SW SHORE, WHITE LAKE PROTECTION
(ME-12) DEMONSTRATION PROJECT
ME-12-MSPR-1296-1
PROGRESS REPORT No. 1
for the period
June 7, 1996 to December 4, 1996

Project Description/Status

The SW Shore, White Lake Protection (ME-12) project area consists of approximately 25 acres of fresh and intermediate marsh and is located on the southwest shore of White Lake at the Vermilion/Cameron Parish line, approximately 1 mi south of the Old Intracoastal Waterway (figure 1). The shoreline plant community is dominated by roseau cane (*Phragmites australis*), elephant ear (*Colocasia esculenta*), California bulrush (*Scirpus californicus*), and bulltongue (*Sagittaria lancifolia*).

High wave energy generated across the long fetch of White Lake has caused severe shoreline erosion in the project area. The shoreline erosion rate for the SW White Lake area averaged 11.9 ft/yr between 1974 and 1990 (Brown and Root 1992). This wave-induced erosion has led to the formation of a pronounced cutbank along the project area's vegetated marsh edge. Water depth immediately adjacent to the shoreline ranges from 2.0 to 3.0 ft; whereas the water depth within the planting area, 25 ft lakeward of the shoreline, ranges from 1.0 to 1.5 ft. If wave erosion persists along the natural lake shoreline, the encroachment of White Lake into the Deep Lake wetlands is inevitable.

The design of the project is to use vegetation plantings to protect a portion of the SW shore of White Lake. On June 7, 1996, approximately 2,650 California bulrush plantings were installed. The plantings were spaced on 6-ft centers, in three rows approximately 10 ft apart, between the 1.0-ft and 1.5-ft contours. The first planting row is located approximately 25 ft from the lake shoreline, the second row is located approximately 35 - 40 ft from the lake shoreline, with the third planting row being located approximately 50 ft from the lake shoreline. The objectives of the project are to evaluate the effectiveness of California bulrush plantings as a wave-damping technique, and to prevent the encroachment of White Lake into the adjacent interior marsh by reducing the rate of shoreline erosion.

Monitoring Design

Near-vertical, color-infrared aerial photography (1:12,000 scale) was taken in January 1995 (preconstruction), and will be taken in 1999 (postconstruction). The photography will be used to determine changes in land-to-water ratios, marsh loss rates, and shoreline movement within the project and reference areas over the project life. Eighteen vegetation markers and twelve shoreline markers, consisting of single 4-in, x 4-in, x 8-ft, wooden posts, were placed at 1000-ft intervals within each row of the plantings and adjacent to the shoreline at the vegetated marsh edge in the project and reference areas. The vegetation markers are being used as reference points to determine lateral spread and percent survival of the plantings. The shoreline markers are designated as reference points to take direct measurements of shoreline position. The reference area, which includes six of the shoreline marker posts, is being monitored for shoreline position only. Vegetation and shoreline data were collected in July 1996 (1 mo postconstruction) and December 1996 (6 mo postconstruction), and will be collected at 1, 3, 5, and 10 yr postconstruction.

Percent survival was determined at 6 randomly selected plots of 15 plants (5 plants on each of 3 rows), defined by the vegetation marker posts, by recording the presence or absence of the original plantings. Percent survival from the six plots was used to determine the mean percent survival for the project area. Presence or absence of submerged aquatic vegetation (SAV) was also recorded (table 1). Lateral spread of the transplants was determined by taking measurements east (lakeside) and west (shoreline) of the vegetation marker posts within the six plots (table 2). The distance of lateral spread on each row was recorded, and will be used to determine plant vigor when future data sets are collected. Lateral spread of the plantings in the center row will be recorded until the tillering of the plantings become intermixed and indistinguishable with the first and third rows of plantings.

The shoreline markers, within the project and reference areas, were used to document shoreline movement by taking direct measurements from the back side of the marker posts towards the vegetated marsh edge. Additional PVC marker poles were added 20 ft west of the existing markers, and a compass bearing to the marker was recorded to assure that the original wooden marker posts could be reestablished if lost or stolen. Should survey funds become available, a Global Positioning System (GPS) will also be used to document shoreline and vegetation marker location, and shoreline position.

An analysis of variance (ANOVA) and multiple comparison tests will be performed on shoreline marker data to compare shoreline changes within the project and reference areas. Descriptive and summary statistics will be used to evaluate the success of the vegetative plantings.

Results/Discussion

Vegetation survival one month after planting averaged 98.8% in the 6 sample plots (table 1). This high survival, and the seemingly large amount of lateral spread of up to 29 in. (table 2), are encouraging in terms of the initial establishment of the plantings. The 1-mo postconstruction shoreline marker data is presented in table 3. This data set will be used as the baseline for determining shoreline changes over time. Comparisons of these data with the 6-mo postconstruction monitoring data, conducted December 3, 1996, and subsequent monitoring results, will be included in future reports.

Reference

Brown & Root, Inc. 1992. Feasibility report for White Lake Shore Protection. Unpublished report prepared for the Louisiana Department of Natural Resources/Coastal Restoration Division. Belle Chasse, La: Brown & Root, Inc. 27 pp.

