



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

**2015 Biennial Inspection Report**

for

**BIG ISLAND MINING PROJECT**

State Project Number AT-03  
Priority Project List 2

October 9, 2015  
St. Mary Parish

Prepared by:

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## **I. Introduction**

The Atchafalaya delta and the Wax Lake delta formed in the shallow Atchafalaya Bay between the mouth of the Atchafalaya river navigation channel and the Point au Fer shell reef (Curole, 2003). The Atchafalaya River has been a distributary of the Mississippi River since the 1500's and is typical of diversion or capture of mainstream flow by distributary (van Heerden and Roberts, 1980). In 1960, the Old River control structure was completed by the U.S. Corps of Engineers (USACE) and has since maintained the flow of the Atchafalaya River at the historic rate of 30% of the combined flow the Mississippi and Red Rivers (Louisiana Coastal Wetlands Conservation and Restoration Task Force, 1993). A subaqueous delta began to form at the mouth of the Atchafalaya River between 1952 and 1962 with the introduction of silts and fine sands to the bay. Prior to 1952 the lakes and bays within the Atchafalaya Basin floodway system, north of the Atchafalaya Delta, filled with sediment. Only prodelta clay deposition was occurring in the Atchafalaya Bay due to contact with higher salinity waters (Louisiana Coastal Wetlands Conservation and Restoration Task Force, 1993). From 1962 to 1972, coarser materials began to be deposited into the bay and a period of distal bar and subaqueous bar accretion occurred (van Heerden and Roberts, 1980). The spring flood of 1973 produced the first subareial growth of the Atchafalaya Delta on both sides of the navigation channel (Curole, 2003).

The Atchafalaya delta is bisected by the Lower Atchafalaya River navigation channel which is maintained by the USACE for navigational purposes. Dredge material on the channel banks and increased channel depths have created unnatural conditions forming an efficient conduit for river sediment to the Gulf of Mexico, depriving the adjacent delta environments of sediment critical to the delta building process (Curole, 2003). Spoil material deposited along the western portion of the navigation channel formed Big Island. This island effectively limits westward flow of sediment rich Atchafalaya River water (van Heerden, 1983). A comparison can be made between the Atchafalaya delta and the Wax Lake delta to the west. Dredging ceased on the Wax Lake Outlet in 1980 and this delta has flourished, building land naturally since that time (Curole, 2003).

The Big Island Mining (AT-03) project is a distributary channel maintenance and delta lobe creation project located in the northwestern region of the of the Atchafalaya delta within the Atchafalaya Delta Wildlife Management Area, in the southwest corner of St. Mary Parish, La. The project is bounded by Shell Island and Shell Island Pass to the north and west, Ameranda Pass to the south, and the Atchafalaya Bay Channel to the east and southeast (Monitoring Plan, 2003). A map of the project boundary and features are shown in Appendix A. The objective and specific goals of the project according to the Monitoring Plan prepared by the Louisiana Department of Natural Resources (LDNR) are outlined below:

### **Project Objectives:**

1. Establish a sediment delivery system in the western portion of the Atchafalaya delta, thereby enhancing the system's natural delta-building potential.
2. Utilizing dredged material from the creation of the distributary channels to create delta lobe islands suitable for establishment of emergent marsh.

### Specific Goals:

1. To increase the project areas delta-building potential through the establishment of effective distributary channels.
2. Create approximately 850 ac. of delta lobe islands through the beneficial use of dredge material at elevations suitable for emergent marsh vegetation.
3. Increase the rate of subaerial growth in the project area to that measured from historical photography since 1956 with the project area.

## **II. Inspection Purpose and Procedures**

The purpose of the annual inspection of the Big Island Mining Project (AT-03) is to evaluate the constructed project features, identify any deficiencies and prepare a report detailing the condition of such features and to recommend corrective actions needed, if any. Should it be determined that corrective actions are needed, the Coastal Protection and Restoration Authority (CPRA) shall provide, in report form, a detailed cost estimate for engineering, design, supervision, inspection, construction contingencies, and an assessment of the urgency of such repairs. The annual inspection report also contains a summary of maintenance projects undertaken since the constructed features were completed and an estimated project budget for the upcoming three (3) years for operation, maintenance and rehabilitation. The three (3) year projected operation and maintenance budget is shown in Appendix C. A summary of past operation and maintenance projects undertaken since the completion of the Big Island Mining Project (AT-03) are outlined in Section IV of this report.

