal sponsor efforts to meet overall project target milestones.	560	Non-Federal Sponsor	44	100,000
8.2	Existing Conditions Independent Technical Review (ITR)	Perform independent technical review and provide comments on baseline and affected environment documents.	384	CEMVN-PM-W	13	48,001
8.3	Alternatives ITR	Perform independent technical review and provide comments on alternatives analysis report and impacted environment documents.	384	CEMVN-PM-W	13	48,001
8.4	Final Report ITR	Perform independent technical review and provide comments on the final main report and appendices and the final EIS.	256	CEMVN-PM-W	12	32,001
8.5	External Peer Review (EPR)	Perform external peer review and provide comments on the draft main report and appendices and the final EIS.	-	CEMVN-PM-W	50	195,000
	TOTAL TECHNICAL REVIEW		**1,584**			**423,003**
	TOTAL FEASIBILITY STUDY		**31,289**			**3,914,089**

Notes: 1 - See Appendix B, Cost Estimate Details and Resource Allocation Plan, for specific staff levels assigned to each task.

Appendix B

Cost Estimate Details

And

Resource Allocation Plan

Appendix B

Cost Estimate Details and Resource Allocation Plan

WBS No.	Activities/Task	GS14 $133.54 (hrs)	GS13 $113.01 (hrs)	GS12 $95.03 (hrs)	GS11 $79.29 (hrs)	GS09 $65.54 (hrs)	GS07 $53.57 (hrs)	GS05 $43.25 (hrs)	GS04 $38.66 (hrs)	Other Costs ($)	Subtotal Cost ($)	Contingency Cost ($)	Risk and Reliabilty ($)	Total Cost ($)	Explanation of Other Costs	Responsible Organization	Non-Federal Work in Kind ($)
1.0	**ENVIRONMENTAL**																
1.1	**Environmental Studies**																
1.1.1	Scoping Meeting Prep & Assessment of Prelim Alternatives	-	24	160	-	-	-	-	-	$ 200	$ 18,117	$ 1,812	$ -	$ 19,929	Scoping meeting notice in paper	CEMVN-PM-RS	
1.1.2	Conduct Public Scoping Meeting	-	20	-	-	-	-	-	-	$ 3,000	$ 5,260	$ 526	$ -	$ 5,786	Meeting facilities/materials	CEMVN-PM-RS	
1.1.3	Scoping Meeting Report	-	16	40	80	-	-	-	-	$ 1,000	$ 12,953	$ 1,295	$ -	$ 14,248	Report reproduction/materials	CEMVN-PM-RS	
1.1.4	Develop Environmental Setting & Future Without	-	-	208	104	-	-	-	-	$ -	$ 28,013	$ 2,801	$ -	$ 30,814		CEMVN-PM-RS	
1.1.5	Develop Environmental Features For Alternatives	-	-	248	-	-	-	-	-	$ -	$ 23,568	$ 2,357	$ -	$ 25,925		CEMVN-PM-RS	
1.1.6	Assess Biological Impacts of Alternatives	-	-	480	-	-	-	-	-	$ -	$ 45,615	$ 4,562	$ -	$ 50,177		CEMVN-PM-RS	
1.1.7	Conduct Habitat Evaluation	-	-	176	88	-	-	-	-	$ -	$ 23,703	$ 2,370	$ -	$ 26,073		CEMVN-PM-RS	
1.1.8	USFWS Coordination Act Report	-	-	16	-	-	-	-	-	$ 104,000	$ 105,521	$ 10,552	$ -	$ 116,073	MIPR to USFWS	CEMVN-PM-RS	
1.1.9	Prepare Mitigation Plan	-	-	344	168	-	-	-	-	$ -	$ 46,012	$ 4,601	$ -	$ 50,613		CEMVN-PM-RS	
1.1.10	Prepare 401(b)(1) Evaluation	-	-	24	80	-	-	-	-	$ -	$ 8,624	$ 862	$ -	$ 9,486		CEMVN-PM-RS	
1.1.11	Prepare 401(b)(1) Public Notice	-	-	4	8	-	-	-	-	$ -	$ 1,014	$ 101	$ -	$ 1,115		CEMVN-PM-RS	
1.1.12	Obtain Water Quality Certification	-	-	8	40	-	-	-	-	$ -	$ 3,932	$ 393	$ -	$ 4,325		CEMVN-PM-RS	
1.1.13	Conduct Endangered Species/EFH Coordination	-	-	24	60	-	-	-	-	$ -	$ 7,038	$ 704	$ -	$ 7,742		CEMVN-PM-RS	
1.1.14	Prepare Coastal Zone Consistency Determination	-	-	40	80	-	-	-	-	$ -	$ 10,145	$ 1,014	$ -	$ 11,159		CEMVN-PM-RS	
1.1.15	Prepare Air Quality Determination	-	-	8	40	-	-	-	-	$ -	$ 3,932	$ 393	$ -	$ 4,325		CEMVN-PM-RS	
1.1.16	Prepare PDEIS and Environmental Appendix	-		200	300	200	-	-	-	$ 10,000	$ 65,901	$ 6,590	$ -	$ 72,491	Report reproduction/materials	CEMVN-PM-RS	
1.1.17	Prepare DEIS and Environmental Appendix	-	-	400	220	-	-	-	-	$ 5,000	$ 60,457	$ 6,046	$ -	$ 66,503	Report reproduction/materials	CEMVN-PM-RS	
1.1.18	Prepare FEIS and Environmental Appendix	-	-	200	300	160	-	-	-	$ 5,000	$ 58,280	$ 5,828	$ -	$ 64,108	Report reproduction/materials	CEMVN-PM-RS	
1.1.19	Record of Decision	-	-	80	40	-	-	-	-	$ 2,000	$ 12,774	$ 1,277	$ -	$ 14,051	Report reproduction/materials	CEMVN-PM-RS	
1.1.20	Supervision and Review	40	200	280	-	-	-	-	-	$ -	$ 54,552	$ 5,455	$ -	$ 60,007		CEMVN-PM-RS	
	Subtotal Environmental Studies	**40**	**260**	**2,940**	**1,608**	**360**	**-**	**-**	**-**	**$ 130,200**	**$ 595,412**	**$ 59,539**	**$ -**	**$ 654,950**			**$ -**
1.2	**Cultural, Socioeconomic & Recreational Resources**																
1.2.1	Cultural Resources Analysis	-	-	80	200	40	-	-	-	$ -	$ 26,082	$ 2,608	$ -	$ 28,690		CEMVN-PM-RN	
1.2.2	Land-Use History Evaluation	-	-	8	-	-	-	-	-	$ 40,000	$ 40,760	$ 4,076	$ -	$ 44,836	Land-use History Contract	CEMVN-PM-RN	
1.2.3	Socioeconomic & Recreation Resources Evaluation	-	-	8	24	40	-	-	-	$ -	$ 5,285	$ 528	$ -	$ 5,813		CEMVN-PM-RN	
1.2.4	Determine Significance of Resources	-	-	8	24	-	-	-	-	$ -	$ 2,663	$ 266	$ -	$ 2,929		CEMVN-PM-RN	
1.2.5	Impacts to Resources	-	-	16	40	-	-	-	-	$ -	$ 4,692	$ 469	$ -	$ 5,161		CEMVN-PM-RN	
1.2.6	Incorporate Recreation Resources into Alternatives	-	-	4	40	-	-	-	-	$ -	$ 3,552	$ 355	$ -	$ 3,907		CEMVN-PM-RN	
1.2.7	Cultural & Recreation Input to DEIS	-	-	40	80	80	-	-	-	$ -	$ 15,388	$ 1,539	$ -	$ 16,927		CEMVN-PM-RN	
1.2.8	Supervision and Review	8	40	40	-	-	-	-	-	$ -	$ 9,390	$ 939	$ -	$ 10,329		CEMVN-PM-RN	
	Subtotal Cultural & Recreational Resources	**8**	**40**	**204**	**408**	**160**	**-**	**-**	**-**	**$ 40,000**	**$ 107,812**	**$ 10,780**	**$ -**	**$ 118,592**			**$ -**
New	**HTRW Assessment**																
1.3.1	Conduct HTRW Site Assessment	-	-	80	120	100	-	-	-	$ 6,000	$ 29,671	$ 2,967	$ -	$ 32,638	Environmental database search	CEMVN-PM-RP	
1.3.2	Supervision and Review	4	8	16	-	-	-	-	-	$ -	$ 2,959	$ 296	$ -	$ 3,255		CEMVN-PM-RP	
	Total HTRW Assessment	**4**	**8**	**96**	**120**	**100**	**-**	**-**	**-**	**$ 6,000**	**$ 32,630**	**$ 3,263**	**$ -**	**$ 35,893**			**$ -**
	TOTAL ENVIRONMENTAL	**52**	**308**	**3,240**	**2,136**	**620**	**-**	**-**	**-**	**$ 176,200**	**$ 735,855**	**$ 73,582**	**$ -**	**$ 809,435**			**$ -**
2.0	**ENGINEERING**																
2.1	**Geotechnical**																
2.1.1	Determine Boring Locations and Request Right-of-Entry	-	8	16	-	-	-	-	-	$ -	$ 2,425	$ 242	$ -	$ 2,667		CEMVN-ED-F	$ 2,400
2.1.2	Drill Undisturbed Borings For Alignments B,C, and D	-	-	-	40	-	-	-	-	$ 100,000	$ 103,172	$ 10,317	$ -	$ 113,489	Drilling (25 Bores at $1,000 each; $50K mob/demob for swamp area)	CEMVN-ED-F	$ 102,140
2.1.3	Visual Classification of Borings	-	-		100	-	-	250	-	$ -	$ 18,742	$ 1,874	$ -	$ 20,616		CEMVN-ED-F	$ 18,554
2.1.4	Choose Samples for Shear & Consolidation Testing	-	-	24	-	24	-	-	-	$ -	$ 3,854	$ 385	$ -	$ 4,239		CEMVN-ED-F	$ 3,815
2.1.5	Laboratory Testing of Samples	-	-	24	-	-	-	-	-	$ 19,737	$ 22,018	$ 2,202	$ -	$ 24,220	Laboratory Soils Multiple Tests	CEMVN-ED-F	$ 21,798
2.1.6	Determine Surface and Subsurface Geological Conditions	-	16	160	-	-	-	-	-	$ -	$ 17,013	$ 1,701	$ -	$ 18,714		CEMVN-ED-F	$ 16,843
2.1.7	Develop Geotechnical Design Parameters & Prepare Geotechnical Report	-	64	400	-	160	40	-	-	$ -	$ 57,874	$ 5,787	$ -	$ 63,661		CEMVN-ED-F	$ 57,295
2.1.8	Identify Potential Sources of Borrow for Levee Construction	-	24	40	-	80	-	80	-	$ -	$ 15,217	$ 1,522	$ -	$ 16,739		CEMVN-ED-F	$ 15,065
2.1.9	Supervision and Review	10	100	120	-	-	-	-	-	$ -	$ 24,040	$ 2,404	$ -	$ 26,444		CEMVN-ED-F	
	Subtotal Geotechnical	**10**	**212**	**784**	**140**	**264**	**40**	**330**	**-**	**$ 119,737**	**$ 264,354**	**$ 26,434**	**$ -**	**$ 290,789**			**$ 237,911**

