



**State of Louisiana  
Department of Natural Resources  
Coastal Engineering Division**

**2005 Bi-Annual Inspection  
Report**

for

**BIG ISLAND MINING**

State Project Number AT-03  
Priority Project List 2

December 30, 2005  
St. Mary Parish

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## **I. Introduction**

The Big Island Mining Project is a distributary channel maintenance and delta lobe creation project. The project is located in the northwestern region of the Atchafalaya Delta and is bounded by Shell Island and Shell Pass to the north and west, Ameranda Pass and Big Island to the south, and the Atchafalaya Bay Channel to the east and southwest. The project is located within the Atchafalaya Delta Wildlife Management Area in the southeast corner of St. Mary Parish, Louisiana (O&M Plan, 2004). A map of the project boundaries and related features are shown in Appendix A.

The Atchafalaya Delta is bisected by the Lower Atchafalaya River which is maintained by the U.S. Corps of Engineers for navigation purposes. The continued dredging and placement of spoil material along the banks of the river has caused sediment deprivation in the delta environments. The Big Island Mining Project was designed to enhance natural delta building process by creating an avenue for sediment transport to areas north and west of Big Island. The project consist of dredging a secondary distributary channel from the Atchafalaya River along the northern side of Big Island with four smaller tertiary distributary channels to emulate an emerging delta (O&M Plan, 2004).

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

The purpose of the bi-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, LDNR 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 (O&M Plan, 2004). The bi-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 the 2003 Bi-annual Inspection and past operation and maintenance projects undertaken since the completion of the Big Island Mining Project (AT-03) are outlined in section IV.

An inspection of the Big Island Mining Project was held on July 18, 2005 under partly cloudy skies and warm temperatures. In attendance were Herbert Juneau, Dewey Billodeau, Stanley Aucoin and Darrel Pontiff of the LDNR Lafayette Field Office, Dr. John Foret and Richard Hartman of NMFS, Cassidy Lefeune, Edmond Mouton, Wayne Desota and Paul Cook with the LDWF, Dr. Bruce Thompson and Dr. Gary Peterman, LSU Fisheries Biologist and Brian Babin, Daniel Dearmond, Shane Triche and Glen Curole of the LDNR Thibodaux Field Office. The attendees met at the Berwick Public Boat Launch in St. Mary Parish. The inspection began at approximately 9:30 a.m. and ended at 1:30 p.m.

The field inspection included an inspection of various distributary channels, tertiary channels and existing disposal areas within the project boundaries. No attempt was made to measure

the geometry of the channels other than periodic depth measurements recorded using a hand-held fathometer provided by LDWF. Staff gauge readings, where available, were used to determine approximate water elevations. Periodic soundings were then taken to determine the approximate elevations of the channel bottoms. The gauge reading at Amerada Hess was 1.9' NAVD. Photographs were taken at each project feature (see Appendix B) and Field Inspection notes (see Appendix D) were completed in the field to document and record measurements and deficiencies.

### **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 a 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 Project was designed to create and/or re-establish channels for water and sediment distribution from the Atchafalaya River to the northwest portion of the Atchafalaya Delta and to create delta lobe islands with the resulting spoil material from channel excavations.

The Big Island Mining project was 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 for the construction of the Big Island and Atchafalaya Sediment projects, which were accomplished under one contract by the State of Louisiana Division of Administration, and administered by the Louisiana Department of Natural Resources was River Road Construction Co. of Mandeville, LA. The projects 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 the State of Louisiana Department of Natural Resources by Brown, Cunningham, 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 800 feet of bottom width at the Elevation -20.0 ft. NGVD contour of the Atchafalaya River to a 400 ft. bottom width at an elevation of -10.0 ft. NGVD, thence remainder of channel was dredged to -10.0 feet NGVD. Bottom width of the channel was 400 feet to Station 145+00, thence 375 feet between Stations 145+00 and 180+00, thence 250 feet width between Stations 180+00 and 200+00, thence with a 200 feet width between Stations 200+00 and 206+00 with exception that this latter portion of the channel created is all to the south of the channel centerline baseline.
- Channel B, 5,500 linear ft. of dredged channel with a bottom width of 160 feet.