An inspection of the Big Island Mining Project (AT-03) was held on June 3, 2015 under clear skies and warm temperatures. The field trip included a visual inspection and limited soundings of Breaux's Pass (Channel "A"), and Channels "D", "B", "E" and "C". In attendance were Brian Babin, Adam Ledet and Glen Curole of the CPRA, Dr. John Foret of the National Marine Fisheries Service (NMFS), and Lance Cambell and David LeBlanc with the Louisiana Department of Wildlife and Fisheries (LDWF). The attendees met at the Berwick Public Boat Launch in St. Mary Parish. The inspection began at approximately 9:00 a.m. and ended at 12:00 p.m.

## **III. Project Description and History**

The Atchafalaya Delta is bisected by the Lower Atchafalaya River which is maintained by the U.S. Corps of Engineers to an elevation of -20.0 NGVD with a 400 foot bottom width for navigation purposes. The continued dredging and placement of spoil material along the banks of the river has caused sediment deprivation in adjacent delta environments.

The Big Island Mining (AT-03) and Atchafalaya Sediment Delivery (AT-02) projects were constructed as a Coastal Wetlands, Planning, Protection, and Restoration Project (CWPPRA)

with the Louisiana Department of Natural Resources as the local state sponsor and the National Marine Fisheries Service of the Department of Commerce as the federal sponsor. The general contractor that constructed both projects, which was accomplished under one contract by the State of Louisiana Division of Administration, and administered by the Louisiana Department of Natural Resources (LDNR) was River Road Construction Co. of Mandeville, LA. The Atchafalaya Sediment Delivery Project (AT-02) and the Big Island Mining Project (AT-03) were constructed during the period of January 28, 1998 and October 27, 1998. Final cost of the construction contract for both projects was \$7,238,449.36. The design, engineering, and construction oversight for the projects was performed under an engineering services contract with LDNR by Brown, Cunningham, and Gannuch Engineers.

The principle project features of the Big Island Mining (AT-03) project include:

- Channel A – 20,600 linear ft. of dredged channel from the Atchafalaya River starting with an 800 ft. bottom width at an elevation of -20 ft. NGVD contour of the Atchafalaya River to a 400 ft. bottom width at an elevation of -10.0 ft. NGVD. The remainder of Channel A was dredged to -10.0' NGVD. Bottom width of the channel was 400 ft. to Sta. 145+00, thence 375 ft. between Stations 145+00 to 180+00, thence 250 ft. wide between Stations 180+00 and 200+00, thence 200 ft. wide between Stations 200+00 and 206+00.
- Channel B – 5,500 linear ft. of dredged channel with a bottom width of 160 ft.
- Channel C – 2,400 linear ft. of dredged channel with a bottom width of 125 ft.
- Channel D – 4,000 linear ft. of dredged channel with a bottom width of 160 ft.
- Channel E – 4,150 linear ft. of dredged channel with a bottom width of 125 ft.

#### **IV. Summary of Past Operations and Maintenance Projects**

Since completion of the Big Island Mining (AT-03) project in October 1998, no maintenance dredging or marsh creation efforts have been recommended or undertaken.

#### **V. Inspection Results**

Inspection of the Big Island Mining Project (AT-03) began at the head of Channel “A”, known as Breaux’s Pass”, near the beginning of the reach at Sta. 20+00. Since the completion of dredging of Breaux’s Pass, the entrance has experienced shoaling that has made it difficult to access the channel. In 2009, the LDWF dredged and marked the entrance for access to the island. The latest bathymetric data available was conducted in 2008 and the current conditions of the channel are unknown. Prior to the next inspection in 2017, we are recommending a bathymetric survey of the channel to determine the extent of shoaling. (Appendix B; Photo No. 1)

Channel “D” is the first channel along the north bank of Breaux’s Pass and extends northwest between Shell Island and dredge disposal area #5. As noted in previous inspections, Channel “D” has completely shoaled in and we were unable to access the channel during our inspection. It is apparent that very little flow is occurring in Channel “D” and the areas that have shoaled are

vegetated with broken marsh. We are also recommending a bathymetric survey of this channel prior to the 2017 annual inspection as well. (Photos not available)

Channel “B” is the second distributary channel along the north bank of Breaux’s Pass extending in a northwesterly direction towards Shell Island Pass. The channel was not accessible during our inspection. There was a large vegetated marsh platform at the entrance and the channel was completely clogged with water hyacinth. The amount of water hyacinth present would indicate shoaling at the mouth of the channel and that there is very little flow in the channel to clear the vegetation. A bathymetric survey of the channel is recommended prior the next inspection to evaluate water depths. (Appendix B; Photo No. 2)