Appendix B
Cost Estimate Details and Resource Allocation Plan

WBS No.	Activities/Task	GS14 $133.54 (hrs)	GS13 $113.01 (hrs)	GS12 $95.03 (hrs)	GS11 $79.29 (hrs)	GS09 $65.54 (hrs)	GS07 $53.57 (hrs)	GS05 $43.25 (hrs)	GS04 $38.66 (hrs)	Other Costs ($)	Subtotal Cost ($)	Contingency Cost ($)	Risk and Reliabilty ($)	Total Cost ($)	Explanation of Other Costs	Responsible Organization	Non-Federal Work in Kind ($)
2.2	**Levees**																
2.2.1	Preliminary Levee Design	-	-	416	120	120	-	-	-	$ -	$ 56,913	$ 5,691	$ 11,383	$ 73,987		CEMVN-ED-L	$ 66,588
2.2.2	Supervision and Review	4	12	40	-	-	-	-	-	$ -	$ 5,692	$ 569	$ 1,138	$ 7,399		CEMVN-ED-L	
	Subtotal Levees	**4**	**12**	**456**	**120**	**120**	**-**	**-**	**-**	**$ -**	**$ 62,604**	**$ 6,260**	**$ 12,521**	**$ 81,386**	0	0	**$ 66,588**
2.3	**Structures**																
2.3.1	Preliminary Structures Design (Levees & Floodwalls)	-	64	320	-	144	-	-	-	$ -	$ 47,080	$ 4,708	$ 9,416	$ 61,204		CEMVN-ED-T	$ 55,084
2.3.2	Preliminary Structures Design (Pump Stations)		20	300		180		60		$ -	$ 45,161	$ 4,516	$ 9,032	$ 58,709		CEMVN-ED-T	$ 52,838
2.3.3	Supervision and Review	8	12	64	-	-	-	16	-	$ -	$ 9,199	$ 920	$ 1,840	$ 11,959		CEMVN-ED-T	
	Subtotal Structural	**8**	**96**	**684**	**-**	**324**	**-**	**76**	**-**	**$ -**	**$ 101,440**	**$ 10,144**	**$ 20,288**	**$ 131,872**			**$ 107,922**
2.4	**Mechanical & Electrical**																
2.4.1	Preliminary Pump Stations Design	-	20	420	-	160	-	60	-	$ -	$ 55,254	$ 5,525	$ 11,051	$ 71,830		CEMVN-ED-T	$ 64,647
2.4.2	Supervision and Review	8	10	35	-	-	-	-	-	$ -	$ 5,525	$ 552	$ 1,105	$ 7,182		CEMVN-ED-T	
	Subtotal Mechanical & Electrical	**8**	**30**	**455**	**-**	**160**	**-**	**60**	**-**	**$ -**	**$ 60,779**	**$ 6,077**	**$ 12,156**	**$ 79,012**			**$ 64,647**
2.5	**Hydrology & Hydraulics**																
2.5.1	ADCIRC Modeling	-	60	800	1,000	100	-	-	-	$ -	$ 168,652	$ 16,865	$ -	$ 185,517		CEMVN-ED-H	
2.5.2	Storm Surge & Wave Analysis Without & With Project	-	40	260	320	-	30	-	-	$ -	$ 56,209	$ 5,621	$ -	$ 61,830		CEMVN-ED-H	
2.5.3	Interior Hydraulic Analysis Without & With Project	-	32	300	400	-	-	-	-	$ -	$ 63,843	$ 6,384	$ 12,769	$ 82,996		CEMVN-ED-H	
2.5.4	Prepare Overflow Maps & Delineate Reach Boundaries	-	-	24	40	-	-	-	-	$ -	$ 5,452	$ 545	$ -	$ 5,997		CEMVN-ED-H	
2.5.5	Water Quality Assessment of Alternatives	-	8	24	80	-	-	-	-	$ -	$ 9,528	$ 953	$ -	$ 10,481		CEMVN-ED-H	
2.5.6	Water Quality Input - 404(b)(1)	-	8	16	16	-	-	-	-	$ -	$ 3,693	$ 369	$ -	$ 4,062		CEMVN-ED-H	
2.5.7	Circulation and Water Quality Modeling (Enclosed Wetlands)	-	40	400	600	-	40	-	-	$ 25,000	$ 117,251	$ 11,725	$ -	$ 128,976	Travel costs for field visits.	CEMVN-ED-H	
2.5.8	Supervision and Review	40	100	250	-	-	-	8	-	$ -	$ 40,746	$ 4,075	$ -	$ 44,821		CEMVN-ED-H	
	Subtotal Hydrology & Hydraulics	**40**	**288**	**2,074**	**2,456**	**100**	**70**	**8**	**-**	**$ 25,000**	**$ 465,376**	**$ 46,537**	**$ 12,769**	**$ 524,680**			**$ -**
2.6	**Design Services - Cost & Specifications**																
2.6.1	Develop Construction Cost Estimate	-	-	80	240	200	-	-	-	$ -	$ 39,740	$ 3,974	$ -	$ 43,714		CEMVN-ED-S	$ 39,343
2.6.2	MCACES (Tentatively Selected Alignment)	-		80	-	-	-	-	-	$ -	$ 7,603	$ 760	$ -	$ 8,363		CEMVN-ED-S	
2.6.3	Supervision and Review	8	16	20	-	-	-	-	-	$ -	$ 4,777	$ 478	$ -	$ 5,255		CEMVN-ED-S	
	Subtotal Cost & Specifications	**8**	**16**	**180**	**240**	**200**	**-**	**-**	**-**	**$ -**	**$ 52,120**	**$ 5,212**	**$ -**	**$ 57,332**			**$ 39,343**
2.7	**Design Services - Surveys**																
2.7.1	Surveys	-	-	24	120	40	40	-	-	$ 80,000	$ 96,560	$ 9,656	$ -	$ 106,216	Cost to Accomplish Field Surveys	CEMVN-ED-S	$ 95,594
2.7.2	Supervision and Review	8	36	-	-	-	-	40	72	$ -	$ 9,650	$ 965	$ -	$ 10,615		CEMVN-ED-S	
	Subtotal Surveys	**8**	**36**	**24**	**120**	**40**	**40**	**40**	**72**	**$ 80,000**	**$ 106,210**	**$ 10,621**	**$ -**	**$ 116,831**			**$ 95,594**
2.8	**Design Services - Geospatial Engineering**																
2.8.1	Prepare Data Mgmt/Document Control/GIS Plans	-	16	60	40	-	-	-	-	$ -	$ 10,682	$ 1,068	$ -	$ 11,750		CEMVN-ED-S	$ 10,575
2.8.2	GIS Support	-	-	80	400	-	-	-	-	$ -	$ 39,320	$ 3,932	$ 7,864	$ 51,116		CEMVN-ED-S	
2.8.3	Supervision and Review	4	12	40	-	-	-	-	-	$ -	$ 5,692	$ 569	$ -	$ 6,261		CEMVN-ED-S	
	Subtotal Geospatial Engineering	**4**	**28**	**180**	**440**	**-**	**-**	**-**	**-**	**$ -**	**$ 55,693**	**$ 5,569**	**$ 7,864**	**$ 69,127**			**$ 10,575**
2.9	**Design Services - Relocations**																
2.9.1	Relocations Input for Initial Evaluation	-	-	40	-	-	-	-	-	$ -	$ 3,801	$ 380	$ -	$ 4,181		CEMVN-ED-S	$ 3,763
2.9.2	Relocations for Preferred Alternative	-	-	80	400	400	-	-	-	$ -	$ 65,534	$ 6,553	$ 13,107	$ 85,194		CEMVN-ED-S	
2.9.3	Supervision and Review	4	16	60	-	-	-	-	-	$ -	$ 8,044	$ 804	$ -	$ 8,848		CEMVN-ED-S	
	Subtotal Relocations	**4**	**16**	**180**	**400**	**400**	**-**	**-**	**-**	**$ -**	**$ 77,379**	**$ 7,737**	**$ 13,107**	**$ 98,223**			**$ 3,763**
	TOTAL ENGINEERING	**94**	**734**	**5,017**	**3,916**	**1,608**	**150**	**514**	**72**	**$ 224,737**	**$ 1,245,955**	**$ 124,591**	**$ 78,705**	**$ 1,449,252**	0		**$ 626,342**

Appendix B
Cost Estimate Details and Resource Allocation Plan

WBS No.	Activities/Task	GS14 $133.54 (hrs)	GS13 $113.01 (hrs)	GS12 $95.03 (hrs)	GS11 $79.29 (hrs)	GS09 $65.54 (hrs)	GS07 $53.57 (hrs)	GS05 $43.25 (hrs)	GS04 $38.66 (hrs)	Other Costs ($)	Subtotal Cost ($)	Contingency Cost ($)	Risk and Reliabilty ($)	Total Cost ($)	Explanation of Other Costs	Responsible Organization	Non-Federal Work in Kind ($)
3.0	**ECONOMICS**																
3.1	Document Historical Flood Damages	-	-	16	40	-	-	-	-	$ -	$ 4,692	$ 469	$ -	$ 5,161		CEMVN-PM-AW	
3.2	Collect Residential Structure Inventory for Alignment D	-	-	16	64	-	-	-	-	$ -	$ 6,595	$ 660	$ -	$ 7,255		CEMVN-PM-AW	$ 6,530
3.3	Collect Commercial Structure Inventory For Alignment D	-	-	8	32	-	-	-	-	$ -	$ 3,298	$ 330	$ -	$ 3,628		CEMVN-PM-AW	$ 3,265
3.4	Compile Inventory for Future Development	-	-	144	48	-	-	-	-	$ -	$ 17,491	$ 1,749	$ -	$ 19,240		CEMVN-PM-AW	
3.5	First Floor Elevation Survey	-	-	60	-	300	300	-	-	$ -	$ 41,435	$ 4,143	$ -	$ 45,578		CEMVN-PM-AW	$ 41,020
3.6	Determine Structure Values	-	-	16	40	-	-	-	-	$ -	$ 4,692	$ 469	$ -	$ 5,161		CEMVN-PM-AW	
3.7	Conduct Net Benefit Analysis for Non-Structural Alternatives	-	-	40	-	-	-	-	-	$ -	$ 3,801	$ 380	$ 760	$ 4,941		CEMVN-PM-AW	
3.8	Develop Depth Damage Relationships	-	8	80	-	-	-	-	-	$ -	$ 8,507	$ 851	$ 1,701	$ 11,059		CEMVN-PM-AW	
3.9	Develop Contents-to-Structure Value Ratios	-	-	40	-	-	-	-	-	$ -	$ 3,801	$ 380	$ 760	$ 4,941		CEMVN-PM-AW	
3.10	Prepare Estimates of Measurement Error	-	-	40	24	-	-	-	-	$ -	$ 5,704	$ 570	$ 1,141	$ 7,415		CEMVN-PM-AW	
3.11	Prepare Flood Damage Model Input File	-	-	40	40	-	-	-	-	$ -	$ 6,973	$ 697	$ 1,395	$ 9,065		CEMVN-PM-AW	
3.12	Average Annual Future Without-Project Damages	-	-	16	40	-	-	-	-	$ -	$ 4,692	$ 469	$ 938	$ 6,099		CEMVN-PM-AW	
3.13	Average Annual Future With Project Damages	-	-	120	160	-	-	-	-	$ -	$ 24,091	$ 2,409	$ 4,818	$ 31,318		CEMVN-PM-AW	
3.14	Flood Damage Reduction Benefits for Structures & Contents	-	-	8	16	-	-	-	-	$ -	$ 2,029	$ 203	$ 406	$ 2,638		CEMVN-PM-AW	
3.15	Flood Damage Reduction Benefits for Vehicles	-	-	8	24	40	-	-	-	$ -	$ 5,285	$ 528	$ 1,057	$ 6,870		CEMVN-PM-AW	
3.16	Flood Damage Reduction Benefits for Transportation and Traffic Analysis	-	-	40	200	400	-	-	-	$ -	$ 45,874	$ 4,587	$ 9,175	$ 59,636		CEMVN-PM-AW	
3.17	Flood Damage Reduction Benefits for Other Categories	-	40	200	200	400	-	-	-	$ -	$ 65,600	$ 6,560	$ 13,120	$ 85,280		CEMVN-PM-AW	
3.18	Update Benefit Analysis for Alternative Plans	-	-	8	16	-	-	-	-	$ -	$ 2,029	$ 203	$ 406	$ 2,638		CEMVN-PM-AW	
3.19	Update Cost Analysis for Alternative Plans	-	-	16	-	-	-	-	-	$ -	$ 1,521	$ 152	$ 304	$ 1,977		CEMVN-PM-AW	
3.20	Update Net Benefit and Optimization Analyses	-	-	40	-	-	-	-	-	$ -	$ 3,801	$ 380	$ 760	$ 4,941		CEMVN-PM-AW	
3.21	Evaluate & Update Project Benefits Under the Risk-Based Analysis Approach	-	-	160	-	-	-	-	-	$ -	$ 15,205	$ 1,521	$ 3,041	$ 19,767		CEMVN-PM-AW	
3.22	Conduct Social Impact Analysis for Input into the EIS	-	-	-	120	-	-	-	-	$ -	$ 9,515	$ 952	$ 1,903	$ 12,370		CEMVN-PM-AW	
3.23	Conduct Financial Analysis	-	-	176	-	-	-	-	-	$ -	$ 16,726	$ 1,673	$ -	$ 18,399		CEMVN-PM-AW	
3.24	Prepare Economic Appendix	-	-	160	80	-	-	-	-	$ -	$ 21,548	$ 2,155	$ -	$ 23,703		CEMVN-PM-AW	
3.25	Supervision and Review	20	100	240	-	-	-	-	-	$ -	$ 36,779	$ 3,678	$ -	$ 40,457		CEMVN-PM-AW	
	TOTAL ECONOMICS	**20**	**148**	**1,692**	**1,144**	**1,140**	**300**	**-**	**-**	**$ -**	**$ 361,683**	**$ 36,168**	**$ 41,685**	**$ 439,537**			**$ 50,815**
4.0	**REAL ESTATE**																
4.1	Obtain Rights-of-Entry	-	16	120	160	-	-	-	-	$ -	$ 25,899	$ 2,590	$ -	$ 28,489		CEMVN-RE-E	$ 25,640
4.2	Real Estate Cost Estimates for Alternatives & Mitigation	-	8	24	200	-	-	-	-	$ -	$ 19,043	$ 1,904	$ -	$ 20,947		CEMVN-RE-E	$ 18,852
4.3	Prepare Gross Appraisal Report	-	16	200	400	-	-	-	-	$ -	$ 52,531	$ 5,253	$ -	$ 57,784		CEMVN-RE-E	
4.4	Prepare Real Estate Plan (Input for Feasibility Report)	-		80	160	40	-	-	-	$ -	$ 22,911	$ 2,291	$ -	$ 25,202		CEMVN-RE-E	$ 22,682
4.5	Supervision and Review	8	88			-	-	-	-	$ -	$ 11,013	$ 1,101	$ -	$ 12,114		CEMVN-RE-E	
	TOTAL REAL ESTATE	**8**	**128**	**424**	**920**	**40**	**-**	**-**	**-**	**$ -**	**$ 131,397**	**$ 13,139**	**$ -**	**$ 144,536**			**$ 67,174**
5.0	**O&M**																
5.1	Prepare O&M Cost Estimates	-	4	80	16	-	-	-	-	$ -	$ 9,323	$ 932	$ 1,865	$ 12,120		CEMVN-OD-W	$ 10,908
	TOTAL O&M	**-**	**4**	**80**	**16**	**-**	**-**	**-**	**-**	**$ -**	**$ 9,323**	**$ 932**	**$ 1,865**	**$ 12,120**			**$ 10,908**

