



**State of Louisiana
Coastal Protection and Restoration Authority**

2016 Annual Inspection Report

for

**DELTA MANAGEMENT AT
FORT ST. PHILIP (BS-11)**

State Project Number BS-11
Priority Project List PPL-10

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Plaquemines Parish

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I. Introduction

Delta Management at Fort St. Philip (BS-11) was 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 BS-11 Project was approved on the tenth (10th) Priority Project List.

The project area is located within two separate areas, both in Plaquemines Parish, La, across the river from Fort Jackson at River Mile 19.5 AHP. The western-most area (Area 1), north of Fort St. Philip in Bay Denesse, consists of three (3) crevasses and 19,500 linear feet of terraces. The other area (Area 2), approximately 4.5 miles east of Area 1 near Little Coquille Bay, consists of three (3) crevasses. Both areas are fed by over-bank flow from the Lower Mississippi River.

II. Inspection Purpose and Procedures

The purpose of the annual inspection of BS-11 is to evaluate the constructed project features and to identify any deficiencies in a detailed annual report. Any recommended corrective actions are listed as conclusions in the report. Should corrective actions be reported, CPRA will provide a detailed cost estimate for engineering, design, supervision, inspection, construction contingencies, and an assessment of the urgency of such repairs (O&M Plan May 13, 2007). The annual inspection report also contains a summary of maintenance projects and an estimated projected budget for operation, maintenance, and rehabilitation for the upcoming three (3) years. The three (3) year projected operation and maintenance budget is shown in Appendix C. The summary of any past maintenance projects since completion of the initial construction in 2006 will be outlined in Section IV.

Due to mechanical difficulties with the airboat used to access the project site, the 2016 annual inspection was conducted in two parts: Area 1 to the west on May 25th, and Area 2 to the east on August 23rd. Luke Prendergast from CPRA was present both days, accompanied by Jonathan Sherwood (CPRA) on May 25th, and with Melissa Hymel and Bryan Gossman (CPRA) on August 23rd. An airboat was used to reach the crevasses and to gain access to the terrace field. Photographs of the inspection are included in Appendix B.

III. Project Description and History

This project was constructed in two areas on the east side of the Mississippi River near Fort St. Philip, across from Fort Jackson. Area 1 consists of 174 acres of emergent marsh and 678 acres of open water. Area 2 contains three triangular-shaped sections that consist of 126 acres of emergent marsh and 327 acres of open water. This project's objective is to enhance marsh growth by diverting fresh, sediment-laden water through dredged crevasses into shallow, open-water receiving areas. Earthen terraces were constructed in Area 1 to trap sediments and promote marsh-building processes, thereby offsetting land loss. The project has a twenty-year (20 year) economic life which began in 2006.

The principal project features include:

- 98 terraces located in the receiving bay of Crevasse 1A
- Crevasse 1A: 2000 ft. x 75 ft. x -8.0 ft. NAVD 88
- Crevasse 1B: 400 ft. x 75 ft. x -6.0 ft. NAVD 88
- Crevasse 1C: 700 ft. x 75 ft. x -6.0 ft. NAVD 88
- Crevasse Alt.2A: 732 ft. x 75 ft. x -8.0 ft. NAVD 88
- Crevasse 2B: 500 ft. x 75 ft. x -6.0 ft. NAVD 88
- Crevasse 2C: 2000 ft. x 75 ft. x -6.0 ft. NAVD 88

A. Terraces – Project Area 1.

- 98 terraces, each constructed 200 ft. in length, with a crown width of 10 ft., tapering at a slope of 1 vertical to 6 horizontal to a base width of 52 ft.
- 50 ft. separation between ends of each terrace.
- Terraces were built to an initial elevation of +3.5 ft. NAVD 88, with a target settled elevation of +3.0 ft. NAVD 88.
- Aggregate length of constructed terraces is 19,500 linear ft.
- Minimum distance to shoreline was 50 ft. and minimum pipeline clearance was 50 ft. Within these constraints, the locations of individual terraces were left to the discretion of the construction manager. In order to maintain the minimum clearance from the existing pipelines, three of the terraces were scaled down a total of 100 ft.

