

VERMILION RIVER CUTOFF (T/V-03)
TV-03-MSPR-0298-3
PROGRESS REPORT NO. 3
for the period
August 20, 1996 to February 16, 1998

Project Status

No additional data have been collected since the previous progress report.

Project Description

The Vermilion River Cutoff project was designed to protect and stabilize the shoreline along the east bank of the Vermilion River Cutoff and the adjacent wetlands, located in Vermilion Parish, La. (figure 1). The Vermilion River Cutoff was constructed in 1944 to connect the Vermilion River and the Gulf Intracoastal Waterway (GIWW) with Vermilion Bay for navigational purposes. Comparison of the 1955 and 1985 aerial photographs indicate a shoreline erosion rate of 23.3 ft (7.1 m) per year of the west bank of the Vermilion River Cutoff, assuming a constant annual erosion rate (U. S. Army Corps of Engineers and Louisiana Department of Nat. Res. 1991). Erosion on the east bank threatens to breach the land bridge between the Vermilion River Cutoff and Onion Lake. In February 1996, a 6,520-ft (1,987 m) rock breakwater was constructed parallel to and intermittently connected to the bank of the Vermilion River Cutoff (figure 2).

The project objectives are to maintain and protect approximately 54 acres (22.0 ha) of brackish marsh along the eastern side of the Vermilion River Cutoff and to prevent the Vermilion River Cutoff from widening into adjacent marshes and interior lakes. The specific goal of the project is to decrease the rate of shoreline erosion along the east bank of the Vermilion River Cutoff, adjacent to Onion Lake, through the use of a rock breakwater (figure 1).

Monitoring Design

Near-vertical, color-infrared aerial photographs (1:12,000 scale) were taken preconstruction and are scheduled 3 times postconstruction at year 2, year 9, and year 17 to determine vegetated/non-vegetated areas within the project area over time and whether the project is successful at retarding shoreline erosion. Aerial photographs will be scanned, mosaicked, and georectified by National

Wetlands Research Center (NWRC) personnel according to the standard operating procedure described in Steyer et al. (1995).

Continuous differential GPS data were collected at the mean high water line along the original shoreline adjacent to the breakwater (figure 3) in September 1995. The shoreline position will be measured every 3 yr to calculate shoreline changes and movement over time. Paired t-tests or analysis of variance (ANOVA) will be used to analyze shoreline changes over the postconstruction period. In addition, shoreline position will be compared to historical data sets available in digitized format for 1956, 1978, and 1988.

Results/Discussion

Only baseline data have been collected at this time.

Near-vertical, color-infrared photographs (1:12,000) were taken in 1993 and will be taken again in February 1998. The photographs were checked for flight accuracy, color correctness, and clarity. The duplicate photographs were prepared for scanning and analysis, and the original film was archived. A digital file with 300 pixels-per-inch resolution was created from the photographs. Using PCI and ERDAS Imagine, image processing software, the photography was mosaicked and used for basemap production. Global positioning system (GPS) points were collected in the field to georeference the basemap to a Universal Transverse Mercator (UTM) coordinate system. The resulting preconstruction map (map i.d. #97-2-030) was then analyzed using ERDAS Imagine, a geographic information system (GIS). Using the GIS classification, it was determined that when the photographs were taken, the project area consisted of approximately 145.8 acres (59.0 ha) of land and 38.1 acres (15.4 ha) of open water, a land/water ratio of 3.83:1.

The shoreline surveys are to be repeated in February 1999, after which time two data sets will be available for analysis and interpretation.

References

- Steyer, G. D., R. C. Raynie, D. L. Steller, D. Fuller and E. Swenson 1995. Quality management plan for Coastal Wetlands Planning, Protection, and Restoration Act monitoring program. Open-file series no. 95-01. Baton Rouge: Louisiana Department of Natural Resources, Coastal Restoration Division.
- U.S. Army Corps of Engineers (USACE) 1996. Vermilion River Cutoff (T/V-03) project plan. Data from as-built surveys recorded during project construction. New Orleans, La.: USACE district office.

