OPERATION, MAINTENANCE, AND REHABILITATION PLAN

MANDALAY BANK PROTECTION DEMONSTRATION
State Project No. TE-41

AUGUST 2004
OPERATION, MAINTENANCE, AND REHABILITATION PLAN FOR MANDALAY BANK PROTECTION DEMONSTRATION PROJECT TE-41

August 2004

Prepared by:
Louisiana Department of Natural Resources
Coastal Engineering Division
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OPERATION, MAINTENANCE, AND REHABILITATION PLAN

MANDALAY BANK PROTECTION DEMONSTRATION PROJECT

(TE-41)

The Louisiana Department of Natural Resources (LDNR) and the United States Department of the Interior - Fish and Wildlife Service (USFWS) agree to carry out the terms of this Operation, Maintenance, Repair, and Rehabilitation Plan (hereinafter referred to as the “Plan”) of the accepted, completed project features in accordance with the Cost Sharing Agreement No. 435-100323, DNR Agreement No. 2511-01-13 dated December 6, 2000 with amendments effective January 9, 2002 and May 9, 2002 (Attachment I).

The project features covered by this plan are inclusive of and are identified as the Mandalay Bank Protection Demonstration Project (TE-41). The intention of the provisions of this Plan is to maintain this project in a condition that will generally provide the anticipated benefits that the project was based on. This is a Demonstration Project and there are no requirements that this project function to any standard beyond the 5-year demonstration period, except that it is not left as a hazard to navigation or a detriment to the environment.

Construction of Mandalay Bank Protection Demonstration Project is authorized by Section 303(a) of Title III Public Law 101-646, the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) enacted on November 29, 1990 as amended. The Mandalay Bank Protection Demonstration Project was approved on the 9th Priority Project List.

1. PROJECT DESCRIPTION, PURPOSE, AND LOCATION

The Mandalay Bank Protection Demonstration Project (TE-41) is located along 3.4 miles of the Gulf Intracoastal Waterway (GIWW) approximately 6 miles southwest of Houma, Louisiana in the northeast portion of Terrebonne Parish. The project lies in the northern portion of the Penchant sub-basin in the Terrebonne hydrologic basin.

The stretch of the GIWW within the project area experiences a substantial volume of marine vessel traffic. Frequent wave action along the waterway coupled with soft, unstable marsh sediments has resulted in several shoreline blowouts, bank erosion, and an overall widening of the channel. Studies show that from 1944 to 1983 the GIWW shoreline in the project area experienced land loss rates of more than 13 feet per year (May and Britsch 1987). Adjacent freshwater marshes remain vulnerable to the damaging effects of waves produced by large-vessel traffic and high winds.

The overall objective of the project is to demonstrate the effectiveness of four separate types of treatments (two blowout and two off-bank techniques) in providing protection against shoreline erosion, promoting sedimentation, and promoting vegetative growth in a relatively high wave energy environment containing soft, highly organic soils. Unconsolidated sediments, such as those found along the GIWW, make traditional shoreline stabilization techniques ineffective due to poor load bearing capacities. The
treatments are arranged in twelve sites along the south bank of the GIWW, three sites of each of the four types of treatments (Attachment II – Project Features). Additionally, armored earthen plugs were constructed in three locations across deep, narrow breaks in the bank near some treatment sites in order to maintain the integrity of the treatment evaluation.

The project has a demonstration period of five (5) years, which began in September 2003. The principal project features include:

Blowout Treatments:

- Site R1 – Revetment Mats / Elevated Shoreline (CPE Pipe) System
- Site R2 – Revetment Mats / Elevated Shoreline (CPE Pipe) System
- Site R3 – Revetment Mats / Elevated Shoreline (CPE Pipe) System
- Site V1 – Straight-walled Fiberglass Sheet Pile System
- Site V2 – Straight-walled Fiberglass Sheet Pile System
- Site V3 – Straight-walled Fiberglass Sheet Pile System

Off-Bank Treatments:

- Site J1 – Concrete Armor Units with Giant Cutgrass
- Site J2 – Concrete Armor Units with Giant Cutgrass
- Site J3 – Concrete Armor Units with Giant Cutgrass
- Site F1 – Fencing with Giant Cutgrass
- Site F2 – Fencing with Giant Cutgrass
- Site F3 – Fencing with Giant Cutgrass

Additional features:

- Site A1 – Armored Plug
- Site A2 – Armored Plug
- Site A3 – Armored Plug

2. CONSTRUCTION COMPLETION

The Mandalay Bank Protection Demonstration Project (TE-41) completion report is included in Attachment III of this Plan. Within this completion report is a summary of information and significant events including: project personnel, final as-built project features, construction cost and CWPPRA project estimates, construction oversight cost, construction activities and change orders, pipeline and utility crossing owner information, and other significant milestone dates and comments.

The project “As-Built” construction drawings updated with all field changes and modifications that occurred during construction are included in Attachment IV.
3. **PROJECT PERMITS**

Project permit applications were completed and submitted to appropriate agencies, and permits were received prior to construction. These permits and permit amendments are included in Attachment V. Provisions for the renewal of Federal and State permits may be required prior to removal of these Structures.

4. **ITEMS REQUIRING OPERATION, MAINTENANCE, AND REHABILITATION**

This is a Demonstration Project with no provision for the operation, maintenance, or rehabilitation of any of the project features other than the performance of inspections of the project features during the 5-year demonstration period. The following completed, structural components jointly accepted by LDNR and USFWS will require inspections during the 5-year demonstration period of the project.

The project features to be inspected include:

**Blowout Treatments:**

**Sites R1, R2, R3 – Revetment Mats / Elevated Shoreline (CPE Pipe) System**
Articulated concrete mats are draped over bundled, perforated Corrugated Polyethylene (CPE) pipes which are placed on top of a geotextile fabric layer. This assembly is anchored to the water bottom and to shoreline banks. Each site has one Settlement Plate and one Warning Sign.

- Site R1 – approximately 312 L.F.
- Site R2 – approximately 300 L.F.
- Site R3 – approximately 584 L.F.

**Sites V1, V2, V3 – Straight-walled Fiberglass Sheet Pile System**
The sheet pile structure consists of vertically constructed, parallel, fiberglass panels with ball and socket interlocking joints. Walers are constructed of treated timber. All hardware and tie-rods are galvanized. In-fill dredge material from the GIWW is placed in between the sheet piles. Each site has one Warning Sign.

- Site V1 – approximately 612 L.F.
- Site V2 – approximately 408 L.F.
- Site V3 – approximately 729 L.F.

**Off-Bank Treatments:**

**Sites J1, J2, J3 – Concrete Armor Units with Giant Cutgrass**
An interlocking double row of 24 inch A-Jacks® concrete armor units is placed on the channel side of *Zizaniopsis miliacea* (giant cutgrass) plantings. The units are submerged and located in shallow water adjacent to eroding shoreline banks (off-
bank). The units are placed on a geogrid layer that is anchored to the water bottom. Each site has one Warning Sign.

- Site J1 – approximately 442 L.F.
- Site J2 – approximately 429 L.F.
- Site J3 – approximately 370 L.F.

Sites F1, F2, F3 – Fencing with Giant Cutgrass
The timber fence structure is a vertically constructed, V-shaped, wave dampening structure consisting of staggered timber boards and timber posts. All fencing is constructed with pressure-treated timber and galvanized hardware. The structure is constructed on the channel side of *Zizaniopsis miliacea* (giant cutgrass) plantings and is located in shallow water adjacent to eroding shoreline banks (off-bank). Each site has one Warning Sign.

- Site F1 – approximately 372 L.F.
- Site F2 – approximately 447 L.F.
- Site F3 – approximately 375 L.F.

Additional features:

Sites A1, A2, A3 – Armored Plugs
The armored plug consists of a core of dredged fill material from the GIWW placed on a geogrid layer with a geotextile fabric layer and a concrete revetment mat covering the core. The revetment mat is anchored to the water bottom. Each site has one Warning Sign.

- Site A1 – approximately 88 L.F.
- Site A2 – approximately 80 L.F.
- Site A3 – approximately 48 L.F.

5. **OPERATION AND MAINTENANCE BUDGET**

The Mandalay Bank Protection Demonstration Project (TE-41) is a demonstration project with a 5-year demonstration period. The costs associated with project inspections approved by the CWPPRA Task Force are included in attachment VI. This figure represents funding for inspection of the project after the first, third, and fifth years following construction completion. Under the current Cost Sharing Agreement between LDNR and USFWS no funds other than for inspections have been provided for the operation, maintenance, or rehabilitation of any of the project features in the Mandalay Bank Protection Demonstration Project (TE-41).

6. **OPERATION OF STRUCTURES**

No operation is required for this project. (Attachment VII intentionally blank)
7. **RESPONSIBILITIES – MAINTENANCE AND REHABILITATION**

A. LDNR will:

1. In accordance with the Cost Sharing Agreement No. 435-100323 outlined in Attachment I, assume all responsibilities for maintenance and rehabilitation of the accepted, completed project features identified in Section 4.

2. Conduct joint site inspections with USFWS of the project site after the first, third, and fifth years following construction completion and also after major storm events if determined to be necessary by LDNR and USFWS. LDNR will submit to USFWS, a report detailing the condition of the project features and recommendations for any corrective action. If LDNR recommends that corrective actions are needed, the report will include the entire estimated cost for engineering and design, supervision and inspection, construction, contingencies, and the urgency of such action. Project inspection reports may be compiled under attachment VIII - Project Inspections.

3. Perform or have performed any corrective actions needed, if such corrective actions have been approved by LDNR, USFWS, and the CWPPRA Task Force. USFWS will participate with LDNR, or its appointed representative, in the engineering and design phases of the corrective actions for the project. Oversight of engineering and construction of the corrective actions for the project will be the responsibility of LDNR or its appointed representative. At least thirty (30) calendar days prior to the date of formal request for construction bids, LDNR or its appointed representative shall provide USFWS with final copies of all project corrective action designs and specifications for review and concurrence by USFWS. LDNR or its appointed representative shall approve the final designs and specifications prior to proceeding with bid solicitations on all project corrective action construction contracts in coordination with USFWS. Any plan and/or specification change both before and after award of construction contracts shall be approved by LDNR in coordination with USFWS.

4. USFWS and LDNR representatives shall meet as necessary during the period of construction for corrective actions and shall make such recommendations as they deem necessary.

5. Provide the non-Federal contribution towards operation and maintenance activities as specified in the Cost Sharing Agreement between LDNR and USFWS.
B. USFWS will:

1. Conduct joint site inspections with LDNR of the project site after the first, third, and fifth years following construction completion and also after major storm events if determined to be necessary by LDNR and USFWS.

2. Request funding and authorization from the CWPPRA Task Force for any corrective actions that are deemed necessary by LDNR and USFWS.

3. Provide guidance for the development of plans and implementation of the project, review final copies of any maintenance and rehabilitation project designs and specifications, and provide review and approval of all planning and construction details prior to formal request for construction bids or any corrective actions for the project.

4. Provide the Federal contribution towards operations and maintenance activities as specified in the Cost Sharing Agreement between LDNR and USFWS.
The undersigned parties, acting on behalf of their respective agencies, agree to operate, maintain, and rehabilitate the Mandalay Bank Protection Demonstration Project (TE-41) according to this document, referenced Cost Sharing Agreement, plans, and all applicable permits and laws.

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

By: [Signature]  
Title: Field Supervisor  
Date: July 7, 2004

LOUISIANA DEPARTMENT OF NATURAL RESOURCES

By: [Signature]  
Title: Director - Coastal Engineering Division  
Date: 8/18/04
ATTACHMENT I

MANDALAY BANK PROTECTION DEMONSTRATION PROJECT (TE-41)

COST SHARING AGREEMENT
AMENDMENT NO. 2
TO
COST SHARING AGREEMENT

BETWEEN

U.S. DEPARTMENT OF INTERIOR - FISH AND WILDLIFE SERVICE

AND

STATE OF LOUISIANA

FOR CONSTRUCTION, OPERATION, MAINTENANCE AND MONITORING OF THE
MANDALAY BANK PROTECTION (DEMO) PROJECT

TE-41 / XTE-DEMO

Reference is made to ARTICLE XX-AMENDMENTS TO BE IN WRITING, of the Cost Sharing Agreement for the captioned Project as amended on the 9th day of January, 2002, by and between the U.S. Department of Interior, represented by the Fish and Wildlife Service (hereinafter referred to as “FWS”), acting by and through the Regional Director, Region 4, and the State of Louisiana, acting by and through the Secretary, Department of Natural Resources (hereinafter referred to as “DNR”), which allows for the Cost Sharing Agreement to be amended in writing.

Therefore,

WITNESSETH THAT:

WHEREAS, the actual costs, based on the bids received for construction, supervision and inspection, exceeded the amount authorized during the Phase II funding request; and,

WHEREAS, expenditure of an additional $400,000 for the Mandalay Bank Protection (Demo) Project (TE-41 / XTE-DEMO) was authorized by the PL 101-646 Task Force on April 16, 2002.

NOW THEREFORE, the following Articles and Paragraphs are amended as follows:
1. ARTICLE VI – METHOD OF PAYMENT

Paragraph "a." contained in the January 9, 2002, amended Agreement is deleted in its entirety and the following is substituted therefor:

"a. DNR shall provide the contributions required under Article II of this Agreement. The PL 101-646 Task Force has authorized a maximum Phase I cost of $367,034 and a maximum Phase II cost of $1,502,625 for this particular Project. To meet its share, DNR will contribute, through in-kind services or in cash, the non-federal share of the maximum Phase I and Phase II costs. The maximum amount of DNR’s contribution for Phase I is $55,055 and for Phase II is $225,394, the total of which is $280,449. This figure is subject to modification as provided for in Section 303(f) of CWPPRA. Any costs in excess of the maximum Phase I cost of $367,034 or the maximum Phase II cost of $1,502,625 are subject to amendment of this Agreement and Task Force approval, as provided in ARTICLE XIX. The maximum amount of DNR’s required minimum five percent (5%) cash contribution for Phase I is $18,352 and Phase II is $75,131. Funding methods and limits of obligations are specified in ARTICLE XIX-PROJECT COST LIMITS. When the PL 101-646 Task Force authorizes expenditures for post-construction monitoring and operation, maintenance and rehabilitation beyond the initial three (3) year minimum, this Agreement shall be amended in accordance with ARTICLE XX.”

ARTICLE XIX – PROJECT COST LIMITS

Paragraph "a." contained in the January 9, 2002, amended Agreement is deleted in its entirety and the following is substituted therefor:

"a. Phase I funding is comprised of those funds needed for any necessary analysis of environmental benefits, any necessary hydrologic data collection and analysis, Pre-construction Biological Monitoring, and Engineering and Design and Real Estate requirements up to, but not including, the purchase of real estate. Engineering and Design includes Engineering, Design, Environmental Clearances, Permitting, and Project Management. Phase II funding is comprised of those funds needed for Construction, the first three (3) years of Post-construction Biological Monitoring, Operation, Maintenance and Rehabilitation and the Purchase of Real Estate. Construction includes Project Management, Contract Management, Construction Supervision and Inspection. The PL 101-646 Task Force has authorized a maximum Phase I and Phase II cost of $367,034 and $1,502,625 respectively. Any cost in excess of these maximum total Phase I and Phase II costs is subject to Task Force approval and amendment of this Agreement as provided in ARTICLE XX. The budget for each Phase by funding category includes the following:
## PHASE I

1. E&D (including supervision & administration) $247,360
2. Easements and Landrights $93,750
3. Pre-Construction Monitoring $25,924

Total Phase I $367,034

## PHASE II

1. Construction (including Project & construction management and construction supervision & inspection) $1,434,445
2. Easements and Landrights $0
3. Post-Construction Monitoring $51,313
4. Operation, Maintenance and Rehabilitation $12,469
5. U.S. Corps of Engineers Project Management $4,398

Total Phase II $1,502,625

## GRAND TOTAL

$1,869,659
MANDALAY BANK PROTECTION (DEMO) / TE-41 / XTE-DEMO

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be executed on this _____ day of ________, 2002, before the undersigned witnesses.

U.S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

BY: ____________________________
Sam D. Hamilton
Regional Director

THE STATE OF LOUISIANA

BY: ____________________________
Jack C. Caldwell, Secretary
Louisiana Department of
Natural Resources

WITNESSES:

________________________________
Peggy J. Kerlin

________________________________
Derek W. Young

________________________________
Linda Jones

WITNESSES:

________________________________
Karen L. Sevier

________________________________
Julie L. Hyde

APPROVED
Office of the Governor
Office of Contractual Review

______________________________
DIRECTOR

JUN 21/2002
CERTIFICATION REGARDING LOBBYING

The undersigned certifies, to the best of his or her knowledge and belief that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of a cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000.00 and not more than $100,000.00 for each such failure.

DATE: May 9, 2002

Jack C. Caldwell, Secretary
Department of Natural Resources
State of Louisiana
CERTIFICATION OF AUTHORITY

I, Warren A. Fleet, do hereby certify that I am the principal legal officer of the Department of Natural Resources for the State of Louisiana, that the Department of Natural Resources for the State of Louisiana is a legally constituted public body with full authority and legal capability to perform the terms of the Agreement between the U. S. Fish and Wildlife Service and the State of Louisiana in connection with the MANDALAY BANK PROTECTION (DEMO) PROJECT (TE-41 / XTE-DEMO), Terrebonne Parish, LA, and that the persons who have executed this Amendment on behalf of the State have acted within their statutory authority.

IN WITNESS WHEREOF, I have made and executed this certification this 13th day of May, 2002.

[Signature]
Warren A. Fleet
General Counsel
STATE OF GEORGIA  
COUNTY OF DEKALB  

BEFORE ME, the undersigned authority, duly commissioned and qualified in and for said County and State aforesaid, on this 30th day of May, 2002, personally came and appeared Sam D. Hamilton who declared that he is the Regional Director of the U.S. Department of Interior, Fish and Wildlife Service, that he executed the foregoing instrument on behalf of said Federal Agency and that the instrument was signed pursuant to the authority granted to him by said Federal Agency and that he acknowledged the instrument to be the free act and deed of said Federal Agency.

[Signature]  
NOTARY PUBLIC  
My commission expires:  
(SEAL)

STATE OF LOUISIANA  
PARISH OF EAST BATON ROUGE  

BEFORE ME, the undersigned authority, duly commissioned and qualified in and for said Parish and State aforesaid, on this 9th day of May, 2002, personally came and appeared Jack C. Caldwell, to me known, who declared that he is the Secretary of the Department of Natural Resources, State of Louisiana, that he executed the foregoing instrument on behalf of said State Agency and that the instrument was signed pursuant to the authority granted by him by said State Agency and that he acknowledged the instrument to be the free act and deed of said State Agency.

[Signature]  
NOTARY PUBLIC  
My commission expires:  
(SEAL)
AMENDMENT NO. 1

TO

COST SHARING AGREEMENT

BETWEEN

U.S. DEPARTMENT OF INTERIOR - FISH AND WILDLIFE SERVICE

AND

STATE OF LOUISIANA

FOR CONSTRUCTION, OPERATION, MAINTENANCE AND MONITORING OF THE

MANDALAY BANK PROTECTION (DEMO) PROJECT

TE-41 / XTE-DEMO

Reference is made to ARTICLE XX-AMENDMENTS TO BE IN WRITING, of the Cost Sharing Agreement for the captioned Project entered into the 6th day of December, 2000, by and between the U.S. Department of Interior, represented by the Fish and Wildlife Service (hereinafter referred to as "FWS"), acting by and through the Regional Director, Region 4, and the State of Louisiana, acting by and through the Secretary, Department of Natural Resources (hereinafter referred to as "DNR"), which allows for the Cost Sharing Agreement to be amended in writing.

