

**BENEFICIAL USE OF DREDGED MATERIAL
DISPOSAL HISTORY
ALONG SELECT NAVIGATIONAL CHANNELS IN LOUISIANA**

Prepared for
The U.S. Army Corps of Engineers
New Orleans District

Prepared by
University of New Orleans
Contract DACW29-98-D-0008
May 2001

INTRODUCTION

Beginning in the late 1970's, the U.S. Army Corps of Engineers (USACE) began placing dredged material in an effort to create and restore coastal habitats. In 1994, the Beneficial Use Monitoring Program (BUMP) was instituted to quantify the amount of new habitat created and to improve dredge disposal placement in order to maximize the beneficial use. As part of BUMP, the University of New Orleans- Coastal Research Laboratory (UNO-CRL) performed a cumulative landscape history of the BUMP monitored sites between 1985 and 2000 to determine the net amount of sub-aerial land created by the USACE. The study will be continued on a yearly basis to determine the net land created between the current year and base year of 1985.

DATA

The base year color infrared (CIR) photography used in the study was flown in December 1985 by the NASA- Ames Research Center. The photography was captured using a Wild RC10 camera at an altitude of 65,000 feet (1:65,000 scale).

For comparison, the current fiscal year (FY) CIR photography was used. The FY 2000 photography was flown by Aerial View Point in December of 2000 and January 2001. The photography was captured with a Wild RC30 camera at an altitude of 12,000 feet (1:24,000 scale).

METHODS

The CIR photography was first scanned at a resolution of 600 dpi, and then imported into Erdas Imagine file format. The photography was then geo-referenced and a CIR photo-mosaic was created. For the land water classification, an ISODATA algorithm was performed on the CIR photo-mosaic to separate the imagery into 85 unique spectral classes. These 85 classes were then examined for spectral homogeneity and assigned either a final class of land or water. The image was then recoded to produce a land-water image. This procedure was followed for both the 1985 and FY 2000 CIR mosaics.

Once a land-water image was finalized for a study site, a change detection matrix was computed and a change detection image created. From this image, the areas of direct land created due to dredged material disposal was delineated using information from the disposal history of each study site.

RESULTS

The goal of the study was to determine the amount of sub-aerial land created by the USACE. Since this study was a comparison of two time periods, the polygon delineations and acreage of BUMP created land represents a net change in the landscape based on current conditions. However, it was beyond the scope of the study to determine the amount of new land created by "BUMP assistance." The natural processes of re-working sediment placed into a system are numerous; making the determination of

BUMP assisted land creation difficult. Table 1 summarizes the results of the study and is followed by figures presenting the cumulative landscape change for each study site.

Table 1 Summary of BUMP created land by study site.

BUMP Study Site	BUMP Created (Acres)	BUMP Created (Hectares)	Figure Number
Atchafalaya- Avoca Island	1,066	432	1
Atchafalaya- Delta	2,924	1,184	2
Atchafalaya- Horseshoe Bend	1,256	508	3
Baptiste Collette	6,239	2,527	4
Barataria- Inland	141	57	5
Barataria- Bay	60	24	6
Barataria- Grand Terre	121	49	7
Calcasieu- Brown Lake	195	79	8
Calcasieu- Sabine	745	302	9
Freshwater Bayou	21	8	10
Houma- Navigation Canal	13	5	11
Houma- Wine Inland	48	19	12
Mermentau River	63	25	13
MRGO- Inland	289	117	14
MRGO- Jetties	319	129	15
MRGO- Breton Island	29	12	16
South Pass	396	161	17
Southwest Pass	3,096	1,254	18
Tiger Pass	347	140	19
Total	17,367	7,034	

BENEFICIAL USE OF DREDGED MATERIAL DISPOSAL HISTORY
MISSISSIPPI RIVER OUTLETS, VENICE, LA
BAPTISTE COLLETTE BAYOU
Through FY 2000

Baptiste Collette Bayou existed as a small canal in 1868 that extended between the river and what was then known as Bird Island Sound. In 1874, a crevasse occurred, and by 1893, a small subaerial subdelta had been formed. In 1908, the Corps of Engineers dammed the crevasse to maintain the flow through the navigational channels. In 1915, the dam was breached and growth of the subdelta resumed. The subdelta was nearly 20 square miles in 1959, but considerable subsidence and ponding was evident on the 1959 survey, indicating that the deterioration phase of this subdelta had already begun (Morgan, 1977).

The River and Harbors Act of 1968, approved August 13, 1968, authorized the USACE-NOD to enlarge the existing channel of Baptiste Collette Bayou to -14 feet Mean Low Gulf (MLG) over a bottom width of 150 feet with an entrance/bar channel in open water 16 feet deep over a bottom width of 250 feet. Jetties to the 6 foot depth contour also were authorized. Enlargement of the channel began in November, 1977 and was completed in May, 1978. Jetty construction was completed in May 1979.