U.S. Army Corps of Engineers (USACE) and Louisiana Department of Natural Resources (LDNR), Coastal Restoration Division 1991. Vermilion River Cutoff (T/V-03), Candidate Project Information Sheet for Wetland Value Assessment. Baton Rouge: LDNR, Coastal Restoration Division. 21 pp.

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Construction Start:	January 1, 1996	
Construction End:	February 16, 1996	

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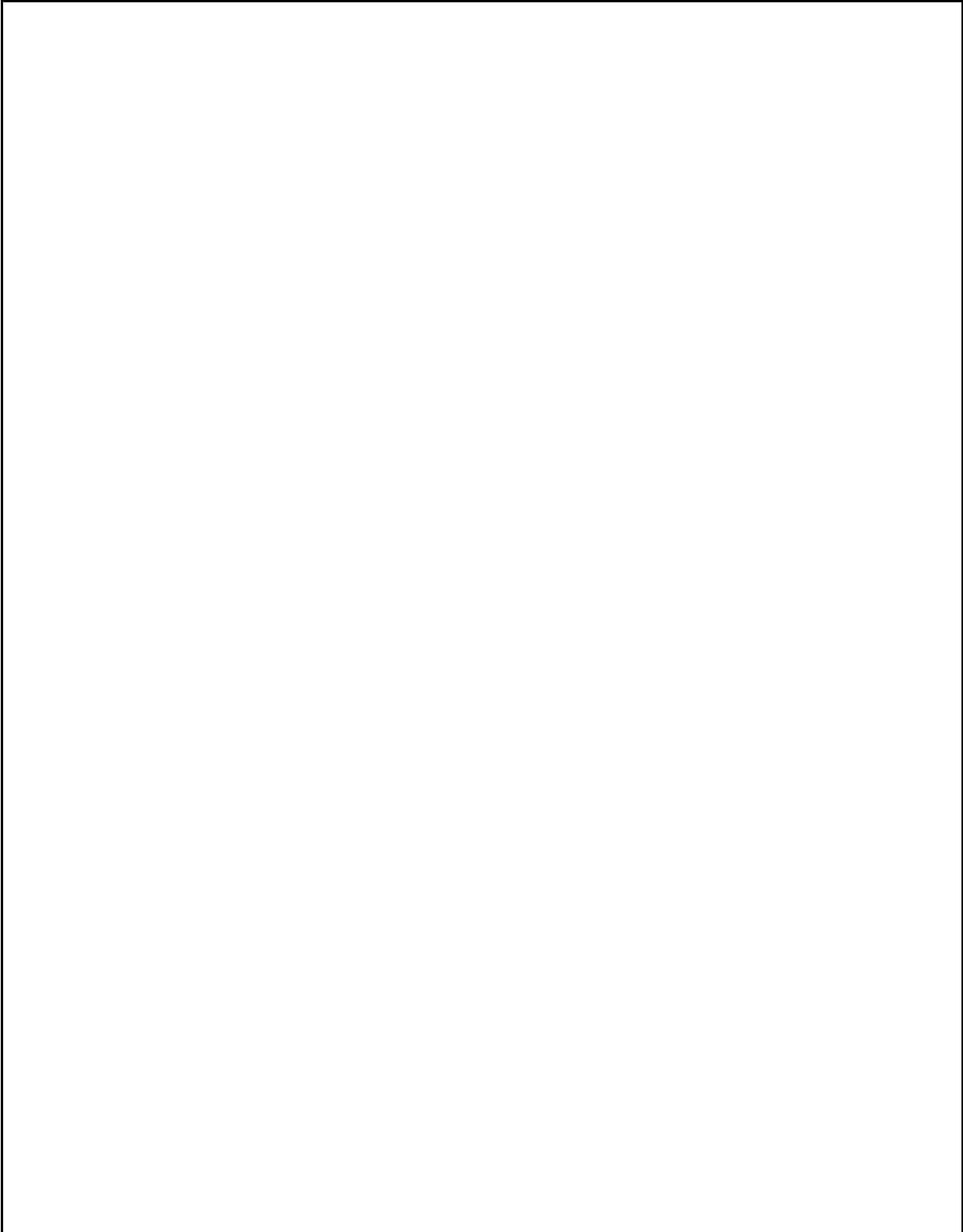


Figure 1. Vermilion River Cutoff (T/V-03) shoreline protection project area.