- Channel C, 2,400 linear ft. of dredged channel with a bottom width of 125 feet.
- Channel D, 4,000 linear ft. of dredged channel with a bottom width of 160 feet.
- Channel E, 4,150 linear ft. of dredged channel with a bottom width of 125 feet. A “Cul du Sac” turning/mooring area was excavated at the end of Channel E.
- Channel F, 2,300 linear ft. of dredged channel with a bottom width of 160 feet.
- The placement of 3.36 million cubic yards of dredged material at eleven (11) separate disposal areas to create wetlands at an elevation of between Elevation 1.5 ft. to 3.0 ft. NGVD.
- All channels that were dredged were excavated to an elevation of -10.0 feet NGVD Datum, except where noted differently for the “ramp” entrance of Channel A from the Atchafalaya River.

#### **IV. Summary of 2003 Bi-annual Inspection Report**

In 2005, duties of bi-annual inspections, in the past coordinated by the LDNR Lafayette Field Office (LFO), were transferred to the LDNR Thibodaux Field Office (TFO). Transfer of operation and maintenance duties from LFO to the TFO was initiated to provide better coordination between the field engineering and biological monitoring sections of LDNR in that the field engineering section and biological monitoring section would be stationed in the same field office and better able to manage projects effectively. The new operation and maintenance manager for this project is Brian Babin, who shall be responsible for all maintenance duties, on behalf of LDNR, outlined in the operation and maintenance plan.

Prior to presenting the inspection results for the 2005 annual inspection, a brief summary of the 2003 bi-annual inspection report written by Mr. Herbert Juneau, the past O&M manager, will outline the findings and theories of the inspection team in 2003.

By use of a fathometer borrowed from C.H. Fenstermaker and Associates, Inc. of Lafayette, the 2003 inspection team was able to complete a cursory investigation of depths in the existing primary and secondary distribution channels of the Big Island Mining Project.

The 2003 bi-annual inspection was performed on October 28, 2003 with representatives from LDNR, LDWF and NMFS present. The inspection began at the Atchafalaya River near the transition and beginning reach of Breaux’s Pass, designated channel A on the construction drawings. Soundings taken in channel “A” averaged between -8 and -10 feet, but dropped slightly below -8 feet as the inspection team journeyed downstream in the channel. At the very downstream end of the channel, it was discovered that the channel continued for some distance past the location where dredging had ceased. It was estimated that erosion had occurred for several hundred feet to the southwest. As noted in the 2000 bi-annual inspection, immediately upstream of channel “A” in the Atchafalaya River, appears to have not aggraded and encroached into the cross-section of channel “A”. It is speculated by the inspection team that flow into Channel “A” from the Atchafalaya River gathers and carries sediment trying to accumulate on the downstream side of this “bar” and downstream into channel “A”. If this is the case, a very desirable condition is present since channel “A” is possibly in a sediment rich

location to receive needed material to enhance maximum sediment distribution into the project area.

Channel "D" was found to have approximately 4 feet of water in the initial reach at the mouth of the channel. Thereafter, approximately -5 feet water depths were recorded as the inspection team moved downstream in channel "D" towards the Shell Island Pass channel to the northwest. At the time of the 2003 bi-annual inspection, channel "D" appeared to be in the same condition as the previous 2000 bi-annual inspection.

Fathometer readings in Channel "B" indicated depths of -4 feet for an estimated distance of several hundred feet from Channel "A". As the inspection team moved downstream, the water depths increased to -6 feet and eventually to -8 and -9 feet at the end of the channel near Shell Island Pass to the northwest.

The 2003 inspection of channel "F" revealed about -4 feet as the controlling water depth, again at the mouth of the channel near channel "A" for a distance of several hundred feet. A consistent bottom depth of -6 feet was found further downstream from the mouth of channel "F".