Therefore,

WITNESSETH THAT:

WHEREAS, Phase I categories of E&D (including supervision & administration), Easements and Landrights, and, Pre-Construction Monitoring are substantially completed; and,

WHEREAS, expenditure of Phase II for the Mandalay Bank Protection (Demo) Project (TE-41 / XTE-DEMO) was authorized by the PL 101-646 Task Force October 25, 2001.

NOW THEREFORE, the following Articles and Paragraphs are amended as follows:
1. **ARTICLE VI – METHOD OF PAYMENT**

Paragraph “a.” contained in the December 6, 2000 Agreement is deleted in its entirety and the following is substituted therefor:

“a. DNR shall provide the contributions required under Article II of this Agreement. The PL 101-646 Task Force has estimated a Phase I cost of $298,939 and a Phase II cost of $895,556.

To provide flexibility, the PL 101-646 Task Force has authorized a maximum Phase I cost of $367,034 and a maximum Phase II cost of $1,102,625 for this particular Project. To meet its share, DNR will contribute, through in-kind services or in cash, the non-federal share of the maximum Phase I and Phase II costs. The maximum amount of DNR’s contribution for Phase I is $55,055 and for Phase II is $165,394, the total of which is $220,449. This figure is subject to modification as provided for in Section 303(f) of CWPPRA. Any costs in excess of the maximum Phase I cost of $367,034 or the maximum Phase II cost of $1,102,625 are subject to amendment of this Agreement and Task Force approval, as provided in ARTICLE XIX. The maximum amount of DNR’s required minimum five percent (5%) cash contribution for Phase I is $18,352 and Phase II is $55,131. Funding methods and limits of obligations are specified in ARTICLE XIX-PROJECT COST LIMITS. When the PL 101-646 Task Force authorizes expenditures for post-construction monitoring and operation, maintenance and rehabilitation beyond the initial three (3) year minimum, this Agreement shall be amended in accordance with ARTICLE XX.”

2. **ARTICLE XIX – PROJECT COST LIMITS**

Paragraph “a.” contained in the December 6, 2000 Agreement is deleted in its entirety and the following is substituted therefor:

“a. The PL 101-646 Task Force has financed Phase I at an estimated cost of $298,939 and the Phase II at an estimated cost of $895,556. Phase I funding is comprised of those funds needed for any necessary analysis of environmental benefits, any necessary hydrologic data collection and analysis, Pre-construction Biological Monitoring, and Engineering and Design and Real Estate requirements up to, but not including, the purchase of real estate. Engineering and Design includes Engineering, Design, Environmental Clearances, Permitting, and Project Management. Phase II funding is comprised of those funds needed for Construction, the first three (3) years of Post-construction Biological Monitoring, Operation, Maintenance and Rehabilitation and the Purchase of Real Estate. Construction includes Project Management, Contract Management, Construction Supervision and Inspection. To provide flexibility in the funding of the Project, the PL 101-646 Task Force has authorized a maximum Phase I and Phase II cost of 125% of the estimated Phase I and Phase II costs or $367,034 and $1,102,625 respectively. Any cost in excess of these maximum total Phase I and Phase II costs is subject to Task Force approval and amendment of this Agreement as provided in ARTICLE XX. The 125% budget for each Phase by funding category includes the following:
PHASE I

1. E&D (including supervision & administration) $247,360
2. Easements and Landrights $93,750
3. Pre-Construction Monitoring $25,924
Total Phase I $367,034

PHASE II

1. Construction (including Project & construction management and construction supervision & inspection) $1,034,445
2. Easements and Landrights $0
3. Post-Construction Monitoring $51,313
4. Operation, Maintenance and Rehabilitation $12,469
5. U.S. Corps of Engineers Project Management $4,398
Total Phase II $1,102,625

GRAND TOTAL $1,469,659
MANDALAY BANK PROTECTION (DEMO) / TE-41 / XTE-DEMO

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be executed on this __________ day of ______________, 2003, before the undersigned witnesses.

U.S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

BY: Sam D. Hamilton
Regional Director

THE STATE OF LOUISIANA

BY: Jack C. Caldwell, Secretary
Louisiana Department of Natural Resources

WITNESSES:

Peggyood Harris

Karen Y. Lewis

THE STATE OF LOUISIANA

BY: Jack C. Caldwell, Secretary
Louisiana Department of Natural Resources

WITNESSES:

Peggie Good Harris
Karen Y. Lewis

APPROVED
Office of the Governor
Office of Contractual Review

MAR 05 2003
DIRECTOR

4 of 7
CERTIFICATION REGARDING LOBBYING

The undersigned certifies, to the best of his or her knowledge and belief that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of a cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL “Disclosure Form to Report Lobbying,” in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000.00 and not more than $100,000.00 for each such failure.

DATE: 1-8-2022

Jack C. Caldwell, Secretary
Department of Natural Resources
State of Louisiana
CERTIFICATION OF AUTHORITY

I, Warren A. Fleet, do hereby certify that I am the principal legal officer of the Department of Natural Resources for the State of Louisiana, that the Department of Natural Resources for the State of Louisiana is a legally constituted public body with full authority and legal capability to perform the terms of the Agreement between the U. S. Fish and Wildlife Service and the State of Louisiana in connection with the MANDALAY BANK PROTECTION (DEMO) PROJECT (TE-41 / XTE-DEMO), Terrebonne Parish, LA, and that the persons who have executed this Amendment on behalf of the State have acted within their statutory authority.

IN WITNESS WHEREOF, I have made and executed this certification this 11th day of January, 2001.

[Signature]

Warren A. Fleet
General Counsel
STATE OF GEORGIA
COUNTY OF DEKALB

BEFORE ME, the undersigned authority, duly commissioned and qualified in and for said County and State aforesaid, on this ___ day of _____, 20___, personally came and appeared Sam D. Hamilton who declared that he is the Regional Director of the U.S. Department of Interior, Fish and Wildlife Service, that he executed the foregoing instrument on behalf of said Federal Agency and that the instrument was signed pursuant to the authority granted to him by said Federal Agency and that he acknowledged the instrument to be the free act and deed of said Federal Agency.

(SEAL)

DEBORAH A. VELLIS
NOTARY PUBLIC
CHEROKEE COUNTY, GA
MY COMMISSION EXPIRES ON NOVEMBER 23, 2003

STATE OF LOUISIANA
PARISH OF EAST BATON ROUGE

BEFORE ME, the undersigned authority, duly commissioned and qualified in and for said Parish and State aforesaid, on this ___ day of _____, 20___, personally came and appeared Jack C. Caldwell, to me known, who declared that he is the Secretary of the Department of Natural Resources, State of Louisiana, that he executed the foregoing instrument on behalf of said State Agency and that the instrument was signed pursuant to the authority granted by him by said State Agency and that he acknowledged the instrument to be the free act and deed of said State Agency.

(SEAL)
COST SHARE AGREEMENT

BETWEEN

U.S. DEPARTMENT OF THE INTERIOR - FISH AND WILDLIFE SERVICE

AND

THE STATE OF LOUISIANA

FOR PLANNING, ENGINEERING AND DESIGN, CONSTRUCTION, OPERATION,

MAINTENANCE, AND MONITORING OF THE

MANDALAY BANK PROTECTION (DEMO) PROJECT

TE-41 / XTE-DEMO

THIS AGREEMENT, entered into this 10th day of December 2000 by and between the U.S. Department of the Interior, represented by the Fish and Wildlife Service (hereinafter referred to as “FWS”), acting by and through the Regional Director, Region 4, and the State of Louisiana, acting by and through the Secretary, Department of Natural Resources (hereinafter referred to as “DNR”).

WITNESSETH, THAT:

WHEREAS, expenditure of Phase I funding for the Mandalay Bank Protection (Demo) Project (TE-41 / XTE-DEMO) was authorized by the Coastal Wetlands Planning, Protection and Restoration Act (hereinafter referred to as “CWPPRA”) of 1990 (16 U.S.C. Section 3961 et seq.; Public Law 101-646, Title III), and for local sponsorship by the Louisiana Coastal Wetlands Conservation Plan, by the State of Louisiana in January 2000; and,

WHEREAS, upon successful completion of Phase I, expenditure of Phase II funding for the Mandalay Bank Protection (Demo) Project may be authorized by the Louisiana Coastal Wetlands Conservation and Restoration Task Force (hereafter referred to as the “Task Force”);

WHEREAS, the State’s Coastal Wetlands Conservation Plan was approved on November 30, 1997; all costs incurred on or after December 1, 1997 are shared at eighty-five percent (85%) Federal and fifteen percent (15%) non-Federal;

WHEREAS, Section 303(e) of CWPPRA states that the Secretary of the Army shall not fund the identified project unless said project is subject to such terms and conditions necessary to ensure that
wetlands restored, enhanced, or managed through the project will be administered for the long-term
conservation of such lands and waters and dependent fish and wildlife populations; and,

WHEREAS, FWS is authorized by federal law to enter a cost-sharing agreement with DNR to
provide financial cost-share assistance for the construction, operation, maintenance, and monitoring of
the Project; and,

WHEREAS, La. R.S. 49:213 and La. R.S. 49:214 state that the Secretary of DNR may enter into
cost-sharing agreements with the federal government in order to conserve, restore, create, and enhance
vegetated wetlands in coastal Louisiana in accordance with prescribed legislative oversight; and,

WHEREAS, DNR has agreed to pay 5% of the total Project cost in actual cash and the
remaining balance of its share in the form of in-kind contributions; and,

WHEREAS, DNR is willing to participate in cost-sharing and financing in accordance with the
terms of this Agreement;

NOW, THEREFORE, the parties agree as follows:

ARTICLE I – DEFINITIONS AND GENERAL PROVISIONS

For the purposes of this Agreement:

a. The term “Project” shall mean the work authorized by Congress as specified above for
the construction of the Mandalay Bank Protection (Demo) Project (TE-41 / XTE-DEMO). The TE-41 /
XTE-DEMO Project is located in Terrebonne Parish. The Project objective is to develop new
techniques for protecting and restoring easily erodible organic soils affected by bank erosion along
navigation channels. This project attempts to combine existing technologies such as plantings and
fencing with other untried technologies to create new hybrid technologies. The use of concrete mats has
been fairly well developed for upland erosion protection, but not yet developed for protection of organic-
soil wetlands, nor used as proposed in this project. Techniques will be employed on intact banks to test
their erosion prevention capability. Other techniques will be installed in eroded embayments to test both
protection from further erosion and restoration of these “blowouts.” The proposed techniques attempt to
capitalize on observed processes using a combination of hard and soft structures. Techniques employed
will include a combination of fenced and unfenced vegetative planting (cutgrass and/or willow stakes),
submarine armored levee, and low-level armored berm. The effectiveness of the various techniques will
be determined by monitoring shoreline position change rates. Elevation surveys from foreshore open
water areas will be used to further evaluate sediment trapping and associated shoreline changes.
Settlement surveys will be utilized to monitor sinking rates of the concrete structures.

b. The term “total Project costs” shall mean all costs incurred by DNR and FWS directly
related to implementation of the Project. Such costs shall be those costs incurred after January 11, 2000;
and which shall include, but not necessarily be limited to, the following: actual costs of applicable
project management, geotechnical investigations, detailed engineering and design; actual construction
costs; construction management, supervision and inspection costs; operation costs; monitoring costs; the cost of land rights acquisition, easements, servitudes, rights-of-way; utility and facility alterations or relocations; and maintenance for the Project.

c. The term “total first costs” shall mean all costs incurred by DNR and FWS directly related to completion of the construction phase of the project as identified in the official CWPPRA authorization document prepared by the CWPPRA Task Force January 11, 2000, and submitted to Congress.

d. The term “period of construction” shall mean the time from the advertisement of the first construction contract to the time that the Contracting Officer certifies to DNR that construction of the entire project is complete. The Contracting Officer shall furnish to DNR copies of the government’s written Notice of Acceptance of Complete Work furnished to contractor(s) for all contracts for the Project.

e. The term “Contracting Officer” shall mean the FWS Regional Director, Region 4, or his/her designee.

f. The term “relocations” shall mean the preparation of plans and specifications for, and the accomplishment of any alteration, modification, lowering or raising in place, and/or a new construction related to, but not limited to, existing: buildings, pipelines, public utilities (such as municipal water and sewer lines, telephone lines, and storm drains), aerial utilities, cemeteries, and other facilities, structures, and improvements determined by FWS and DNR to be necessary for the construction, operation, maintenance, and monitoring of the Project.

g. The term “utility” shall mean pipelines, cables, and similar facilities.

h. The term “fiscal year” shall mean one fiscal year of the United States Government, unless otherwise specifically indicated. The Government fiscal year begins on October 1 and ends on September 30.

i. The term “construction management costs” shall mean costs incurred by FWS directly supervising and administering construction contracts, to include related overhead costs, as specified in applicable contracting regulations.

j. The term “Project Monitoring Plan” shall mean a plan jointly developed and approved by DNR and FWS specifically for the Project which identifies all monitoring requirements, parameters and procedures. DNR will be responsible for collection of monitoring data and assimilation as part of the local cost-share responsibilities. Monitoring will be conducted for the expected life of the Project or as agreed by FWS and DNR.

k. The term “maintenance” shall mean any action completed after the construction period that is required to maintain the Project at “as built” standards, and costing less than twenty percent (20%) of the original construction cost.
The term “Operation and Maintenance Plan” shall be a plan jointly developed and approved by FWS and DNR upon completion of the Project and prior to acceptance by DNR of the completed Project or functional portion of the Project. The Operation and Maintenance Plan will address specific items, including engineering inspections and any related land rights issues, with estimated costs, to be performed throughout the expected life-span of the Project and will be revised periodically to reflect actual needs.

The term “operation and maintenance costs” shall mean all costs incurred by DNR and FWS related to operating and maintaining the final accepted Project. Specific requirements and responsibilities shall be identified and mutually accepted by both parties in an “Operations and Maintenance Plan”.

The term “obligation” refers to amount of orders placed, contracts awarded, services rendered, or other commitments made during a given period which will require outlay during the same or some future period.

The term “engineering and design costs” shall mean all costs incurred by DNR and FWS related to the development, approval, and acceptance of detailed engineering and design plans, specifications, and Project bid documents. This will also include all supervision and administrative costs associated with the engineering and design phase of the Project and will terminate with the award of a Project construction contract.

The term “monitoring costs” shall mean all costs by DNR and FWS in developing and implementing the Project Monitoring Plan to evaluate the effectiveness of the Project in reaching Project objectives. This shall include, but not be limited to, such items as plan development and review, conducting pre- and post-construction monitoring procedures, collection and evaluation of data, and preparation of monitoring reports.

The term “functional portion of the Project” shall mean a completed portion of the Project as determined by the Contracting Officer and DNR in writing to be suitable for tender to DNR for operation and maintenance in advance of completion of the entire Project. To be suitable for tender, the Contracting Officer must determine that the completed portion of the Project can function independently and for a useful purpose, although the balance of the Project is not complete.

The term “life of the Project” shall mean the next five (5) years starting at the date of acceptance of the final Project, or functional portion of the Project, as provided in Article V.e. of this Agreement.

The term “Phase I” shall include but not be limited to any necessary analysis of environmental benefits, any necessary hydrologic data collection and analysis, Pre-construction Biological Monitoring, and Engineering and Design. Engineering and Design includes Engineering, Design, Environmental Clearances, Permitting, Project Management and Real Estate requirements up to, but not including, the purchase of real estate.
t. The term “Phase II” shall mean Construction and the first three (3) years of Post-construction Biological and Structural Monitoring, Operation and Maintenance. Construction includes Project Management, Contract Management, Construction Supervision, Inspection, and the Purchase of Real Estate.

u. The term “CWPPRA Project Standard Operating Procedures Manual” shall mean the standard procedures to be used by FWS and the State in the management of the Project. These standard procedures shall not supersede nor invalidate any rules or regulations internal to FWS or the State.

ARTICLE II – OBLIGATIONS OF THE PARTIES

a. No federal funds may be used to meet the DNR share of Project costs under this Agreement unless the expenditure of such funds is expressly authorized by statute as verified in writing by the granting agency.

b. DNR shall:

1. Over the life of the Project, fund a total contribution equal to the non-federal share of the total Project costs, including a minimum cash contribution of five percent (5%) of the total Project costs. Said contribution will include cash and/or credit granted from land rights, easements, servitudes, and rights-of-way obtained through or owned by DNR, or relocations credit granted for Project features furnished by DNR, and all administrative and management costs required by DNR to fulfill the obligations specified in this Agreement including pre- and post-construction Project monitoring, permitting coordination, geotechnical investigation, engineering services, landrights amendment processing and or acquisition, and maintenance and operation responsibilities accepted by DNR.

2. Prior to advertisement of each construction contract, and as further specified in Article VI.b.2. hereof, provide a minimum cash contribution of five percent (5%) of that portion of total first costs incurred to date and anticipated to be expended through completion of that construction contract.

3. Prior to the advertisement of each construction contract, and as further specified in Article VI.b.2. hereof, provide a contribution equal to the non-federal share of that portion of total first costs incurred to date and anticipated to be expended through completion of that construction contract. Said contribution will include cash and/or credit granted from land rights, easements, servitudes, and rights-of-way obtained through or owned by DNR, or relocations credit granted for Project features furnished by DNR, administrative and management costs, and any engineering and/or, biological, or hydrological review evaluations required by DNR to fulfill the obligations specified in this Agreement.

4. Implement the Project Monitoring Plan in accordance with procedures jointly developed with FWS and, as further specified in Article VIII, to assure the performance of the long-term monitoring requirements.
5. Provide specific engineering services, associated with the Project, subject to the cost-sharing provisions, and as mutually agreeable to both DNR and FWS, or its engineering representative. Specific engineering services to be provided by DNR may include design surveys, preparation of plans and specifications, post-construction surveys, geotechnical, engineering, design, land services, and construction management services, etc., associated with the project, as requested by the FWS, subject to the cost-sharing provisions identified. All such services will be approved by and subject to the supervision and guidance of FWS Project Manager or engineering representative.

6. Acquire all land rights, servitudes, rights-of-way, easements, and material borrow and disposal areas associated with the Project which are determined to be necessary, subject to cost-sharing terms previously identified.

7. Jointly develop an Operation and Maintenance Plan with the FWS which will identify specific long-term maintenance and operation requirements. Said plan will be developed upon completion of the Project features in accordance with Article I.m., and will be reviewed and modified as necessary after an evaluation conducted by DNR, with FWS participation, within 12-18 months following completion of construction.

8. Provide for non-federal share of costs identified in the Operation and Maintenance Plan, according to Article VIII.a.

9. Assume all responsibilities (including engineering, design, and construction services) for operation and maintenance of the Project upon acceptance of the completed Project, limited only by the provisions of Article XVI. FWS will reimburse DNR using electronic funds transfer (EFT) procedures in accordance with 31 CFR 208 for the federal share of such costs, subject to availability of funds.

10. Participate in a preliminary design review with FWS at thirty percent (30%) completion of Phase I project evaluation in accordance with Section 5.(k).8 and 5.(k).9, CWPPRA, Project Standard Operating Procedures Manual.

11. Provide authorized technical services including, but not limited to, obtaining basic information; preparation of drawings, design, and specifications; and performance of layout, inspection services, and quality assurance during construction. The design report, preliminary and final plans must be reviewed by the FWS Project Manager and concurred upon prior to advertisement.

