BAYOU LABRANCHE WETLAND (PO-17)
PO-17-MSPR-0895-1
PROGRESS REPORT No. 1
for the period
April 1, 1994 to August 8, 1995

Project Description/Status

The Bayou LaBranche Wetland Project (PO-17) is located on the southwestern shore of Lake Ponchartrain in the LaBranche Wetland Management area (figure 1). Historically, this area was a brackish marsh which served as a nursery ground for gulf menhaden and finfish fisheries (Hinchee 1977; Cramer 1978). A failed attempt at agriculture in the early 1900s caused subsidence of the interior marsh which led to the formation of a large open water pond area. The pond area has increased in size over the years, leaving just a narrow band of marsh on the Lake Pontchartrain shoreline. Shoreline retreat rates estimated at 9.5 ft/yr (Coastal Environments Inc. 1984) have further decreased the width of the shoreline bordering Lake Pontchartrain. The purpose of this project is to create new vegetated wetlands in the Bayou La Branche area utilizing dredged sediment. Specifically, the project's goal is to create approximately 254 acres of shallow water habitat conducive to the natural establishment of emergent wetland vegetation. Another of the project's goals is to increase the marsh-to-open water ratio to a minimum of 70%:30% after five years. An auxilliary monitoring need is to assess the characteristics of the sediment over time.

Project components include a containment levee earthen berm surrounding the area and approximately 2 million yd^3 of sediment dredged from a nearby Lake Pontchartrain water bottom. The project area is divided into two areas: pond A and pond B (figure 1). The barrier between the ponds consists of an earthen ridge with a concrete weir (weir 1) which allows excess water to flow from pond A to pond B and a z-wall closure. Weirs on the eastern berm (weirs 2 and 3) allow excess water to flow out of the project area to the east. The exterior weirs (weirs 2 and 3) are designed to allow ingress and egress of marine species during high tides. The interior weir (weir 1) is designed to allow water access to both ponds.

Sediments were deposited in the 515-acre project area in January and February of 1994. A final elevation of 2 ft NGVD is anticipated after settling; however, it is anticipated that a minimum of five yr will elapse before complete consolidation and settling has occurred. Plantings of cypress trees and marsh species will be completed after five yr once the sediment has consolidated. The introduced sediment was aerially seeded with Japanese millet (*Echinochloa crusgali var.*

frumentacea) in July 1994 in order to enhance volunteer plant growth and to reduce aeolian transport of sediment.

Monitoring Design

The monitoring variables are tied to the goals of increasing vegetated marsh area by 254 acres, increasing the marsh-to-open water ratio, and achieving a 70%:30% marsh to open water ratio after five yr. Habitat mapping will be conducted to measure marsh to open water ratios and to document marsh loss rate for the project area. Habitat mapping includes taking color infrared aerial photography at a scale of 1:12,000 utilizing control markers, and groundtruthing via vegetative delineations. The area will be flown in preconstruction phase and 3 times in postconstruction to correspond with vegetative and elevational transects. Vegetative transects will be monitored to quantify species composition and relative abundance of emergent vegetation in replicate one-m^2 plots taken at 440 ft intervals along the vegetative transects for a total of 82 plots (figure 2). Sampling will be conducted during periods of peak vegetation biomass. Vegetative transects will correspond with elevational transects taken during preconstruction and will be conducted at mo 6, yr 1, yr 2, yr 3, and every 3 yr thereafter. Elevational transects will document the settling rate of the dredged sediment and allow comparison of the elevation versus the design criteria of 2 ft NGVD. Water elevations will be measured using 21 staff gauges located at the intersections of vegetation transects (figure 2) to be tied into one continuous recorder within the study area. The recorder within the study area will be related to an existing water level recording gauge adjacent to Interstate 10 in order to determine duration and frequency of flooding. The 21 staff gauges will be monitored monthly, at a minimum. Sediment will be monitored in order to characterize its composition over time. Sediment will be collected using the "Swenson" corer taking one 10 cm deep sample at 880-ft intervals along the vegetative transects. Sampling will be done at yr 1, yr 3, and every 3 yr thereafter. Soil variables measured will include percent organic matter, bulk density, soil salinity, and water content. In the event that unconsolidated sediment conditions prohibit traversing the project area, the sampling schedule will be adjusted to commence when the first postconstruction sampling is concluded.

Results/Discussion

Preconstruction vegetation and sediment data were collected on February 4, 1994. The results are summarized in tables 1 and 2. Generally, there was abundant submersed aquatic vegetation dominated by *Myriophyllum spicatum* (water milfoil) and *Ceratophyllum demersum* (coontail) with abundant *Eleocharis parvula* (dwarf spike rush) around the shallower pond edges. The sediments had high water content averaging 50%, bulk densities ranging from 0.64 to 1.06 g/cc, percent organic matter from 7.9 to 26.8, and a soluble salt content around 3.5 ppt.