Appendix B
Cost Estimate Details and Resource Allocation Plan

WBS No.	Activities/Task	GS14 $133.54 (hrs)	GS13 $113.01 (hrs)	GS12 $95.03 (hrs)	GS11 $79.29 (hrs)	GS09 $65.54 (hrs)	GS07 $53.57 (hrs)	GS05 $43.25 (hrs)	GS04 $38.66 (hrs)	Other Costs ($)	Subtotal Cost ($)	Contingency Cost ($)	Risk and Reliabilty ($)	Total Cost ($)	Explanation of Other Costs	Responsible Organization	Non-Federal Work in Kind ($)
6.0	**PLAN FORMULATION AND REPORTING**																
6.1	Public Involvement - Communication Plans	-	120	240	360	-	-	-	-	$ 2,000	$ 66,914	$ 6,691	$ -	$ 73,605	Report reproduction/materials	CEMVN-PM-W	
6.2	Plan Formulation	-	-	760	200	-	-	-	-	$ 2,000	$ 90,083	$ 9,008	$ 18,017	$ 117,108	Report reproduction/materials	CEMVN-PM-W	
6.3	Alternative Formulation Briefing Document	-	-	640	120	-	-	-	-	$ 2,000	$ 72,335	$ 7,234	$ 14,467	$ 94,036	Report reproduction/materials	CEMVN-PM-W	
6.4	Draft Report	-	-	320	60	-	-	-	-	$ 10,000	$ 45,168	$ 4,517	$ 9,034	$ 58,719	Report reproduction/materials	CEMVN-PM-W	
6.5	Final Report	-	-	320	40	-	-	-	-	$ 5,000	$ 38,582	$ 3,858	$ 7,716	$ 50,156	Report reproduction/materials	CEMVN-PM-W	
	TOTAL PLAN FORMULATION	**-**	**120**	**2,280**	**780**	**-**	**-**	**-**	**-**	**$ 21,000**	**$ 313,081**	**$ 31,308**	**$ 49,234**	**$ 393,624**			**$ -**
7.0	**PROJECT MANAGEMENT**																
7.1	Project Management	-	320	800	-	-	-	-	-	$ 22,438	$ 134,626	$ 11,219	$ -	$ 145,845	Sponsor participation in SCT and audits	CEMVN-PM-W	
7.2	Program Management & Budget Preparation	-	120	400	-	-	-	-	-	$ -	$ 51,574	$ 5,157	$ -	$ 56,731		CEMVN-PM-W	
7.3	Prepare Draft PED PMP and DA	-	120	240	-	-	-	-	-	$ -	$ 36,369	$ 3,637	$ -	$ 40,006		CEMVN-PM-W	
	TOTAL PROJECT MANAGEMENT	**-**	**560**	**1,440**	**-**	**-**	**-**	**-**	**-**	**$ 22,438**	**$ 222,568**	**$ 20,013**	**$ -**	**$ 242,582**			**$ -**
8.0	**TECHNICAL REVIEW**																
8.1	Technical Review of Initial Feasibility Study Data	-	80	240	240	-	-	-	-	$ 49,122	$ 100,000	$ -	$ -	$ 100,000	Non-Fed. sponsor contractor.	Non-Fed. Sponsor	$ 100,000
8.2	Existing Conditions Independent Technical Review (ITR)	-	24	360	-	-	-	-	-	$ -	$ 36,924	$ 3,692	$ 7,385	$ 48,001		CEMVN-PM-W	
8.3	Alternatives ITR	-	24	360	-	-	-	-	-	$ -	$ 36,924	$ 3,692	$ 7,385	$ 48,001		CEMVN-PM-W	
8.4	Final Report ITR	-	16	240	-	-	-	-	-	$ -	$ 24,616	$ 2,462	$ 4,923	$ 32,001		CEMVN-PM-W	
8.5	External Peer Review (EPR)	-	-	-	-	-	-	-	-	$ 150,000	$ 150,000	$ 15,000	$ 30,000	$ 195,000		CEMVN-PM-W	
	TOTAL TECHNICAL REVIEW	**-**	**144**	**1,200**	**240**	**-**	**-**	**-**	**-**	**$ 199,122**	**$ 348,463**	**$ 24,846**	**$ 49,693**	**$ 423,003**			**$ 100,000**
	TOTAL FEASIBILITY COSTS	**174**	**2,146**	**15,373**	**9,152**	**3,408**	**450**	**514**	**72**	**$ 643,497**	**$ 3,368,327**	**$ 324,579**	**$ 221,182**	**$ 3,914,089**			**$ 855,240**

Appendix C

Work Breakdown Structure

Appendix C

Work Breakdown Structure

C.1 WBS LEVEL DEFINITIONS

The work breakdown structure (WBS) is divided into the following five levels.

Level 1. The Project

Level 2. The Subprojects are established by the phase that is appropriated by Congress – in this case the feasibility phase of the study. This level includes the major products generated in the feasibility phase: the Feasibility Report, the Preconstruction Engineering and Design (PED), Project Management Plan and the PED Agreement, which are identified in the first character of the work breakdown structure code.

Level 3. The Parent Tasks are generally identified as separate products that go into the final feasibility phase documentation. Examples of these subprojects include such items as the real estate report, the geotechnical engineering report, etc. These parent tasks are normally identified with the responsibility of a particular functional organization. This level is generally identified in the second and third characters of the work breakdown structure code.

Level 4. The Tasks are major separable elements of the subprojects that are keyed to separately identifiable products that are developed for the major feasibility milestones. These tasks are elements of work resulting in a deliverable product which have a beginning and an end, may be accomplished within one functional organization, can be described at a work order of detail and are the lowest level that will be specifically tracked with respect to cost and schedule. As an example, the cost estimates for the draft feasibility report would be an example of a task. Tasks can be described as the summation of activities that would be accomplished by a particular functional organizational between two of milestone events.

Level 5. The Activities are separate elements of work that are managed by the functional managers to whom the tasks are assigned and which may not necessarily result in a deliverable work product to another organization. These activities are not tracked separately in terms of cost and schedule but are described in the scopes of work to the extent required to provide a clear understanding of the work required.

C.2 PROJECT WBS DESCRIPTIONS

The WBS for the West Shore - Lake Pontchartrain, Louisiana Hurricane Protection Project Feasibility Study was formulated in recognition of the previous investigations that have been conducted within the study area. Additional data collection and analyses proposed for this study have been specifically designed to augment the available existing information.

In accordance with the levels described above, the WBS includes Level 1 through 5 project, subproject, parent tasks, tasks, and activities, as described below. The WBS Level 1 (Project) is the West Shore-Lake Pontchartrain Hurricane Protection System. The WBS Level 2 (Subproject) is the Feasibility Study Phase. WBS Levels 3 through 5 are as follows:

1.0 Environmental

- 1.1 Environmental Studies
  - 1.1.1 Scoping Meeting Prep & Assessment of Prelim Alternatives
  - 1.1.2 Conduct Public Scoping Meeting
  - 1.1.3 Scoping Meeting Report
  - 1.1.4 Develop Environmental Setting and Future Without
  - 1.1.5 Develop Environmental Features for Alternatives
  - 1.1.6 Assess Biological Impacts of Alternatives
  - 1.1.7 Conduct Habitat Evaluation
  - 1.1.8 U.S. Fish & Wildlife Service (USFWS) Coordination Act Report
  - 1.1.9 Prepare Mitigation Plan
  - 1.1.10 Prepare 404(b)(1) Evaluation
  - 1.1.11 Prepare 404(b)(1) Public Notice
  - 1.1.12 Obtain Water Quality Certification
  - 1.1.13 Conduct Threatened & Endangered (T&E) Species & Essential Fish Habitat (EFH) Coordination
  - 1.1.14 Prepare Coastal Zone Consistency Determination
  - 1.1.15 Prepare Air Quality Determination
  - 1.1.16 Prepare Preliminary Draft Environmental Impact Statement (PDEIS) and Environmental Appendix
  - 1.1.17 Prepare Draft Environmental Impact Statement (DEIS) and Environmental Appendix
  - 1.1.18 Prepare Final Environmental Impact Statement (FEIS) and Environmental Appendix
  - 1.1.19 Record of Decision
  - 1.1.20 Supervision and Review
- 1.2 Cultural, Socioeconomic & Recreational Resources
  - 1.2.1 Cultural Resources Analysis
  - 1.2.2 Land-use History Evaluation
  - 1.2.3 Socioeconomic & Recreation Resources Evaluation
  - 1.2.4 Determine Significance of Resources
  - 1.2.5 Impacts to Resources
  - 1.2.6 Incorporate Recreation Resources into Alternatives
  - 1.2.7 Cultural and Recreation Input into DEIS
  - 1.2.8 Supervision and Review
- 1.3 HTRW Assessmeent
  - 1.3.1 Conduct HTRW Site Assessment
  - 1.3.2 Supervision and Review

2.0 Engineering

- 2.1 Geotechnical

- 2.1.1 Determine Boring Locations and Request Right-of-Entry
- 2.1.2 Drill Undisturbed Borings for Alignments B, C, D
- 2.1.3 Visual Classification of Borings
- 2.1.4 Choose Samples for Shear and Consolidation Testing
- 2.1.5 Laboratory Testing of Samples
- 2.1.6 Determine Surface and Subsurface Geological Conditions
- 2.1.7 Develop Design Parameters & Prepare Geotechnical Report
- 2.1.8 Identify Potential Sources of Borrow for Levee Construction
- 2.1.9 Supervision and Review

2.2 Levees
- 2.2.1 Preliminary Levee Design
- 2.2.2 Supervision and Review

2.3 Structures
- 2.3.1 Preliminary Structures Design (Levees and Floodwalls)
- 2.3.2 Preliminary Structures Design (Pump Stations)
- 2.3.3 Supervision and Review

2.4 Mechanical and Electrical
- 2.4.1 Preliminary Pump Stations Design
- 2.4.2 Supervision and Review

2.5 Hydrology and Hydraulics
- 2.5.1 Advanced Circulation (ADCIRC) Modeling
- 2.5.2 Storm Surge and Wave Analysis With- and Without-Project
- 2.5.3 Interior Hydraulic Analysis With- and Without-Project
- 2.5.4 Prepare Overflow Maps & Delineate Reach Boundaries
- 2.5.5 Water Quality Assessment of Alternatives
- 2.5.6 Water Quality Input (404(b)(1))
- 2.5.7 Circulation and Water Quality Modeling (Enclosed Wetlands)
- 2.5.8 Supervision and Review

2.6 Design Services - Cost & Specifications
- 2.6.1 Develop Construction Costs for Alternatives
- 2.6.2 Microcomputer Aided Cost Engineering System (MCACES) for Tentatively Selected Alignment
- 2.6.3 Supervision and Review

2.7 Design Services - Surveys
- 2.7.1 Surveys
- 2.7.2 Supervision and Review

2.8 Design Services - Geospatial Engineering
- 2.8.1 Prepare Data Mgmt/Document Control/Geographic Information Systems (GIS) Plans
- 2.8.2 GIS Support
- 2.8.3 Supervision and Review

2.9 Design Services – Relocations
- 2.9.1 Relocations Input for Initial Evaluation
- 2.9.2 Relocations for Preferred Alternative
- 2.9.3 Supervision and Review

3.0 Economics

- 3.1 Document Historical Flood Damages
- 3.2 Collect Residential Structure Inventory for Alignment D
- 3.3 Collect Commercial Structure Inventory for Alignment D
- 3.4 Compile Inventory for Future Development
- 3.5 First Floor Elevation Survey
- 3.6 Determine Structure Values for Alignment D
- 3.7 Conduct Net Benefit Analysis for Non-Structural Alternatives
- 3.8 Develop Depth-Damage Relationships
- 3.9 Develop Contents-to-Structure Value Ratios
- 3.10 Prepare Estimates of Measurement of Error
- 3.11 Prepare Flood Damage Model Input File
- 3.12 Average Annual Future Without-Project Damages
- 3.13 Average annual Future With-Project Damages
- 3.14 Flood Damage Reduction Benefits for Structures and Contents
- 3.15 Flood Damage Reduction Benefits for Vehicles
- 3.16 Flood Damage Reduction Benefits for Transportation
- 3.17 Flood Damage Reduction Benefits Other Categories
- 3.18 Update Benefit Analysis for Alternative Plans
- 3.19 Update Cost Analysis for Alternative Plans
- 3.20 Update Net Benefit and Optimization Analyses
- 3.21 Update Evaluate Project Benefits Under the Risk-Based Analysis Approach
- 3.22 Conduct Social Impact Analysis for Input into the EIS
- 3.23 Conduct Financial Analysis
- 3.24 Prepare Economic Appendix
- 3.25 Supervision and Review

4.0 Real Estate

- 4.1 Obtain Right-of-Entry
- 4.2 Real Estate Cost Estimates for Alternatives and Mitigation
- 4.3 Prepare Gross Appraisal Report
- 4.4 Prepare Real Estate Plan (Input for Feasibility Report)
- 4.5 Supervision and Review

5.0 Operations and Maintenance

- 5.1 Prepare Operations and Maintenance Cost Estimates

6.0 Plan Formulation

- 6.1 Public Involvement-Communication Plans
- 6.2 Plan Formulation
- 6.3 Alternative Formulation Briefing Document
- 6.4 Draft Report
- 6.5 Final Report

7.0 Project Management

- 7.1 Project Management
- 7.2 Program Management and Budget Preparation
- 7.3 Prepare Draft PED, PMP and Design Analysis

8.0 Technical Review

- 8.1 Technical Review of Initial Feasibility Study Data
- 8.2 Existing Conditions Independent Technical Review (ITR)
- 8.3 Alternatives ITR
- 8.4 Final Report ITR
- 8.5 External Peer Review (EPR)

Appendix D

Organizational Breakdown Structure

APPENDIX D

ORGANIZATIONAL BREAKDOWN STRUCTURE

RESOURCE NAME	ORGANIZATION CODE	OFFICE SYMBOL
PLANNING, PROGRAMS, AND PROJECT MANAGEMENT DIVISION		
PROJECT MANAGEMENT BRANCH		
Project Management	B2H4800	CEMVN-PM-W
ECONOMICS BRANCH		
Economics	B2H4610	CEMVN-PM-AW
ENVIRONMENTAL BRANCH		
Environmental	B2H4710	CEMVN-PD-RS
Cultural & Recreational Resources	B2H4730	CEMVN-PD-RN
HTRW	B2H4720	CEMVN-PD-RP
ENGINEERING DIVISION		
CIVIL BRANCH	B2L0400	CEMVN-ED-L
Levees Section	B2L0450	CEMVN-ED-L
STRUCTURES BRANCH	B2L0900	CEMVN-ED-T
Flood Control Structures Section	B2L0920	CEMVN-ED-T
DESIGN SERVICES BRANCH	B2L0500	CEMVN-ED-S
Projects Engineering Section	B2L0520	CEMVN-ED-S
Survey Section	B2L0550	CEMVN-ED-S
Relocations Section	B2L0500	CEMVN-ED-S
Systems and Programming Section	B2L0540	CEMVN-ED-S
Geospatial Engineering Section	B2L0500	CEMVN-ED-S
GEOTECHNICAL BRANCH	B2L0300	CEMVN-ED-F
Investigations Section	B2L0900	CEMVN-ED-F
HYDRAULICS AND HYDROLOGIC BRANCH	B2L0200	CEMVN-ED-H
Hydraulic Design Section	B2L0200	CEMVN-ED-HD
COST ENGINEERING BRANCH	B2L0700	CEMVN-ED-C
REAL ESTATE DIVISION		
APPRAISAL BRANCH	B2N0200	CEMVN-RE-E
OPERATIONS DIVISION		
OPERATIONS AND MAINTENANCE	B2R0045	CEMVN-OD-W
NON-FEDERAL SPONSOR		
PONTCHARTRAIN LEVEE DISTRICT		PLD
OTHER AGENCIES		
U.S. FISH AND WILDLIFE SERVICE		USF&WS