12. Submit to FWS the completed As-built Surveys/Construction drawings and Construction Completion Report.

   c. FWS shall:

   1. Over the life of the Project, fund a total contribution equal to the federal share of the total Project costs, including any relocation costs associated with the Project.
2. Prior to the advertisement of each construction contract, FWS shall provide a contribution equal to the federal share of that portion of total first costs incurred to date and anticipated to be expended through completion of that construction contract, including any relocation costs associated with the Project.

3. Except as limited by the provisions of Article VIII.b., and subject to the availability of appropriations, reimburse DNR for the federal share of the approved cost of pre- and post-construction monitoring of the Project upon receipt of the request for reimbursement.

4. Reimburse DNR using electronic funds transfer (EFT) procedures in accordance with 31 CFR 208 for the federal share of the actual costs incurred by DNR for project management, geotechnical and engineering services, and permitting coordination provided for the Project, and acquiring all land rights (easements, servitudes, and rights-of-way, including suitable borrow material and disposal areas) as determined by FWS to be necessary for Project construction, operation, monitoring, and maintenance.

5. Participate with DNR on the level of design effort needed to determine the effectiveness of a project in achieving intended environmental benefits.

6. Provide all engineering, design, including but not limited to surveying, geotechnical investigations, hydrological modeling as deemed necessary by DNR and FWS, land services, and construction services, except those mutually agreed as specified in Article II.b.5. and Article II.b.9. associated with the Project, subject to the cost-sharing provisions identified.

7. Participate in a preliminary design review with DNR at thirty percent (30%) completion of Phase I project evaluation in accordance with Section 5.(k).8 and 5.(k).9, CWPPRA, Standard Operating Procedure.

8. Provide the federal share of costs identified in the Operation and Maintenance, Plan and actually incurred by DNR, subject to the limitations on expenditures set forth in Article XIX.

9. Arrange for and conduct final inspection of the completed works of improvement with DNR to determine whether all work has been performed in accordance with the contractual requirements. Based on this determination, accept work from the contractor and notify DNR of acceptance.

10. Participate, with DNR, in an evaluation within 12 to 18 months following the completion of construction to assess maintenance and operation needs. FWS will also participate with DNR in any subsequent evaluations as the parties deem necessary to address long-term maintenance and operation of the Project.

11. Ensure that all National Environmental Policy Act (NEPA) and regulatory requirements, including permits, for the Project are met.
ARTICLE III – LAND RIGHTS, FACILITIES, AND PUBLIC LAW 91-646
RELOCATION ASSISTANCE

a. On non-Federal lands, DNR shall acquire all land rights, easements, servitudes, rights-of-way, and material borrow and disposal areas determined to be necessary for construction of the Project and as mutually agreed-to by DNR and FWS. Prior to the advertisement of any construction contract, DNR shall provide certification to FWS that all land rights, easements, servitudes, rights-of-way and material borrow and disposal areas required, have been acquired as part of this Agreement and shall furnish to FWS evidence supporting actual rights-of-way acquired by DNR for Project construction, operation, monitoring, and maintenance.

b. The State shall comply with the applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646) as amended by Title IV of the Surface Transportation and Uniform Relocation Assistance Act of 1987 (Public Law 100-17), and the Uniform Regulations contained in 49 CFR part 24, in acquiring lands, easements, and rights-of-way for construction and subsequent operation, and maintenance of the project.

c. No title to the property or minerals affected herein are transferred with any easements, servitudes, rights-of-way, and material borrow and disposal areas provided by DNR pursuant to this Agreement. No public rights of ownership shall be transferred and vested in private parties as a result of the Project. Further, any easements, servitudes, rights-of-way, and material borrow and disposal areas shall provide for reasonable access for mineral exploration and development.

ARTICLE IV – VALUE OF LAND RIGHTS AND FACILITIES

a. The value of the land rights, easements, servitudes, and rights-of-way to be included in total Project costs and credited towards DNR’s share of total Project costs will be determined in accordance with the following procedures:

1. The costs associated with securing all land rights, easements, servitudes, and rights-of-way to be acquired by DNR (Article III.a.) shall be the actual costs including, but not limited to, expenses associated with securing legal land rights instruments from all sources (legal reviews, recording fees, etc.) associated with Project activities. An estimate of such costs will be prepared by DNR and approved by FWS for credit allowance as part of the DNR cost-share. Credit allowance for any costs above this estimate must be approved by FWS.

2. Any costs incurred for relocations will be included in total Project costs and will be accomplished as part of Project construction through the agreed cost-share arrangement.

ARTICLE V – CONSTRUCTION PHASING AND MANAGEMENT

a. To provide for consistent and effective communication between DNR and FWS during the period of construction, DNR and FWS shall appoint representatives to coordinate scheduling, plans, specifications, modifications, contract costs, and other matters relating to construction of the Project.
b. FWS will participate with DNR, or its appointed representative, in the engineering and design phases of the Project. Oversight of engineering and construction of the Project will be the responsibility of DNR or its appointed representative. At least thirty (30) calendar days prior to the date of formal request for construction bids, DNR, or its appointed representative, shall provide FWS with final copies of all Project designs and specifications for review and concurrence by FWS. FWS, or its appointed representative, and DNR shall concur in the final designs and specifications prior to proceeding with bid solicitations on all project construction contracts. Any plan and/or specification(s) changes, both before and after award of construction contracts, shall be jointly approved by FWS and DNR.

c. The representatives appointed above shall meet as necessary during the period of construction and shall make such recommendations as they deem warranted to the Contracting Officer.

d. The Contracting Officer shall consider the recommendations of the representatives in all matters relating to construction of the Project; but the Contracting Officer, having ultimate responsibility for construction of the Project, has complete discretion to accept, reject, or modify the recommendations.

e. Following completion of the Project, or functional portion of the Project, final acceptance of the Project, or functional portion of the Project, will be jointly made by FWS and DNR. Should the Project, or functional portion of the Project, not meet plan specification objectives, then DNR will have the option to approve modification of the Operation and Maintenance Plan, or to terminate this Agreement. However, both DNR and FWS shall endeavor to modify the Project and/or its Operation and Maintenance Plan to ensure that the original plan specification objectives are achieved.

ARTICLE VI – METHOD OF PAYMENT

a. DNR shall provide the contributions required under Article II of this Agreement. The Task Force has estimated a Phase I cost of $298,939 and authorized a maximum Phase I cost of $367,034 for this particular Project. To meet its share, DNR will contribute, through in-kind services or in cash, the non-federal share of the maximum Phase I costs. The maximum amount of DNR's contribution is $55,055. This figure is subject to modification as provided for in Section 303(f) of CWPPRA. Any costs in excess of the maximum Phase I cost of $367,034 are subject to amendment of this Agreement and Task Force approval, as provided in Article XIX. The maximum amount of DNR's required minimum five percent (5%) cash contribution for Phase I is $18,352. Funding methods and limits of obligations are specified in Article XIX – Project Cost Limits. Should the Task Force authorize expenditure of Phase II funding, this Agreement shall be amended in accordance with Article XX.

b. DNR shall provide its required cash contribution in proportion to the rate of federal expenditures in accordance with the following provisions:

1. For purposes of budget planning, FWS shall notify DNR by October 1 of each year of the estimated funds that will be required from DNR to meet its share of total Project costs for the subsequent fiscal year.
2. No later than sixty (60) calendar days prior to the advertisement of each construction contract, FWS shall notify DNR of DNR's share of that portion of total first costs incurred to date and anticipated to be expended through completion of that construction contract. This amount will include the non-federal share of total first costs in cash and/or credit as described in Article II.b.3., and the minimum cash contribution of five percent (5%) of total first costs as described in Article II.b.2. No later than thirty (30) calendar days thereafter, DNR shall verify to the satisfaction of FWS or its representative, that it has deposited the requisite amount in an escrow account with interest accruing to DNR.

3. For the second and subsequent fiscal years of Project implementation, no later than sixty (60) calendar days prior to the beginning of the fiscal year, DNR shall make the necessary funds available to FWS through the funding mechanism specified in Article VI.b.2. of this Agreement. As construction of the Project proceeds, FWS shall adjust the amount required to be provided under this paragraph to reflect actual costs.

4. If, at any time during the period of construction, FWS determines that additional funds will be needed from DNR to meet DNR's required share, FWS shall so notify DNR, and DNR, no later than forty-five (45) calendar days from receipt of such notice, shall make the necessary funds available through the funding mechanism specified in Article VI.b.2. of this Agreement.

   c. FWS will draw on the escrow account such sums as FWS deems necessary to cover contractual and in-house fiscal obligations attributable to the Project on an annual basis, as well as costs incurred by FWS prior to the initiation of construction but after January 11, 2000, according to Article I.b.

   d. The escrow account will be managed for FWS by the New Orleans District, U.S. Army Corps of Engineers. Funds will be withdrawn from the account and disbursed to FWS as requested.

   e. Upon completion of the Project, or termination of this Agreement in accordance with Article XV of this Agreement, and resolution of all relevant contract claims and appeals, FWS shall compute the total Project costs and tender to DNR a final accounting of DNR's share of total Project costs. In the event that the total contribution by DNR is less than its minimum required share of total Project costs, DNR shall, no later than ninety (90) calendar days after receipt of written notice, make a cash payment to FWS of whatever sum is required to meet its minimum required non-federal share of total Project costs, subject to the availability of appropriations.

   f. In the event DNR has made cash contributions in excess of five percent (5%) of total Project costs which result in DNR having provided more than its required share of total Project costs, FWS shall, no later than ninety (90) calendar days after the final accounting is complete, subject to the availability of appropriations, return said excess to DNR; however, DNR shall not be entitled to any refund of the five percent (5%) cash contribution required pursuant to Article I.b.2. of this Agreement.

   g. If DNR's total contribution under this Agreement (including land rights, easements, rights-of-way, relocations, material borrow and disposal areas, and work-in-kind provided by DNR and
approved by FWS) exceeds DNR's required non-federal share of total Project costs, FWS shall verify the actual exceeded costs and direct the U.S. Army Corps of Engineers, subject to the availability of appropriations for that purpose, and the minimum five percent (5%) cash requirement, refund the excess to DNR no later than ninety (90) calendar days after the final accounting is complete.

ARTICLE VII – DISPUTES

Before any party to this Agreement may bring suit in any court concerning an issue relating to this Agreement, such party must first seek in good faith to resolve the issue through negotiations or other forms of non-binding alternative dispute resolution mutually acceptable to the parties.

ARTICLE VIII – MONITORING, OPERATING AND MAINTENANCE

a. After FWS has accepted, with the concurrence of DNR, the completed Project, or the functional portion of the Project, DNR shall assume long-term monitoring responsibilities in accordance with the Project Monitoring Plan defined in Article I.j. of this Agreement. At this same time, DNR will also assume responsibilities for operation and maintenance of the completed Project, or functional portion of the Project, following the recommendations jointly developed and approved by DNR and FWS in the Project Operation and Maintenance Plan defined in Article I.m. of this Agreement. These responsibilities will remain in effect for the expected life of the Project which is five (5) years from the late of acceptance of the completed Project unless otherwise agreed to by FWS and DNR.

b. DNR grants FWS the right to enter, at reasonable times and in a reasonable manner, upon land which it owns or maintains access easements to the Project, for the purpose of inspection related to monitoring, operating or maintaining the Project. If an inspection shows that DNR, for any reason, is failing to fulfill its obligations under this Agreement, FWS will send a written notice to DNR concerning a need for compliance. If DNR persists in such failure for ninety (90) calendar days after receipt of this notice, then FWS shall have a right to cancel the federal assistance portion of this Agreement for any additional expenses related to monitoring, operation and maintenance costs of the Project.

ARTICLE IX – MAINTENANCE OF RECORDS

FWS and DNR shall keep books, records, documents, and other evidence pertaining to costs and expenses incurred pursuant to this Agreement to the extent and in such detail as will properly reflect total Project costs. FWS and DNR shall maintain such books, records, documents and other evidence for a minimum of three (3) years after completion of construction, operation, maintenance, repair, and monitoring of the Project and resolution of all relevant claims arising therefrom, and shall make available at their offices at reasonable times, such books, records, documents, and other evidence for inspection and audit by authorized representatives of the parties to this Agreement.
ARTICLE X – GOVERNMENT REVIEW OF RECORDS

FWS shall have the right to conduct an audit, when appropriate, of DNR’s records for the Project to ascertain the reasonableness and allowability of its costs for inclusion as credit against the non-federal share of Project costs.

ARTICLE XI – STATE REVIEW OF RECORDS

DNR shall have the right to conduct an audit, when appropriate, of FWS’s records for the Project to ascertain the reasonableness and allowability of its costs for inclusion as credit against the federal share of Project costs.

ARTICLE XII – RELATIONSHIP OF PARTIES

The parties to this Agreement act in an independent capacity in the performance of their respective functions under this Agreement, and neither party is to be considered the officer, agent, or employee of the other.

ARTICLE XIII – OFFICIALS NOT TO BENEFIT

No member of, or delegate to, the Congress, or resident commissioner, shall be admitted to any share or part of this Agreement, or to any benefit that may arise therefrom.

ARTICLE XIV – COVENANT AGAINST CONTINGENT FEES

DNR warrants that no person or selling agency has been employed or retained to solicit or secure this Agreement upon agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by DNR for the purpose of securing business. For breach or violation of this warranty, FWS shall have the right to annul this Agreement without liability, or, in its discretion, to add to the Agreement or consideration, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fee.

ARTICLE XV – TERMINATION OR SUSPENSION

a. If FWS or DNR fails to receive annual appropriations for the Project in amount sufficient to meet Project expenditure for the then-current or upcoming fiscal year, FWS or DNR shall so notify the other Party. After sixty (60) calendar days from such notification either party may elect, without penalty, to terminate this Agreement pursuant to this Article or to defer future performance hereunder; however, deferral of future performance under this Agreement shall not affect existing obligations or relieve the parties of liability for any obligation previously incurred. In the event that either party elects to terminate this Agreement pursuant to this Article, both parties shall conclude their activities relating to the Project and proceed to final accounting in accordance with Article VI of this Agreement. In the event that either party elects to defer future performance under this Agreement pursuant to this Article,
such deferral shall remain in effect until such time as FWS or DNR receives sufficient appropriations or until either party elects to terminate this Agreement.

b. Except as provided in paragraph (a) above, if at any time DNR fails to make the payments required under this Agreement, FWS shall terminate or suspend work on the Project until DNR is no longer in arrears, unless FWS determines that continuation of work on the Project is in the best interest of the United States or is necessary in order to satisfy agreements with any other non-federal interests in connection with the Project. DNR shall not be liable for any future payments should FWS continue work on the Project, but shall remain liable for obligations previously incurred.

ARTICLE XVI – OBLIGATIONS OF FUTURE APPROPRIATIONS

Nothing herein shall constitute, or be deemed to constitute, an obligation of future appropriations by the legislature of the State of Louisiana when obligating future appropriations would be inconsistent with the State’s constitutional or statutory limitations.

ARTICLE XVII – NOTICES

a. All notices, requests, demands, and other communications required or permitted to be given under this Agreement shall be deemed to have been duly given if in writing and delivered personally, given by prepaid telegram, or mailed by first-class (postage pre-paid), registered, or certified mail, as follows:

If to DNR:
Secretary, Department of Natural Resources
P.O. Box 94396
Baton Rouge, LA 70804-9396

If to FWS:
Regional Director, U.S. Fish and Wildlife Service
1875 Century Boulevard
Atlanta, Georgia 30345

b. A party may change the address to which such communications are to be directed by giving written notice to the other party in the manner provided in this Article.

c. Any notice, request, demand, or other communication made pursuant to this Article shall be deemed to have been received by the addressee at such time as it is personally delivered or seven (7) calendar days after it is mailed, as the case may be.

ARTICLE XVIII – CONFIDENTIALITY

To the extent permitted by the laws governing each party, the parties agree to maintain the confidentiality of exchanged information when requested to do so by the providing party.
ARTICLE XIX – PROJECT COST LIMITS

a. The Task Force will finance the Project in two phases. Phase I funding is comprised of those funds needed for any necessary analysis of environmental benefits, any necessary hydrologic data collection and analysis, Pre-construction Biological Monitoring, and Engineering and Design. Engineering and Design includes Engineering, Design, Environmental Clearances, Permitting, Project Management and Real Estate requirements up to, but not including, the purchase of real estate. The Task Force estimated Phase I cost for this Project at $298,939. To provide flexibility in Phase I of the Project, the Task Force has authorized a maximum Phase I cost of 125% of the estimated Phase I cost or $367,034 for this particular Project. This is the total funding and obligation for FWS and the State until Phase II funding is approved. Any cost in excess of this maximum total Phase I cost is subject to Task Force approval and amendment of this Agreement, as provided in Article XX. The 125% budget for Phase I by funding category includes the following:

1. E & D (including supervision & administration) $247,360
2. Easements and Landrights $93,750
3. Pre – Construction Monitoring $25,924

Total $367,034

b. If, at any time during the performance of work for a particular funding category, the actual or anticipated cost of that category exceeds the 125% cost of that particular funding category as set forth in Article XIX.a. of this Agreement, all work in that particular category shall cease. FWS and DNR may agree to increase the cost of completing that particular category by transferring funds from one category to the other, but only if such increase would not result in the total Phase I costs exceeding the maximum total cost defined in Article XIX.a. of this Agreement. Such agreement regarding transferring funds from one category to the other shall be made by letter agreement confirmed by the mutual written approval of both the FWS Regional Director and the DNR Secretary. Work on that particular funding category shall thereafter resume.

c. After Phase I has been substantially completed, the Task Force may authorize expenditure of Phase II funding. This process will be accomplished as specified in the CWPPRA Project Standard Operating Procedures Manual. This Agreement shall then be amended in accordance with the provisions of Article XX to include the Phase II costs of Construction and the first three (3) years of Post-construction Biological Monitoring, Operation and Maintenance. Construction includes Project Management, Contract Management, Construction Supervision, Inspection, and the purchase of real estate. Operation and Maintenance includes Engineering Inspections.

d. Post-construction Biological Monitoring and Operation and Maintenance costs will be funded in accordance with Section 5.(k).12. of the CWPPRA Project Standard Operating Procedures manual so as to maintain approximately three (3) years of authorized and funded post construction
activity. This Agreement will be amended in accordance with the provisions of Article XX to reflect these CWPPRA and State funding obligations as they occur.

ARTICLE XX – AMENDMENTS TO BE IN WRITING

This Agreement may be modified by agreement of the parties, in accordance with the provisions of CWPPRA and applicable federal and state regulations. All such amendments, modifications, revisions, and/or changes to this Agreement must be made in writing and acknowledged by signature of the authorized representatives of all parties of this Agreement. All such amendments, modifications, revisions, and/or changes to this Agreement shall be subject to review and approval by the Division of Administration, State of Louisiana.

ARTICLE XXI – EQUAL OPPORTUNITY AND CIVIL RIGHTS

a. The program or activities conducted under this Agreement will be in compliance with the nondiscrimination provisions contained in the following Federal anti-discrimination laws: (1) Titles VI and VII of the Civil Rights Act of 1964 (Public Law 88-352), as amended; (2) the Civil Rights Restoration Act of 1987 (Public Law 100-259); (3) the Civil Rights Act of 1991 (Public Law 102-166), as amended; (4) Executive Order 11478, as amended; (5) Section 504 of the Rehabilitation Act of 1973 (PL 93-112), as amended; (6) Title II of the Americans with Disabilities Act of 1990 (PL 101-336); (7) the Age Discrimination in Employment Act (PL 93-259), as amended; (8) Age Discrimination Act of 1975 (PL 94-135); (9) Equal Pay Act; (10) Title IX of the Education Amendments of 1972, as amended; and (11) other Federal statutes that prohibit discrimination. They will also be in accordance with nondiscrimination regulations of the Secretary of Interior (43 CFR 17). The program or activities conducted under this Agreement will provide that no person in the United States shall on the grounds of race, color, national origin, age, sex, religion, marital status, handicap or sexual orientation be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity receiving federal financial assistance from the Department of Interior or any agency thereof.