Depth measurements of channel "C" which leads into Catfish Pass indicated approximately -5 feet of water at the mouth of the channel near channel "A". Thereafter, -6 to -7 feet depths were recorded downstream until the inspection team reached Catfish Pass which had depths of approximately -8'.

Channel "E", the "dead end" Cul-da-Sac channel which is oriented towards the south into Big Island was found to have approximately -2 foot depths controlling over a hump approximately 150 feet in length downstream from the mouth. Thereafter, water depths increased to -5 feet, then gradually sloped down to -10 feet approximately 1,500 feet down the Cul-da-Sac. It was apparent that channel "E" is receiving significant deposits of sediment from Channel "A" which is falling out due to minimal gradient in the channel and lack of adequate velocities for transportation of sediment. The LDWF frequently use this channel for maintenance and biological data collection and are currently contending with the shallow draft conditions. It is the opinion of Mr. Juneau that the shoaling in this channel will continue to worsen over time and that some maintenance dredging will be required in the near future.

In the 2003 bi-annual inspection report, the Mr Juneau concluded that the conditions in 2003 were similar to the 2000 inspection. The sediment accumulation noted in the 2003 inspection were not excessive or unexpected and does not require any immediate maintenance dredging, except as noted in Channel "E" of the Big Island Mining Project.

No maintenance projects have been undertaken on the Big Island Mining (AT-03) project since construction was completed in October 1998.

## **V. 2005 Inspection Results**

### **Channel “A” – Breaux’s Pass**

Channel “A” appeared to be in good condition with no serious signs of silting or shoaling. The depth at the mouth of Breaux’s Pass near the Atchafalaya River was approximately 11 feet deep. Disposal area 1 adjacent to Breaux’s Pass was heavily vegetated and appeared to be maintaining post construction elevations. The Louisiana Department of Wildlife and Fisheries in conjunction with LSU Fisheries are currently planning to intentionally breach seven (7) locations along the southern boundary of disposal area 1 to study fisheries migration within the disposal area. No other serious silting or shoaling was discovered along Channel “A”.

### **Channel “D”**

An investigation of water depths at the mouth of Channel “D” revealed some shoaling with depths measuring between 2 and 3 feet. Due to silting of the channel, we were unable to travel the entire channel. As a result of discussions with LDWF and NMFS, a possible maintenance project was proposed to re-dredge the channel to design depths. However, the inspection team believes that the configuration of this channel with Breaux’s Pass to the southeast and Catfish Pass to the west has contributed to low velocities in the channel causing silt material to settle out in the channel rather than being transported to desired areas. Under these conditions, we feel that Channel “D” will continue to shoal as silt material continues to build up in the channel. If the consensus is that the channel should be dredged to design elevations in the future, a permit will be required to extend the permitted disposal area since available area for placement of dredge material has been exhausted.

### **Channel “C”**

Upon visual inspection of the channel, we noticed that significant shoaling has occurred in the channel with a large build up of material overgrown with vegetation in the center of the channel. It is the opinion of LDNR that severe shoaling has occurred due to the lack of adequate flow in the channel. Discussions with LDWF and NMFS did not bring about a consensus on maintenance dredging of Channel “C”. At this point, no maintenance dredging is recommended.

### **Channel “E”**

Prior to this inspection, LDWF had reminded the inspection team that Channel “E”, near the mouth, had silted in to the extent that the channel has become impassable. The depth measurements taken at the time of the inspection showed that the depths were approximately 3.9’ at the mouth of Channel “E” near Breaux’s pass, 4.2’ deep 200’ into the channel and 5.0’ deep 500’ into the channel. The major deposition has taken place at the mouth of the channel. Possible hydraulic dredging will be required to re-open the existing channel near the cul-de-sac in the near future. A previously permitted disposal area is available on the southwest side of the channel. At this time, it is recommended that no maintenance dredging be performed until a re-evaluation and bathymetric survey is conducted next year to ascertain the extent of shoaling in this channel.

### **Channel “F”**

Channel “F” appears to be in good condition with no serious silting or shoaling. The estimated depth at the time of the inspection was approximately 7’ deep 100’ into the channel from Breaux’s Pass. From visual observations, it appears that an available disposal site for potential dredge material from Channel “E” is located on the west side of Channel “F”.