Appendix E

Responsibility Assignment Matrix

Appendix E

Responsibility Assignment Matrix

WBS No.	Activities/Task	Responsible Organization	Organization Code	Level of Effort (hours)	Total Cost ($)	Non-Federal Work in Kind ($)
1.0	**ENVIRONMENTAL**					
1.1	**Environmental Studies**					
1.1.1	Scoping Meeting Prep & Assessment of Prelim Alternatives	CEMVN-PM-RS	B2H4710	384	$ 19,929	
1.1.2	Conduct Public Scoping Meeting	CEMVN-PM-RS	B2H4710	3,020	$ 5,786	
1.1.3	Scoping Meeting Report	CEMVN-PM-RS	B2H4710	1,136	$ 14,248	
1.1.4	Develop Environmental Setting & Future Without	CEMVN-PM-RS	B2H4710	312	$ 30,814	
1.1.5	Develop Environmental Features For Alternatives	CEMVN-PM-RS	B2H4710	248	$ 25,925	
1.1.6	Assess Biological Impacts of Alternatives	CEMVN-PM-RS	B2H4710	480	$ 50,177	
1.1.7	Conduct Habitat Evaluation	CEMVN-PM-RS	B2H4710	264	$ 26,073	
1.1.8	USFWS Coordination Act Report	CEMVN-PM-RS	B2H4710	104,016	$ 116,073	
1.1.9	Prepare Mitigation Plan	CEMVN-PM-RS	B2H4710	512	$ 50,613	
1.1.10	Prepare 401(b)(1) Evaluation	CEMVN-PM-RS	B2H4710	104	$ 9,486	
1.1.11	Prepare 401(b)(1) Public Notice	CEMVN-PM-RS	B2H4710	12	$ 1,115	
1.1.12	Obtain Water Quality Certification	CEMVN-PM-RS	B2H4710	48	$ 4,325	
1.1.13	Conduct Endangered Species/EFH Coordination	CEMVN-PM-RS	B2H4710	84	$ 7,742	
1.1.14	Prepare Coastal Zone Consistency Determination	CEMVN-PM-RS	B2H4710	120	$ 11,159	
1.1.15	Prepare Air Quality Determination	CEMVN-PM-RS	B2H4710	48	$ 4,325	
1.1.16	Prepare PDEIS and Environmental Appendix	CEMVN-PM-RS	B2H4710	10,700	$ 72,491	
1.1.17	Prepare DEIS and Environmental Appendix	CEMVN-PM-RS	B2H4710	5,620	$ 66,503	
1.1.18	Prepare FEIS and Environmental Appendix	CEMVN-PM-RS	B2H4710	5,660	$ 64,108	
1.1.19	Record of Decision	CEMVN-PM-RS	B2H4710	2,120	$ 14,051	
1.1.20	Supervision and Review	CEMVN-PM-RS	B2H4710	480	$ 60,007	
	Subtotal Environmental Studies			**135,368**	**$ 654,950**	**$ -**
1.2	**Cultural, Socioeconomic & Recreational Resources**					
1.2.1	Cultural Resources Analysis	CEMVN-PM-RN	B2H4730	320	$ 28,690	
1.2.2	Land-Use History Evaluation	CEMVN-PM-RN	B2H4730	40,008	$ 44,836	
1.2.3	Socioeconomic & Recreation Resources Evaluation	CEMVN-PM-RN	B2H4730	72	$ 5,813	
1.2.4	Determine Significance of Resources	CEMVN-PM-RN	B2H4730	32	$ 2,929	
1.2.5	Impacts to Resources	CEMVN-PM-RN	B2H4730	56	$ 5,161	
1.2.6	Incorporate Recreation Resources into Alternatives	CEMVN-PM-RN	B2H4730	44	$ 3,907	
1.2.7	Cultural & Recreation Input to DEIS	CEMVN-PM-RN	B2H4730	200	$ 16,927	
1.2.8	Supervision and Review	CEMVN-PM-RN	B2H4730	80	$ 10,329	
	Subtotal Cultural & Recreational Resources			**40,812**	**$ 45,066**	**$ -**
New	**HTRW Assessment**					
1.3.1	Conduct HTRW Site Assessment	CEMVN-PM-RP	B2H4720	6,300	$ 32,638	
1.3.2	Supervision and Review	CEMVN-PM-RP	B2H4720	24	$ 3,255	
	Total HTRW Assessment			**6,324**	**$ 35,893**	**$ -**
	TOTAL ENVIRONMENTAL			**182,504**	**$ 773,542**	**$ -**

Appendix E
Responsibility Assignment Matrix

WBS No.	Activities/Task	Responsible Organization	Organization Code	Level of Effort (hours)	Total Cost ($)	Non-Federal Work in Kind ($)
2.0	**ENGINEERING**					
2.1	**Geotechnical**					
2.1.1	Determine Boring Locations and Request Right-of-Entry	CEMVN-ED-F	B2L0900	24	$ 2,667	$ 2,400
2.1.2	Drill Undisturbed Borings For Alignments B,C, and D	CEMVN-ED-F	B2L0900	100,040	$ 113,489	$ 102,140
2.1.3	Visual Classification of Borings	CEMVN-ED-F	B2L0900	350	$ 20,616	$ 18,554
2.1.4	Choose Samples for Shear & Consolidation Testing	CEMVN-ED-F	B2L0900	48	$ 4,239	$ 3,815
2.1.5	Laboratory Testing of Samples	CEMVN-ED-F	B2L0900	19,761	$ 24,220	$ 21,798
2.1.6	Determine Surface and Subsurface Geological Conditions	CEMVN-ED-F	B2L0900	176	$ 18,714	$ 16,843
2.1.7	Develop Geotechnical Design Parameters & Prepare Geotechnical Report	CEMVN-ED-F	B2L0900	664	$ 63,661	$ 57,295
2.1.8	Identify Potential Sources of Borrow for Levee Construction	CEMVN-ED-F	B2L0900	224	$ 16,739	$ 15,065
2.1.9	Supervision and Review	CEMVN-ED-F	B2L0900	220	$ 26,444	
	Subtotal Geotechnical			**121,507**	**$ 290,789**	**$ 237,911**
2.2	**Levees**					
2.2.1	Preliminary Levee Design	CEMVN-ED-L	B2L0400	656	$ 73,987	$ 66,588
2.2.2	Supervision and Review	CEMVN-ED-L	B2L0400	52	$ 7,399	
	Subtotal Levees			**708**	**$ 81,386**	**$ 66,588**
2.3	**Structures**					
2.3.1	Preliminary Structures Design (Levees & Floodwalls)	CEMVN-ED-T	B2L0900	528	$ 61,204	$ 55,084
2.3.2	Preliminary Structures Design (Pump Stations)	CEMVN-ED-T	B2L0900	560	$ 58,709	$ 52,838
2.3.3	Supervision and Review	CEMVN-ED-T	B2L0900	92	$ 11,959	
	Subtotal Structural			**1,180**	**$ 131,872**	**$ 107,922**
2.4	**Mechanical & Electrical**					
2.4.1	Preliminary Pump Stations Design	CEMVN-ED-T	B2L0900	660	$ 71,830	$ 64,647
2.4.2	Supervision and Review	CEMVN-ED-T	B2L0900	45	$ 7,182	
	Subtotal Mechanical & Electrical			**705**	**$ 79,012**	**$ 64,647**
2.5	**Hydrology & Hydraulics**					
2.5.1	ADCIRC Modeling	CEMVN-ED-H	B2L0200	1,960	$ 185,517	
2.5.2	Storm Surge & Wave Analysis Without & With Project	CEMVN-ED-H	B2L0200	650	$ 61,830	
2.5.3	Interior Hydraulic Analysis Without & With Project	CEMVN-ED-H	B2L0200	732	$ 82,996	
2.5.4	Prepare Overflow Maps & Delineate Reach Boundaries	CEMVN-ED-H	B2L0200	64	$ 5,997	
2.5.5	Water Quality Assessment of Alternatives	CEMVN-ED-H	B2L0200	112	$ 10,481	
2.5.6	Water Quality Input - 404(b)(1)	CEMVN-ED-H	B2L0200	40	$ 4,062	
2.5.7	Circulation and Water Quality Modeling (Enclosed Wetlands)	CEMVN-ED-H	B2L0200	26,080	$ 128,976	
2.5.8	Supervision and Review	CEMVN-ED-H	B2L0200	358	$ 44,821	
	Subtotal Hydrology & Hydraulics			**29,996**	**$ 524,680**	**$ -**

Appendix E
Responsibility Assignment Matrix

WBS No.	Activities/Task	Responsible Organization	Organization Code	Level of Effort (hours)	Total Cost ($)	Non-Federal Work in Kind ($)
2.6	**Design Services - Cost & Specifications**					
2.6.1	Develop Construction Cost Estimate	CEMVN-ED-S	B2L0500	520	$ 43,714	$ 39,343
2.6.2	MCACES (Tentatively Selected Alignment)	CEMVN-ED-S	B2L0500	80	$ 8,363	
2.6.3	Supervision and Review	CEMVN-ED-S	B2L0500	36	$ 5,255	
	Subtotal Cost & Specifications			**636**	**$ 57,332**	**$ 39,343**
2.7	**Design Services - Surveys**					
2.7.1	Surveys	CEMVN-ED-S	B2L0550	80,224	$ 106,216	$ 95,594
2.7.2	Supervision and Review	CEMVN-ED-S	B2L0550	148	$ 10,615	
	Subtotal Surveys			**80,372**	**$ 116,831**	**$ 95,594**
2.8	**Design Services - Geospatial Engineering**					
2.8.1	Prepare Data Mgmt/Document Control/GIS Plans	CEMVN-ED-S	B2L0500	116	$ 11,750	$ 10,575
2.8.2	GIS Support	CEMVN-ED-S	B2L0500	480	$ 51,116	
2.8.3	Supervision and Review	CEMVN-ED-S	B2L0500	52	$ 6,261	
	Subtotal Geospatial Engineering			**648**	**$ 69,127**	**$ 10,575**
2.9	**Design Services - Relocations**					
2.9.1	Relocations Input for Initial Evaluation	CEMVN-ED-S	B2L0500	40	$ 4,181	$ 3,763
2.9.2	Relocations for Preferred Alternative	CEMVN-ED-S	B2L0500	880	$ 85,194	
2.9.3	Supervision and Review	CEMVN-ED-S	B2L0500	76	$ 8,848	
	Subtotal Relocations			**996**	**$ 98,223**	**$ 3,763**
	TOTAL ENGINEERING			**236,748**	**$ 1,281,902**	**$ 612,005**

Appendix E

Responsibility Assignment Matrix

WBS No.	Activities/Task	Responsible Organization	Organization Code	Level of Effort (hours)	Total Cost ($)	Non-Federal Work in Kind ($)
3.0	**ECONOMICS**					
3.1	Document Historical Flood Damages	CEMVN-PM-AW	B2H4610	56	$ 5,161	
3.2	Collect Residential Structure Inventory for Alignment D	CEMVN-PM-AW	B2H4610	80	$ 7,255	$ 6,530
3.3	Collect Commercial Structure Inventory For Alignment D	CEMVN-PM-AW	B2H4610	40	$ 3,628	$ 3,265
3.4	Compile Inventory for Future Development	CEMVN-PM-AW	B2H4610	192	$ 19,240	
3.5	First Floor Elevation Survey	CEMVN-PM-AW	B2H4610	660	$ 45,578	$ 41,020
3.6	Determine Structure Values	CEMVN-PM-AW	B2H4610	56	$ 5,161	
3.7	Conduct Net Benefit Analysis for Non-Structural Alternatives	CEMVN-PM-AW	B2H4610	40	$ 4,941	
3.8	Develop Depth Damage Relationships	CEMVN-PM-AW	B2H4610	88	$ 11,059	
3.9	Develop Contents-to-Structure Value Ratios	CEMVN-PM-AW	B2H4610	40	$ 4,941	
3.10	Prepare Estimates of Measurement Error	CEMVN-PM-AW	B2H4610	64	$ 7,415	
3.11	Prepare Flood Damage Model Input File	CEMVN-PM-AW	B2H4610	80	$ 9,065	
3.12	Average Annual Future Without-Project Damages	CEMVN-PM-AW	B2H4610	56	$ 6,099	
3.13	Average Annual Future With Project Damages	CEMVN-PM-AW	B2H4610	280	$ 31,318	
3.14	Flood Damage Reduction Benefits for Structures & Contents	CEMVN-PM-AW	B2H4610	24	$ 2,638	
3.15	Flood Damage Reduction Benefits for Vehicles	CEMVN-PM-AW	B2H4610	72	$ 6,870	
3.16	Flood Damage Reduction Benefits for Transportation	CEMVN-PM-AW	B2H4610	640	$ 59,636	
3.17	Flood Damage Reduction Benefits for Other Categories	CEMVN-PM-AW	B2H4610	840	$ 85,280	
3.18	Update Benefit Analysis for Alternative Plans	CEMVN-PM-AW	B2H4610	24	$ 2,638	
3.19	Update Cost Analysis for Alternative Plans	CEMVN-PM-AW	B2H4610	16	$ 1,977	
3.20	Update Net Benefit and Optimization Analyses	CEMVN-PM-AW	B2H4610	40	$ 4,941	
3.21	Update Evaluate Project Benefits Under the Risk-Based Analysis Approach	CEMVN-PM-AW	B2H4610	160	$ 19,767	
3.22	Conduct Social Impact Analysis for Input into the EIS	CEMVN-PM-AW	B2H4610	120	$ 12,370	
3.23	Conduct Financial Analysis	CEMVN-PM-AW	B2H4610	176	$ 18,399	
3.24	Prepare Economic Appendix	CEMVN-PM-AW	B2H4610	240	$ 23,703	
3.25	Supervision and Review	CEMVN-PM-AW	B2H4610	340	$ 40,457	
	TOTAL ECONOMICS			**4,424**	**$ 439,537**	**$ 50,815**
4.0	**REAL ESTATE**					
4.1	Obtain Rights-of-Entry	CEMVN-RE-E	B2N0200	296	$ 28,489	$ 25,640
4.2	Real Estate Cost Estimates for Alternatives & Mitigation	CEMVN-RE-E	B2N0200	232	$ 20,947	$ 18,852
4.3	Prepare Gross Appraisal Report	CEMVN-RE-E	B2N0200	616	$ 57,784	
4.4	Prepare Real Estate Plan (Input for Feasibility Report)	CEMVN-RE-E	B2N0200	280	$ 25,202	$ 22,682
4.5	Supervision and Review	CEMVN-RE-E	B2N0200	88	$ 12,114	
	TOTAL REAL ESTATE			**1,512**	**$ 144,536**	**$ 67,174**
5.0	**O&M**					
5.1	Prepare O&M Cost Estimates	CEMVN-OD-W	B2R0045	100	$ 12,120	$ 10,908
	TOTAL O&M			**100**	**$ 12,120**	**$ 10,908**