ARTICLE XXII – SURVEY

Prior to commencement of any construction activities, FWS or the Office of Coastal Restoration and Management of DNR, at the option of DNR, shall (1) cause to be conducted, a survey to determine the highest tide during winter season or such other time which will indicate the extent of State ownership existing prior to commencement of any restoration activities, or (2) obtain aerial photographs or satellite images of the project area taken within one (1) year prior to commencement of the restoration activity, or (3) acquire such other information as is acceptable to DNR to indicate the extent of State ownership. Any costs associated with this Article are considered a part of total Project costs and shall be cost-shared according to the terms previously identified.
ARTICLE XXIII – FEDERAL AND STATE LAWS

a. In exercise of DNR’s rights and obligations hereunder, DNR agrees to comply with all applicable Federal and State laws and regulations.

b. FWS agrees to comply with all applicable Federal and State of Louisiana laws and/or regulations, unless state law and regulations are preempted by federal law.

ARTICLE XXIV – FISCAL FUNDING

The continuation of this contract is contingent upon the appropriation of funds by the Louisiana Legislature to fulfill the requirements of the agreement. If the Louisiana Legislature fails to appropriate sufficient monies to provide for the continuation of the agreement, or if such appropriation is reduced by the veto of the governor or by any means provided in the appropriations act to prevent the total appropriation for the year from exceeding revenues for that year, or for any other lawful purpose, and the effect of such reduction is to provide insufficient monies for the continuation of the agreement, the agreement shall terminate on the date of the beginning of the first fiscal year for which funds are not appropriated.
MANDALAY BANK PROTECTION (DEMO) TE-41 / XTE-DEMO

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed on the 32nd day of November, 2000, before the undersigned witnesses.

U.S. DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE

BY: Sam D. Hamilton  
Regional Director

THE STATE OF LOUISIANA

BY: Jack C. Caldwell, Secretary  
Louisiana Department of Natural Resources

WITNESSES:

Karen Y. Lewis
Margaret Lowell
Janafera Bennett

WITNESSES:

Julie Rayford

APPROVED
Office of the Governor  
Office of Contractual Review

JAN 19 2001
DIRECTOR
CERTIFICATE OF AUTHORITY

I, Warren A. Fleet, do hereby certify that I am the principal legal officer of the Department of Natural Resources for the State of Louisiana, that the Department of Natural Resources for the State of Louisiana is a legally constituted public body with full authority and legal capability to perform the terms of the Agreement between the U. S. Fish and Wildlife Service and the State of Louisiana in connection with the MANDALAY BANK PROTECTION (DEMO) (TE-41 / XTE-DEMO), Terrebonne Parish, LA, and that the persons who have executed this Agreement on behalf of the State have acted within their statutory authority.

IN WITNESS WHEREOF, I have made and executed this certification this 4th day of November, 2000.

Warren A. Fleet
General Counsel
CERTIFICATION REGARDING LOBBYING

The undersigned certifies, to the best of his or her knowledge and belief that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

DATE: 3/6/00

JACK CALDWELL, Secretary
Department of Natural Resources
State of Louisiana
STATE OF GEORGIA
COUNTY OF DEKALB

BEFORE ME, the undersigned authority, duly commissioned and qualified in and for said County and State aforesaid, on this 12th day of December, 2000, personally came and appeared Sam D. Hamilton who declared that he is the Regional Director of the U.S. Department of the Interior, Fish and Wildlife Service, that he executed the foregoing instrument on behalf of said Federal Agency and that the instrument was signed pursuant to the authority granted to him by said Federal Agency and that he acknowledged the instrument to be the free act and deed of said Federal Agency.

[Signature]
NOTARY PUBLIC, CHEROKEE COUNTY, GA
MY COMMISSION EXPIRES ON NOVEMBER 23, 2003

My commission expires:

(SEAL)

STATE OF LOUISIANA
PARISH OF EAST BATON ROUGE

BEFORE ME, the undersigned authority, duly commissioned and qualified in and for said Parish and State aforesaid, on this 6th day of December, 2000, personally came and appeared Jack C. Caldwell, to me known, who declared that he is the Secretary of the Department of Natural Resources, State of Louisiana, that he executed the foregoing instrument on behalf of said State Agency and that the instrument was signed pursuant to the authority granted to him by said State Agency and that he acknowledged the instrument to be the free act and deed of said State Agency.

[Signature]
NOTARY PUBLIC

My commission expires:

(SEAL)
ATTACHMENT II

MANDALAY BANK PROTECTION DEMONSTRATION PROJECT (TE-41)

PROJECT FEATURES
ATTACHMENT III

MANDALAY BANK PROTECTION DEMONSTRATION PROJECT (TE-41)

PROJECT COMPLETION REPORT
Mandalay Inspection Services TE-41

LDNR CONTRACT NO. 2503-03-21
SCI PROJECT NO. 1942

PROJECT COMPLETION REPORT

MARCH 2004

Prepared For:
Louisiana Department of Natural Resources

Prepared By:
Shaw Coastal, Inc.
197 Elysian Drive
Houma, Louisiana 70363
# PROJECT COMPLETION REPORT

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3. Final, As-Built Features, Boundaries and Resulting Acreage ....................................................... Page 1
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5. Items of Work ............................................................................................... Page 2
6. Construction and Construction Oversight ..................................................... Page 3
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## APPENDICES

A  CWPPRA Report
B  Change Order No.
C  Change Order No. 2
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E  Project Site Map
F  As-Built Drawings
G  As-Build Surveys Data/Field Notes
H  As-Build Revetment Mat Layout
PROJECT COMPLETION REPORT

PROJECT NAME
Mandalay Bank Protection Demonstration

CWPPRA/STATE PROJECT NO.
TE-41

Report Date: February, 2004 By: Shaw Coastal, Inc.

1. Project Managers/Contracting Officer:

- DNR Project Manager: Ralph Libersat, Telephone (225) 342-1952
- DNR Construction Project Manager: Daniel Dearmond, Telephone (985) 449-5103
- DNR Monitoring Manager: Elaine Lear, Telephone (985) 447-0974
- USFWS Project Manager: Martha Segura, Telephone (337) 291-3110
- Construction Administrator/Inspection: Jeffery Peña -SCI, Telephone (985) 868-3434

2. Location and Description of Projects as Approved for Construction by Task Force.

The Mandalay Bank Protection Demonstration (TE-41) project is located along a 3.4 mi (5.5 km) stretch of the Gulf Intracoastal Waterway (GIWW). It is approximately 6 mi (9.7 km) southwest of Houma, Louisiana in the northeast portion of Terrebonne Parish. The project lies in the northern portion of the Pensive sub-basin in the Terrebonne hydrologic basin between Latitude 29°32'10" east Longitude 90°40'49" north, and Latitude 29°32'06" east Longitude 90°46'16" north. A permanent benchmark (PBM) has been installed in the project area as part of the secondary GPS network.

Fifteen sites were considered along the GIWW, along the Mandalay Refugee to demonstrate Five (5) treatments to protect the shoreline banks from additional erosion and to restore the marshes by promoting sedimentation and vegetation growth. These proposed treatments were Revetment Mat System, straight walled and fiberglass sheet pile system for the Blowout Treatments; Concrete Armor Units with Giant Cutgrass and Fencing with Giant Cutgrass for the Off-Bank Treatments; and the Armored Plug Treatment.

(Refer to Appendix E for fact sheet and project site map.)

3. Final, As-Built Features, Boundaries and Resulting Acreage (use attachments if necessary).

The project was constructed as described above. For additional information see attached “AS BUILT” Plans.

Current Benefited Acres: N/A
Key Project Cost Elements

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**Most recent estimate from CWPPRA Project estimates Report produced by USACOE.

** See Appendix A, CWPPRA Report.

5. Items of Work

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**Total** $1,402,973.50  **Total** $1,127,025.00

TE-41 Completion Report 2 of 6
Construction and Construction Oversight

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Construction Oversight Contractor: Shaw Coastal, Inc.

Construction Oversight Amount: $77,004.20 (As of January 31, 2004)

7. Major Equipment Used

- Quarter Boats: AB-11, and AB 4
- Cranes: 71 B, and 88 B
- Spud Barges: KS-113, and RG-410
- Excavators: 9030b (40’ boom), and 240x (60’ boom)
- Tug Boats: Capt Mack, and Julie Marie

8. Discuss Construction Sequences and Activities, Problems Encountered, Solutions to Problems, etc.

Armored Plugs Sites:

A1, A2 and A3 sites were filled with dredged material from the middle of the GIWW borrow area. The material was of good clay type material. The material set up and dried before placing on the geogrid. The geogrid was sewn with overlays and placed on bottom of the treatment sites before the material was placed. This procedure was followed for all three treatments sites. Upon placing the material in the three sites, the sites were shaped, sloped and permitted to dry and settle. Upon verifying the elevation on each, the engineer was informed and authorized the placement of the fabric and revetment mats on the armored plug. This fabric was placed with overlays and sewing and adjusted to the site. Then followed the placement of the revetment mats. Each revetment mat was anchored and secured together with a minimum of eight (8) ss straps. The elevation and alignment was checked and monitored as the mats were placed and periodically thereafter. There were no problems encountered at any of the armored plug sites.

Concrete Armor Units with Giant Cuto grass Off-Bank Sites:

J1 and J2 sites were re-aligned from the banks edge due to the existing water depth and to maintain the required water depth for the placement of the concrete armored units (A-Jacks). The alignment was staked out and verified before placing the geogrid and the A-Jacks. Upon verifying the alignment, the geogrid was placed and pinned at both sites. The A-Jacks was then placed onto the geogrid. A special hanger was made by the Contractor to accommodate ten (10) feet of A-Jack when placing on the site. Upon the first few placements of A-Jacks, they were settling and parting from the intended set up. After a few trials, the A-Jacks were placed in a uniform manner with little settling and parting. These areas were a rather soft humus material (i.e., loose). An excavator with a special rack was used to place the A-Jacks in the three (3) sites.

The J3 site was re-aligned ten (10) feet from the banks edge due to the existing condition of the depth of water. This site placement was a little deeper than sites J1 and J2. The geogrid was placed within the proper overlays and sewn and alignment was checked and fied before placing the geogrid and A-Jacks. Upon verification of the alignment, the geogrid was placed and pinned as in J1 and J2 sites. Wave action was encountered, which made it more difficult for the geogrid to stay in place. The A-Jacks were placed onto
geogrid by the same method as in J1 and J2. Being this site was in deeper water, it took a little more time to place and secure the geogrid and A-Jacks. Upon completion of the geogrid and A-Jacks in all three (3) sites, the anchors were placed and secured.

**Straight Walled Fiberglass Sheetpile System Sites:**

V1, V2 and V3. Sites V2 and V3 were driven without major encounters. The only encounters for these two (2) sites were striking roots, logs on the bank at each end of the sites. A special flat head hydraulic vibrator was used to drive the sheet pile. A wooden templet was first made to use for alignment, an iron templet was then made to use for alignment and was used at sites V1, V2 and V3. Site V1 encountered the most problems. A stiff clay material was encountered preventing the 20 foot sheets from being driven no more than 3 to 5 feet into the ground. Upon further evaluation, a steel cap was made to fit over the end of the sheet pile to be driven. Even with this cap, the sheet pile continued to meet heavy resistance and a number of the 20 foot sheets were not driven to the full depth. With the use of the steel cap, an extra 5 to 6 feet of driving ability was observed. In some of the area, 10 foot sheets were allowed to be driven instead of the required 20 foot sheets. This site by far was the most difficult and time consuming. The whalers were placed in all three (3) sites, secured as specified. All three (3) sites were backfilled with a clay type material, dredged for the GIWW.

**Revetment Mat Blowout Sites:**

R1, R2 and R3. The Contractor chose to stagger the pipe while banding the pipe together. By staggering the pipe, this method helped in the placement of the pipe and alignment of the pipe. It also lessened the pipe movement with the wave action and water movements as the vessels would pass. Alignment was staked, checked and verified before placement of fabric, pipe, revetment mats and anchors. Upon verifying the alignment, the fabric was placed and secured. Then the bundles of pipe were placed. A special spreader bar with a harness was used to place the pipes and mats. A crane barge did the placement. Upon placement of the pipe, the mats were placed on top of the pipe. Upon completion of each site with the fabric, pipe and mats, the anchors and straps were installed to secure the same. The straps are as recommended by the manufacturer.

The site had two (2) areas which fill material to was placed to level the bottom before placement of the fabric, pipe, and mats. R1 site several areas of settlement. There is a settlement plate installed in the middle of each of the sites.

**Fencing with Giant Cutgrass:**

F1, F2 and F3. These sites were the least difficult. The material was transported on a barge and the crew fabricated the sections to be installed. An excavator barge was used to set in place each section of wooden fence and drive down to grade. The alignment was staked and checked and verified before any sections were set in place. There were no major difficulties encountered at these sites. Adjustments in the alignment were verified due to the existing conditions. The cutgrass was placed in these sites and in the concrete armor unit sites (J1, J2 and J3).

9. **Construction Change Orders and Field Changes.**

1. Change Order No.1 – The quantities of the items were modified in order to construct the treatments and the tie-ins as per the construction contract drawings. The change order cost is $95,358.00 and increased the total construction cost to $1,153,181.00 from $1,057,823.00. This change order did not increase the construction time. (See Appendix B.)

2. Change Order No.2 – This change order increased the construction time by 20 days, from 180 to 200 days, with no change in project construction cost. The increase in construction time is due to the issuance of an advanced Notice to Proceed and construction down time due to inclement weather. (See Appendix C.)

3. Balancing Change Order – This change order constituted a decrease in Construction Cost of $26,156.00 due to under runs on the contract. (See Appendix D.)

TE-41 Completion Report 4 of 6
11. Safety and Accidents.

None

12. Additional Comments Pertaining to Construction, Completed Projects, etc.

1. The limits for the sites were increased due to the time between the original survey, the bidding and the start of construction.
2. The dredged material for the sites was a better material than expected. The material set up with good consistency. The anticipated two feet of fluff in the dredge location was not encountered.
3. The J sites were altered due to the existing conditions of bank and water depth.
4. The securing of the anchors at the J sites should be re-evaluated before the next project. The material (tie wraps), used to secure the geogrid to the anchors, were stronger than the geogrid. In these sites, with the wave action, the geogrid mulled away from the anchors, causing a bunching effect.
   The V sites were more time consuming than the other sites due to the resistance and method used in aligning, setting and driving the fiberglass sheet pile in place to the proper grade. Site V1 met greatest resistance due to the stiff clays in which the sheet piles were driven.
5. At Site R1, a cut in the marsh on the east bank was observed. A clay type dredged material was placed in the site to protect the marsh around the cut.

13. Significant Construction Dates: To be filled out by DNR Construction Project Manager or Contracting Officer for construction for Agency responsible for construction.

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</tr>
<tr>
<td>Construction Start</td>
<td>08-29-03</td>
</tr>
<tr>
<td>Construction Completion</td>
<td>09-17-03</td>
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</table>
If different bids are taken, repeat this table to individually reflect each bid and attach tables.

Other significant Project Dates

<table>
<thead>
<tr>
<th>Project Implementation closeout**</th>
<th>Date</th>
</tr>
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<tbody>
<tr>
<td>Start of Preconstruction Monitoring***</td>
<td></td>
</tr>
<tr>
<td>Preconstruction Aerial Photography</td>
<td></td>
</tr>
<tr>
<td>Acquisition***</td>
<td></td>
</tr>
<tr>
<td>Monitoring Plan Completion***</td>
<td></td>
</tr>
</tbody>
</table>

** Final implementation closeout is made by either the DNR Project Manager or the Federal Agency Contracting Officer depending on which organization had lead role for construction of project.

*** To be completed by DNR Project Manager.
Appendix A

CWPPRA REPORT
COASTAL WETLANDS PLANNING, PROTECTION AND RESTORATION ACT

PROJECT STATUS REPORT as of 2/5/2004

Mandalay Bank Protection Demonstration (DEMO)

PROJECT DATA

PROJECT: Mandalay Bank Protection Demonstration (DEMO)  CWPPRA NO: XTE-DEMO
PRIORITY LIST: 9  DNR NO: TE-41
PROJECT NO: 0909  NET ACRES BENEFITED:  
PROJECT TYPE: Shoreline Protection  PARISH: Terrebonne
REGION: 3  BASIN: Terrebonne
LEAD AGENCY: FWS
LOCAL SPONSOR: DEPT. OF NATURAL RESOURCES, STATE OF LA

MILESTONES:

CSA EXECUTION: 12/6/2000 (Actual)
DESIGN COMPLETION: 9/1/2001 (Actual)
CONSTRUCTION START: 4/25/2003 (Actual)
CONSTRUCTION COMPLETION: 9/1/2003 (Actual)
ESCROW AMENDMENT 3/2/2001 (Actual) No: 81
MONITORING PLAN APPROVAL:
O and M PLAN APPROVAL:
DEAUTHORIZATION DATE:
CASH FLOW PROJECTS:
  Phase 1 Approval: 1/11/2000 (Actual)
  Phase 2 Approval: 10/25/2001 (Actual)

LEGISLATIVE DISTRICTS:

CONGRESSIONAL DISTRICT: 3 W. J. Tauzin
STATE SENATE DISTRICT: 21 Butch Gautreaux
STATE HOUSE DISTRICT: 51 Carla Blanchard Dartez

Point of Contact:

DEPT. OF THE INTERIOR  PHONES:
FISH & WILDLIFE SERVICE  Office: (337) 291-3110
Fish and Wildlife Biologist  Fax: (337) 291-3139
646 Cajundome Blvd.
Suite 400
Lafayette, LA 70506
# COASTAL WETLANDS PLANNING, PROTECTION AND RESTORATION ACT

**PROJECT STATUS REPORT as of 2/5/2004**

Mandalay Bank Protection Demonstration (DEMO)

## FINANCIAL DATA

<table>
<thead>
<tr>
<th>ESTIMATES</th>
<th>BASELINE</th>
<th>CSA</th>
<th>CURRENT</th>
</tr>
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<tbody>
<tr>
<td>Engr &amp; Design:</td>
<td>$229,235</td>
<td>$251,758</td>
<td>$251,758</td>
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<tr>
<td>Lands:</td>
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<td>$93,750</td>
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<td>$1,434,445</td>
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<td>$77,237</td>
<td>$77,237</td>
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<tr>
<td>O &amp; M:</td>
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<td>$12,469</td>
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<tr>
<td>Contingencies:</td>
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<td>$1,869,659</td>
<td>$1,869,659</td>
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<td><strong>Maximum Project Cost:</strong></td>
<td>$1,493,119</td>
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<td>future input</td>
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## OBLIGATIONS

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<th>Total</th>
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<tr>
<td>Engr &amp; Design:</td>
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<td>$0</td>
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<tr>
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<td>$0</td>
<td>$933,331</td>
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<td>$0</td>
<td>$17,895</td>
<td>$17,895</td>
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<tr>
<td>O &amp; M:</td>
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<td>$0</td>
<td>$0</td>
<td>$0</td>
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<td><strong>Total:</strong></td>
<td>$978,021</td>
<td>$0</td>
<td>$202,038</td>
<td>$1,180,060</td>
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## EXPENDITURES

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<td>$0</td>
<td>$22,319</td>
<td>$22,319</td>
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<tr>
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<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Monitoring:</td>
<td>$0</td>
<td>$0</td>
<td>$17,895</td>
<td>$17,895</td>
</tr>
<tr>
<td>O &amp; M:</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td>$31,084</td>
<td>$0</td>
<td>$202,038</td>
<td>$233,122</td>
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</table>

**Financial Data Analysis:**

- **Federal Expenditures:** $31,084 (13.3%)
- **Non-Fed Expenditures:** $202,038 (86.7%)
- **Escrow Funds Deposited:** $0

**Note:**

1. Financial data based on Corps of Engineers records.
2. A "#" by the CSA Estimate indicates that the CURRENT ESTIMATE exceeds 125% of the CSA ESTIMATE for the feature. A modification to the Cost Sharing Agreement may be required.
COASTAL WETLANDS PLANNING, PROTECTION AND RESTORATION ACT

PROJECT STATUS REPORT as of 2/5/2004

Mandalay Bank Protection Demonstration (DEMO)

PROJECT LOCATION:

The project is located in Terrebonne Parish along the Gulf Intracoastal Waterway west of Houma.