Note: *Terraces are not subject to maintenance or rehabilitation* under the Cost Sharing Agreement or permits. The above information is provided as a record of post-construction conditions. CPRA will monitor terrace condition during the 20-year life time.

Vegetative plantings on the terraces were contracted out separately from the construction contract and *are not subject to maintenance or rehabilitation* by CPRA or USFWS.

- B. Crevasse 1A – Project Area 1.** 2000 ft. long x 75 ft. base width x -8.0 ft. NAVD 88. Marsh elevation was assumed to be +1.5 ft. NAVD 88. The crevasse, dredged from the center of the channel, passes through a reference point defined by the pre-construction shoreline (X = 3,875,963.63 ft., Y = 322,516.09 ft. NAD 83), and extends along a bearing of N47°W. Dredge material was placed between 25-175 feet on either side of the crevasse to a maximum elevation of +5.0 ft. NAVD 88.
- C. Crevasse 1B – Project Area 1.** 400 ft. long x 75 ft. base width x -6.0 ft. NAVD 88. Marsh elevation was assumed to be +1.5 ft. NAVD 88. The crevasse, dredged from the center of the channel, passes through a reference point defined by the pre-construction shoreline (X = 3,875,557.544 ft., Y = 320,705.6253 ft. NAD 83), and extends along a bearing of N22°W. Dredge

material was placed between 25-175 feet on either side of the crevasse to a maximum elevation of +5.0 ft. NAVD 88.

- D. Crevasse 1C – Project Area 1.** 700 ft. long x 75 ft. base width x -6.0 ft. NAVD 88. Marsh elevation was assumed to be +1.5 ft. NAVD 88. The crevasse, dredged from the center of the channel, passes through a reference point defined by the pre-construction shoreline (X = 3,873,382.42 ft., Y = 320,246.83 ft. NAD 83), and extends along a bearing of S77°W. Dredge material was placed between 25-175 feet on either side of the crevasse to a maximum elevation of +5.0 ft. NAVD 88.
- D. Crevasse Alt. 2A – Project Area 2.** 732 ft. long x 75 ft. base width x -8.0 ft. NAVD 88. Marsh elevation was assumed to be +1.5 ft. NAVD 88. The crevasse, dredged from the center of the channel, passes through a reference point defined by the pre-construction shoreline (X = 3,891,269.92 ft., Y = 322,243.99 ft. NAD 83), and extends along a bearing of N50°E. Dredge material was placed between 25-175 feet on either side of the crevasse.
- F. Crevasse 2B – Project Area 2.** 500 ft. long x 75 ft. base width x -6.0 ft. NAVD 88. Marsh elevation was assumed to be +1.5 ft. NAVD 88. The crevasse, dredged from the center of the channel, passes through a reference point defined by the pre-construction shoreline (X = 3,888,519.61 ft., Y = 320,569.13 ft. NAD 83), and extends along a bearing of S69°E. Dredge material was placed within 175 ft. no closer than 25 ft. on either side of the crevasse to a maximum elevation of +5.0 ft. NAVD 88.
- G. Crevasse 2C – Project Area 2.** 2000 ft. long x 75 ft. base width x -6.0 ft. NAVD 88. Marsh elevation was assumed to be +1.5 ft. NAVD 88. The crevasse, dredged from the center of the channel, passes through a reference point defined by the pre-construction shoreline (X = 3,891,138.38 ft., Y = 321,807.44 ft. NAD 83), and extends along a bearing of S77°E. Dredge material was placed between 25-175 feet on either side of the crevasse to a maximum elevation of +5.0 ft. NAVD 88.

Project features covered by this inspection are identified as the Delta Management at Fort St. Philip Project (BS-11). The goal of each annual inspection is to ensure that the project is delivering the anticipated benefits. Project maintenance is not required beyond the 20-year economic life, except that it is not left as a hazard to navigation or a detriment to the environment. A site map in Appendix A shows the project boundary and labels all project features.