Appendix E

Responsibility Assignment Matrix

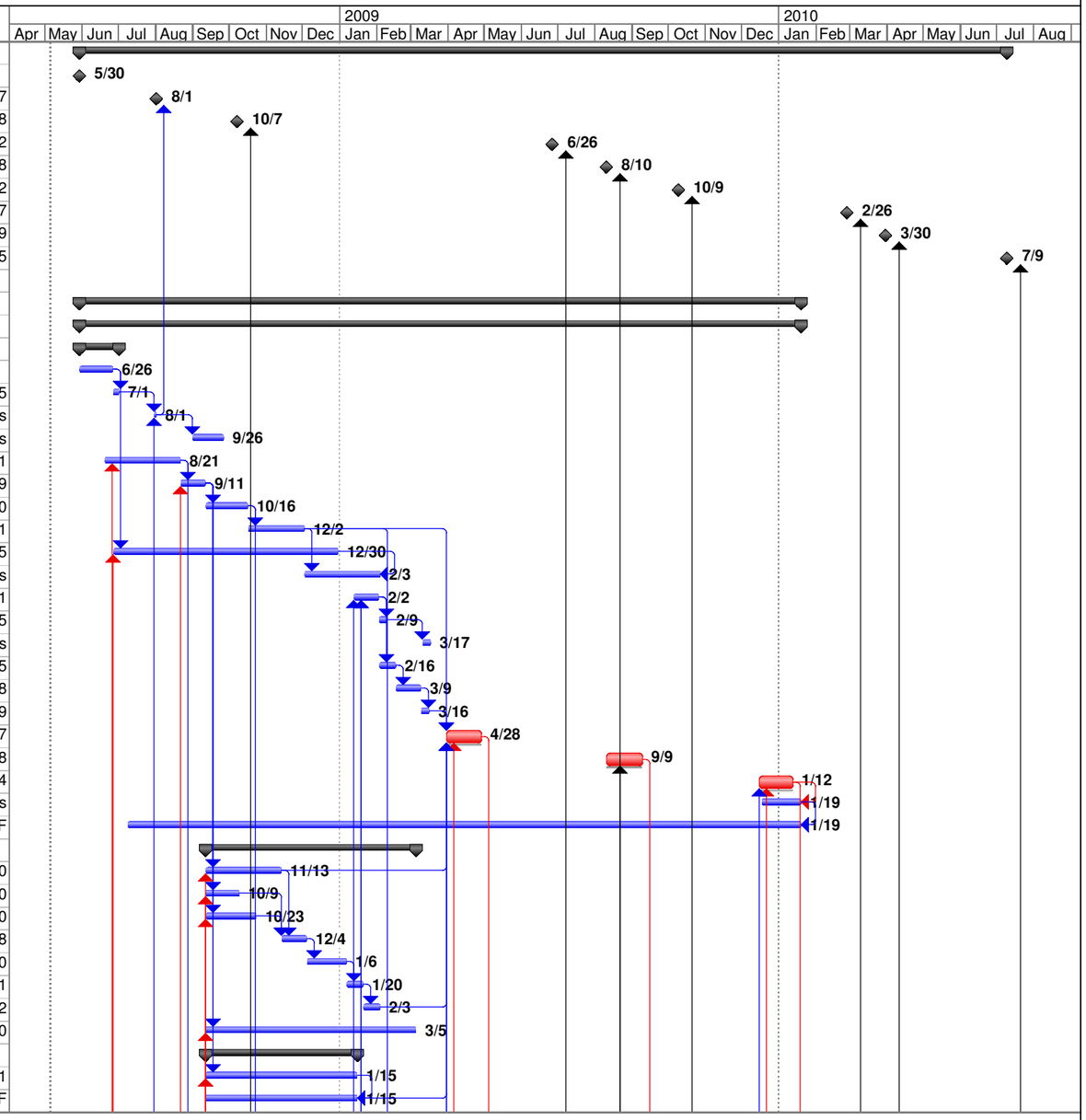
WBS No.	Activities/Task	Responsible Organization	Organization Code	Level of Effort (hours)	Total Cost ($)	Non-Federal Work in Kind ($)
6.0	**PLAN FORMULATION AND REPORTING**					
6.1	Public Involvement - Communication Plans	CEMVN-PM-W	B2H4800	2,720	$ 73,605	
6.2	Plan Formulation	CEMVN-PM-W	B2H4800	2,960	$ 117,108	
6.3	Alternative Formulation Briefing Document	CEMVN-PM-W	B2H4800	2,760	$ 94,036	
6.4	Draft Report	CEMVN-PM-W	B2H4800	10,380	$ 58,719	
6.5	Final Report	CEMVN-PM-W	B2H4800	5,360	$ 50,156	
	TOTAL PLAN FORMULATION (700)			**24,180**	**$ 393,624**	**$ -**
7.0	**PROJECT MANAGEMENT**					
7.1	Project Management	CEMVN-PM-W	B2H4800	23,558	$ 145,845	
7.2	Program Management & Budget Preparation	CEMVN-PM-W	B2H4800	520	$ 56,731	
7.3	Prepare Draft PED PMP and DA	CEMVN-PM-W	B2H4800	360	$ 40,006	
	TOTAL PROJECT MANAGEMENT			**24,438**	**$ 242,582**	**$ -**
8.0	**TECHNICAL REVIEW**					
8.1	Technical Review of Initial Feasibility Study Data	Non-Fed. Sponsor		49,682	$ 100,000	$ 100,000
8.2	Existing Conditions Independent Technical Review (ITR)	CEMVN-PM-W	B2H4800	384	$ 48,001	
8.3	Alternatives ITR	CEMVN-PM-W	B2H4800	384	$ 48,001	
8.4	Final Report ITR	CEMVN-PM-W	B2H4800	256	$ 32,001	
8.5	External Peer Review (EPR)	CEMVN-PM-W	B2H4800	150,000	$ 195,000	
	TOTAL TECHNICAL REVIEW (900)			**200,706**	**$ 423,003**	**$ 100,000**
	TOTAL FEASIBILITY COSTS			**674,612**	**$ 3,914,089**	**$ 855,240**

Appendix F

Project Schedule

Appendix F - Project Schedule
West Shore-Lake Pontchartrain, Louisiana
Hurricane Protection Protection Project Feasibility Study

ID	WBS	Task Name	Duration	Start	Finish	Predecessors
1	**MS**	**Milestones**	**551 days**	**5/30/08**	**7/9/10**	
2	MS-1	Execute FCSA - Re-start FS/EIS	0 days	5/30/08	5/30/08	
3	MS-2	Complete Public Scoping Meeting	0 days	8/1/08	8/1/08	17
4	MS-3	Feasibility Briefing Meeting (w/ ITR & MVD)	0 days	10/7/08	10/7/08	168
5	MS-4	Alternatives Review Conference (w/ITR & MVD)	0 days	6/26/09	6/26/09	172
6	MS-5	Alternatives Formulation Briefing (w/USACE HQ)	0 days	8/10/09	8/10/09	138
7	MS-6	Notice of Draft FS and EIS in Federal Register (for public review)	0 days	10/9/09	10/9/09	142
8	MS-7	Final FS and EIS to ITR	0 days	2/26/10	2/26/10	147
9	MS-8	Final FS and EIS to Civil Works Review Board (CWRB)	0 days	3/30/10	3/30/10	149
10	MS-9	Sign Chief's Report	0 days	7/9/10	7/9/10	155
11						
12	**1.0**	**Environmental**	**428 days**	**5/30/08**	**1/19/10**	
13	**1.1**	**Environmental Studies**	**428 days**	**5/30/08**	**1/19/10**	
14	**1.1.1**	**Scoping Meeting Prep & Assessment of Prelim Alternatives**	**23 days**	**5/30/08**	**7/1/08**	
15	1.1.1.1	Prepare NOI/Public Notice	20 days	5/30/08	6/26/08	
16	1.1.1.2	Publish NOI & Public Notice	3 days	6/27/08	7/1/08	15
17	1.1.2	Conduct Public Scoping Meeting (MS-2)	2 days	7/31/08	8/1/08	129,16FS+21 days
18	1.1.3	Scoping Meeting Report	20 days	9/1/08	9/26/08	17FS+20 days
19	1.1.4	Develop Environmental Setting & Future Without Project Conditions	45 days	6/20/08	8/21/08	131
20	1.1.5	Develop Environmental Features for Alternatives	15 days	8/22/08	9/11/08	131,19
21	1.1.6	Assess Biological Impacts of Alternatives	25 days	9/12/08	10/16/08	20
22	1.1.7	Conduct Habitat Evaluation	33 days	10/17/08	12/2/08	21
23	1.1.8	USFWS Coordination Act Report	133 days	6/27/08	12/30/08	131,15
24	1.1.9	Prepare Mitigation Plan	45 days	12/3/08	2/3/09	22,23FF+5 days
25	1.1.10	Prepare 401(b)(1) Evaluation	15 days	1/13/09	2/2/09	167,75,111
26	1.1.11	Prepare 401(b)(1) Public Notice	5 days	2/3/09	2/9/09	25
27	1.1.12	Obtain Water Quality Certification	5 days	3/11/09	3/17/09	26FS+21 days
28	1.1.13	Conduct T&E Species & EFH Coordination	10 days	2/3/09	2/16/09	25
29	1.1.14	Prepare Coastal Zone Consistency Determination	15 days	2/17/09	3/9/09	28
30	1.1.15	Prepare Air Quality Determination	5 days	3/10/09	3/16/09	29
31	1.1.16	Prepare PDEIS & Environmental Appendix	21 days	3/31/09	4/28/09	37,43,30,167,47,117
32	1.1.17	Prepare DEIS and Environmental Appendix	22 days	8/11/09	9/9/09	138
33	1.1.18	Prepare FEIS & Environmental Appendix	20 days	12/16/09	1/12/10	176,144
34	1.1.19	Record of Decision	23 days	12/18/09	1/19/10	33FF+5 days
35	1.1.20	Supervision and Review	400 days	7/9/08	1/19/10	34FF
36	**1.2**	**Cultural, Socioeconomic & Recreational Resources**	**125 days**	**9/12/08**	**3/5/09**	
37	1.2.1	Cultural Resources Analysis	45 days	9/12/08	11/13/08	131,20
38	1.2.2	Land-Use History Evaluation	20 days	9/12/08	10/9/08	131,20
39	1.2.3	Socioeconomic & Recreation Resources Evaluation	30 days	9/12/08	10/23/08	131,20
40	1.2.4	Determine Significance of Resources	15 days	11/14/08	12/4/08	39,37,38
41	1.2.5	Impacts to Resources	23 days	12/5/08	1/6/09	40
42	1.2.6	Incorporate Recreation Resources into Alternatives	10 days	1/7/09	1/20/09	41
43	1.2.7	Cultural & Recreation Input to PDEIS	10 days	1/21/09	2/3/09	42
44	1.2.8	Supervision and Review	125 days	9/12/08	3/5/09	131,20
45	**1.3**	**HTRW Assessment**	**90 days**	**9/12/08**	**1/15/09**	
46	1.3.1	Conduct HTRW Site Assessment	90 days	9/12/08	1/15/09	20,131
47	1.3.2	Supervision and Review	90 days	9/12/08	1/15/09	46FF

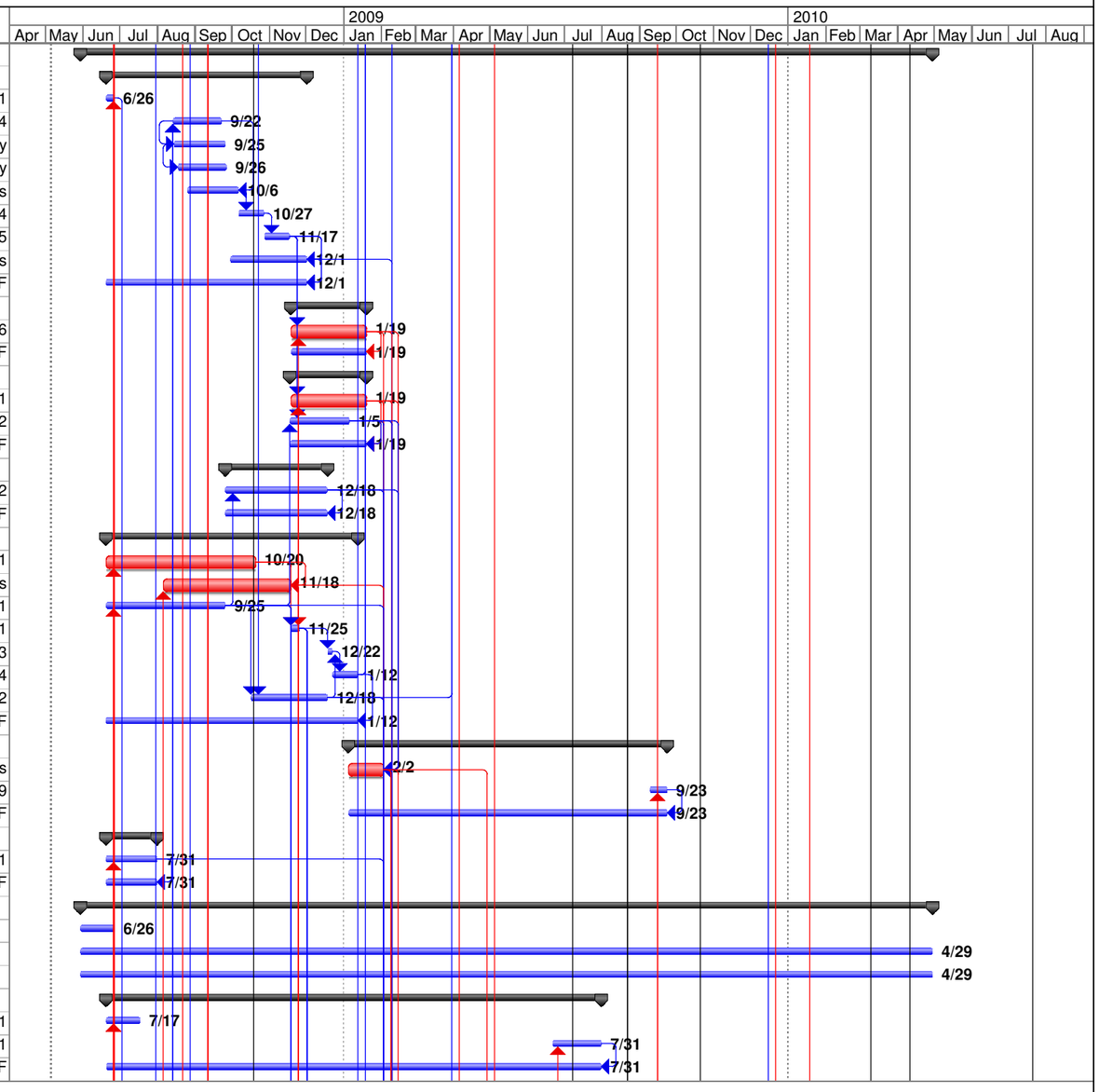


Project: WSLP Hurricane Protection Feasibility Study Schedule. 5/5/08

Non-Critical Critical Milestone Summary

Appendix F - Project Schedule
West Shore-Lake Pontchartrain, Louisiana
Hurricane Protection Protection Project Feasibility Study