PROJECT DESCRIPTION:

The project will evaluate several low-cost solutions for restoring habitat in blowout areas and preventing bank erosion.

PROJECT STATUS: (Project Status Last Updated: 9/5/2003 )

Construction was completed 9/1/2003.

FUND STATUS:

The current project estimate is $1,869,659, which includes $1,779,953 for construction first costs, and $77,237 and $12,469 for 20 years of monitoring and operations and maintenance, respectively.

Home | CWPPRA Project Reports

Project Managers' Technical Factsheet http://lacoast.gov/reports/
Appendix B

CHANGE ORDER NO. 1
June 16, 2003

Louisiana Department of Natural Resources
1440 Tiger Drive, Suite B
Thibodaux, Louisiana 70310

Attention: Daniel Dearmond, P.E.

Subject: Change Order No. 1

Reference: Louisiana Department of Natural Resources
Mandalay Bank Protection Demo Project (TE-41)
Terrebonne Parish, Louisiana
CEECE Job No. 1942

Dear Mr. Dearmond:

Attached for your review and approval is Change Order No.1 and attachments for the above referenced project. The change order cost is $95,358.00 and will increase the total construction cost to $1,153,181.00. This change order will not increase the construction time.

Should you have any questions or wish to discuss, please call me at (985)868-3434.

Sincerely,

COASTAL ENGINEERING AND ENVIRONMENTAL CONSULTANTS, INC.

Jeffery M. Peña, P.E.
Project Manager

JMP:rmb

Attachment

cc: Oscar F. Peña - CEEC

K:\1942\Change Order\DNR Letter.wpd
CHANGE ORDER NO. 1

PROJECT: Mandalay Bank Protection Demo Project

OWNER: Department of Natural Resources
1440 Tiger Drive STE B
Thibodaux, LA 70301

CONTRACTOR: Bertucci Contracting Corporation
Post Office Box 10582
Jefferson, LA 70181-4223

DATE OF ISSUANCE: JUN 16 2003

OWNER'S PROJECT NO. (TE-41)

ENGINEER: Coastal Engineering & Environmental Consultants, Inc.
197 Elysian Drive
Houma, Louisiana 70364

ENGINEER'S PROJECT NO. 1942

CONTRACT FOR: Mandalay Bank Protection Demo Project (TE-41)

You are directed to make the following changes in the Contract Documents.

Description: Refer Change Order No. 1 Attached

Purpose of Change Order: Increase in the limits of the various treatments.

<table>
<thead>
<tr>
<th>CHANGE IN CONTRACT PRICE:</th>
<th>CHANGE IN CONTRACT TIME:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original Contract Price</td>
<td>Original Contract Time</td>
</tr>
<tr>
<td>$ 1,057,823.00</td>
<td>180 Calendar Days</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Previous Change Orders No. 1 to No.2</td>
<td>Net Change from previous Change Orders</td>
</tr>
<tr>
<td>$ 0.00</td>
<td>0 Days</td>
</tr>
<tr>
<td></td>
<td>days or date</td>
</tr>
<tr>
<td>Contract Price Prior to this Change Order</td>
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</tr>
<tr>
<td>$ 1,057,823.00</td>
<td>180 Calendar Days</td>
</tr>
<tr>
<td></td>
<td>days or date</td>
</tr>
<tr>
<td>Net Increase of this Change Order</td>
<td>Net Increase of this Change Order</td>
</tr>
<tr>
<td>$ 95,358.00</td>
<td>0 Days</td>
</tr>
<tr>
<td></td>
<td>days or date</td>
</tr>
<tr>
<td>Contract Price with all approved Change Orders</td>
<td>Contract Time with all approved Change Orders</td>
</tr>
<tr>
<td>$ 1,153,181.00</td>
<td>180 Calendar Days</td>
</tr>
<tr>
<td></td>
<td>days or date</td>
</tr>
</tbody>
</table>

RECOMMENDED By: JEFFERY M. PENA
REG. No. 29388
PROFESSIONAL ENGINEER IN

Date: 01/16/03

APPROVED By: ANTHONY S. ZEGUEN, PRESIDENT
Date: 15-JUNE-03

APPROVED By: ____________________________
Date: ____________________________

APPROVED By: ____________________________
Date: ____________________________
Summary

The change order cost is $95,358.00 and will increase the total construction cost to $1,153,181.00. This change order will not increase the construction time.

This Change Order consists of modifying the following Bid Items:

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM</th>
<th>UNIT</th>
<th>Add. Quantity</th>
<th>Unit Cost</th>
<th>Total Additional Cost</th>
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</thead>
<tbody>
<tr>
<td>3</td>
<td>Concrete Revetment Mat</td>
<td>Each</td>
<td>35.00</td>
<td>$1,300.00</td>
<td>$45,500.00</td>
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<tr>
<td>4</td>
<td>Elevated Shore Line System</td>
<td>Linear feet</td>
<td>336.00</td>
<td>$45.00</td>
<td>$15,120.00</td>
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<tr>
<td>5</td>
<td>Anchors (Type I)</td>
<td>Each</td>
<td>42.00</td>
<td>$200.00</td>
<td>$8,400.00</td>
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<tr>
<td>7</td>
<td>Dredged Material Fill</td>
<td>Cubic yard</td>
<td>900.00</td>
<td>$5.00</td>
<td>$4,500.00</td>
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<tr>
<td>8</td>
<td>Fiber Glass Sheet Pile</td>
<td>Square feet</td>
<td>3040.00</td>
<td>$5.95</td>
<td>$18,088.00</td>
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<td>10</td>
<td>Geotextile</td>
<td>Square yard</td>
<td>625.00</td>
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<tr>
<td>15</td>
<td>Geogrid</td>
<td>Square yard</td>
<td>375.00</td>
<td>$5.00</td>
<td>$1,875.00</td>
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</tbody>
</table>

$95,358.00

The following items are being modified in order to construct the treatments and the tie-ins as per the construction contract drawings:

**Item No. 3: Concrete Revetment Mat**

The increase in the quantity of this item is due to the expansion in limits of the treatments. (Treatments R1, R2, R3, A1 & A3)

**Item No. 4: Elevated Shore Line System**

The additional length of perforated CPE system is due to the increase in length of the treatments. (Treatments R1, R2 & R3)

Page 2 of 3
Item No. 5: Anchors (Type I)

The additional anchors are required to support the additional revetment mats. (Treatments R1, R2, R3, A1 & A3)

Item No. 7: Dredge Material

The additional cubic yardage of fill is due to the increase in length of the sheetpile systems and armored plugs. (Treatments V1, V2, V3, A1 & A3)

Item No. 8: Fiber Glass Sheet Pile

The additional length of sheet pile is due to the increase in length of the treatments. (Treatments V1, V2 & V3)

Item No. 10: Geotextile

The additional area of geotextile is due to the increase in length of the treatments. (R1, R2, R3, A1 & A3)

Item No. 15: Geogrid

The additional quantity of geogrid is due to the increase in length of the treatments. (Treatments A1 & A3)
Appendix C

CHANGE ORDER NO. 2
September 10, 2003

Bertucci Contracting Corporation  
#7 River Road, Post Office Box 10582  
Jefferson, Louisiana 70181

Attention: Nolan Simoneaux, Project Manager

Subject: Change Order No. 2

Reference: Louisiana Department of Natural Resources  
Mandalay Bank Protection Demo Project (TE-41)  
Terrebonne Parish, Louisiana  
CEEC Job No. 1942

Dear Mr. Simoneaux:

In response to your letter dated September 10, 2003 (attached), Coastal Engineering and Environmental Consultants, Inc. has prepared for your review and approval Change Order No. 2 for the above referenced project. This change order will increase the construction time by 20 days, from 180 to 200 days, with no change in project construction cost.

The increase in construction time is due to the issuance of an advanced Notice to Proceed and construction down time due to inclement weather.

Should you have any questions or wish to discuss, please call me at (985) 868-3434.

Sincerely,

COASTAL ENGINEERING AND ENVIRONMENTAL CONSULTANTS, INC.

Jeffrey M. Peña, P.E.  
Project Manager

JMP:mmb

Attachment

c:  Daniel Dearmond, DNR  
Oscar F. Peña, Sr. Vice-President - CEEC

K:\1942\Change Orders\Change Order No. 2 Letter.wpd
September 108, 2003

Mr. Jeff Pena
CEEC, Inc
197 Elysian Drive
Houma, Louisiana 70363

Re: Mandalay Bank Shoreline Protection Demonstration Project (TE-41)/Department of Natural Resources, Terrebonne Parish, Louisiana. File Number J 24954 DL, Purchase Order Number 3519448.

Mr. Pena;

We are requesting additional performance time for the above referenced contract. Due to an advanced Notice to Proceed and down time due to weather, we are requesting 20 days extension to the 180 contract days.

If you have any questions or need further information please contact me at your earliest convenience.

Sincerely,

Stephen M. Zelenka
Contract Administrator
CHANGE ORDER NO. 2

PROJECT: Mandalay Bank Protection Demo Project

OWNER: Department of Natural Resources
1440 Tiger Drive STE B
Thibodaux, LA  70301

CONTRACTOR: Bertucci Contracting Corporation
Post Office Box 10582
Jefferson, LA  70181-4223

DATE OF ISSUANCE: (TE-41)

OWNER'S PROJECT NO. (TE-41)

ENGINEER: Coastal Engineering & Environmental Consultants, Inc.
197 Elysian Drive
Houra, Louisiana  70384

ENGINEER'S PROJECT NO. 1942

You are directed to make the following changes in the Contract Documents.
Description: Increase the construction time by 20 days, from 180 to 200 days.

Purpose of Change Order: Due to the issuance of an advanced Notice to Proceed and construction down time due to inclement weather.

<table>
<thead>
<tr>
<th>CHANGE IN CONTRACT PRICE:</th>
<th>CHANGE IN CONTRACT TIME:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original Contract Price</td>
<td>Original Contract Time</td>
</tr>
<tr>
<td>$ 1,057,823.00</td>
<td>180 Calendar Days</td>
</tr>
<tr>
<td>Previous Change Orders No. 1 to No.2</td>
<td>days or date</td>
</tr>
<tr>
<td>$ 95,358.00</td>
<td>0 Days</td>
</tr>
<tr>
<td>Contract Price Prior to this Change Order</td>
<td>Contract Time Prior to this Change Order</td>
</tr>
<tr>
<td>$ 1,153,181.00</td>
<td>180 Calendar Days</td>
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<td>Net Increase of this Change Order</td>
<td>days or data</td>
</tr>
<tr>
<td>$ 0.00</td>
<td>20 Days</td>
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<tr>
<td>Contract Price with all approved Change Orders</td>
<td>Contract Time with all approved Change Orders</td>
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<tr>
<td>$ 1,057,823.00</td>
<td>200 Calendar Days</td>
</tr>
</tbody>
</table>

RECOMMENDED: By: [Signature]
Date: [Date]

APPROVED: By: [Signature]
Date: 16-SEP-03

APPROVED: By: [Signature]
Date: [Date]
Appendix D

BALANCING CHANGE ORDER
Jeff,
This is the letter from Bertucci agreeing to the reduction in the TE-41 final contract price. Also, attached is the balancing change order from Purchasing. This was done direct between Bertucci and DNR Purchasing. Thought you might want something for your files.

Daniel Dearmond, P.E.
Louisiana Department of Natural Resources
Coastal Engineering Division
Thibodaux Field Office
(985) 449-5103

Please find attached the agreement to decrease the items on change order 02.
DATE: 10/10/2003

TIME: 11:40 am

TO: Judy LeBourgeois

LOCATION: DNR

FAX NUMBER: 225-242-3369

MESSAGE/COMMENTS:

TE-41 Mandalay Bank Protection Demo Project
PO 3519448

Judy,
I've signed off on Bertucci's agreement with the balancing change order for TE-41 as the project construction manager with DNR.
Thanks.

FROM: Daniel Dearmond, P.E.

TELEPHONE: (985) 449-5103 FAX: (985) 447-0997

NUMBER OF PAGES TO FOLLOW COVER SHEET: 1
Fax

To:  Jerry LeBourgeois
     Fax:  225-242-3369
     Phone:  
     Re:  Mandalay Bank Demo Project

From: Gene Simon  628-1723
     Date:  October 10, 2003
     CC:  

☐ Urgent  ☐ For Review  ☐ Please Comment  ☐ Please Reply  ☐ Please Recycle

• Comments:

Confirming our conversation, we consent to a change order to the contract decreasing its value by $26,156 due to under runs on the contract.

Gene Simon
Chief Financial Officer

Daniel Dearmond, DNR construction Manager

Please see us at Bertuccicorp.com
**REQUISITION (Rev 2/02)**

**TO BE DELIVERED TO:**
NAME: Sam Priddy  
ROOM: 1017 M  
PHONE: (225) 342-5023

**DIRECT QUESTIONS TO:**
NAME: Daniel Dearmont/Sam Priddy  
PHONE: (985) 449-3103/342-5023

**ORDER ISSUED TO:**
BERTUCCI CONTRACTING CORP.

**MANDALAY BANK SHORELINE PROTECTION**
P.O. 3519448  
FILE J24954 DL

**DATE:**
October 2, 2003

**REQUISITION NO.:**
CRD-03-0233

**CHANGE ORDER #2**

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<th>AMOUNT</th>
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<td></td>
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<tr>
<td>ITEM #4 Decrease by $12,915.00</td>
<td>(287 LF X $45.00) Underrun</td>
<td>287</td>
<td>LF</td>
<td>1.</td>
<td>$45.00</td>
<td>-$12,915.00</td>
</tr>
<tr>
<td>ITEM #5 Decrease by $5,200.00</td>
<td>(26 EA X $200.00) Underrun</td>
<td>26</td>
<td>EA</td>
<td>2.</td>
<td>$200.00</td>
<td>-$5,200.00</td>
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<tr>
<td>ITEM #6 Decrease by $3,010.00</td>
<td>(602 CY X $5.00) Underrun</td>
<td>602</td>
<td>CY</td>
<td>3.</td>
<td>$5.00</td>
<td>-$3,010.00</td>
</tr>
<tr>
<td>ITEM #7 Decrease by $238.00</td>
<td>(40 SF X $5.95) Underrun</td>
<td>40</td>
<td>SF</td>
<td>4.</td>
<td>$5.95</td>
<td>-$238.00</td>
</tr>
<tr>
<td>ITEM #8 Decrease by $1,890.00</td>
<td>(42 LF X $45.00) Underrun</td>
<td>42</td>
<td>LF</td>
<td>5.</td>
<td>$45.00</td>
<td>-$1,890.00</td>
</tr>
<tr>
<td>ITEM #9 Decrease by $198.00</td>
<td>(66 SY X $3.00) Underrun</td>
<td>66</td>
<td>SY</td>
<td>6.</td>
<td>$3.00</td>
<td>-$198.00</td>
</tr>
<tr>
<td>ITEM #15 Decrease by $2,705.00</td>
<td>(541 SY X $5.00) Underrun</td>
<td>541</td>
<td>SY</td>
<td>7.</td>
<td>$5.00</td>
<td>-$2,705.00</td>
</tr>
</tbody>
</table>

**OVERRUNS/UNDERRUNS**

-12,915-$5,200-$3,010-$238-$1,890-$198-$2,705=-$26,156.00 Underrun

Net Total Project Underrun=-$26,156.00

**PROJECT**

<table>
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<tr>
<th>overdurs/underrun monitory adjustments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overrun(+) Underrun(-)</td>
</tr>
<tr>
<td>-$12,915-$5,200-$3,010-$238-$1,890-$198-$2,705 $26,156.00 Underrun</td>
</tr>
<tr>
<td>Net Total Project Underrun $26,156.00</td>
</tr>
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</table>

**TOTAL ADJUSTMENT**

<table>
<thead>
<tr>
<th>ITEM #S</th>
<th>COST CENTER</th>
<th>OBJECT</th>
<th>ACTIVITY</th>
<th>REPORTING CAT. (Proj-code)</th>
<th>PROJECT NO/ AIDGR UNIT (Purpose Code)</th>
<th>REQUESTED BY</th>
<th>SIGNATURE AGENCY APPROVAL</th>
</tr>
</thead>
<tbody>
<tr>
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<td>2511</td>
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**LESS DEPOSIT**

|              |                                          |     |      |            |                   |                  | 86,280.00      | 86,280.00     | 86,280.00    | 86,280.00         | 86,280.00         |

**LESS PRE-DIVIS**

|              |                                          |     |      |            |                   |                  | 18,776.00      | 18,776.00     | 18,776.00   | 18,776.00         | 18,776.00         |

**DUE THIS MONTH**

|              |                                          |     |      |            |                   |                  | 18,776.00      | 18,776.00     | 18,776.00   | 18,776.00         | 18,776.00         |
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**CONTRACTOR'S CERTIFICATION**

The undersigned contractor certifies that the amount of progress payments requested hereunder has been calculated in accordance with the terms of the contract and that the amounts requested are based on the completion of work performed as of the date of the application. The contractor further certifies that all materials and equipment have been paid for in accordance with the terms of the contract, and that all labor has been performed in accordance with the terms of the contract. The contractor also certifies that all work has been completed to the satisfaction of the owner, and that all work has been completed in accordance with the plans and specifications.

**PAYMENT AUTHORIZATION**

[Signature]

[Date: 9/17/2003]

[Seal]

[Notary Public]

[Seal]

[Date: 9/18/2003]

**DNR CONSTRUCTION MANAGER**
Appendix E

PROJECT SITE MAP
Mandalay Bank Protection Demonstration (TE-41)

Project Status

Approved Date: 2000  Cost: $1.19 million
Project Area: N/A  Status: Completed September 2003
Net Benefit after 20 Years: N/A
Project Type: Demonstration, Shoreline Protection

Location

The project is located on the Gulf Intracoastal Waterway (GIWW), just west of Houma, in Terrebonne Parish Louisiana, in the vicinity of Minors Canal. The project features will be installed in the Mandalay National Wildlife Refuge.

Problems

Erosion of canal banks is caused by the wakes of passing vessels on the GIWW. Wake action erodes the spoil banks and exposes the underlying organic soils. Once breakthrough occurs, bay-like areas form in adjacent areas through continued erosion.