## **VI. Conclusions and Recommendations**

Our findings revealed that several of the tertiary channels within the Big Island project have experienced moderate to severe deposition of silt material since construction was completed in October 1998 with the most notable shoaling in Channels “C”, “D” & “E”. The 2005 inspection team (NMFS, LDNR and LDWF) agree that Channels “C” & “D” will produce little long term benefit from re-dredging due to the lack of water velocities necessary to transport material effectively to intended areas thus creating conditions for accumulation of sediment in the channel. However, there is a consensus among the inspection team that Channel “E” be dredge under the next maintenance cycle to open up severe shoaling at the mouth of the channel upstream from the cul-da-sac. Other issues to be resolved prior to maintenance dredging are the availability of existing disposal areas and permitting of additional areas should it be necessary. Potential disposal areas, identified during the inspection, for placement of spoil material include the west side of Channel “F”, southwest of Channel “E” and disposal area 10.

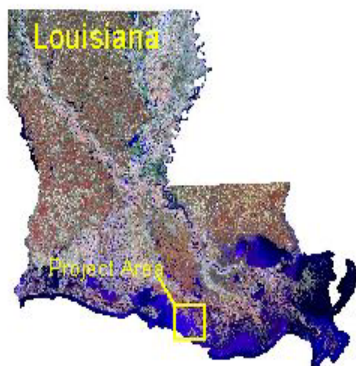
It is recommended that no maintenance project be initiated at this time. However, LDNR is recommending that a bathymetric survey of selective channels be conducted prior to the 2007 bi-annual inspection to identify maintenance priorities. To avoid unnecessary duplication of efforts, the proposed survey to identify maintenance needs should be included in the scope of services currently under development by the biological monitoring section of LDNR which is scheduled to begin in early 2007. The scope of service includes topographic and bathymetric surveys of the existing distributary and tertiary channels associated with the Atchafalaya Sediment Delivery (AT-02) and Big Island Mining (AT-03) projects.



## 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



AT-03 Big Island Mining – Photo at the mouth of Channel “B” looking northwest from Breaux’s Pass (Photo 1)



AT-03 Big Island Mining – Photo at the mouth of Channel “B” looking northwest from Breaux’s Pass. (Photo 2)



AT-03 Big Island Mining – Photo along Channel “E” looking southeast from Breaux’s Pass (Photo 3)



AT-03 Big Island Mining – Photo of disposal area no. 9 adjacent to Channel “E” looking in a southerly direction. (Photo 4)



AT-03 Big Island Mining – Photo of disposal area no.8 located on the east side of Channel “E” looking in a southeasterly direction. (Photo 5)



AT-03 Big Island Mining – Photo looking down Channel “E” to the dead end “Cult-a-sak” looking in a southeasterly direction. (Photo 6)





AT-03 Big Island Mining – photo of Channel “F” from Breaux’s Pass (Channel “A”) looking in a northwesterly direction. (Photo 7)



AT-03 Big Island Mining – photo along Channel “F” of remaining marsh on the west side of the channel looking in a westerly direction (Photo 8)



AT-03 Big Island Mining – photo down Channel “F” of disposal area no. 6, on the right of the photo, looking in a northerly direction. (Photo 9)



AT-03 Big Island Mining – photo along Breaux’s Pass (Channel “A”) looking in the direction of Channel “C” Catfish Pass in a southwesterly direction. (Photo 10)



AT – 03 Big Island Mining – photo along Breaux’s Pass (Channel “A”) looking in a the direction of Channel “C” Catfish Pass in a southwesterly direction. (Photo 11)



AT-03 Big Island Mining – photo of disposal area no. 9 adjacent to Channel “C” Catfish Pass looking in a southeasterly direction. (Photo 12)