ID	WBS	Task Name	Duration	Start	Finish	Predecessors
48	**2.0**	**Engineering**	**500 days**	**5/30/08**	**4/29/10**	
49	**2.1**	**Geotechnical Studies**	**117 days**	**6/20/08**	**12/1/08**	
50	2.1.1	Determine Boring Locations and Request Right-of-Entry	5 days	6/20/08	6/26/08	131
51	2.1.2	Drill Undisturbed Borings for Alternatives B, C, D	28 days	8/14/08	9/22/08	120FS+10 days,164
52	2.1.3	Visual Classification of Borings	30 days	8/15/08	9/25/08	51SS+1 day
53	2.1.4	Choose Samples for Shear and Consolidation Testing	30 days	8/18/08	9/26/08	52SS+1 day
54	2.1.5	Laboratory Testing of Samples	30 days	8/26/08	10/6/08	51FF+10 days
55	2.1.6	Determine Surface and Subsurface Geological Conditions	15 days	10/7/08	10/27/08	54
56	2.1.7	Develop Design Parameters	15 days	10/28/08	11/17/08	55
57	2.1.8	Identify Potential Sources of Borrow for Levee Construction	45 days	9/30/08	12/1/08	56FF+10 days
58	2.1.9	Supervision and Review	117 days	6/20/08	12/1/08	56FF,57FF
59	**2.2**	**Levees**	**44 days**	**11/19/08**	**1/19/09**	
60	2.2.1	Preliminary Levee Design	44 days	11/19/08	1/19/09	71,56
61	2.2.2	Supervision and Review	44 days	11/19/08	1/19/09	60FF
62	**2.3**	**Structures**	**45 days**	**11/18/08**	**1/19/09**	
63	2.3.1	Preliminary Structures Design (Levees & Floodwalls)	44 days	11/19/08	1/19/09	56,71
64	2.3.2	Preliminary Structures Design (Pump Stations)	35 days	11/18/08	1/5/09	56,72
65	2.3.3	Supervision and Review	45 days	11/18/08	1/19/09	63FF,64FF
66	**2.4**	**Mechanical and Electrical**	**60 days**	**9/26/08**	**12/18/08**	
67	2.4.1	Preliminary Pump Stations Design	60 days	9/26/08	12/18/08	72
68	2.4.2	Supervision and Review	60 days	9/26/08	12/18/08	67FF
69	**2.5**	**Hydrology and Hydraulics**	**147 days**	**6/20/08**	**1/12/09**	
70	2.5.1	ADCIRC Modeling	87 days	6/20/08	10/20/08	131
71	2.5.2	Storm Surge & Wave Analysis With & Without Project	75 days	8/6/08	11/18/08	131,70FF+21 days
72	2.5.3	Interior Hydraulic Analysis With & Without Project	70 days	6/20/08	9/25/08	131
73	2.5.4	Prepare Overflow Maps and Delineate Reach Boundaries (ADCIRC)	5 days	11/19/08	11/25/08	70,72,71
74	2.5.5	Water Quality Assessment of Alternatives	2 days	12/19/08	12/22/08	76,73
75	2.5.6	Water Quality Input - 404(b)(1)	15 days	12/23/08	1/12/09	74
76	2.5.7	Circulation & Water Quality Modeling (Enclosed Wetlands)	45 days	10/17/08	12/18/08	21,72
77	2.5.8	Supervision and Review	147 days	6/20/08	1/12/09	75FF
78	**2.6**	**Design Services - Cost & Specifications**	**188 days**	**1/5/09**	**9/23/09**	
79	2.6.1	Develop Construction Costs for Alternatives	21 days	1/5/09	2/2/09	) days,67FF+10 days
80	2.6.2	MCACES of Tentatively Selected Alignment	10 days	9/10/09	9/23/09	139
81	2.6.3	Supervision and Review	188 days	1/5/09	9/23/09	80FF
82	**2.7**	**Design Services - Surveys**	**30 days**	**6/20/08**	**7/31/08**	
83	2.7.1	Surveys	30 days	6/20/08	7/31/08	131
84	2.7.2	Supervision and Review	30 days	6/20/08	7/31/08	83FF
85	**2.8**	**Design Services - Geospatial Engineering**	**500 days**	**5/30/08**	**4/29/10**	
86	2.8.1	Prepare Data Mgmt/Document Control/GIS Plans	20 days	5/30/08	6/26/08	
87	2.8.2	GIS Support	500 days	5/30/08	4/29/10	
88	2.8.3	Supervision and Review	500 days	5/30/08	4/29/10	
89	**2.9**	**Design Services - Relocations**	**291 days**	**6/20/08**	**7/31/09**	
90	2.9.1	Relocations Input for Initial Evaluation	20 days	6/20/08	7/17/08	131
91	2.9.2	Relocations for Preferred Alternative	30 days	6/22/09	7/31/09	171
92	2.9.3	Supervision and Review	291 days	6/20/08	7/31/09	91FF

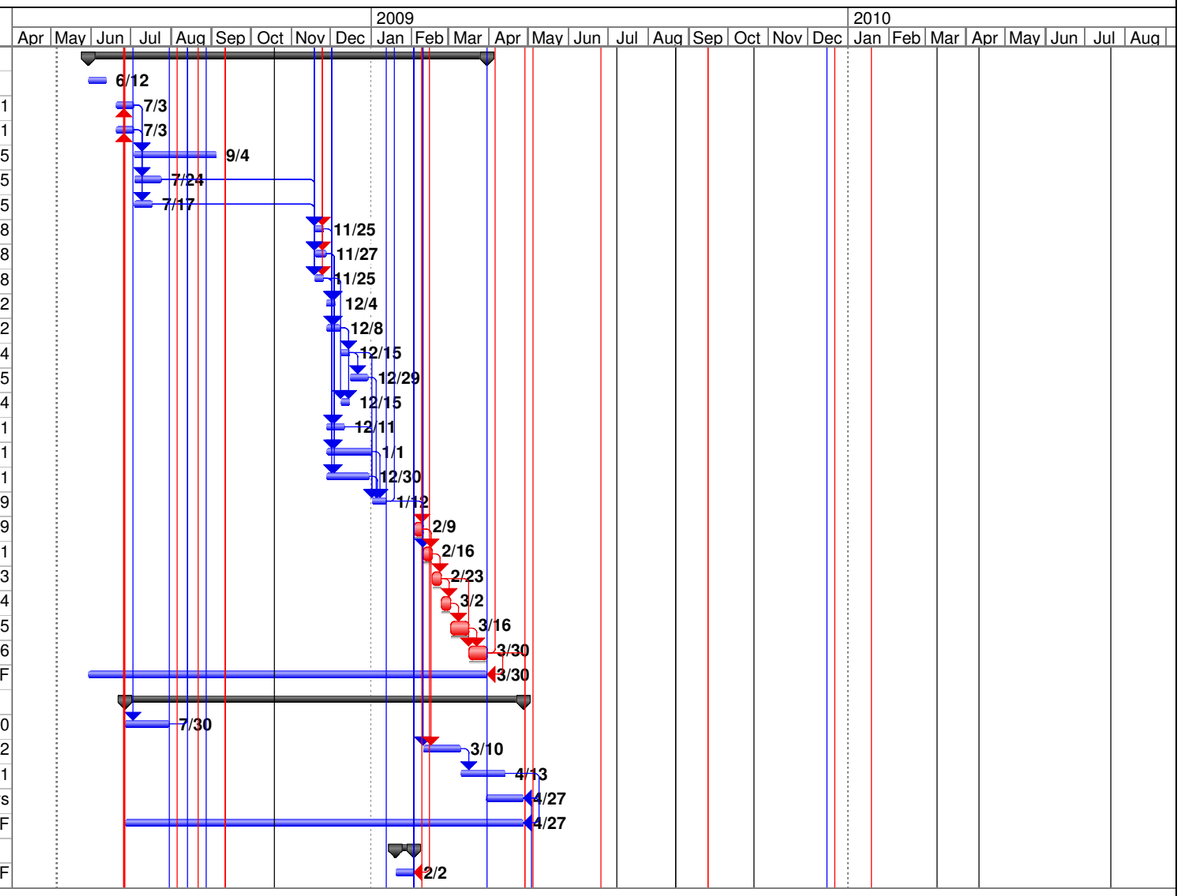


Project: WSLP Hurricane Protection Feasibility Study Schedule. 5/5/08

Non-Critical Critical Milestone Summary

Appendix F - Project Schedule
West Shore-Lake Pontchartrain, Louisiana
Hurricane Protection Protection Project Feasibility Study

ID	WBS	Task Name	Duration	Start	Finish	Predecessors
93	**3.0**	**Economics**	**217 days**	**5/30/08**	**3/30/09**	
94	3.1	Document Historical Flood Damages	10 days	5/30/08	6/12/08	
95	3.2	Collect Residential Structure Inventory for Alignment D	10 days	6/20/08	7/3/08	131
96	3.3	Collect Commercial Structure Inventory for Alignment D	10 days	6/20/08	7/3/08	131
97	3.4	Compile Inventory for Future Development	45 days	7/4/08	9/4/08	96,95
98	3.5	First Floor Elevation Survey	15 days	7/4/08	7/24/08	96,95
99	3.6	Determine Structure Values for Alignment D	10 days	7/4/08	7/17/08	96,95
100	3.7	Conduct Net Benefit Analysis for Non-structural Alternatives	5 days	11/19/08	11/25/08	71,72,98
101	3.8	Develop Depth-Damage Relationships	7 days	11/19/08	11/27/08	71,72,99,98
102	3.9	Develop Contents-to-Structure Value Ratios	5 days	11/19/08	11/25/08	71,72,99,98
103	3.1	Prepare Estimates of Measurement Error	5 days	11/28/08	12/4/08	100,101,102
104	3.11	Prepare Flood Damage Model Input File	7 days	11/28/08	12/8/08	101,102
105	3.12	Average Annual Future Without-Project Damages	5 days	12/9/08	12/15/08	104
106	3.13	Average Annual Future With-Project Damages	10 days	12/16/08	12/29/08	105
107	3.14	Flood Damage Reduction Benefits for Structures and Contents	5 days	12/9/08	12/15/08	102,104
108	3.15	Flood Damage Reduction Benefits for Vehicles	10 days	11/28/08	12/11/08	73,101
109	3.16	Flood Damage Reduction Benefits for Transportation/Traffic Analysis	25 days	11/28/08	1/1/09	73,101
110	3.17	Flood Damage Reduction Benefits for Other Categories	23 days	11/28/08	12/30/08	73,101
111	3.18	Update Benefit Analysis for Alternative Plans	7 days	1/2/09	1/12/09	110,105,106,108,109
112	3.19	Update Cost Analysis for Alternative Plans	5 days	2/3/09	2/9/09	79
113	3.2	Update Net Benefit and Optimization Analyses	5 days	2/10/09	2/16/09	112,111
114	3.21	Update Project Benefits Under Risk Based Analysis Approach	5 days	2/17/09	2/23/09	113
115	3.22	Conduct Social Impact Analysis for Input into EIS	5 days	2/24/09	3/2/09	114
116	3.23	Conduct Financial Analysis	10 days	3/3/09	3/16/09	115
117	3.24	Prepare Economics Appendix	10 days	3/17/09	3/30/09	114,116
118	3.25	Supervision and Review	217 days	5/30/08	3/30/09	117FF
119	**4.0**	**Real Estate**	**217 days**	**6/27/08**	**4/27/09**	
120	4.1	Obtain Right-of-Entry for Surveys and Borings	24 days	6/27/08	7/30/08	50
121	4.2	Real Estate Cost Estimate for Alternatives and Mitigation	21 days	2/10/09	3/10/09	60,63,64,57,22,112
122	4.3	Prepare Gross Appraisal Report	24 days	3/11/09	4/13/09	121
123	4.4	Prepare Real Estate Plan for Input into the Draft FS	21 days	3/30/09	4/27/09	122FF+10 days
124	4.5	Supervision and Review	217 days	6/27/08	4/27/09	123FF
125	**5.0**	**Operations & Maintenance**	**10 days**	**1/20/09**	**2/2/09**	
126	5.1	Prepare Operations and Maintenance Cost Estimates	10 days	1/20/09	2/2/09	79FF