Restoration Strategy

This project is intended to develop new techniques for protecting and restoring easily erodible organic soils. Intact banks and breakthroughs will be treated to determine the cost effectiveness of demonstrated approaches.

Progress to Date

The project was approved for engineering and design in January 2000 and construction in October 2001.

Construction was completed September 2003.

This project is on Priority Project List 9.

For more project information, please contact:

Federal Sponsor:
U.S. Fish and Wildlife Service
Lafayette, LA
(337) 291-3100

Local Sponsor:
Louisiana Department of Natural Resources
Baton Rouge, LA
(225) 342-7308

www.LaCoast.gov
Appendix F

AS-BUILT DRAWINGS
For As-built drawings, see O&M Plan Attachment IV.
Appendix G

AS-BUILD SURVEYS DATA/FIELD NOTES
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Job # 1768

LOUISIANA DEPT. OF NATURAL RESOURCES
MANDALAY BANK PROTECTION
AS-BUILT SURVEYS

GPS CONTROL

VERTICAL LOCALIZATION
H1
5.633
5.649
3.830
5.849
3.77
2.094
1.863

"MAND" (BASE)

REMARKS
for MAN. "Mand" Ref. (Impact)

Antenna: 1.986 H.
6.51578 FT
10/14/03

1.976 H.
6.483 FT.

2.044 H. = 6.706 FT.
10/16/03

Mand (Base) Antenna: 1.940 H. = 6.345 FT.

Base Plane: 1.967 H. = 6.433 FT.

W/Point: 2.044 H. = 6.706 FT.

on H. 3 = 1.260 H. = 4.147 FT.

PTS (20) to (44) on site F-2
PT (13) GBB near Site F-2
PTS (145) to (50) on Site A-2.

PTS (14) to (77) on Site F-3
PT (14) (1/2) PT (285) to (33) on Site E-3

PTS (17) to (47) on Site J-3
PTS: (20) to (41) on site J-1

PTS: (25) to (63) on site J-2

PTS: (26) to (29) on Site F-2
Job # 1768
LA D.N.R.
MANDALAY BANK PROTECTION
AS BUILT SURVEYS

LOCAL PT A 1.869 M = 6.1319 FT

PFS. 942 TO 349 ON SITE V-1
Note: Points 294 & 293 taken approx. 10' from east end of structure due to heavy tree cover. All even numbered points taken on northern side of structure w/ odd numbered points taken on southern side. Also, PFS. 291 & 292 taken approx. 10' from west end due to tree cover.

PFS. 293 TO 319 ON SITE R-1

LOCAL PT A 1.796 M = 5.892 FT

PFS. 316 TO 382 ON SITE V-2

LOCAL PT A 1.536 M = 5.039 FT

PFS. 381 TO 391 ON SITE A-3

PFS. 353 TO 353 ON SITE V-3

SAME FOR V-2 EXCEPT END SHOTS 319 & 317 taken approx. 20' from ends due to tree cover. Same for V-3.

UNABLE TO TAKE ENDS OF SITE A-3 DUE TO HEAVY TREE COVER.
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<td>EL: 2.611 1.181</td>
<td>EL: 2.369 0.214</td>
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1988

NAD 72 HORIZ. & NAD '88 Vertical

LOCAL POINT 8

Y: 377.442.589
X: 3.445.491.424
EL: 8.243 6.985

ELIP -24.381

19.990 19.128 29.465

25.277 25.271 25.275

24.381 29.128 4.214

25.276 25.276 25.276

23.840 24.361
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<th>V DOP</th>
<th>T DOP</th>
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<td>14:04</td>
<td>1.81</td>
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<td>1.44</td>
<td>0.92</td>
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<td>6/14</td>
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<tr>
<td>9:28</td>
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<td>1.27</td>
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<td>ANTENNA = 1.940 m</td>
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**LOCAL POINT 1:** "PT 01" (ROVER)

| 14:17 | 2.04  | 0.89  | 1.86  | 1.04  | 7/11  | 7/11 |
| 14:56 | 1.99  | 1.01  | 1.71  | 1.03  | 7/11  | 7/11 |
| ANTENNA 1 = 1.702 m |

| 18:33 | 3.50  | 1.83  | 2.99  | 2.45  | 7/11  | 7/11 |
| 19:25 | 1.93  | 0.89  | 1.24  | 0.79  | 7/11  | 7/11 |
| ANTENNA 2 = 1.654 m |

**LOCAL POINT 2:** "PT 02" (ROVER)

| 15:34 | 2.55  | 1.39  | 2.13  | 1.53  |       |      |      |
| 16:11 | 2.08  | 1.23  | 1.67  | 1.19  |       |      |      |
| ANTENNA 1 = 0.838 m |

| 18:06 | 2.41  | 1.47  | 1.91  | 1.38  |       |      |      |
| 18:37 | 3.22  | 1.64  | 2.77  | 2.25  |       |      |      |
| ANTENNA 2 = 0.844 m |

**LOCAL POINT 3:** "PT 03" (ROVER)

| 14:59 | 2.77  | 2.26  |       |       |       |      |      |
| 15:34 | 2.55  | 1.39  | 2.13  | 1.53  |       |      |      |
| 16:11 | 2.08  | 1.23  | 1.67  | 1.19  |       |      |      |
| ANTENNA 1 = 0.838 m |

| 18:06 | 2.41  | 1.47  | 1.91  | 1.38  |       |      |      |
| 18:37 | 3.22  | 1.64  | 2.77  | 2.25  |       |      |      |
| ANTENNA 2 = 0.844 m |

**LOCAL POINT 4:** "PT 04" (ROVER)

| 14:59 | 2.77  | 2.26  |       |       |       |      |      |
| 15:34 | 2.55  | 1.39  | 2.13  | 1.53  |       |      |      |
| 16:11 | 2.08  | 1.23  | 1.67  | 1.19  |       |      |      |
| ANTENNA 1 = 0.838 m |

| 18:06 | 2.41  | 1.47  | 1.91  | 1.38  |       |      |      |
| 18:37 | 3.22  | 1.64  | 2.77  | 2.25  |       |      |      |
| ANTENNA 2 = 0.844 m |

**LOCAL POINT 5:** "PT 05" (ROVER)

| 14:59 | 2.77  | 2.26  |       |       |       |      |      |
| 15:34 | 2.55  | 1.39  | 2.13  | 1.53  |       |      |      |
| 16:11 | 2.08  | 1.23  | 1.67  | 1.19  |       |      |      |
| ANTENNA 1 = 0.838 m |

| 18:06 | 2.41  | 1.47  | 1.91  | 1.38  |       |      |      |
| 18:37 | 3.22  | 1.64  | 2.77  | 2.25  |       |      |      |
| ANTENNA 2 = 0.844 m |
Station Name: "TE41-SM-01"

Location: Located near the community of Waterproof. At the intersection of a shell road and U.S. Hwy 90 proceed in a southerly direction from U.S. Highway 90 along the shell road for approximately 1.9 miles to the monument located at the end of the shell road. The monument is located approximately 245 feet west of Minors Canal and approximately 720 feet north of the Gulf Intracoastal Waterway.

Monument Description: Bronze cap attached to a 9/16" diameter stainless steel rod driven 72' to refusal set in sand filled 6" PVC pipe set in concrete.

Stamping: MANDALAY

Installation Date: September 2001

Monument Established By: Morris P. Hebert Inc.

For: Louisiana Department of Natural Resources, CRD

Adjusted NAD 83 Geodetic Position
Lat. 29°32'17.87723"N
Long. 90°47'52.86010"W

Adjusted NAD 83 Datum LSZ (1702) Ft
N= 377,991.33
E= 3,451,061.87

Adjusted NAVD88 Height
1.80 Feet / 0.549 Mtrs

Geoid99 Height: -25.286 Mtrs
Ellipsoid Height: -24.736 Mtrs

Re-Adjusted September 2003
Appendix H

AS-BUILD REVETMENT MAT LAYOUTS
ATTACHMENT IV

MANDALAY BANK PROTECTION DEMONSTRATION PROJECT (TE-41)

AS-BUILT DRAWINGS
# Drawing Index

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1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, EXISTING ELEVATIONS AND CONDITIONS SHOWN ON THE PLANS PRIOR TO ORDERING MATERIAL, COMMENCEMENT OF CONSTRUCTION, AND PREPARATION OF SHOP DRAWINGS. ENGINEER SHALL BE NOTIFIED OF ALL DISCREPANCIES.

2. THE CONTRACTOR SHALL DESIGN AND PROVIDE FOR ANY REQUIRED EXCAVATIONS AS SHOWN ON THE DRAWINGS AND INDICATED IN THE SPECIFICATIONS.

3. VERTICAL CONTROL: N.A.V.D. 88' DATUM

4. HORIZONTAL CONTROL: LOUISIANA STATE PLANE COORDINATE SYSTEM SOUTH ZONE NAD 83

5. DIMENSIONS AND/OR ELEVATIONS MARKED THUS (±) ARE APPROXIMATE. CONTRACTOR SHALL VERIFY ACTUAL DIMENSIONS IN THE FIELD WITH THE PROJECT REPRESENTATIVE.

6. DETAILS MARKED (N.T.S.) ARE NOT SHOWN TO SCALE.

7. BENCHMARKS HAVE BEEN ESTABLISHED AT THE SITE BY THE OWNER. SEE SHEET 3 FOR BENCHMARK DESCRIPTION. THE CONTRACTOR SHALL BE RESPONSIBLE TO ESTABLISH AND MAINTAIN TEMPORARY BENCHMARKS DURING CONSTRUCTION AS NEEDED.

8. LOCATION OF UTILITIES INDICATED ON THE PLAN SHEET ARE FOR INFORMATIONAL PURPOSES ONLY AND ARE BASED IN PART ON INFORMATION PROVIDED BY THE RESPECTIVE UTILITY COMPANIES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL EXISTING UTILITY LOCATIONS PRIOR TO CONSTRUCTION.

9. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITIES CAUSED BY THE CONTRACTOR'S NEGLIGENCE. THE DAMAGE SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE.

10. CONTRACTOR SHALL VISIT THE SITE OF WORK AND COMPLETELY INFORM HIMSELF RELATIVE TO CONSTRUCTION.


12. ALL STRUCTURAL STEEL SHALL BE ASTM A-36, UNLESS OTHERWISE NOTED.

13. ALL WELDING SHALL BE ELECTRIC WELDING WORKMANSHIP AND TECHNIQUE, WHERE APPLICABLE, SHALL CONFORM TO THE AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE.

14. WELDING SYMBOLS SHOWN ARE THOSE ADOPTED BY THE AMERICAN WELDING SOCIETY AND INDICATE ONLY SIZE AND TYPE OF WELDS REQUIRED. DETAILED INFORMATION SHALL BE SHOWN ON THE SHOP DRAWINGS AND SUBMITTED BY THE CONTRACTOR FOR APPROVAL.

15. STRUCTURAL STEEL FABRICATION AND ERECTION SHALL CONFORM TO THE A.I.S.C. MANUAL OF STEEL CONSTRUCTION LATEST EDITION. UNLESS NOTED OTHERWISE.

16. THE SETTLEMENT PLATES SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.

17. CONCRETE REVETMENT MATS SHALL HAVE A MINIMUM CONCRETE COMPRESSIVE STRENGTH OF 4,000 PSI.
## SUMMARY OF ESTIMATED QUANTITIES

### BASE BID

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>DESCRIPTION</th>
<th>UNIT</th>
<th>QUANTITY</th>
<th>ACTUAL</th>
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</thead>
<tbody>
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<td>1</td>
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<td>200</td>
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<td>2</td>
<td>Cutting &amp; Chipping</td>
<td>linear ft</td>
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<td>3</td>
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### ALTERNATE NO. 1 BID

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<tr>
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<td>Rough &amp; Trench Gravel</td>
<td>linear ft</td>
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<td>200</td>
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**Estimated Quantities: 1,200**

**Alternate 1: 1,500**

**Alternate 2: 1,800**
TYPICAL SECTION
TREATMENT SYSTEM BETWEEN BANKS

SCALE: 1" = 2'

NOTES:
1) CONSTRUCTION DRAWINGS ARE DEPICTED AT CONSTRUCTION ELEVATIONS.
2) ALL ELEVATION ARE IN NAVD 88
3) EXCAVATION MAY BE REQUIRED TO OBTAIN REQ'D ELEVATIONS IN PLACEMENT OF CPE PIPE BUNDLES.

TYPICAL SECTION
TREATMENT SYSTEM TIE-IN TO BANKS

SCALE: 1" = 2'
1. The contractor shall be allowed to remove one mat element for the placement of the revetment mat over the settlement plate. (See detail "A")

2. One settlement plate shall be installed along the centerline of the revetment mat structure as shown on the drawings or as directed by the project engineer. Approximate locations of the settlement plates are shown on sheets 13, 14, & 15. Actual locations will be determined in the field. For installation method refer to the project specifications. Settlement plates shall be hot dipped galvanized after fabrication.

3. Pipe bundles & mat ends shall not end at the same location. Mats shall be installed so as to cover the areas where pipe bundles meet.

4. Stainless steel strapping shall be placed @ ends of pipes and @ a min. of 5’ spacing

5. Pipe joint length will be as available from manufacturer.
1. THE CONSTRUCTION OF THE BLOWOUT TREATMENTS CONSISTS OF WOVEN GEOTEXTILE FABRIC UNDER CONCRETE REVETMENT MATS (SEE SHEETS 13,14,15,25,26 & 27). GEOTEXTILES SHALL BE AS PER THE TECHNICAL SPECIFICATIONS. CONTRACTOR SHALL PLACE GEOTEXTILES IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS AND AS SHOWN ON THE CONSTRUCTION DRAWINGS.

2. ANY SEAM PARALLEL TO BLOWOUT TREATMENT CENTERLINE SHALL BE SEWN. THE MINIMUM OVERLAP AT THE ROLL ENDS, PERPENDICULAR TO BREAKWATER CENTERLINE, SHALL BE THREE FEET FOR WOVEN GEOTEXTILES. THE TYPICAL GEOTEXTILE WIDTH INCLUDES A 1' MINIMUM OVERLAP ON EACH SIDE OF THE BREAKWATER.

"AS-BUILTS"

NOTE:
ALL ELEVATIONS ARE IN NAVD 88
PLAN OF TYPICAL MODULE
PARALLEL FIBERGLASS SHEET PILING

DETAIL ROD
SCALE: 1" = 2"

6" THREAD EACH SIDE
1"Øx6' GALVANIZED ROD

1"Ø GALVANIZED ROD
FIBERGLASS SHEET PILING

TREATED TIMBER 4"x6" WALER

IN-FILL DREDGE MATERIAL TO ELEV. 1.0'

FIBERGLASS SHEET PILING

TREATED TIMBER 4"x6" WALER

SEE DETAIL "A"

DETAILED COLUMN

1"Øx6' GALVANIZED ROD

TREATED TIMBER 4"x6" WALER

OGEE WASHER (GALVANIZED)
NUT (GALVANIZED)

AFTER ASSEMBLY, EXPOSED THREADS SHALL BE EITHER TACK WELDED TO NUTS, STRIPPED, OR DAMAGED BY OTHER APPROVED METHOD TO PREVENT EASY REMOVAL.

TYPICAL ELEVATION
VERTICAL SCALE: 1" = 5
HORIZONTAL SCALE: 1" = 20'

NOTE
ALL ELEVATIONS ARE IN NAVD 88

SOLICITATION NO.
DESIGN FILE NAME:
SUBMITTED BY:

ENGINEERS - SCIENTISTS - PLANNERS - ENVIRONMENTAL CONSULTANTS

MAIN OFFICE LOCATION:
WITH OFFICES IN
1. PLANTING TO BE (2) ROWS DEEP STAGGERED ROWS AS SHOWN.

2. EXACT LOCATION OF ALL PLANT ROWS WILL BE DETERMINED ON SITE BY DNR/CRD AND/OR ITS INSPECTOR.

3. ONE FERTILIZER TABLET SHALL BE PLACED APPROXIMATELY FOUR (4) TO SIX (6) INCHES TO THE SIDE OF EACH PLANT AS SPECIFIED.

4. TOP OF EACH PLANT'S ROOT MEDIA SHALL BE PLACED ONE INCH OR LESS BELOW THE FILL GRADE.

5. ALL DISTANCE MEASUREMENTS SHOWN ON THE PLANS ARE APPROXIMATE.

6. NO EQUIPMENT MAY ALTER THE EXISTING CONDITIONS OF THE AREA OR DISTURB EXISTING VEGETATION.

7. ALL ELEVATIONS ARE IN NAVD 88.
1) EXPOSED BOLT THREADS SHALL BE EITHER TACK WELDED TO NUTS, STRIPPED, OR DAMAGED BY OTHER APPROVED METHOD TO PREVENT EASY REMOVAL.

2) ACTUAL LENGTH WILL BE DETERMINED BY 8' FENCE SECTIONS.

3) ALL ELEVATION ARE IN NAVD 88

4) REFER TO SHEET 9 FOR PLANTING DETAILS.
1.) ALL ELEVATION ARE IN NAVD 88

2.) NAVIGATIONAL WARNING SIGN REQUIRED.

2.5' 2.5' 5' 7.5' 10'

SCALE: 1" = 5'

EXISTING CHANNEL

GEOTEXTILE & GEOGRID

GEOTEXTILE & GEOGRID OVERLAP
BELOW CONCRETE REVETMENT MAT

GEOTEXTILE & GEOGRID OVERLAP
BELOW CONCRETE REVETMENT MAT

3.) DREDGE MATERIAL TO BE CONSTRUCTED AT DIRECTION OF ENGINEER

ARMORED PLUG STRUCTURE

11

11

D.C.S.

J.M.P.

R.A.P.

NOV. 2001

N.T.S. 2/5/04

1768-11.DWG

STATE PROJECT NO. TE-41

TERREBONNE PARISH, LOUISIANA

MANDALAY BANK PROTECTION DEMO PROJECT

FEDERAL PROJECT NO. XTE-Demo

LOUISIANA DEPARTMENT OF NATURAL RESOURCES

ENGINEERS - SCIENTISTS - PLANNERS - ENVIRONMENTAL CONSULTANTS

MAIN OFFICE LOCATION:

WITH OFFICES IN

DESIGNED BY:

DRAWN BY:

CHECKED BY:

DATE:

PLOTPLOT

SCALE:

DATE:

SOLICITATION NO.

DESIGN FILE NAME:

SUBMITTED BY:

MARK

DESCRIPTION

"AS-BUILTS"
1. One warning sign shall be installed approximately 25 feet in front of each treatment structure (15 total) as shown on the drawings or as directed by the project engineer. Approximate determined in the field.

2. Locations of the warning signs are shown on sheets 13 thru 27. Actual locations will be reflective tape 2" wide.

3. Therein, except where stated otherwise.

4. Measurement and payment will be made as described in the "standard specifications" refer to the "la standard specifications for roads and bridges", latest edition, including amendments, by the dept. of transportation and development. Measurement and payment will be made as described therein, except where stated otherwise.

5. References herein to the "standard specifications" refer to the "la standard specifications for roads and bridges", latest edition, including amendments, by the dept. of transportation and development. Measurement and payment will be made as described therein, except where stated otherwise.

6. One warning sign shall be installed approximately 25 feet in front of each treatment structure (15 total) as shown on the drawings or as directed by the project engineer. Approximate locations of the warning signs are shown on sheets 13 thru 27. Actual locations will be determined in the field.