Beneficial use of dredged material from maintenance of the Baptiste Collette bar channel began in 1977 with the placement of dredged material in shallow open water on the east side of the channel in a manner conducive to wetland creation and to the creation of islands for colonial nesting seabirds. Wetland creation on the west side of the jettied channel began in 1988. Maintenance dredging takes place annually and all dredged material is used for confined or unconfined wetland creation and the creation of islands suitable for avian habitat.

Figure 7 illustrates the dredged material disposal history for the study area through FY 2000.

Baptiste Collette Dredged Material Disposal History 1975-FY2000

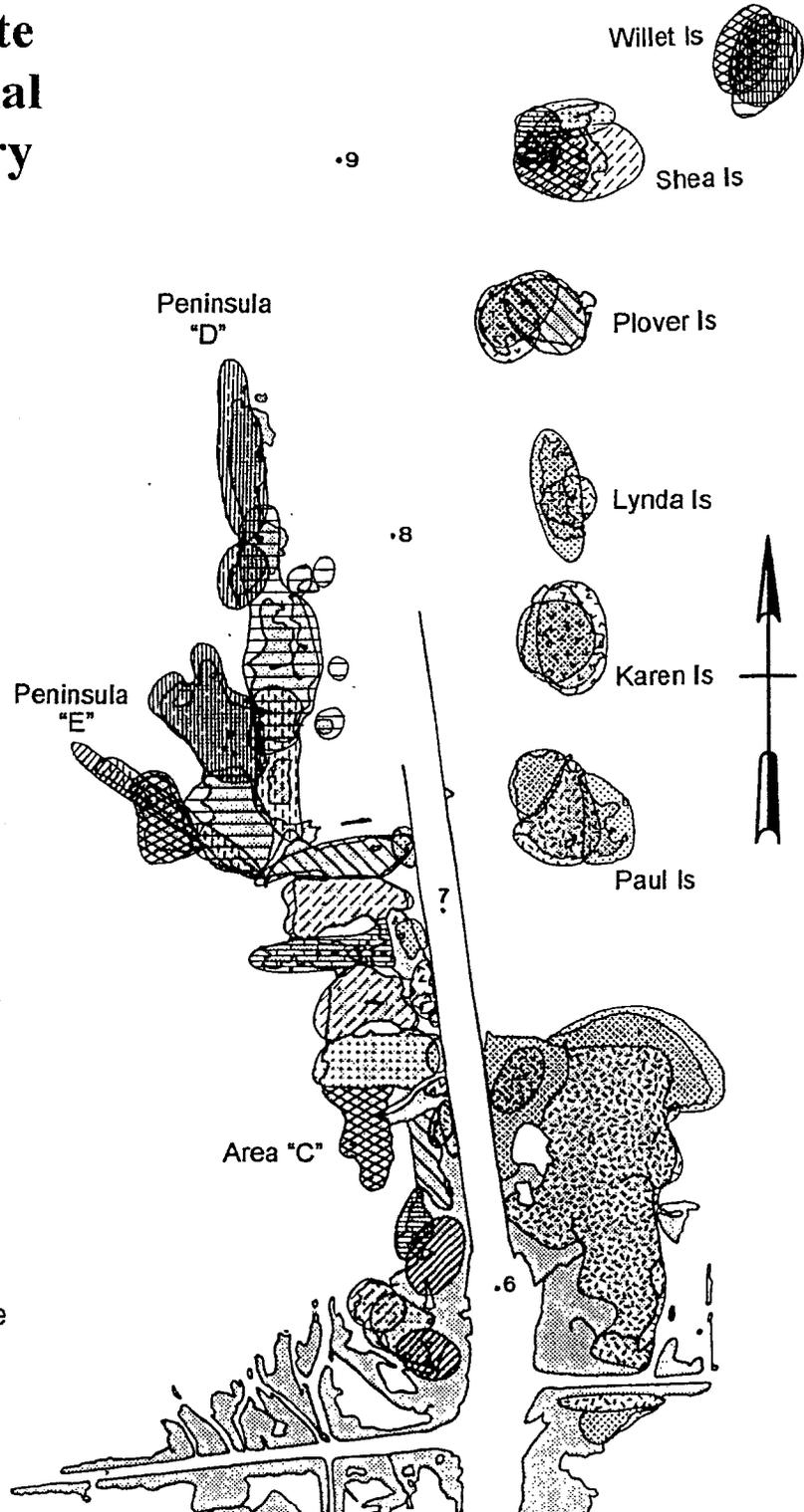
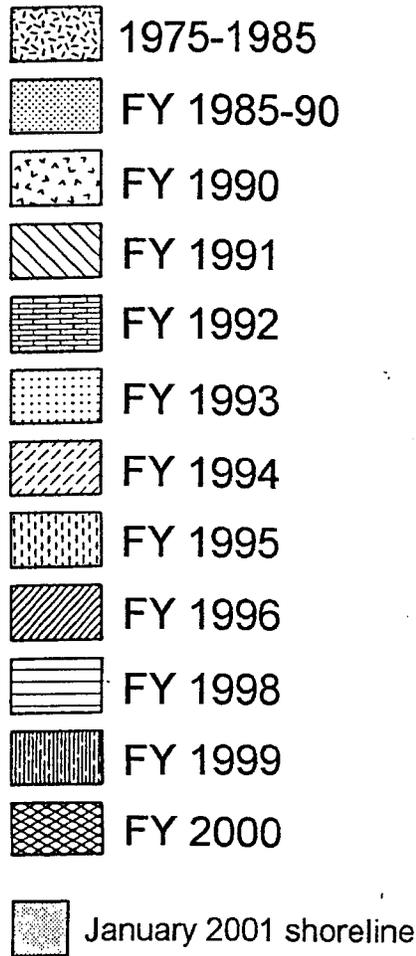
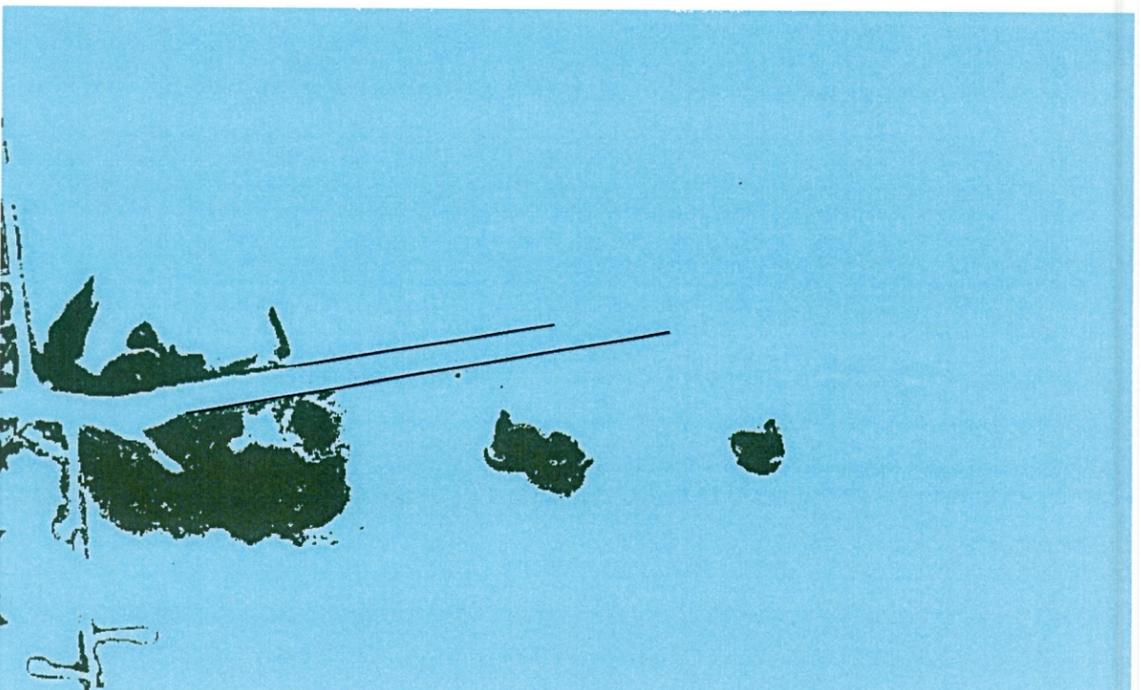
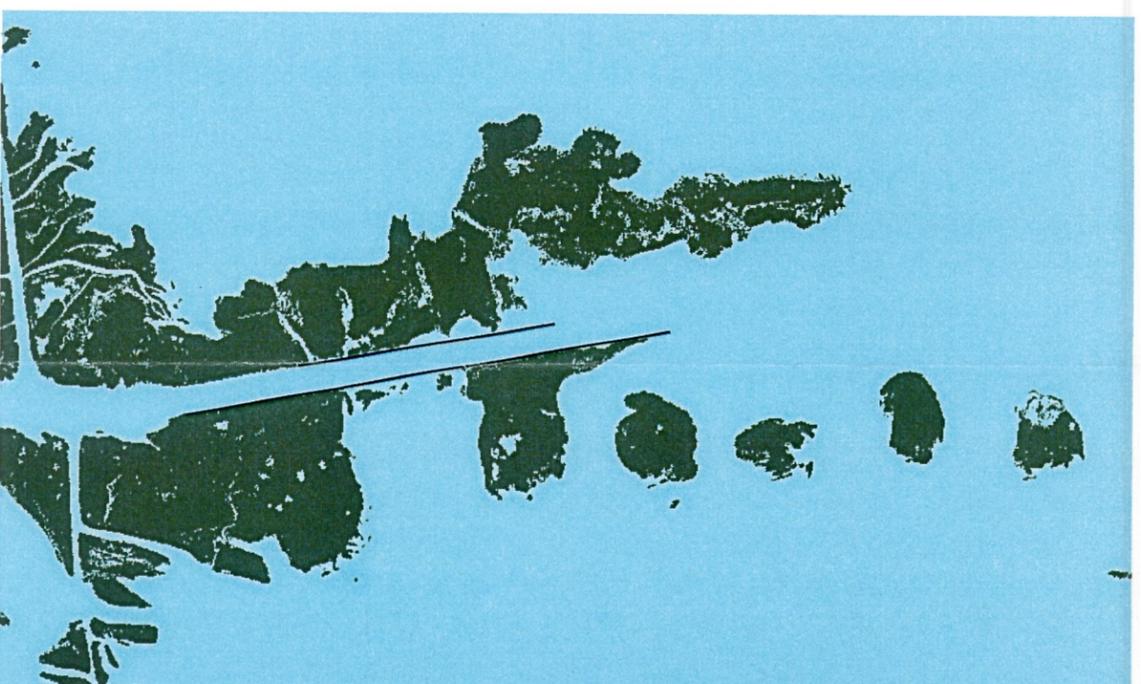