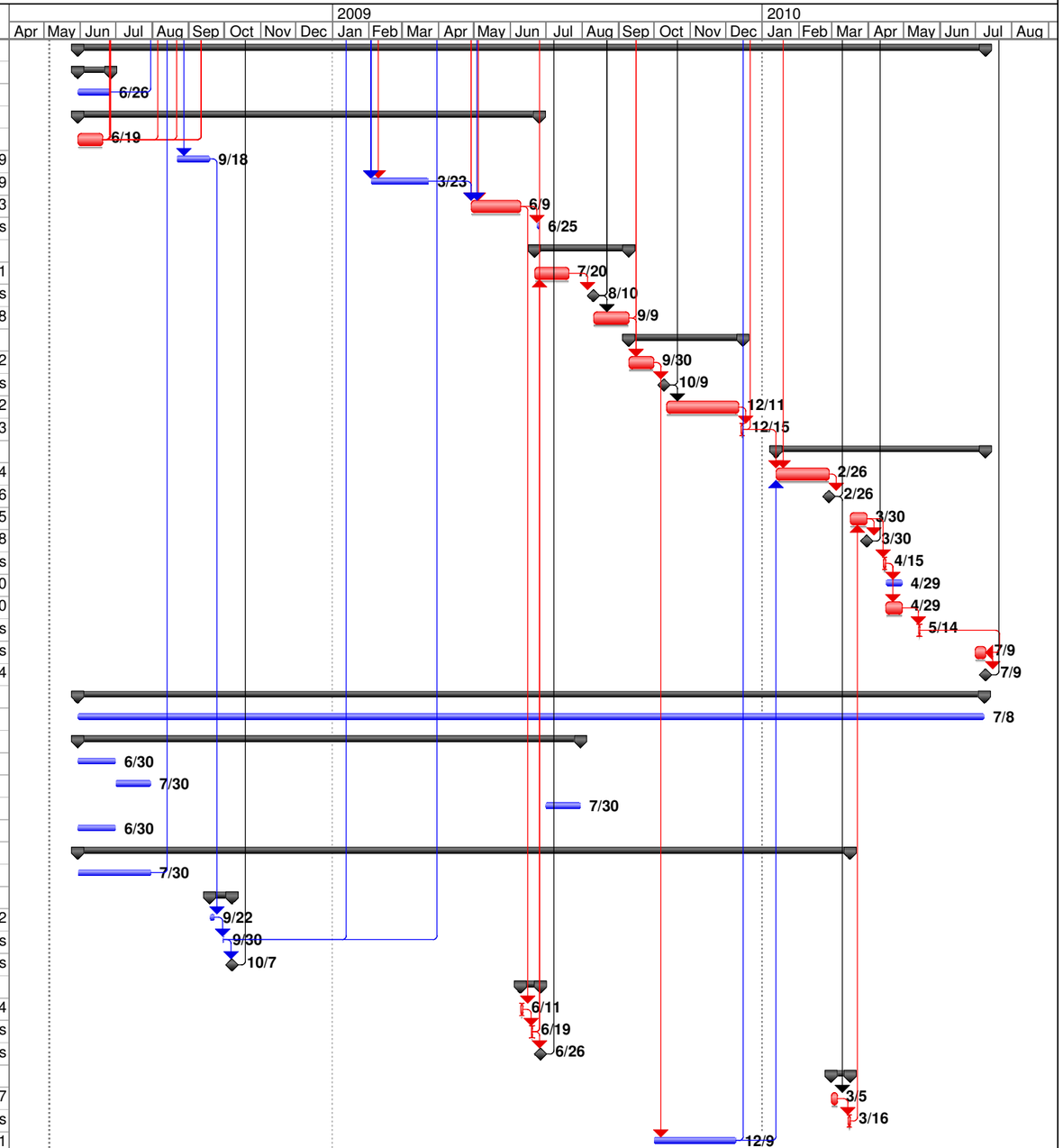


Project: WSLP Hurricane Protection Feasibility Study Schedule. 5/5/08

Non-Critical Critical Milestone Summary

Appendix F - Project Schedule
West Shore-Lake Pontchartrain, Louisiana
Hurricane Protection Protection Project Feasibility Study

ID	WBS	Task Name	Duration	Start	Finish	Predecessors
127	**6.0**	**Plan Formulation and Reporting**	**551 days**	**5/30/08**	**7/9/10**	
128	**6.1**	**Public Involvement-Communication Plans**	**20 days**	**5/30/08**	**6/26/08**	
129	6.1.1	Prepare Public Involvement Communications Plan	20 days	5/30/08	6/26/08	
130	**6.2**	**Plan Formulation**	**280 days**	**5/30/08**	**6/25/09**	
131	6.2.1	Identify Preliminary Alternatives for Evaluation	15 days	5/30/08	6/19/08	
132	6.2.2	Baseline/Future Without Project (FWOP) Conditions Report	20 days	8/22/08	9/18/08	19
133	6.2.3	Assemble Engineering Appendices for Draft Report	35 days	2/3/09	3/23/09	64,67,71,72,83,76,79
134	6.2.4	Develop Alternatives Report for ITR	30 days	4/29/09	6/9/09	31,79,117,133,123
135	6.2.5	Alternatives Review Meeting	2 days	6/24/09	6/25/09	134FS+10 days
136	**6.3**	**Alternative Formulation Briefing Document**	**58 days**	**6/22/09**	**9/9/09**	
137	6.3.1	Prepare AFB Document	21 days	6/22/09	7/20/09	171
138	MS-5	Alternatives Formulation Briefing (w/HQ USACE)	0 days	8/10/09	8/10/09	137FS+15 days
139	6.3.2	Resolution of PGM Comments	22 days	8/11/09	9/9/09	138
140	**6.4**	**Draft Report**	**69 days**	**9/10/09**	**12/15/09**	
141	6.4.1	Update Preliminary Draft FS and DEIS	15 days	9/10/09	9/30/09	139,32
142	MS-6	Notice of Draft FS and EIS in Federal Register	0 days	10/9/09	10/9/09	141FS+7 days
143	6.4.2	Public Review of Draft FS and EIS (concurrent w/EPR)	45 days	10/12/09	12/11/09	142
144	6.4.3	Draft FS and EIS Public Meeting	2 days	12/14/09	12/15/09	143
145	**6.5**	**Final Report**	**128 days**	**1/13/10**	**7/9/10**	
146	6.5.1	Incorporate EPR/Public Comments & Prepare Final Report	33 days	1/13/10	2/26/10	33,176,144
147	MS-7	Submit Final FS and EIS to ITR	0 days	2/26/10	2/26/10	146
148	6.5.2	Update Final FS and EIS for CWRB (Include Legal Review Cert & Draft ROD)	10 days	3/17/10	3/30/10	175
149	MS-8	Final FS and EIS to Civil Works Review Board (CWRB)	0 days	3/30/10	3/30/10	148
150	6.5.3	Final Report CWRB Meeting	2 days	4/14/10	4/15/10	148FS+10 days
151	6.5.4	Prepare Division Engineer's Notice & Transmittal Letter	10 days	4/16/10	4/29/10	150
152	6.5.5	Update Final FS and EIS for State & Agency Review	10 days	4/16/10	4/29/10	150
153	6.5.6	Publish NOA in Federal Register for State & Agency Review	1 day	5/14/10	5/14/10	152FS+10 days
154	6.5.7	Prepare Chief's Report	7 days	7/1/10	7/9/10	153FF+40 days
155	MS-9	Sign Chief's Report	0 days	7/9/10	7/9/10	154
156	**7.0**	**Project Management**	**550 days**	**5/30/08**	**7/8/10**	
157	7.1	Project Management	550 days	5/30/08	7/8/10	
158	**7.2**	**Program Management and Budget Preparation**	**305 days**	**5/30/08**	**7/30/09**	
159	7.2.1	FY08 Program	22 days	5/30/08	6/30/08	
160	7.2.2	FY09 Program	22 days	7/1/08	7/30/08	
161	7.2.3	FY10 Program	22 days	7/1/09	7/30/09	
162	7.3	Prepare Draft PED PMP and DA	22 days	5/30/08	6/30/08	
163	**8.0**	**Technical Review**	**468 days**	**5/30/08**	**3/16/10**	
164	8.1	Technical Review of Initial Feasibility Study Data	44 days	5/30/08	7/30/08	
165	**8.2**	**Existing Conditions ITR**	**13 days**	**9/19/08**	**10/7/08**	
166	8.2.1	ITR Review	2 days	9/19/08	9/22/08	132
167	8.2.2	Division Review	1 day	9/30/08	9/30/08	166FS+5 days
168	MS-3	Feasibility Briefing Meeting (w/ MVD)	0 days	10/7/08	10/7/08	167FS+5 days
169	**8.3**	**Alternatives ITR**	**13 days**	**6/10/09**	**6/26/09**	
170	8.3.1	ITR Review	2 days	6/10/09	6/11/09	134
171	8.3.2	Division Review	1 day	6/19/09	6/19/09	170FS+5 days
172	MS-4	Alternatives Review Conference (w/MVD)	0 days	6/26/09	6/26/09	171FS+5 days
173	**8.4**	**Final Report ITR**	**12 days**	**3/1/10**	**3/16/10**	
174	8.4.1	ITR Review	5 days	3/1/10	3/5/10	147
175	8.4.2	Division Review	2 days	3/15/10	3/16/10	174FS+5 days
176	**8.5**	**External Peer Review (EPR)**	**50 days**	**10/1/09**	**12/9/09**	141



Project: WSLP Hurricane Protection Feasibility Study Schedule. 5/5/08

Non-Critical Critical Milestone Summary

Appendix G

Quality Control and Peer Review Plan

US Army Corps
of Engineers®
New Orleans District

Quality Control and Peer Review Plan

WEST SHORE LAKE PONTCHARTRAIN, LA HURRICANE PROTECTION PROJECT FEASIBILITY STUDY

January 2008

1) **Project Description Decision Document.** This document outlines the peer review plan for the **West Shore Lake Pontchartrain, La Hurricane Protection** project. EC 1105-2-408 dated 31 May 2005 "Peer Review of Decision Documents" 1) establishes procedures to ensure the quality and credibility of Corps decision documents by adjusting and supplementing the review process and 2) requires that documents have a peer review plan. The Circular applies to all feasibility studies and reports and any other reports that lead to decision documents that require authorization by Congress. This Feasibility Report will lead to Congressional Authorization and is therefore covered by the Circular. The West Shore Lake Pontchartrain, LA Hurricane Protection Project feasibility study addresses flooding issues associated with storm surge from Lake Pontchartrain in St. John and St. Charles Parishes. The feasibility phase of this project is cost shared 50/50 with the project sponsor, the Pontchartrain Levee District. This study will develop alternative plans for addressing hurricane protection and Storm Damage Reduction for the West Shore study area, for the evaluation and screening of those plans, and for the development of a plan to be recommended for implementation as a Federal project.

   a) **General Site Description.** The study area, which includes portions of St. Charles, St. John the Baptist, and St James Parishes, is located west of the Bonnet Carre' Spillway between the Mississippi River and Lakes Pontchartrain and Maurepas. Communities within the study area include Laplace, Reserve, Lutcher, Gramercy, and Garyville.

   b) **Project Scope.** Major flooding problems in the study area occurred from Hurricanes Betsy (1965), Juan (1985), and Rita (2005). Approximately 16,400 homes and businesses are located in the project area. Initially, eight alternative alignments for providing increased levels of hurricane protection were evaluated during plan formulation. Subsequent analysis, incorporating lessons learned from Hurricane Katrina, has identified four revised alternatives that will be carried into the final feasibility study, as specified in the amended project management plan (PMP). The PMP provides for the development and selection among the alternatives considering net economic development benefits and assessment of the environmental and social effects of the selected plan. At present, construction costs have not been finalized, but are estimated to be in excess of $250 million.

   c) **Problems and Opportunities.** The current scope of work defines the tasks required to complete the West Shore Lake Pontchartrain, LA Hurricane Protection Project feasibility study as currently understood. The required tasks and related costs are subject to modification during the course of the study if plans are changed. Amendments to the scope of work will be developed in consultation with the non-Federal cost-sharing partner. Amendments to the scope of work must be agreed upon by the cost-sharing partner prior to initiating any new task. If changes in the scope of work are required, the total study cost will be adjusted to reflect such changes. The cost sharing for any changes shall be 50/50 between the Federal and Non-Federal sponsor.

d) **Project Delivery Team.** The project delivery team (PDT) is comprised of those individuals directly involved in the development of the decision document. Contact information and disciplines are listed below.

Discipline	Phone Number	Office Symbol	Org. Code
Project Management	504-862-1674	CEMVN-PM-W	B2H4800
Economics	504-862-1916	CEMVN-PM-AW	B2H4610
Project Engineering (FTL)	504-862-2709	CEMVN-ED-SP	B2L0500
Geotechnical	504-862-1034	CEMVN-ED-FD	B2L0900
Systems & Programming	504-862-2995	CEMVN-ED-SE	B2L0540
Relocations	504-862-2452	CEMVN-ED-SR	B2L0500
Engineering Control	504-862-2611	CEMVN-ED-SP	B2L0500
Structures	504-862-1840	CEMVN-ED-T	B2L0900
Cost Engineering	504-862-2727	CEMVN-ED-C	B2L0700
Civil Engineering	504-862-1214	CEMVN-ED-L	B2L0400
Surveys	504-862-1852	CEMVN-ED-SS	B2L0550
Environmental	504-862-2540	CEMVN-PM-RS	B2H4710
Cultural Resources	504-862-1100	CEMVN-PM-RN	B2H4730
Recreational Resources	504-862-1442	CEMVN-PM-RN	B2H4730
Aesthetics	504-862-1927	CEMVN-PM-RN	B2H4730
HTRW	504-862-2508	CEMVN-PM-RP	B2H4720
H&H (ADCIRC Modeling)	504-862-2444	CEMVN-ED-HD	B2L0200
H&H (Exterior Surge)	504-862-2607	CEMVN-ED-HD	B2L0200
H&H (Interior Drainage)	504-862-2490	CEMVN-ED-HD	B2L0200
H&H (Water Quality)	504-862-2066	CEMVN-ED-HD	B2L0200
Real Estate	504-862-2776	CEMVN-RE-E	B2N0200
Operations	504-862-2313	CEMVN-OD-W	B2R0045
Office of Counsel	504-862-2828	CEMVN-OC	B2N0100
PCX Lead	718-765-7070	CENAD-PSD-P	TBD

e) **In House Review Team (IHRT).** In house review will be performed inside the New Orleans District prior to submitting the West Shore Lake Pontchartrain, LA Hurricane Protection Project feasibility study for peer review. The IHRT will be comprised of members from Planning, Programs, and Project Management Division and Engineering Division, as described below. The IHRT will be established at the planning steps of the study and will be maintained to the maximum extent possible during the life of the study. IHRT members will come from inside the New Orleans District, but must not have been involved with the preparation of the technical product under review. The IHRT will be comprised of the same disciplines on the PDT, and will have experience in the type of analyses in which they are responsible for reviewing. Each IHRT member will be senior or equal in experience to the analyst or production person. The makeup of the IHRT may be modified as the study progresses to match the review requirements. The tiered IHR approach as described in MVD memorandum dated 14 February 2003 is the guiding instrument for IHR team establishment.