Channel “E” is the first channel located along the south bank of Breaux’s Pass extending to a cul-da-sac on the interior of Big Island. Channel “E” is frequently used by the Louisiana Department of Wildlife and Fisheries (LDWF) for access to public hunting grounds and biological data collection stations. The LDWF has been dredging this channel regularly to maintain public access to the interior of the island. We did not have difficulty traveling Channel “E” and water depths were adequate for access. Water depths increased as we traveled closer to the cul-da-sac. We are also recommending that Channel “E” be included in the bathymetric survey prior to the 2017 inspection. (Appendix B; Photos No. 3 through 6)

Channel “C” is a small distributary channel at the end of Breaux’s Pass extending in a southwesterly direction leading into Catfish Pass. In 2009, LDWF dredged the head of the channel for access from Channel “C” to Catfish Pass. The channel that LDWF dredged appears to have shoaled again. We were able to idle through the channel to Catfish Pass with guidance from LDWF. The PVC markers placed after dredging are still visible and are surrounded by marsh and vegetation. We are recommending that Channel “C” be surveyed prior to the 2017 inspection as well. (Appendix B; Photos No. 9 through 11)

Channel “F” is approximately 2,400 linear feet and extends in a northwesterly direction towards Shell Island Pass. Channel “F” was accessible by boat and appeared to be clear of any vegetation at the time of the inspection. Shoaling does not appear to be a problem with Channel “F” as with the other channels. We are recommending a bathymetric survey of this channel prior to the next inspection in 2017. (Appendix B; Photos No. 7 & 8)

## **VI. Conclusions and Recommendations**

Overall, The Big Island Mining (At-03) project was exhibiting substantial shoaling throughout the distributary and tertiary channels of the project. Since this project is close to the end of its 20 year life, we are not recommending maintenance dredging to open any of the distributary or tertiary channels. However, prior to the final inspection in 2017, we are recommending a complete survey of the channels and marsh creation areas to determine the extent of shoaling and to acquire elevation data in marsh creation areas. This information will be used to make a final determination of the effectiveness of the project over the 20 year life.

References:

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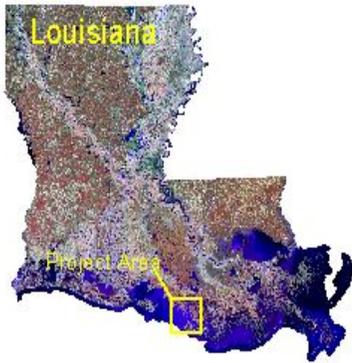
Van Heerden, H. H. Roberts, S. Penland, and R. H. Cunningham 1991. Subaerial delta development, eastern Atchafalaya Bay, Louisiana. Proceedings of GCS-SEP 12<sup>th</sup> Annual Meeting. 13 pp.

Curole, G. P. and B. J. Babin. 2010. 2010 Operations, Maintenance, and Monitoring Report for Atchafalaya Sediment Delivery (AT-02), Coastal Protection and Restoration Authority of Louisiana, Office of Coastal Protection and Restoration, Thibodaux, Louisiana. 38 pp.

## Appendix A

### PROJECT FEATURES MAP

# Big Island Mining (AT-03) project Dredged channel and disposal areas



Data Source:

LA Dept. of Natural Resources  
Coastal Restoration Division  
Biological Monitoring Section  
Thibodaux Field Office

1998 DOQQ's

Map ID: 2002-TFO-003

Date: January 30, 2002

3000 0 3000 6000 Feet



1000 0 1000 2000 Meters



Appendix B  
PHOTOGRAPHS



Photo 1- view from the mouth of Breaux's Pass looking southwest towards Shell Island Pass.



Photo 2 – View from the mouth of Channel “B” long northwest towards Shell Island Pass.



Photo 3 – View of the cul-da-sac at the end of Channel “E” looking southeast.



Photo 4 – View of cul-da-sac at the end of Channel “E” looking east.



Photo 5 - View at the mouth of Channel "E" looking southeast.



Photo 6 - View at the mouth of Channel "E" looking southeast.



Photo 7 - View along Channel "F" near Shell Island Pass looking northwest.



Photo 8 - View along Channel "F" near Shell Island Pass looking northwest.