Figure 7. The dredged material disposal history for the Baptiste Collette Bayou study area through FY 2000.

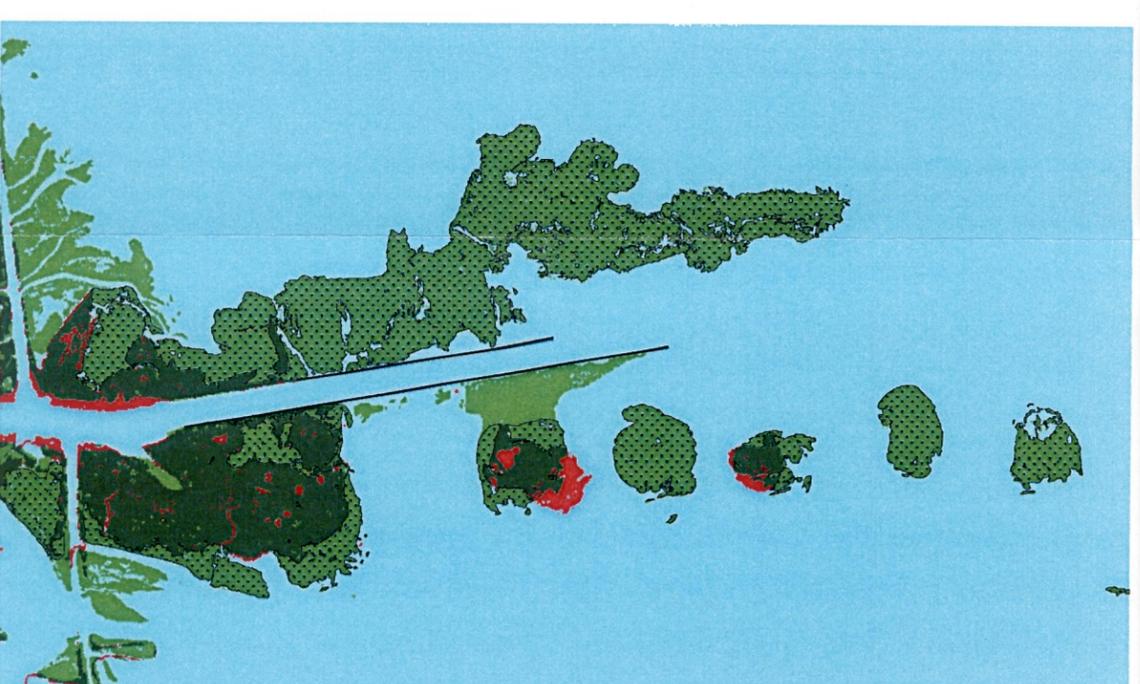
1985 Land-Water Classification



2000 Land-Water Classification



Change Detection: 1985-2000



LEGEND

-  BUMP Created Land
-  Other New Land
-  Unchanged Land
-  Land Loss
-  Water



Figure 4 Cumulative Landscape Change for Baptiste Collette: 6,239 Acres