## **Appendix C**

### **THREE YEAR BUDGET PROJECTIONS**



**BIG ISLAND MINING PROJECT (AT-03)**  
**Three-Year Operations & Maintenance Budgets 07/01/2005 - 06/30/08**

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

	2005/2006	2006/2007	2007/2008
<b>Maintenance Inspection</b>	\$ 4,825.00	\$ 4,955.00	\$ 5,250.00
<b>Structure Operation</b>	\$ -	\$ -	\$ -
<b>Administration</b>	\$ -	\$ -	\$ -

**Maintenance/Rehabilitation**

05/06 Description: Survey (\$20,000 @ 75% = \$15,000)

E&D	\$ 15,000.00
Construction	
Construction Oversight	\$ -
Sub Total - Maint. And Rehab.	\$ 15,000.00

06/07 Description: Maintenance Dredging: cost estimate to be provided upon completion of preliminary survey information.

E&D	\$ -
Construction	\$ -
Construction Oversight	\$ -
Sub Total - Maint. And Rehab.	\$ -

07/08 Description:

E&D	\$ -
Construction	\$ -
Construction Oversight	\$ -
Sub Total - Maint. And Rehab.	\$ -

	2003/2004	2004/2005	2005/2006
<b>Total O&amp;M Budgets</b>	\$ 19,825.00	\$ 4,955.00	\$ 5,250.00

## **Appendix D**

### **FIELD INSPECTION FORMS**

## 2005 Annual Inspection

July 18, 2005

### Participants:

LMNR: Herb Tuncas  
Dewey Billodeau } LFO  
Stanley Avonin }  
Darrel Pontiff }  
Brian Babin } TFO  
Daniel Deamond }  
Shane Triche }

NMFS: Dr. John Foret  
Richard Hartman

LDWF: Edmond Marton  
Cassidy Lefevre  
Wayne DeSoto  
Paul Cook

LSU: Dr. Bruce Thompson  
Dr. Gary Peterman

Head Breaux's Pass - Channel 14"  
Depth = 11.0'

Proposed Gaps in Containment Dikes  
(Back Side of Disposal Area)

### Location of Gaps:

- ①  
29° 27.704' N Most western side of Ditch #1  
91° 18.978' W
- ②  
29° 27.800' N Small existing cut  
91° 19.809' W
- ③  
29° 27.811' N Have entered for sample  
91° 18.03' W
- ④  
29° 27.830' N Good open water on Spoil C  
91° 18.795' W
- ⑤  
29° 27.840' N Wide treeless Area 2/5 sample  
91° 18.790' W

⑥

29° 27.976' N Eastern Most on Ditch #1

91° 13.674' W

⑦

29° 28.012' N Near mouth of Ditch #1

91° 18.690' W

Sites 1-7 are cuts in containment along  
Spill C and would connect into Ditch #1

⑧

29° 28.464' N North Spill A, eastern tip.

91° 18.040' W This site will gap DA-5's  
containment in vicinity of  
Channel "D".

### Channel "D"

Mouth has silted in: Depth at mouth  
at time of inspection 2-3 feet.

Possible maintenance dredging  
of Channel "D". Question of  
spoil placement and possible  
permit to expand disposal  
Area beyond project limits.

### Channel "B"

Depth of 8.5' at mouth near Breaux's  
Pass.

Channel "B" has silted in with  
vegetation and silt material building  
up in center of channel.

No consensus on maintenance  
dredging. Obvious low flow in  
this channel (Velocity low)

### Channel "E"

Staff gauge 1.5' NAVD

Depths:

3.9' @ mouth near Breaux's Pass

4.2' 200' into Channel from Channel "A"

5.0' 300' into " " "

Possible maintenance dredging

Disposal area available on  
the southwest side of Channel "E"

### Channel "F"

Third channel on right descending bank of Breau's Pass from the river.

100' deep @ 100' into Channel "F"  
potential disposal area on  
the west side of Channel "F" for  
material dredged from Channel "E"

### Channel "C" - Catfish Pass

5' to 6' deep at mouth of Channel "D"

Possible maintenance dredging  
with disposal placement into  
Area (10).

depth of 3.5' approximately 2000'  
from mouth and 5' in center  
of channel.

Amarada Hess Gauge: 1.9'