Aerial photography for the preconstruction phase of habitat mapping was flown on November 7, 1993; the first postconstruction flight was conducted on December 19, 1994. The National Biological Service analyzed the photography using a Geographic Information System and estimated that the project area had 350 acres of new vegetation, 131 acres of existing vegetation, and 34 acres

of open water. Approximately 20,000 waterfowl, over 20 emergent marsh species, racoons, nutria, and alligators were reported within the project area.

Since project completion the dredged sediment within the area has remained in an unconsolidated state. Boat, airboat, and foot traffic have been rendered impossible. In the spring of 1994 and 1995, it was attempted to place the staff gauges and monitoring location markers within the project area. Only 6 staff gauges were set in 1994, because of logistical problems, and readings were taken 5 times during 1994 - 1995. The readings indicated that the gauges were not reliable because of the conditions in which they were installed. Thus they will not be used in any data analyses. The monitoring schedule will be adhered to once conditions allow access to the area.

References

Coastal Environments Inc. 1984. Environmental characteristics of the Pontchartrain-Maurepas Basin and identification of management issuess: An Atlas. Baton Rouge: Louisiana Department of Natural Resources, Coastal Management Division.

Cramer, Glenn W. 1978. A nutrient study in the St. Charles Parish wetlands adjacent to Lake Pontchartrain Louisiana. M.S. thesis. Baton Rouge: Louisiana State University. 69 pp.

Hinchee, Robert E. 1977. Selected aspects of the biology of Lake Pontchartrain, Louisiana. 1. Simulations of man's effects on the Lake Pontchartrain food web. 2. The role of the St. Charles Parish marsh in the life cycle of the gulf menhaden. 3. The fishery value of the St. Charles Parish marsh. M.S. thesis. Baton Rouge: Louisiana State University. 75 pp.

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Construction Start:	January 5, 1994	
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Figure 1. Bayou La Branche Wetland Project location map showing main components.