Photo 9 – View at the mouth of Channel “C” looking southwest towards Catfish Pass.



Photo 10 - View at the mouth of Channel “C” looking southwest towards Catfish Pass.



Photo 11 - View at the mouth of Channel "C" looking southwest towards Catfish Pass.

## Appendix C

### Three (3) Year Budget Projections

**BIG ISLAND MINING PROJECT (AT-03)**  
**Three-Year Operations & Maintenance Budgets 07/01/2015 - 06/30/18**

<u>Project Manager</u>	<u>O &amp; M Manager</u>	<u>Federal Sponsor</u>	<u>Prepared By</u>
	<i>Brian Babin</i>	NMFS	<i>Brian Babin</i>

	2015/2016	2016/2017	2017/2018
<i>Maintenance Inspection</i>	\$ -	\$ 9,194.00	\$ -
<i>Structure Operation</i>	\$ -	\$ -	\$ -
<i>Administration</i>	\$ 7,072.00		\$ -

**Maintenance/Rehabilitation**

**15/16 Description: Bathymetric and Topographic Surveys of Channels and Disposal Areas**

<i>E&amp;D</i>	\$ 110,069.00
<i>Construction</i>	\$ -
<i>Construction Oversight</i>	\$ -
<i>Sub Total - Maint. And Rehab.</i>	\$ <u>110,069.00</u>

**16/17 Description:**

<i>E&amp;D</i>	\$ -
<i>Construction</i>	\$ -
<i>Construction Oversight</i>	\$ -
<i>Sub Total - Maint. And Rehab.</i>	\$ <u>-</u>

**17/18 Description:**

<i>E&amp;D</i>	\$ -
<i>Construction</i>	\$ -
<i>Construction Oversight</i>	\$ -
<i>Sub Total - Maint. And Rehab.</i>	\$ <u>-</u>

	2015/2016	2016/2017	2017/2018
<b><u>Total O&amp;M Budgets</u></b>	<b>\$ 117,141.00</b>	<b>\$ 9,194.00</b>	<b>\$ -</b>

<b>Total O&amp;M Budget 2015 through 2018</b>	<b>\$126,335</b>
<b>Unexpended O&amp;M Budget</b>	<b>\$338,654</b>
<b>Remaining O&amp;M Budget (Projected)</b>	<b>\$212,319</b>

## OPERATIONS & MAINTENANCE BUDGET WORKSHEET

**Project: Atchafalaya Sediment Delivery (AT-02)/ Big Island Mining (AT-03)**

**FY 15/16 –**

Administration	\$ 7,072
O&M Inspection & Report	\$ 0
Operation:	\$ 0
Maintenance:	\$110,069
E&D:	\$
Construction:	\$
Construction Oversight:	\$
O&M Surveys:	\$110,069

### **Operation and Maintenance Assumptions:**

Survey of Channels and Disposal Areas for AT-02 and AT-03. Administrative cost scope development and project management. Cost divided by 2 to split the overall cost between AT-02 and AT-03 projects.

### **Direct Costs:**

CPRA Engineer 3 – 40 hrs @ \$60/hr.:	\$ 2,400
CPRA Engineer 6 – 15 hrs @ \$73/hr.	\$ 1,095
CPRA Engineer Manager – 5 hrs @ \$79/hr.	\$ 395
NMFS – 20 hrs @ 100/hr.	<u>\$ 2000</u>
Total Administrative Cost (CPRA/NMFS)	\$5,890/2 = <b>\$2,945</b>

### **Indirect Costs:**

CPRA Engineer 3 – 40 hrs @ \$127.30/hr.:	\$ 5,092
CPRA Engineer 6 – 15 hrs @ \$154.88/hr.	\$ 2,323
CPRA Engineer Manager – 5 hrs @ \$167.61/hr.	<u>\$ 838</u>
	\$8,253/2 = <b>\$4,127</b>

### **2015/2016 Bathymetric/Topographic Surveys:**

(Survey of channels and 3 marsh creation areas)

### **Disposal Area Survey**

Professional Land Surveyor:	\$ 3,780
(30 hrs @ \$126/hr.)	
CAD Operator:	\$ 2,760
(30 hrs @ \$92/hr.)	
3 Man Survey Crew:	\$65,910
(390 hrs. @ \$169/hr.	
Boat (19 – 22 ft.):	\$17,706

(39 days @ \$454/day)  
 Trimble GPS Total Station: \$18,525  
 (39 days @ \$475/day)  
 Airboat: \$22,035  
 (39 days @ \$565/day)

Deliverables:  
 Professional Land Surveyor: \$ 1,890  
 (15 hrs @ \$126/hr.)  
 Project Chief Draftsman: \$ 250  
 (2.5 hrs @ \$100/hr.)  
 Professional Hydrographic: \$ 1,300  
 (10 hrs @ \$130/hr.)