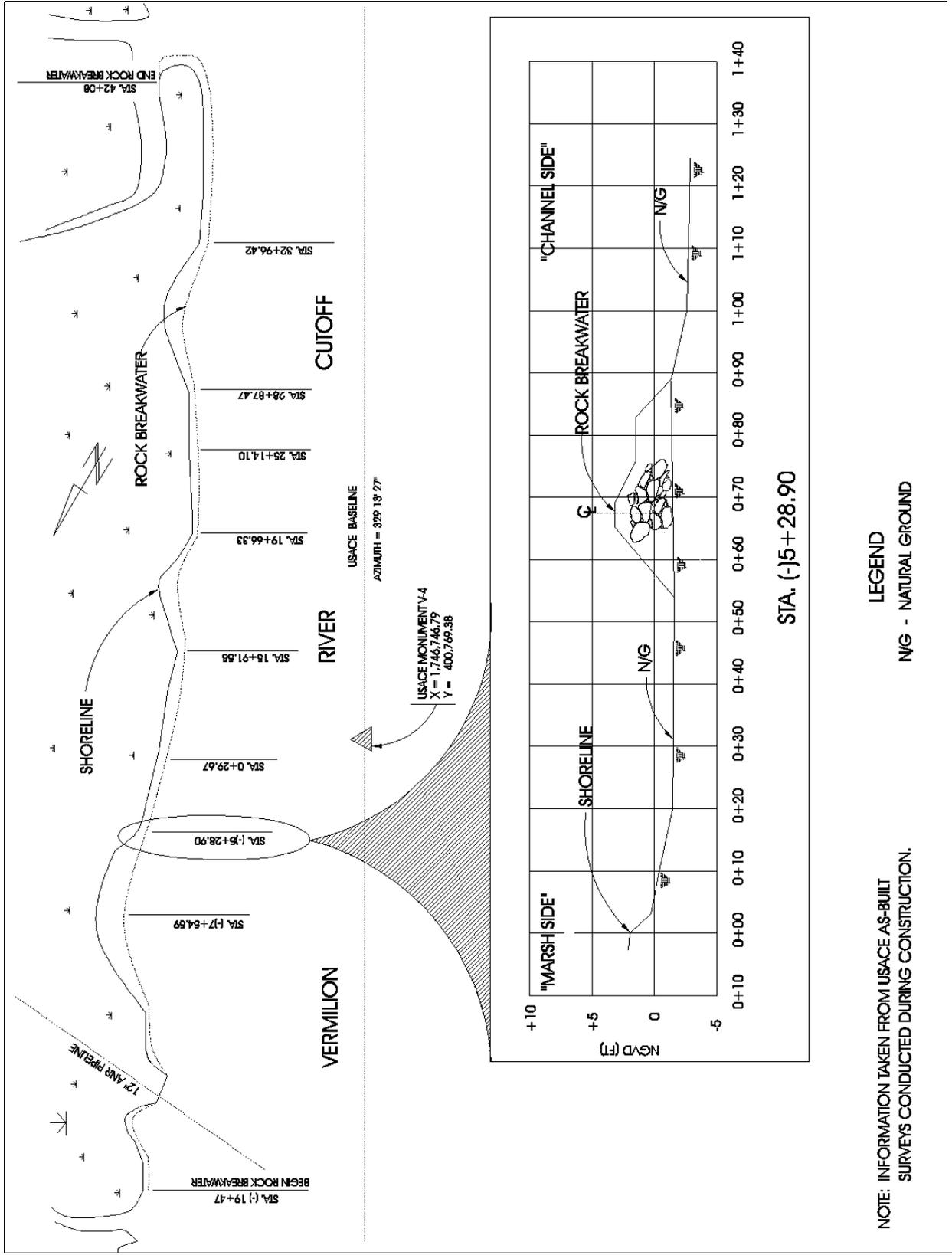


Figure 2. Plan and cross section showing location and elevation profile of station (-)5+28.90 in as-built survey (data from USACE 1996).