IV. Summary of Past Maintenance Projects

There has been no past maintenance on this project.

V. Inspection Results Dredged Crevasses
(See Appendix B for Project Photos)

- A. Terraces: River stage was high; however, emergent vegetation was noted growing on all terraces within the project area. Despite the high river, water depth between terrace rows was shallow, which may indicate desirable sediment deposition is occurring in the receiving bay.
- B. Crevasse No. 1A: Strong flow was observed carrying sediment-laden water into the Bay Denesse terrace field.
- C. Crevasse No. 1B: Flow was observed in the channel. Large amounts of emergent vegetation were growing adjacent to the crevasse and within the receiving area.
- D. Crevasse No. 1C: Water flow was maintained in the channel. Depth in the receiving bay was shallow, and isolated patches of emergent vegetation were present.
- E. Crevasse No. Alt. 2A: The channel was flowing freely, and significant emergent vegetation was observed in the receiving area.
- F. Crevasse No. 2B: Flow was observed in the channel. Dense growth of emergent vegetation was noted in the receiving bay.
- G. Crevasse No. 2C: Water was flowing well in the channel. The receiving area exhibited large areas of emergent vegetation near the crevasse outfall.

VI. Conclusions and Recommendations

Significant deposition appeared to be occurring within the Bay Denesse terrace field, and more emergent vegetation was noted in the receiving bays than was observed in previous inspections. These findings indicate that the project goals of diverting sediment-laden water into the receiving bays and promoting marsh-building processes are being met. The project team recommendation is to continue inspection and assessment of site conditions on an annual basis.

Appendix A Project Features Map



Appendix B

Photographs



Terrace Field (12/08/2011 Stock Photo included for reference)



Emergent vegetation on Bay Denesse terraces



Receiving Area 1A



Crevasse 1A with terrace field beyond



Crevasse 1B



Receiving Area 1B



Crevasse 1C



Receiving Area 1C



Crevasse Alt 2A



Receiving Area Alt 2A



Crevasse 2B



Receiving Area 2B



Crevasse 2C



Receiving Area 2C

Appendix C
Three-Year Operation & Maintenance Budget

2016 Annual Inspection Report
DELTA MANAGEMENT AT FORT ST. PHILIP
State Project No. BS-11

Delta Management at Fort St. Phillip (BS-11)
Federal Sponsor: USFWS
Construction Completed : November 20, 2006

Current Approved O&M Budget June 2011	Project Estimate																				CWPPRA Allocated Money	
	Year - 0	Year - 1	Year -2	Year -3	Year -4	Year -5	Year -6	Year -7	Year -8	Year -9	Year -10	Year -11	Year -12	Year -13	Year -14	Year -15	Year -16	Year - 17	Year -18	Year -19	Project Life	Currently
	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	Budget	Funded
State O&M	\$4,022	\$4,151	\$4,284	\$4,421	\$274,383	\$4,708	\$4,859	\$5,014	\$5,175	\$5,340	\$5,511	\$5,688	\$5,870	\$6,058	\$354,677	\$6,451	\$6,658	\$6,871	\$7,091	\$7,318	\$728,549	\$484,458
Corps Admin	\$731	\$754	\$778	\$803	\$829	\$855	\$883	\$911	\$940	\$970	\$1,001	\$1,033	\$1,066	\$1,100	\$1,136	\$1,172	\$1,210	\$1,248	\$1,288	\$1,329	\$20,039	\$13,791
Federal S&A																					\$0	
Total																					\$748,587	\$498,249