7. The lettering field will be a reflective material of white color. The lettering for the warning signs will be black. All signs must meet U.S. coast guard standards; in accordance with 33 CFR 330.4 (a) (1).

8. Neoprene washers shall be placed between the sign and the piling at all points of contact.

9. Hardware for timber connections shall be hot dip galvanized in accordance with section 811.15 of the Louisiana standard specifications for roads and bridges, as published by the Louisiana department of transportation and development, latest edition.

10. Timber piles shall conform to sections 804 and 1014 of the Louisiana standard specifications for roads and bridges, as published by the Louisiana department of transportation and development, latest edition. Piles shall be treated with a creosote solution conforming to AWPA P2 to a minimum retention of 16 PCF.

11. Timber piling shall be 40-feet in length with a 12-inch diameter butt and 7-inch diameter at the tip.

12. Exposed bolt threads shall be either tack welded to nuts, stripped, or damaged by other approved method to prevent easy removal.

NOTES:

- 2" orange reflective border
- 3" black letters
- 6" black letters
DOUBLE ROW 24" CONCRETE ARMOR UNITS

G.I.W.W.

X = 3,452,787.66
Y = 376,032.44

X = 3,453,218.08
Y = 376,089.01

DOUBLE ROW 24" CONCRETE ARMOR UNITS
SEE SHEET 9

CONTROL SITE NO. 2 (C2)
SEE SHEET NO. 29

EXISTING GROUND
MARSH
SPOIL
TREES

0.0
ELEVATION AT CENTER OF TEXT
1.0
HIGH BANK ELEV.
0.8
BANK BOTTOM ELEV.

DOUBLE ROW 24" CONCRETE ARMOR UNIT
GIANT CUTGRASS
WARNING SIGN

ALL ELEVATIONS ARE IN NAVD 88
"AS-BUILTS"

G.I.W.W.

DOUBLE ROW 24" CONCRETE ARMOR UNITS
SEE SHEET 9

GIANT CUTGRASS
SEE SHEET 9

DOUBLE ROW 24" CONCRETE ARMOR UNITS
SEE SHEET 9

X = 3,452,564.14
Y = 376,365.48

X = 3,452,594.42
Y = 376,279.77
+0.21'

X = 3,452,787.66
Y = 376,032.44
+0.9

X = 3,452,829.45
Y = 376,089.45
+0.52'

X = 3,452,787.66
Y = 376,032.44

VEGETATED BANK LINE

LEGEN

EXISTING GROUND
MARSH
SPOIL
TREES

ELEVATION @ CENTER OF TEXT
HIGH BANK ELEV.
BANK BOTTOM ELEV.

DOUBLE ROW 24" CONCRETE ARMOR UNIT
GIANT CUTGRASS
WARNING SIGN

NOTE:
ALL ELEVATIONS ARE IN NAVD 88

SCALE: 1" = 50'

PLAN
STRAIGHT WALL FIBERGLASS SHEET PILE SYSTEM
BLOW-OUT STRUCTURE NO. 3 (V3)
SEE SHEET NO. 18

OPEN WATER

EXISTING TREES

TREATMENT
X = 3,444,642.57
Y = 376,420.48

G.I.W.W.

WARNING SIGN
(TYP.)

SECTION B-B

WARNING SIGN (TYP.)

SECTION A-A

MARSH

ELEVATION @ CENTER OF TEXT

HIGH BANK ELEV.

BANK BOTTOM ELEV.

WARNING SIGN

TOP OF BANK

BOTTOM OF BANK

EXISTING BOTTOM

EXISITNG SOIL

MARSH

TREATMENT
X = 3,444,642.57
Y = 376,420.48

8' X 20' REVETMENT MATS
ELEV. +3.5'
SEE SHEET 11

8' X 20' REVETMENT MATS
ELEV. +3.25'
SEE SHEET 12

WARNING SIGN (TYP.)

(AS-BUILTS)

"AS-BUILTS"

1 - "AS-BUILT" SURVEY DATA FOR THIS STRUCTURE SUPPLIED BY CONTRACTOR.
2 - ARMORED PLUG LAYOUT POSITIONING IS APPROXIMATE.
3 - "AS-BUILT" SURVEY DATA FOR THIS STRUCTURE SUPPLIED BY DESIGNER.
NOTES:
ALL ELEVATIONS ARE IN NAVD 88

LEGEND:
- EXISTING GROUND
- MARSH
- SPOIL
- TREES
  0.0 ELEVATION @ CENTER OF TEXT
  1.8 HIGH BANK ELEV.
  0.8 BANK BOTTOM ELEV.

G.I.W.W.

VEGETATED BANK LINE

"AS-BUILTS"
SEE SHEET NO. 22
FENCING W/ GIANT CUTGRASS
OFF-BANK TREATMENT NO 2 (F2)

SEE SHEET NO. 23
FENCING W/ GIANT CUTGRASS
OFF-BANK TREATMENT NO 1 (F1)

CONTROL SITE NO. 3 (C3)

NOTE:
ALL ELEVATIONS ARE IN NAVD 88

SCALE: 1" = 100'

STATE PROJECT NO. TE-41
TERREBONNE PARISH, LOUISIANA
MANDALAY BANK PROTECTION DEMO PROJECT
FEDERAL PROJECT NO. XTE-Demo
LOUISIANA DEPARTMENT OF NATURAL RESOURCES

DESIGNER:
D.C.S.
J.M.P.
R.A.P.
NOV. 2001
1768-30.DWG
SOLICITATION NO.
DESIGN FILE NAME:
SUBMITTED BY:

ENGINEERS - SCIENTISTS - PLANNERS - ENVIRONMENTAL CONSULTANTS
MAIN OFFICE LOCATION:
WITH OFFICES IN

"AS-BUILTS"
ALL ELEVATIONS ARE IN NAVD 88

PLAN

G.I.W.W.

LEGEND
- EXISTING GROUND
- MARSH
- SPOIL
- TREES
- ELEVATION @ CENTER OF TEXT
- HIGH BANK ELEV.
- BANK BOTTOM ELEV.

NOTE:

SCALE: 1" = 100'

STATE PROJECT NO. TE-41
TERREBONNE PARISH, LOUISIANA
MANDALAY BANK PROTECTION DEMO PROJECT
FEDERAL PROJECT NO. XTE-Demo
LOUISIANA DEPARTMENT OF NATURAL RESOURCES

DESIGNED BY:
DRAWN BY:
CHECKED BY:
DATE:

SOLICITATION NO.
DESIGN FILE NAME:
SUBMITTED BY:
LEGEND

BORROW AREAS FOR SHEET PILING DREDGE FILL.
BORROW AREAS TO BE NEAREST TO CENTER LINE OF G.I.W.W. AND NOT TO EXCEED 2.0' DEPTH
BORROW AREAS TO BE NEAREST TO CENTER LINE OF G.I.W.W. AND NOT TO EXCEED 7.0' DEPTH
2' DEPTH TO BE STRIPPED

C  G.I.W.W.L
30' MAX.

EL. -16.0'

EXISTING BOTTOM OF G.I.W.W.

TYPICAL SECTION - BORROW AREAS
FOR V1, V2, & V3

"AS-BUILTS"

NOTE:
ALL ELEVATIONS ARE IN NAVD 88

VERTICAL SCALE: 1" = 6'

Engineers - Scientists - Planners - Environmental Consultants

MAIN OFFICE LOCATION:

WITH OFFICES IN

TERREBONNE PARISH, LOUISIANA

MANDALAY BANK PROTECTION DEMO PROJECT

FEDERAL PROJECT NO. XTE-Demo

LOUISIANA DEPARTMENT OF NATURAL RESOURCES

STATE PROJECT NO. TE-41

NUMBER SHEET

DESIGNED BY:

CHECKED BY:

DATE:

DRAWN BY:

DATE:

PLOT PLOT

SCALE: DATE:

SOLICITATION NO. DESIGN FILE NAME:

SUBMITTED BY:

MARK DESCRIPTION

(TE41-SM-01) MAND
X = 2,170,261.645
Y = 317,285.699
ELEVATION = 2.012'

EXISTING PIPELINE

GULF INTRACOASTAL WATERWAY (G.I.W.W.)

P.I. 652
P.I. 651
P.I. 647A

MINORS CANAL

GULF INTRACOASTAL WATERWAY (G.I.W.W.)

MINORS CANAL

EXISTING BOTTOM OF G.I.W.W.

EL. -16.0'

30' MAX

15'

15'

2.0' MAX

TYPICAL SECTION - BORROW AREAS
FOR A1, A2, & A3

NOTE:
REQURED VOLUME FOR ARMORED
PLUGS IS APPROXIMATE 4 CY/FT

VERTICAL SCALE: 1" = 6'

3' 3' 6' 9' 12'
NOTES:
1) ALL ELEVATIONS ARE IN NAVD 88
2) ALL TREATMENT CONSTRUCTION SHALL BE ACCESSED DIRECTLY FROM G.I.W.W.
3) FLOATATION CHANNELS ARE ALLOWED FOR BLOWOUT TREATMENT AND ARMORED PLUG LOCATIONS ONLY. THESE INCLUDE SITES V1-V3, R1-R3, AND A1-A3. NO FLOATATION CHANNELS ARE TO BE DREDGED FOR OFF-BANK TREATMENT SITES.
4) ONE PERPENDICULAR AND ONE PARALLEL FLOATATION CHANNEL IS ALLOWED FOR SITES LISTED IN NOTE 3 AND AS SHOWN IN THE PLAN VIEW. THE PARALLEL CHANNEL MUST BE AT LEAST 40 FEET FROM THE EDGE OF THE STRUCTURE.
5) SHOULD THE CONTRACTOR REQUIRE FLOATATION CHANNEL, THE COST FOR THIS ITEM MUST BE INCLUDED IN THE COST OF THE STRUCTURE FOR EACH AND EVERY TREATMENT SITE AND/OR LOCATION THAT SHALL BE REQUIRED.
6) NO EMERGENT MARSH IS TO BE DAMAGED DURING DREDGING OPERATIONS.

TYPICAL SECTION A-A

LEGEND
- FLOATATION CHANNEL DREDGE AREA TO BE BACKFILLED DREDGE MATERIAL UPON COMPLETION OF TREATMENT
- FLOATATION CHANNEL TEMPORARY SPOIL PLACEMENT
- EXISTING GROUND
- MARSH
- HIGH BANK ELEV.
- SPoil
- BANK BOTTOM ELEV.
- TREES
- WARNING SIGN

"AS-BUILTS"
ATTACHMENT V

MANDALAY BANK PROTECTION DEMONSTRATION PROJECT (TE-41)

PROJECT PERMITS
&
PERMIT AMENDMENTS
Operations Division
Central Evaluation Section

SUBJECT: WI-20-020-0013-1

U.S. Fish and Wildlife Service
c/o Coastal Engineering and Environmental Consultants, Inc.
197 Elysian Drive
Houma, Louisiana 70363

Gentleman:

Revised drawings attached in nine pages, furnished with your application dated January 9, 2003, covering the Mandalay National Wildlife Refuge bank protection demonstration project, located in Sections 1-3, T18S-R16E and Section 16, T18S-R17E, are approved and will be included in your plans for the work authorized by the Secretary of the Army in permit dated March 28, 2002. These drawings supersede the drawings of your previous permit.

The conditions to which the work is made subject, remain in full force and effect.

BY AUTHORITY OF THE SECRETARY OF THE ARMY:

[Signature]

Ronald J. Ventola
Chief, Regulatory Branch
for
Peter J. Rowan
Colonel, U.S. Army
District Engineer

Attachment
VICINITY MAP
N.T.S.

LOUISIANA DEPARTMENT OF NATURAL RESOURCES
MANDALAY BANK PROTECTION DEMO PROJECT (TE-41)
SECTIONS 1-3, T18S-R16E & SECTION 16, T18S-R17E
TERREBONNE PARISH, LOUISIANA

Date: 05/09/01
Drawn By: CDL
Sheet No.: 1 of 9

Scale: NTS
Approved By: MGM
File No.: VICINITY

Revisions:
No.: 1
Date: 05/19/2001
A-JACKS & PLANTING LAYOUT
& TYPICAL SECTIONS

LOUISIANA DEPARTMENT OF NATURAL RESOURCES
MANDALAY BANK PROTECTION DEMO PROJECT (TE-41)
SECTIONS 1-3, T18S-R16E & SECTION 16, T18S-R17E
TERREBONNE PARISH, LOUISIANA
TYPICAL SECTION
TREATMENT SYSTEM TIE-IN TO BANKS

HORIZONTAL SCALE: 1" = 5'

2.5' 0 2.5' 5' 7.5' 10'

INTRACOASTAL WATERWAY

- FENCING
- TREATMENT LENGTH VARIES
- GIANT CUTOSS
- SPACING (Typ.)

BANKLINE

EXISTING MARSH

FENCING & PLANTING LAYOUT

SCALE: N.1.3.

LOCATION LENGTH (FT.)
F1 372
F2 447
F3 375

NOTE:
PLANTING TO BE (2) ROWS DEEP
STAGGERED HORIZONTAL AS SHOWN

FENCING & PLANTING LAYOUT
& TYPICAL SECTION

LOUISIANA DEPARTMENT OF NATURAL RESOURCES
MANDALAY BANK PROTECTION DEMO PROJECT (TE-41)
SECTIONS 1-3, T18S-R16E & SECTION 16, T18S-R17E
TERREBONNE PARISH, LOUISIANA

Drawn By: CDL
Sheet No.: 6 of 9

Approved By: MGM
File No.: FENCING
TYPICAL SECTION

HORIZONTAL SCALE: 1" = 10'

VERTICAL SCALE: 1" = 5'

NOTE:
1) DATUM IS NAVD 88
2) NAVIGATIONAL WARNING SIGN REQUIRED.

LOUISIANA DEPARTMENT OF NATURAL RESOURCES
MANDALAY BANK PROTECTION DEMO PROJECT (TE-41)
SECTIONS 1-3, T18S - R16E & SECTION 16, T18S - R17E
TERREBONNE PARISH, LOUISIANA
PLAN – BORROW AREAS

LOUISIANA DEPARTMENT OF NATURAL RESOURCES
MANDALAY BANK PROTECTION DEMO PROJECT (TE-41)
SECTIONS 1-3, T18S-R16E & SECTION 16, T18S - R17E
TERREBONNE PARISH, LOUISIANA

Date: 09/19/01
Drawn By: R.A.P.
Sheet No.: 8 of 9
Revisions:

No. | Description            | Date       |
--- |------------------------|------------|
1   | NEW DRAWING            | 09/19/01   |
2   | GENERAL REVISIONS      | 09/20/01   |

Scale: SEE DWG.
Approved By: M.G.M.
File No.: BORROW
1,730 cys of dredge material to be excavated for typical flotation canal. Approx. 16,000 cys of dredge material to be excavated for all flotation canals.

NOTES:
1) ALL ELEVATIONS ARE IN NAVD 88
2) ALL TREATMENT CONSTRUCTION SHALL BE ACCESSED DIRECTLY FROM G.I.W.
3) Flotation Channels are allowed for blowout treatment and armored plug locations only. These include sites V1-V3, R6-R13, and A1-A3. No flotation channels are to be dredged for off-bank treatment sites.
January 23, 2003

Coastal Engineering and Environmental Consultants, Inc.
197 Elysian Drive
Houma, LA 70363
Attn: Mohanachandran G. Menon

RE: Revision of Water Quality Certification (WQC 011018-02)/Agency Interest (AI 93482)
   Corps of Engineers Permit (WI-20-020-0013)
   Terrebonne Parish

We have received your letter and attachments concerning the revision to your application to
implement various bank protection treatment techniques along the Gulf Intracoastal Water Way
in the Mandalay National Wildlife Refuge in Terrebonne Parish, Louisiana. This revision
consists of including an extension of the flotation canal.

Please be advised that we have reviewed the information as noted therein and interpose no
objection to this revision.

Sincerely,

Jodi G. Miller
Environmental Scientist Manager
Registrations and Certifications Section

JGM/mvrb

c: Corps of Engineers, New Orleans
   Coastal Management Division
DEPARTMENT OF NATURAL RESOURCES

December 17, 2002

Paul Yakubzak
US Fish and Wildlife Service
Mandalay National Wildlife Refuge
3599 Black Bayou Drive
Houma, LA 70360

RE: C20010381, Coastal Zone Consistency Modification
United States Fish and Wildlife Service
Direct Federal Action
Mandalay Bank Protection Demo CWPPRA Project TE-41; modification to extend the flotation canal, Mandalay National Wildlife Refuge, Terrebonne Parish, Louisiana

Dear Mr. Yakubzak:

The above referenced project has been reviewed for consistency with the approved Louisiana Coastal Resource Program (LCRP) as required by Section 307 of the Coastal Zone Management Act of 1972, as amended. The project, as proposed in the application, is consistent with the LCRP. If you have any questions concerning this determination please contact Brian Marcks of the Consistency Section at (225)342-7939 or 1-800-267-4019.

Sincerely,

Terry W. Howey, Administrator

TWH/JH/bgm
cc: Fred Dunham, LDWF
Ron Ventola, NOD-COE
Mitchell Andrus, CRD
Joyce Mazourek, USFWS
Rick Hartman, NMFS
Rod Pierce, CMD/Fl

COASTAL MANAGEMENT DIVISION  P.O. BOX 44487  BATON ROUGE, LOUISIANA 70804-4487
TELEPHONE (225) 342-7591  FAX (225) 342-9419
AN EQUAL OPPORTUNITY EMPLOYER
Operations Division
Western Evaluation Section

SUBJECT: WI-20-020-0013

Mandalay National Wildlife Refuge
3599 Bayou Black Drive
Houma, Louisiana 70360

Gentlemen:

Enclosed is a permit dated this date, subject as above, authorizing work under the Department of the Army permit program.

You are again reminded that any work not in accordance with the plans is subject to removal regardless of the expense and the inconvenience that such removal may involve and regardless of the date when the discrepancy is discovered.

Your attention is directed to all the terms and conditions of the approval, especially those conditions relative to supervision and approval of work by the District Engineer. In order to have the work finally approved and declared legal, all terms and conditions of the permit and plans shown on the drawings attached thereto, must be rigidly adhered to.

**It is necessary that you notify the District Engineer, Attention: Regulatory Branch, Western Evaluation Section, in writing, prior to commencement of work and also upon its completion.** The notification must include the permittee's name, as shown on the permit, and the permit number. Please note the expiration date on the permit. Should the project not be completed by that date, you may request a permit time extension. Such requests must be received before, but no sooner than, six months before the permit expiration date and must show the work completed and the reason the project was not finished within the time period granted by the permit.

A copy of Page 1 of the permit (ENG Form 1721) must be conspicuously displayed at the project site. Also, you must keep a copy of the signed permit at the project site until the work is completed.

Sincerely,

Pete Serio
Chief, Western Evaluation Section

Enclosure
DEPARTMENT OF THE ARMY PERMIT

Permittee: Mandalay National Wildlife Refuge

Permit No.: WI-20-020-0013

Issuing Office: New Orleans District

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferees. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: Dredge and deposit fill, concrete revetment mats and A-Jacks, and install sheetpile to construct the Mandalay Bank Protection Demonstration Project (TE-41), in accordance with drawings attached in four sheets, undated.

Project Location: The project is located in the GIWW and extends from Latitude 29°32'08.92", Longitude 90°46'16.51" to Latitude 29°32'04.44", Longitude 90°49'43.51" in Terrebonne Parish, Louisiana.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on March 31, 2007. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.
Special Conditions:

See Special Conditions on Page 4.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:
   (X) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).
   (X) Section 404 of the Clean Water Act (33 U.S.C. 1344).