- **Planning, Programs, and Project Management Division Peer Review Members.** IHRT Members will be from the functional areas within Planning, Programs, and Project Management Division, which includes Project Management, Economics and Social Analysis Branch, and Environmental Planning and Compliance Branch. Each functional area will be represented by one or more reviewers on the IHRT from the various disciplines. Thus, a minimum of three members from Planning, Programs, and Project Management Division will reside on the Peer Review Team for the West Shore Lake Pontchartrain, LA Hurricane Protection Project feasibility study and will perform the Peer Review

- **Engineering Division Peer Review Members**. IHRT Members will be selected from the various design offices. The members may change as the project progresses and specific project features are better defined. The IHRT will consist of a Technical Review Manager (TRM) and representatives from the various design offices. The design offices include Civil Branch, Cost Engineering Branch, Design Services Branch, General Engineering Branch, Geotechnical Branch, Hydraulics & Hydrologic Branch, and Structures Branch. One or more reviewers on the IHRT will represent each branch from the various disciplines. There will be a minimum of seven Engineering Division members on the PRT for the West Shore Lake Pontchartrain, LA Hurricane Protection Project feasibility study and will perform the Peer Review.

2) **<u>Peer Review Plan.</u>** This review plan was developed to insure that high quality products are produced within the New Orleans District. This plan establishes the policies, procedures, and organizational responsibilities for providing quality control of planning products for this project.

The peer review plan (PRP) for the West Shore Lake Pontchartrain, LA Hurricane Protection Project feasibility study provides a technical review mechanism insuring that quality products are developed during the course of the study by the New Orleans District (MVN). The technical review of the feasibility study will consist of Independent Technical Review and External Peer Review. An additional level of policy review for the West Shore Lake Pontchartrain study will be performed at the Headquarters of the United States Army Corps of Engineers (HQUSACE) and will insure that all applicable statutes have been applied with respect to cost sharing, project purpose, and budget criteria. All processes, quality control, quality assurance, and policy review, will complement each other producing a seamless review process that identifies and resolves technical and policy issues during the course of the study.

The review process will insure that a cost-effective solution is developed. Technical review will assure accountability for the technical quality of the product. Each technical review objective in the peer review will be satisfied through a seamless review process performed outside the NOD (Internal Technical Review and External Peer Review), MVD (quality assurance of technical products), and HQUSACE (policy review). The PRP is based upon applicable guidance from higher authority including the Engineering Circular 1105-2-408 titled: Peer Review of Decision Documents dated May 31, 2005, Report of the Task Force on Technical Review, dated December 1994, and CELMV-ET memorandum of 23 September 1995, subject: Lower Mississippi Valley Division, Directorate of Engineering and Technical Services, Quality Control and Quality Assurance Guidance.

Peer Review. Based upon cost, technical expertise, and current and projected workload, the on-going technical review process for the West Shore Lake Pontchartrain, LA Hurricane Protection Project feasibility study will be conducted by the New Orleans District in conjunction with another District with hurricane and storm damage prevention experience. The local sponsor will also be involved in the review process by participating in Project Delivery Team (PDT) meetings. In terms of technical expertise, the New Orleans District has a vast amount of experience and capability in order to produce a quality product for the West Shore Lake Pontchartrain, LA Hurricane Protection Project feasibility study given the similarity to numerous other hurricane related projects constructed throughout the New Orleans District. Peer Review will consist of Independent Technical Review and External Peer Review. Peer Review Teams (PRT) will be responsible for verifying; 1) assumptions, 2) methods, procedures, and material used in analyses based on the level of analyses, 3) alternative evaluated is reasonable, 4) appropriateness of data used, and level of data obtained, 5) reasonableness of results, and 6) products meet sponsor needs and are consistent with law and existing policy.

a) **Independent Technical Review (ITR).** ITR will consist of a single level study review performed outside the New Orleans District by the National Planning Center of Expertise for Coastal Storm Damage Reduction (PCX-CSDR).

i) *Planning Center of Expertise (PCX-CSDR*). The West Shore Lake Pontchartrain, LA Hurricane Protection Project feasibility study primarily falls under the PCX business program "Coastal Storm Damage Reduction." ITR for studies grouped in this program for the purposes of storm damage reduction are performed by the PCX-CSDR. The PCX Lead will direct the ITR. If the PCX decides to include the reviewers from an outside source, these potential reviewers may include nominations from scientific or professional societies, if the Center so chooses. At this time it is anticipated that the PCX-CSDR will perform the ITR for the West Shore Lake Pontchartrain, LA Hurricane Protection Project feasibility study.

ii) *Schedule and Independent Technical Review Team (ITRT*). The ITRT will be comprised of the same disciplines on the PDT, and will have experience in the type of analyses in which they are responsible for reviewing. Each ITRT member will be senior or equal in experience to the analyst or production person. The amount of time it will take to conduct the ITR will depend on the schedule of the ITRT members. It is currently estimated that ITR will take no more than two months to complete and will be accomplished by 2009. Consistent with recent Corps guidance, the ITR team member for cost engineering will be obtained through the Walla Walla District. The number of reviewers participating in the ITR should include members with expertise in the following disciplines:

NAME	DISCIPLINE	DIVISION	BRANCH	SECTION
TBD	Economist	Planning, Programs, & Project Mgmt Division (PPPMD)	Economic and Social Analysis	Navigation Support
TBD	Environmentalist	PPPMD	Planning and Compliance	Ecological Planning & Restoration
TBD	Cultural Resource Specialist	PPPMD	Planning and Compliance	Natural/Cultural Resource Analysis
TBD	Recreational Resource Specialist	PPPMD	Planning and Compliance	Natural/Cultural Resource Analysis
TBD	Project Manager	PPPMD	Project Mgmt Branch	
TBD	Hydraulic Engineer	Engineering	Hydraulics & Hydrologic	Hydraulic Design
TBD	Civil Engineer	Engineering	Cost Engineering	
TBD	Geotechnical Engineer	Engineering	Geotechnical	Dams, Levees & Channel Slopes
TBD	Civil Engineer	Engineering	Civil	Levees
TBD	Mechanical Engineer	Engineering	General Engineering	General & Env. Design
TBD	Civil Engineer	Engineering	Design Services	Projects Engineering
TBD	Civil Engineer	Operations	Operations Mgmt	
TBD	Realty Specialist	Real Estate	Acquisition and Leasing Branch	
TBD	Appraiser	Real Estate	Appraisal and Planning Branch	
TBD	Attorney	Real Estate	Acquisition and Leasing Branch	

In addition, the PCX project manager will provide the plan formulation discipline.

iii) *DrChecks.* ITR of this decision document will be conducted using the online DrChecks system (www.projnet.org). Use of DrChecks will document all ITR comments, responses, and associated resolution accomplished throughout the study delivery process.

iv) Milestones and Schedule: The amount of time it will take to conduct the ITR will depend on the Coastal Storm Damage Reduction PCX workload and schedule. The tentative schedule is as follows:

Milestone	Date
FCSA Amendment Execution	April 08
ITR Initiation	Third Quarter FY08
Feasibility Scoping Meeting	Fourth Quarter FY08
AFB	Second Quarter FY09
Draft Report	Third Quarter FY09
Draft Submittal	Third Quarter FY09
EPR Initiation	Third Quarter FY09
Technical review conference	If Needed Second Quarter FY09
NEPA Public Review	Third Quarter FY09
ITR Certification	Third Quarter FY09
EPR Certification	Third Quarter FY09
Final Submittal	First Quarter FY10
CWRB	First Quarter FY10
MSC Commanders Public Notice	Second Quarter FY10

v) *Planning Models:* The Study will use certified HEC-HMS and HEC-RAS models for the H&H portion of the project; no ITR of these models will be necessary. The models that will be employed to analyze water and/or sediment transport in wetland areas of the project have not been selected yet. If the models ultimately selected for this task are subject to certification, they will undergo certification in accordance with the requirements of EC 1105-2-407, *Planning Models Improvement: Model Certification and current Corps guidance, as applicable.* As required, the Coastal Storm Damage Reduction PCX will coordinate with the PCX for Ecosystem Restoration when planning models of an environmental nature are utilized.

b) **External Peer Review (EPR).** The total project cost will exceed $45 million therefore an EPR is mandatory for the study as per WRDA 2007, Section 2034. Additional criteria upon which the need for an EPR was established are summarized in the following External Peer Review Decision Checklist.

External Peer Review Decision Checklist

Evaluation Criteria	Yes/No	Rationale
Novel subject matter?	No	Project involves construction of typical storm damage reduction measures.
Controversial subject matter?	Yes	The study is evaluating alternatives that enclose wetlands within protected areas and provides for long-term active management of these wetlands.
Precedent setting?	Yes	Enclosing wetlands within the protected area with the intent to maintain the areas as wetlands through long-term active management may set precedents.

External Peer Review Decision Checklist (Continued)

Evaluation Criteria	Yes/No	Rationale
Unusually significant interagency interest?	No	Initial interagency discussions suggest that involvement by other agencies will not be unusually significant.
Unusually significant economic, environmental, and social effects to the nation?	No	The costs and benefits of the project are typical of other storm damage reduction projects and the environmental effects will be minimized/mitigated.

Therefore, the PCX-CSDR will manage an EPR consisting of reviewers/expects external to the Corps, in accord with EC1105-2-408 and current Corps policy, as applicable. ERP reviewers will be external to the Corps and also will be selected by an external entity (procured by the PCX-CSDR). It is anticipated that EPR will be conducted through a panel, although the final decision will be made by the PCX and could include individual letters or some form of alternative procedure. The EPR team will be comprised of the same disciplines as the PDT, and will have experience in the type of analyses in which they are responsible for reviewing. Each EPR team member will be senior or equal in experience to the analyst or production person. The EPR Team leader will also come from the CSDR PCX and the ideal candidate will have experience with previous EPR's and have at least 15 years experience in one of the major disciplines. If these criteria cannot be met the team leader will go to the member with the most experience. At least 8 members will be needed for the review team with expertise in the following disciplines:

DISCIPLINE
Economics – team member will have extensive experience in related flood damage reduction projects, and have a thorough understanding of HEC-FDA
Environmental – team members will have extensive experience in NEPA policies, cultural resources, recreational resources and HTRW
Project Management – team member will be familiar with watershed level projects, current flood damage reduction planning and policy guidance and have experience in plan formulation.
Hydraulic Engineering – the team member will be an expert in the field of urban hydrology &hydraulics, have a through understanding of the dynamics of open channel flow systems and enclosed systems, and have an understanding of computer modeling techniques that will be used for this project.
Civil Engineering / cost – team member will be familiar with cost estimating for similar projects using MCACES. Coordination will be made through the Walla District.
Geotechnical Engineering – team member will have extensive experience in levee & floodwall design, post-construction evaluation, and rehabilitation.

DISCIPLINE (Continued)
Civil Engineering – team member will have experience in utility relocations, positive closure requirements and internal drainage for levee construction, projects engineering, operations, and application of non-structural flood damage reduction, specifically flood proofing.
Mechanical Engineering – team member shall be familiar with levee pump station and closure structure design.
Real Estate – team member wall have extensive experience in acquisition and leasing, including right of way issues, and appraisals.

c) **Public Involvement.** The public will have several opportunities to comment on the feasibility study through a public involvement plan implemented through a notice of study initiation, public meetings, and workshops. This will give the Corps the opportunity to exchange information with the public and insure that individuals with an inherent interest in the study are identified and contacted allowing them to voice their views and concerns relative to the study process.

Public meetings and workshops will be conducted to gather and provide feedback from the public, formulate a consensus, and generally keep interested parties informed. A public meeting will be scheduled subsequent to the public release of the draft feasibility report and environmental assessment to present the study conclusions. Throughout the study other public meetings and workshops will be held as necessary.

Although all comments will not be provided to the ITR team, significant and relevant public comments will have been addressed prior to ITR submittal. Any major changes in the study resulting from these comments, and all pertinent comments, will be made available to the PCX.

3) **Technical Review Meetings and Critical Checkpoints.** The quality control process recognizes that the appropriate place to perform one-on-one verification and IHR for Planning, Programs, and Project Management Division, Engineering Division, and Real Estate Division products will vary among the functional areas. However, the verifications will occur before the release of data and/or final products to another office/division, and may include reviewers and PDT members from other functional areas. The one-on-one verifications for technical divisions will occur numerous times throughout the current 25-month schedule. Each one-on-one verification meeting will be documented and become part of the quality control records used in the quality assurance process by MVD.

In addition to the one-on-one verification process, there are also points within the study process where it is appropriate for the TRT and PDT to perform the verification process as a team. This feature of the quality control process allows the flexibility to optimize the one-on-one verification process within the functional area while

maintaining the team concept during the Technical Review Meetings. Each meeting will be documented and become part of the quality control records used in the quality assurance process by MVD. These points in the study process would typically occur during: alternative screening, plan selection, and report review.

4) **Quality Control Records.** Quality control records will be generated by the In-House Review Team and Independent Technical Review Team. IHRT quality control records will consist of comments, responses, and technical review checklists prepared by MVN Planning, Programs, and Project Management Division and MVN Engineering Division. ITRT quality control records will consist of comments, responses, and certifications prepared by the ITRT members assigned to the PRT.

   The comments/response element of the quality control records for both the IHRT and ITRT will:

   - Summarize the issues/comments from the reviewers
   - Record the PDT's response or resolution to each comment

   Technical review checklists prepared by MVN will assure that the major elements of the project have undergone technical review prior to submitting material to the ITRT for review. Certifications prepared by the ITRT members will verify that independent technical review has been conducted in accordance with applicable requirements.

   The PDT leader is responsible for compiling the quality control records generated by the In-House Review Team. The PCX Lead is responsible for compiling the quality control records generated by the Independent Technical Review Team.

   The quality control records that will be included in the West Shore Lake Pontchartrain, LA Hurricane Protection Project feasibility study report are:

   - The Planning, Programs, and Project Management Division technical review checklist,
   - The Engineering Division technical review checklist, and
   - ITRT certifications