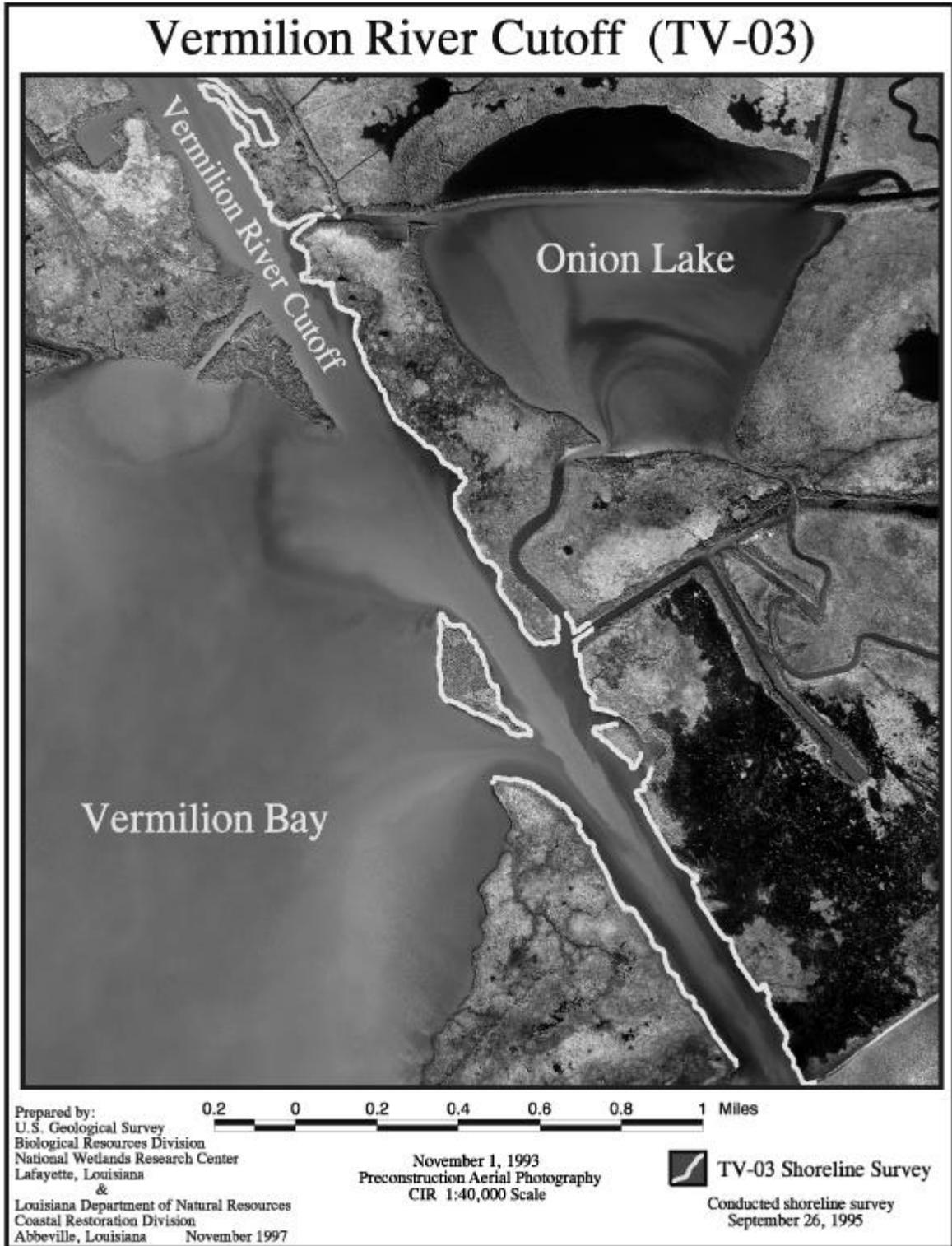


Figure 3. Location of baseline survey of Vermilion River Cutoff (T/V-03) project and surrounding shoreline.