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Construction Start:	June 4, 1996	
Construction End:	June 7, 1996	

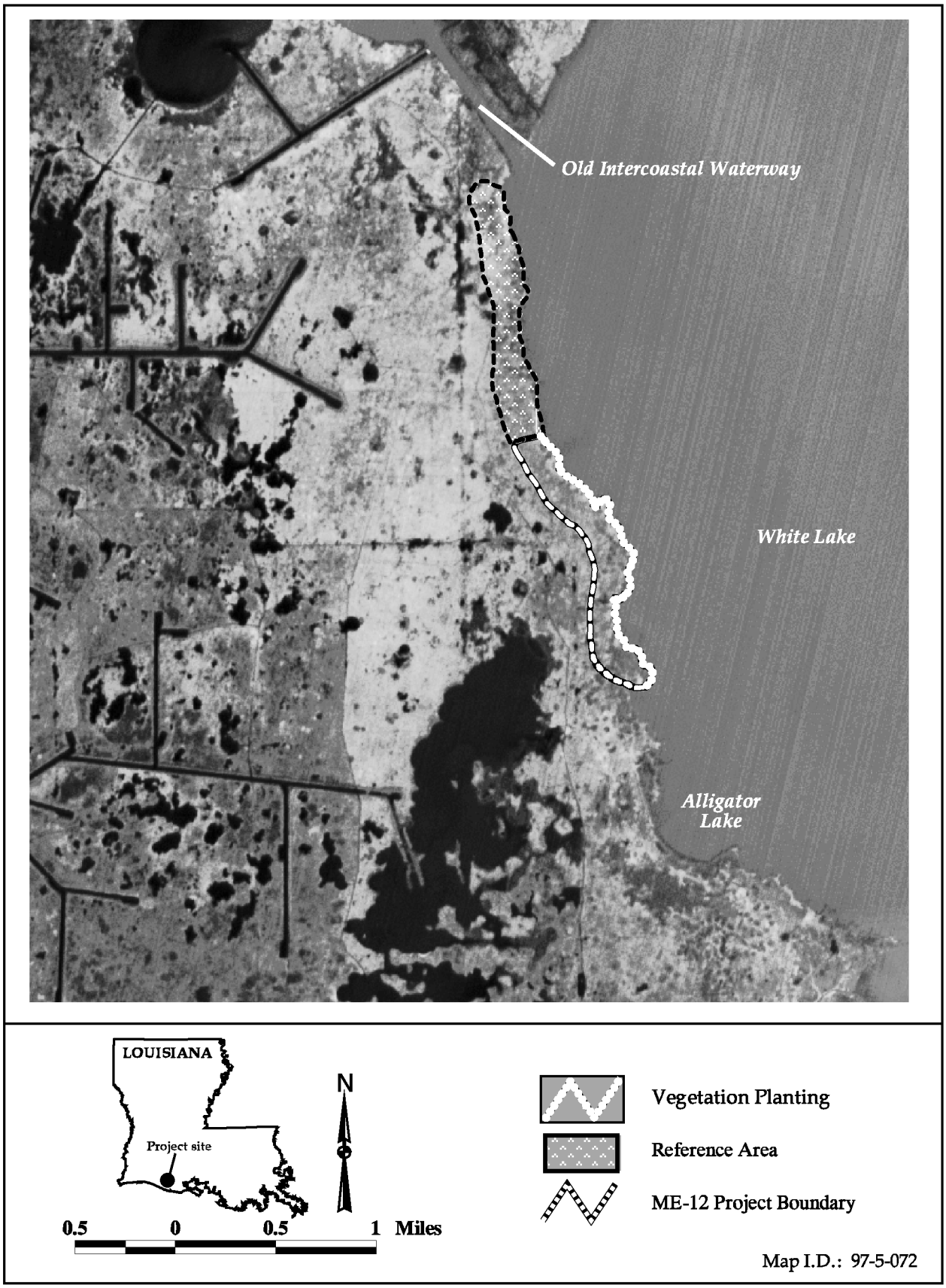

Figure 1. SW Shore, White Lake Protection (ME-12) demonstration project area and reference area boundaries and vegetation planting locations.

Table 1. SW Shore, White Lake Protection (ME-12) demonstration project 1-mo (July 2, 1996) postplanting survival of California bulrush plantings (n=15/plot) and presence (P) or absence (A) of SAV in the 6 sampling plots.

PLOT#	%Survival	SAV
1	100	A
2	93	A
3	100	A
4	100	A
5	100	A
6	100	A
Mean	**98.8**	

Table 2. Lateral spread (inches) of California bulrush plantings, west (shoreward) and east (lakeward) of vegetation marker posts, as recorded at the SW Shore, White Lake Protection (ME-12) demonstration project 1-mo postconstruction (July 2, 1996).

	Shoreline Row		Center Row		Lakeside Row	
PLOT	West	East	West	East	West	East
1	5.89	0	0	0	3.53	0
2	7.86	0	6.68	5.10	29.08	0
3	14.54	9.82	11.79	3.93	9.43	6.28
4	11.00	5.89	11.00	1.96	5.50	6.68
5	2.75	5.89	6.68	2.35	4.32	3.14
6	4.71	5.50	3.53	6.68	2.35	5.10

Table 3. Distances (in feet) between shoreline markers and vegetated marsh edge, as recorded at the SW Shore, White Lake Protection (ME-12) demonstration project, 1-mo postconstruction (July 2, 1996).

	PLOT#	Distance to Shoreline (ft)
Project Area	1	1.6
	2	1.1
	3	1.0
	4	0.0
	5	0.6
	6	0.5
Reference Area	R1	1.3
	R2	4.3
	R3	1.5
	R4	1.2
	R5	0.9
	R6	0.9