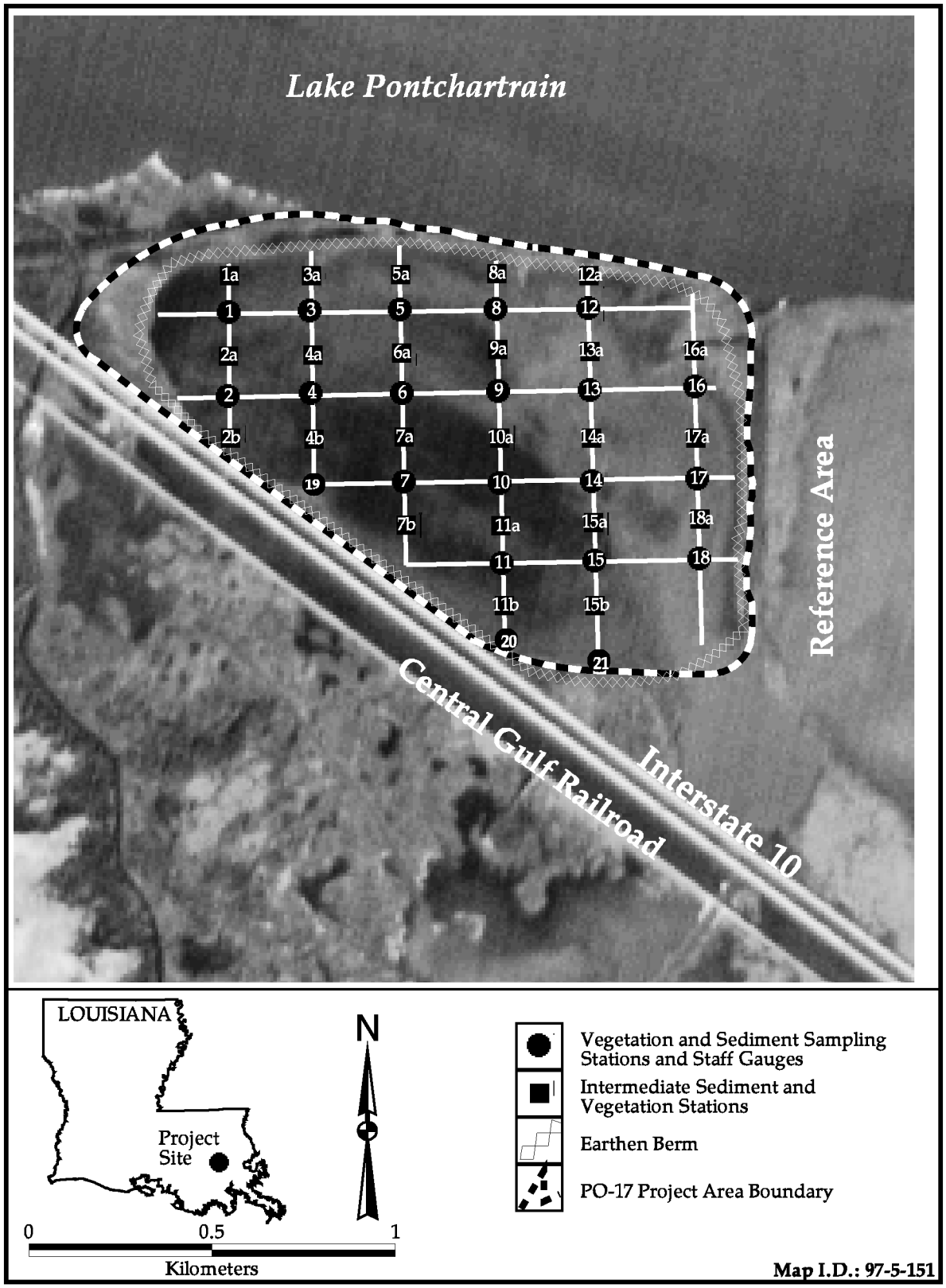

Figure 2. Location of vegetation and elevation transects and staff gauges.

Table 1. Preconstruction sediment monitoring at main stations (cores taken = T, no cores taken = NT) and vegetative monitoring showing the average percent cover (%) for each plant species per station.

	SPECIES	*Eleocharis*	algae	*Ceratophyllum*	*Myriophyllum*	*Najas*	*Ruppia*
STATION	CORES						
1	T		2.5	75	2	5	
1A	NT			25	45	80	
2	T				Trace		
2A	NT		25	2.5		42.5	
3	T				Trace		
3A	NT			50	55	2.5	20
4	T				35	35	
4A	T		2.5	15	75	5	
4B	NT			35	20	20	
5	T			50	50	35	
5A	NT				50		
6	T			100	10	10	
6A	NT			50	75	5	
7	T				50	60	
7A	NT		10	75	10	35	
7B	NT						
8	T			2.5	52.5	7.5	
8A	NT			25	30		
9	T			50	50	20	
9A	NT			25	35	10	
10	T			50	50	5	
10A	NT			100	50	5	
11	T		100	30	10	10	
11A	T			60	20	20	
11B	NT		100	50	50	52.5	
12	T			30	50		15
12A	T			7.5	2.5		
13	T						
13A	NT						
14	T					2.5	
14A	NT					5	Trace
15	T		30			5	
15A	T						2.5
15B	NT					100	
16	T						100
16A	NT	52.5					
16B	NT		25			5	
17	T	50					50
17A	NT	50					50
18	T	27.5	2.5			2.5	
18A	T	100					

Table 2. Preconstruction sediment samples assayed for percent organic matter, conductivity, salinity, dry weight, volume, bulk density, wet weight, weight change, and percent water from the LaBranche wetland.

Sample #	Percent Organic Matter (%)	Conductivity (mmho/cm)	Salinity (ppt)	Dry Weight (g)	Volume (cc)	Bulk Density (g/cc)	Wet Weight (g)	Weight Change (g)	Percent Water (%)
1	17.3	5550	3.66	32.02	41.5	0.77	69.94	37.93	54.24
2	15.3	5300	3.50	32.85	41.5	0.80	70.96	38.11	53.71
3	15.7	5500	3.63	25.43	31.0	0.825	58.37	32.95	56.30
4A	18.2	5575	3.71	26.94	35.0	0.77	64.50	37.57	58.19
4	21.7	5425	3.60	14.25	38.5	0.69	68.21	41.62	61.17
5	15.3	5550	3.66	29.07	30.0	0.97	70.02	40.95	58.48
6	11.0	5500	3.63	32.53	34.0	0.96	66.15	33.62	50.84
7	15.8	5575	3.68	25.87	37.5	0.69	63.60	37.74	59.36
8	16.0	5550	3.67	27.90	35.0	0.80	68.67	40.77	59.37
9	14.2	4725	3.37	23.60	34.0	0.70	61.27	37.68	61.20
10	17.2	5500	3.63	30.38	34.0	0.89	68.61	38.23	55.71
11A	19.0	5475	3.61	29.90	38.5	0.78	71.08	41.19	58.00
11	26.8	5425	3.58	25.23	30.0	0.86	62.92	37.70	59.86
12A	13.2	5600	3.69	32.27	38.5	0.84	75.85	43.58	57.44
12	17.1	5675	3.75	31.11	37.5	0.83	66.38	35.27	53.15
13	26.8	5500	3.63	38.64	35.0	1.10	70.33	31.69	45.10
14	16.0	5450	3.60	37.59	32.5	1.16	71.62	34.03	47.45
15A	18.8	5450	3.60	29.68	33.5	0.89	67.92	38.24	56.27
15	12.4	5100	3.37	39.85	38.5	1.04	75.70	35.85	47.37
16	7.9	5850	3.86	47.55	44.5	1.07	80.91	33.36	41.24
17	12.8	5275	3.48	43.98	45.0	0.98	77.88	33.90	43.55
18A	9.4	5625	3.72	45.29	40.0	1.15	79.29	33.51	42.26
18	8.3	5500	3.63	46.43	44.5	1.06	80.65	34.23	42.44