2. Limits of this authorization.
   a. This permit does not obviate the need to obtain other federal, state or local authorizations required by law.
   b. This permit does not grant any property rights or exclusive privileges.
   c. This permit does not authorize any injury to the property or rights of others.
   d. This permit does not authorize interference with any existing or proposed federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:
   a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
   b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.
   c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.
   d. Design or construction deficiencies associated with the permitted work.
   e. Damage claims associated with any future modification, suspension or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:
   a. You fail to comply with the terms and conditions of this permit.
   b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).
   c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.
Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms conditions of this permit.

[Signature]
(PERMITTEE) Refuse Manager

[Date]
(MARCH 22, 2002)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

[Signature]
Pete Serlo, Chief, Western Evaluation Section for Thomas F. Julich, District Engineer

[Date]
(28 MARCH 2002)

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

[Signature]
(TRANSFEREE)

[Signature]
(CATE)
SPECIAL CONDITIONS:

7. Your use of the permitted activity must not interfere with the public’s right to free navigation on all navigable waters of the United States.

8. You must install and maintain, at your expense, any safety lights, signs and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, on your authorized facilities.

9. The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

10. Barriers will be visible to the boating public both day and night so as to reduce the possibility of boat collisions with barriers.

11. The permittee is aware that under 33 CFR 333.4(2)(1), signs may be placed as aids to navigation warning boaters of upcoming barriers in the waterways provided they are approved and installed with the requirements of the U.S. Coast Guard. The permittee is aware of special condition "c" under the Structures In or Affecting Navigable Waters of the United States section of this permit.

12. No structures permitted by this authorization are to be constructed less than 175-feet from the channel centerline.

13. The permittee is to provide all results of the shoreline protection demonstration project to the USACE for review to include copies of available evaluation reports, monitoring surveys and photos.
A-JACKS & PLANTING LAYOUT
& TYPICAL SECTIONS

LOUISIANA DEPARTMENT OF NATURAL RESOURCES
MANDALAY BANK PROTECTION DEMO PROJECT (TE-41)
SECTIONS 1-3, T18S-R16E & SECTION 16, T18S-R17E
TERREBONNE PARISH, LOUISIANA

Date: 05/08/01  Drawn By: ODL  Sheet No.: 5 of 9  Revisions:
Scale: SEE DWG  Approved By: MGM  File No.: AJACKS

COASTAL ENGINEERING AND ENVIRONMENTAL
CONSULTANTS, INC.
Engineers - Scientists - Pioneers - Environmental Consultants
197 Elysian Drive Houma, Louisiana 70360

NOTE:
PLANTING TO BE (2) ROWS DEEP
STAGGERED ROWS AS SHOWN

LOCATION  LENGTH (FT.)
J1  442
J2  427
J3  370
TYPICAL SECTION
TREATMENT SYSTEM TIE-IN TO BANKS
HORIZONTAL SCALE: 1" = 5'

INTRACOASTAL WATERWAY
TREATMENT LENGTH VARIES
5'-0" FENCE
SPACING (TYP.)

GIANT CUCUMBER
SPACING (TYP.)

EXAMPLE MARSH
SPACING (TYP.)

EXISTING MARSH

FENCING & PLANTING LAYOUT
SCALE: N.T.S.

LOCATION LENGTH (FT.)
F1 372
F2 447
F3 375

NOTE:
PLANTING TO BE (3) ROWS DEEP
STAGGERED ROWS AS SHOWN

LOUISIANA DEPARTMENT OF NATURAL RESOURCES
MANDALAY BANK PROTECTION DEMO PROJECT (TE-41)
SECTIONS 1-3, T18S-R16E & SECTION 16, T18S-R17E
TERRIBONNE PARISH, LOUISIANA
TYPICAL SECTION

HORIZONTAL SCALE: 1" = 10'

VERTICAL SCALE: 1" = 5'

NOTE:

1.) DATUM IS NAVD 88
2.) NAVIGATIONAL WARNING SIGN REQUIRED.

LOUISIANA DEPARTMENT OF NATURAL RESOURCES
MANDALAY BANK PROTECTION DEMO PROJECT (TE-41)
SECTIONS 1-3, T18S - R16E & SECTION 16, T18S - R17E
TERREBONNE PARISH, LOUISIANA
PLANT - BORROW AREAS

LOUISIANA DEPARTMENT OF NATURAL RESOURCES
MANDALAY BANK PROTECTION DEMO PROJECT (TE-41)
SECTIONS 1-3, T18S-R16E & SECTION 16, T18S - R17E
TERREBONNE PARISH, LOUISIANA

Date: 09/19/01
Drawn By: R.A.P.
Sheet No.: 8 of 9
Revisions:
No.: 1
Rev. No.: 09/19/01
Scale: SEE DWG.
Approved By: M.G.M.
File No.: BORROW

LEGEND
BORROW AREAS FOR SHEET PILING DREDGE FILL
BORROW AREAS TO BE NEAREST TO CENTER LINE OF G.I.W.W. AND NOT TO EXCEED 2' DEPTH
BORROW AREAS FOR ARMORED PLUG DREDGE FILL
BORROW AREAS TO BE NEAREST TO CENTER LINE OF G.I.W.W. AND NOT TO EXCEED 7.2' DEPTH
2' DEPTH TO BE STRIPPED

TYPICAL SECTION - BORROW AREAS
FOR PLATE & AS
NOTE: REQUIRED VOLUME FOR ARMORED PLUGS IS APPROXIMATE 6 CY/FT

TYPICAL SECTION - BORROW AREAS
FOR V1, V2, & V3
NOTE: REQUIRED VOLUME FOR DOUBLE SINEISOAL VINYL SHEET PILE IS APPROXIMATE 1 CY/FT

EL. -16.0

EXISTING BOTTOM OF G.I.W.W.

EL. -16.0

EXISTING BOTTOM OF G.I.W.W.

G.I.W.W.
1,730 cubic yards of dredge material to be excavated for typical flotation canal. Approx. 18,000 cubic yards of dredge material to be excavated for all flotation canals.

NOTES:
1) ALL ELEVATIONS ARE IN NAVD 88
2) ALL TREATMENT CONSTRUCTION SHALL BE ADJUSTED DIRECTLY FROM G.I.W.
3) FLOATATION CHANNELS ARE ALLOWED FOR BLOWOUT TREATMENT AND ARMORED PLUG LOCATIONS ONLY. THESE INCLUDE SITES V1-V3, R1-R3, AND A1-A3. NO FLOATATION CHANNELS ARE TO BE DRILLED FOR OFF-BANK TREATMENT SITES.

LOUISIANA DEPARTMENT OF NATURAL RESOURCES
MANDALAY BANK PROTECTION DEMO PROJECT (TE-41)
SECTIONS 1-3, T18S - R16E & SECTION 16, T18S - R17E
TERREBONNE PARISH, LOUISIANA
Mr. David W. Fruge
United States Department of the Interior
Fish and Wildlife Service
646 Cajundome Blvd., Suite 400
Lafayette, LA 70506

RE: DEQ0201140129; Terrebonne Parish
    Proposed Mandalay Bank Protection Project

Dear Mr. Fruge:

The Department of Environmental Quality, Office of Environmental Assessment and Office of Environmental Services has received your request for comments on the above referenced project.

There were no objections based on the limited information submitted to us. However, the following comments have been included and/or attached. Should you encounter a problem during the implementation of this project, please make the appropriate notification to this Department.

The Office of Environmental Services has made the following comments:

Please see the letter from the Office of Environmental Services, Permits Division.

"Any approval, or letter of no objection, granted by LDEQ is relevant only to the granting of funds for the proposed project. This does not relieve the applicant of his responsibility for obtaining any other permits or approvals necessary from LDEQ or other State, Local, or Federal agencies, nor does it influence the Department's ultimate decision on those permits or approvals. A copy of our brochure on construction best management practices is enclosed."

RECEIVED
AUG 18 2003
January 28, 2002
Page 2

Please forward all future requests to the following address and we will expedite it as quickly as possible. When submitting large proposals please provide triplicate copies.

Mrs. Lisa Miller
Department of Environmental Quality
P. O. Box 82231
Baton Rouge, LA 70884-2231

Should you need any additional information please call me at (225) 765-0723.

Sincerely,

Lisa Miller
Lisa L. Miller
Contracts & Grants

Enclosure
January 7, 2002

U. S. Fish and Wildlife Service
Mandalay National Wildlife Refuge
3599 Bayou Black Drive
Houma, LA 70380

Attention: Paul Yakupzack

RE: Corps of Engineers Permit (WI-20-020-0013)
Water Quality Certification (WQC 011018-02/AI 93482)
Terrebonne Parish

Dear Mr. Yakupzack:

The Department has received an application to implement various bank protection
treatment techniques along the Gulf Intracoastal Water Way, in the Mandalay National
Wildlife Refuge, in Terrebonne Parish, Louisiana.

The requirements for Water Quality Certification have been met in accordance with LAC
33:IX.1507.A-E. Based on the information provided in your application, we have
determined that the placement of the fill material will not violate the water quality
standards of Louisiana provided for under LAC 33:IX.Chapter 11. Therefore, the
Department has no objection to this project.

Sincerely,

[Signature]

Jodi G. Miller
Environmental Scientist Manager
Registrations and Certifications Section

JGM/jcr

c: Corps of Engineers, New Orleans
Coastal Management Division

OFFICE OF ENVIRONMENTAL SERVICES • P.O. BOX 82135 • BATON ROUGE, LOUISIANA 70884-2135

AN EQUAL OPPORTUNITY EMPLOYER
SPECIAL USE PERMIT

Permittee Name
Randy Hanchey, Assistant Secretary

Permittee Address
LA Dept. of Natural Resources
Coastal Restoration Division - Land Section
P. O. Box 14027
Baton Rouge, LA 70804

Purpose (specify in detail privilege requested, or units of products involved)

To construct CWPPRA project entitled Mandalay Bank Protection Demo Project TR-41

G. Citation (specify unit numbers; metes and bounds, or other recognizable designations)

As per attachments Exhibit A and B

Amount of fee $ 0

If not a fixed payment, specify rate and unit of charge:

□ Payment Exempt - Justification: State Conservation Agency
□ Full Payment
□ Partial Payment - Balance of payment to be made as follows:

Record of Payments

□

Special Conditions

As per attached Special Conditions

RECEIVED
AUG 1 8 2003

This permit is issued by the U.S. Fish and Wildlife Service and accepted by the undersigned. Subjected to the terms, covenants, obligations, and reservations, expressed or implied herein, and to the conditions and requirements appearing on the reverse side.

Permittee Signature

Issuing Officer Signature and Title

Refuge Manager
General Conditions

1. Payments
All payments shall be made on or before the due date to the local representative of the U.S. Fish and Wildlife Service by a postal money order or check made payable to the U.S. Fish and Wildlife Service.

2. Use limitations
The permittee's use of the described premises is limited to the purposes herein specified; does not unless provided for in this permit allow him/her to restrict other authorized entry onto his/her area; and permits the Service to carry on whatever activities are necessary for (1) protection and maintenance of the premises and adjacent lands administered by the Service and (2) the management of wildlife and fish using the premises and other Service lands.

3. Damages
The United States shall not be responsible for any loss or damage to property including but not limited to growing crops, animals, and machinery; or injury to the permittee, or his/her relatives, or to the officers, agents, employees, or any others who are on the premises from instructions or by the sufferance of the permittee, or is his/her associates; for damages or interference caused by wildlife or employees or representatives of the Government carrying out their official responsibilities. The permittee agrees to save the United States or any of its agencies harmless from any and all claims for damages or losses that may arise or be incident to the flooding of the premises resulting from any associated Government river and harbor, flood control, reclamation, or Tennessee Valley Authority activity.

4. Operating Rules and Laws
The permittee shall keep the premises in a neat and orderly condition at all times, and shall comply with all municipal, county, and State laws applicable to the operations under the permit as well as all Federal laws, rules, and regulations governing National Wildlife Refuges and the area described in this permit. The permittee shall comply with all instructions applicable to this permit issued by the refuge officer in charge. The permittee shall take all reasonable precautions to prevent the escape of fires and to suppress fires and shall render all reasonable assistance in the suppression of refuge fires.

5. Responsibility of Permittee
The permittee, by operating on the premises, shall be considered to have accepted these premises with all the facilities, fixtures, or improvements in their existing condition as of the date of this permit. At the end of the period specified or upon earlier termination, the permittee shall give up the premises in as good order and condition as when received except for reasonable wear, tear, or damage occurring without fault or negligence. The permittee will fully repay the Service for any and all damage directly or indirectly resulting from negligence or failure on his/her part, or the part of anyone of his/her associates, to use reasonable care.

6. Revocation Policy
This permit may be revoked by the Regional Director of the Service without notice for noncompliance with the terms hereof or for violation of general and/or specific laws or regulations governing National Wildlife Refuges or for nonuse. It is at all times subject to discretionary revocation by the Director of the Service. Upon such revocation the Service, by and through any authorized representative, may take possession of the said premises for its own and sole use, or may enter and possess the premises as the agent of the permittee and for his/her account.

7. Compliance
Failure of the Service to insist upon a strict compliance with any of this permit's terms, conditions, and requirements shall not constitute a waiver or be considered as a giving up of the Service's right to thereafter enforce any of the permit's terms, conditions, or requirements.

8. Termination Policy
At the termination of this permit, the permittee shall immediately give up possession to the Service representative, reserving, however, the rights specified in paragraph 9. If he/she fails to do so, he/she will pay the Government, as liquidated damages, an amount double the rate specified in this permit for the entire term of possession. Upon the term of possession, the permittee will be allowed to rear or raise as needed to remove his/her property as stated in paragraph 9. The acceptance of any fee for liquidated damages or for any act of administration relating to the continued tenancy is not to be considered as an affirmation of the permittee's action nor shall it operate as a waiver of the Government's right to terminate or cancel the permit for the breach of any specified condition or requirement.

9. Removal of Permittee's Property
Upon the expiration or termination of this permit, if all rental charges and/or damage claims due to the Government have been paid, the permittee may, within a reasonable period as stated in the permit or as determined by the refuge officer in charge but not to exceed 60 days, remove all structures, machinery, and/or other equipment, etc., from the premises for which he/she is responsible. Within this period the permittee must also remove any other his/her property including his/her acknowledged share of products or crops grown, cut, harvested, stored, or stacked on the premises. Upon failure to remove any of the above items within the aforesaid period, they shall become the property of the United States.

10. Transfer of Privileges
This permit is not transferable, and no privileges herein mentioned may be sublet or made available to any person or interest not mentioned in this permit. No interest hereunder may accrue through lien or be transferred to a third party without the approval of the Regional Director of the U.S. Fish and Wildlife Service and the permit shall not be used for speculative purposes.

11. Conditions of Permit not Fullfilled
If the permittee fails to fulfill any of the conditions and requirements set forth herein, all money paid under this permit shall be retained by the Government to be used to satisfy as much of the permittee's obligation as possible.

12. Officials Barred from Participating
No Member of Congress or Resident Commissioner shall participate in any part of this contract to any benefit that may arise from it, but this provision shall not pertain to this contract if made with a corporation for its general benefit.

13. Non-discrimination in Employment
The permittee agrees to be bound by the equal opportunity clause of Executive Order 11246, as amended.

Privacy Act Statement—Special Use Permit

NOTICE: In accordance with the Privacy Act of 1974, 5 U.S.C. 552a, please be advised that:

1. The issuance of a permit and collection of fees on lands of the National Wildlife Refuge System is authorized by the National Wildlife Refuge System Administration Act (16 U.S.C. 668dd - 668ee), and the Refuge Recreation Act, (16 U.S.C. 640k-3); implemented by regulations in 50 CFR 25-36.

2. Information collected in issuing a permit may be used to evaluate and conclude the eligibility of, or merely document, permit applicants.

3. Routine use disclosures may also be made (1) to the U.S. Department of Justice when related to litigation or anticipated litigation; (2) of information indicating a violation or potential violation of a statute, regulation, rule, order or license, to appropriate Federal, State, local or foreign agencies responsible for investigating or prosecuting the violation or for enforcing or implementing the statute, rule, regulation, order or license; (3) from the record of the individual in response to an inquiry from a Congressional office made at the request of that individual; (4) to provide addresses obtained from the Internal Revenue Service to debt collection agencies for purposes of locating a debtor to collect or compromise a Federal claim against the debtor, or to consumer reporting agencies to prepare a commercial credit report for use by the Department (48FR 54716, December 6, 1983).

4. Any information requested is required to receive this permit. Failure to answer questions may jeopardize the eligibility of individuals to receive permits.
Special Conditions
Special Use Permit No. 76539
Mandalay NWR

1. A 48 hour notice of initial use of the MNWR will be given to the Refuge Manager or his designee.

2. Permittee shall advise the Refuge Manager of the agency and contractor representatives and their telephone numbers prior to entering the Refuge.

3. No discharge will be allowed on the Refuge.

4. The Refuge Manager must be advised immediately of any substantial release of pollutants, or any imminent danger of release. A log must be maintained by the LADNR or its contractors of all releases of pollutants into the surrounding area.

5. All Local, State and Federal air, water, fish, and wildlife regulations must be adhered to while LADNR or its contractors is utilizing the Refuge.

6. No solid waste may be deposited anywhere on the refuge.

7. All spills or releases of any liquid or solid shall be immediately reported to the Refuge Manager or his designee.

8. LADNR or its contractor shall maintain the ability to immediately respond to any oil spills. Absorbent pads and oil booms shall be readily accessible in the event of a spill.
ATTACHMENT VI

MANDALAY BANK PROTECTION DEMONSTRATION PROJECT (TE-41)

OPERATION, MAINTENANCE, AND REHABILITATION BUDGET
The Mandalay Bank Protection Demonstration Project (TE-41) is a demonstration project with a 5-year demonstration period with no provision for the operation, maintenance, or rehabilitation of any of the project features other than the performance of inspections of the project features during the 5-year demonstration period. The costs associated with project inspections approved by the CWPPRA Task Force are shown below. This figure represents funding for inspection of the project after the first, third, and fifth years following construction completion. Under the current Cost Sharing Agreement between LDNR and USFWS no funds other than for inspections have been provided for the operation, maintenance, or rehabilitation of any of the project features in the Mandalay Bank Protection Demonstration Project (TE-41).

**COSTS OF ANNUAL INSPECTIONS**

<table>
<thead>
<tr>
<th>Year</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>$3,890</td>
</tr>
<tr>
<td>Year 3</td>
<td>$4,150</td>
</tr>
<tr>
<td>Year 5</td>
<td>$4,429</td>
</tr>
</tbody>
</table>

**TOTAL O&M BUDGET** $12,469
ATTACHMENT VII

MANDALAY BANK PROTECTION DEMONSTRATION PROJECT (TE-41)

OPERATION OF STRUCTURES
ATTACHMENT VIII

MANDALAY BANK PROTECTION DEMONSTRATION PROJECT (TE-41)

PROJECT INSPECTIONS

The purpose of the project inspections is to inspect and evaluate the condition of all project features to determine if structures are operating correctly and identify any deficiencies that may require maintenance. A project inspection report outlining these field observations will be drafted by LDNR. This report shall include the type of structure and description, date and time of inspection, personnel present for inspection, weather conditions, water levels at the time of inspection, and general condition of and any observed damages to structures.

In the case of severe storms and tidal events, additional inspections may be required between the scheduled inspections to assess potential damage from such weather events.