**Est. Cost for Disposal Area Surveys: \$134,156 x 0.5 (50% Cost) = \$67,078**

**Channel Surveys**

Professional Land Surveyor: \$ 3,780  
 (30 hrs @ \$126/hr.)  
 CAD Operator: \$ 3,520  
 (40 hrs @ \$88/hr.)  
 3 Man Survey Crew: \$37,180  
 (220 hrs. @ \$169/hr.)  
 Boat (19 – 22 ft.): \$17,706  
 (19 days @ \$454/day)  
 Trimble GPS Total Station: \$ 9,025  
 (19 days @ \$475/day)  
 Airboat: \$10,735  
 (19 days @ \$565/day)  
 Automated Hydrographic Survey: \$ 1,815  
 (3 days @ \$605/day)

Deliverables:  
 Professional Land Surveyor: \$ 1,890  
 (15 hrs @ \$126/hr.)  
 Project Chief Draftsman: \$ 250  
 (2.5 hrs @ \$100/hr.)  
 Professional Hydrographic: \$ 1,300  
 (10 hrs @ \$130/hr.)

**Est. Cost for Disposal Area Surveys: \$87,201 x 0.5 (50% Cost) = \$ 43,601**

<b>Total Estimated Cost for Survey of AT-02:</b>	<b>\$110,069</b>
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<b>Total Estimated Cost for Survey of AT-03:</b>	<b>\$110,069</b>
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**FY 16/17 –**

Administration		\$	0
O&M Inspection & Report		\$	9,194
Operation:		\$	0
Maintenance:		\$	0
E&D:	\$		0
Construction:	\$		0
Construction Oversight:	\$		0

**Operation and Maintenance Assumptions:**

Biennial Inspection Based on new rate schedule. Total cost divided by 2 since the AT-02 and AT-03 projects are inspected on the same day and inspection costs are split between both projects. It is estimated to take 60 hours to compile photos and create report for both projects.

**Direct Costs:**

Inspection:		
CPRA Engineer 3 – 12 hrs@ \$60/hr.:	\$	720
CPRA Engineer 6 – 10 hrs @ \$73/hr.	\$	730
CPRA Scientist 4 – 10 hrs @ \$50/hr.	\$	500
NMFS – 20 hrs @ 100/hr.	\$	<u>2000</u>
Total Administrative Cost (CPRA/NMFS)	\$	3,950
Report:		
CPRA Engineer 7 – 60 hrs. @ \$73/hr.	\$	4,380
<b>Total Direct Expenses:</b>	<b>\$</b>	<b>8,330</b>

**Indirect Costs:**

Inspection:		
CPRA Engineer 3 – 12 hrs@ \$127.30/hr.:	\$	1,528
CPRA Engineer 6 – 10 hrs @ \$154.88/hr.	\$	1,549
CPRA Scientist 4 – 10 hrs @ \$106.08/hr.	\$	<u>1,061</u>
Total Administrative Cost (CPRA/NMFS)	\$	4,138
Report:		
CPRA Engineer 7 – 60 hrs. @ \$167.61/hr.	\$	<b>10,057</b>
<b>Total Indirect Expenses:</b>	<b>\$</b>	<b>18,387/2 = 9,194</b>

**FY 17/18 –**

Administration		\$	0
O&M Inspection & Report		\$	0
Operation:		\$	0
Maintenance:		\$	0
E&D:	\$	0	
Construction:	\$	0	
Construction Oversight:	\$	0	

**Operation and Maintenance Assumptions:**

**Atchafalaya Sediment (AT-02) 2015-2018 Accounting**

Total O&M Budget (20 Year)	\$ 452,452.00
Expenditures by LDNR:	<u>\$ 79,407.24</u>

**Estimated Unexpended Funds: \$ 373,044.76**

**Big Island Mining (AT-0) 2015-2018 Accounting**

Total O&M Budget (20 Year)	\$ 409,773.00
Expenditures by LDNR:	<u>\$ 71,119.00</u>
<b>Estimated Unexpended Funds:</b>	<b>\$ 338,654.00</b>