Projected O&M Expenditures																					Remaining Project Life	Current 3 year budget (FY17, 18, 19)
Maintenance Inspection											\$5,511	\$5,688	\$5,870	\$6,058	\$6,251	\$6,451	\$6,658	\$6,871	\$7,091	\$7,318	\$63,766	\$11,199
General Maintenance																					\$0	\$0
Structure Operation																					\$0	\$0
Federal S&A																					\$0	\$0
State S&A																					\$0	\$0
E&D																					\$0	\$0
Surveys																					\$0	\$0
Construction																					\$0	\$0
Construction Oversight																					\$0	\$0
Total											\$5,511	\$5,688	\$5,870	\$6,058	\$6,251	\$6,451	\$6,658	\$6,871	\$7,091	\$7,318	\$63,766	\$11,199

Total O&M Expenditures from COE Report (Inception to present)	\$47,796
State O&M Expenditures not submitted for in-kind credit	\$36,966
Federal Sponsor MIPRs (if applicable) (REQUESTED MONEY)	\$0
Total Estimated O&M Expenditures (as of March 2016)	\$84,762

Current O&M Budget less COE Admin	\$484,458
(State O&M Currently Funded + Fed S&A Currently Funded)	
Remaining Available O&M Budget	\$399,696
(Current O&M - Total Est. O&M Expenditures)	
Incremental Funding Request Amount FY17-FY19	(\$388,497)

Current Project Life Budget less COE Admin	\$728,549
(State O&M Porject Life Budget + Fed S&A Project Life Budget)	
Total Projected Project Life Budget	\$148,528
(Remaining Project Life + Total Estimated O&M Expenditures)	
Project Life Budget Request Amount	(\$580,021)

Appendix D

FIELD INSPECTION CHECK SHEET			
Project No. / Name: <u>BS-11 Delta Mgmt. @ Ft. St. Philip</u>		Date of Inspection: <u>5/25/2016</u> Time: <u>10:00 AM</u>	
Structure No.: <u>Area 1</u>		Inspector(s): <u>CPRA: Prendergast, Sherwood</u>	
Structure Description: <u>Crevasses & Terrace Field</u>		River Stage: <u>4.00'</u> Time: <u>8:00 AM</u>	
Type of Inspection: <u>Annual</u>		Weather Conditions: <u>Warm, partly cloudy, wind ENE @ 8 mph</u>	
Item	Condition	Physical Damage	Observations and Remarks
Terrace Field	Very Good	None	High river stage covered all but the crown of most terraces, but thick vegetation was observed growing on all. Sediment deposition appeared to be occurring between the terrace rows, as the water depth between rows was shallow even though the river was high.
Crevasse 1A	Excellent	None	Strong flow was observed in the crevasse, carrying turbid water into the terrace field.
Crevasse 1B	Fair	None	Previous reports have indicated that the channel is shoaling, however strong flow was observed during this inspection. Dense growth of emergent vegetation was noted in the receiving bay.
Crevasse 1C	Good	None	The channel was flowing well. Both banks were thickly-vegetated, and isolated stands of vegetation were present in the receiving area. Most of the receiving area appeared to be shallow open water with marsh grass around the perimeter.

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FIELD INSPECTION CHECK SHEET			
Project No. / Name: <u>BS-11 Delta Mgmt. @ Ft. St. Philip</u>		Date of Inspection: <u>8/23/2016</u> Time: <u>10:00 AM</u>	
Structure No.: <u>Area 2</u>		Inspector(s): <u>CPRA: Prendergast, Hymel, Gossman</u>	
Structure Description: <u>Crevasses</u>		River Stage: <u>1.55'</u> Time: <u>8:00 AM</u>	
Type of Inspection: <u>Annual</u>		Weather Conditions: <u>Clear and hot, wind NE @ 5 mph</u>	
Item	Condition	Physical Damage	Observations and Remarks
Crevasse 2A Alt.	Good	None	Flow was present in the channel. Receiving bay appeared to be shallow open water with isolated stands of emergent vegetation.
Crevasse 2B	Good	None	Channel was carrying turbid water into the receiving area. Emergent vegetation including elephant ears and marsh grass were observed throughout the receiving bay.
Crevasse 2C	Good	None	Both channel banks were vegetated, and flow was present in the channel. Receiving area showed significant growth of emergent vegetation.