



## LETTER OF TRANSMITTAL

DATE: September 2, 2005

- TO: Mr. Elisadro Leos, RPLS, LSLS Texas General Land Office 1700 N. Congress Avenue, Room 131 Austin, Texas 78701
- FROM: William E. Merten, RPLS, LSLS
- RE: Clear Lake Shores, Texas

GBI Job #: 052501

Transmitted herewith:

One (1) Original Mylar Survey of Jarboe Bayou One (1) Original Surveyors Report

If you should have any questions, please do not hesitate to contact our office at 713.995.1306

Enclosures

EXAS GENERAL LAND OFFICE
EXAS GENERAL LAND EXAS GENERAL LAND Art. 33.136, Natural Resources Code Small Format Co. GALVESTON, Sketch No. 364 D. J. H.
Co. <u>GALVESTON</u> , <u>SNEED</u> , J. H.
File Date 12-29-2005_ by

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## SURVEYORS REPORT SURVEY OF THE LINE OF MEAN HIGHER HIGH WATER ON JARBOE BAYOU ALONG A PORTION OF THE M. MULDOON TWO LEAGUE GRANT CITY OF CLEAR LAKE SHORES, GALVESTON COUNTY, TEXAS

At the request of the City of Clear Lake Shores and in my capacity as a Licensed State Land Surveyor in Texas, I have determined the line of Mean Higher High Water for a portion of Jarboe Bayou lying east of Clear Lake Road in the M. Muldoon Two League Grant, Abstract Number 18, in the City of Clear Lake Shores, Galveston County, Texas. This survey was performed as per the requirements outlined in the Coastal Public Lands Management Act of 1973, as amended, Chapter 33, Natural Resources Code, and specifically per Section 33.136, Natural Resources Code, "Property Rights: Preservation of Littoral Rights".

The purpose of this survey was to evidence "...the location of the shoreline in the area depicted in this survey as that shoreline existed before commencement of erosion response activity..."(Section 33.136(b), Natural Resources Code).

Title to the M. Muldoon Two League Grant was received from the Mexican Government on December 15, 1831 and Jarboe Bayou flows from east to west through the north portion of the grant. Jarboe Bayou joins Clear Lake to the west of the project area and is tidally influenced.

In the case of Humble Oil & Refining Co. vs. Sun Oil Co. (190 F 2d 191), the court held that "grants issued by the King of Spain and the Mexican State before the adoption of common law in Texas, the boundary between sea and upland must be determined in accordance with principals announced in Las Siete Partidas, the basic law of Spain and Mexico which defines "shore" as all ground covered with water at high tide during the whole year, whether in winter or summer."

In a decision by the Texas Supreme Court in the case of Luttes vs. State (324 SW 2nd 167, on remand 328 SW 2nd 920) it was found that the littoral boundaries for civil law grants differs from the boundaries of common law grants. The court states that for civil law grants (grants by Spain and Mexico) the boundary is the line of Mean Higher High Water (MHHW) and for common law grants (grants made by the Republic and State of Texas) the boundary is the line of Mean Higher High Water is the line of Mean Higher High Water (MHHW) and for common law grants (grants made by the Republic and State of Texas) the boundary is the line of Mean High Water (MHW). Therefore, the littoral boundary within the M. Muldoon Two League Grant, a Mexican Grant, will be the line of Mean Higher High Water.

The Luttes case defined Mean Higher High Water as a tidal datum that is the average of the higher of the two daily tides observed over a specific 19 year period (epoch) and Mean High Water as a tidal datum that is the average of all high tides over a specific 19 year period (epoch). Tides being defined as the regular and predictable rise and fall in sea level due to the gravitational pull of the sun and moon. Also, sea levels are influenced by weather conditions, geographical location and topography of the

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coastline. The combination of these conditions can result in a wide variation in the elevation of the tidal datum from location to location.

Tide gauges along the Texas coastline are installed, operated and maintained by a joint effort involving the National Oceanic and Atmospheric Administration (NOAA), the Conrad Blucher Institute (CBI) and Lamar University. Tidal datum's, benchmarks and gauge readings are published and available from NOAA and CBI.

Clear Lake Shores is located in the general vicinity of the Clear Lake Tide Gauge, a secondary gauge referenced to the Galveston Pier 21 Tide Gauge, a primary gauge in use since 1908. Recently, NOAA has adopted new procedures to compute accepted tidal datum's in the Galveston area based on more recent observations. This procedural change is due to the rise in sea level in the Galveston area, being over 0.02 feet per year, which far exceeds the U.S. average rise of 0.005 feet per year. Currently the published tidal datum for the two gauges is based on the 19-year epoch from 1983 to 2001. Due to this relatively rapid change in sea level I felt it was necessary to compute data on a more current epoch in lieu of using the published datum's. A new tidal datum for the Galveston Pier 21 Tide Gauge was calculated for the 19-year epoch ending in March, 2004 and using the standard method, the Clear Lake Point Tide Gauge was adjusted to this same epoch.

During the month of April, 2004, a site staff gauge was installed and observed simultaneously with the Clear Lake Tide Gauge for eight high tide cycles. These reading were compared to the adjusted Clear Lake Tide Gauge using the amplitude ratio method resulting in a calculated elevation for mean higher high water, mean high water, mean low water and mean lower low water at the site staff gauge. These reading were updated to current elevation using readings from the Clear Lake Tide Gauge through May, 2005.

The project site is along approximately 550 varas of the northerly bank and 440 varas of Jarboe Bayou through Clear Lake Shores and is located generally east of Clear Lake Road to west of Bayou Lane on the north and northwest of FM 2094 on the south. This area of Jarboe Bayou is an area of stable banks having rip-rap protection over a portion of the banks, and several wooden bulkheads have been constructed.

On July 8, 2005, points were located on the line of Mean Higher High Water along the Jarboe Bayou for the entire project length. These points were incorporated into surveyed meanders delineating the littoral boundary between the bed of Jarboe Bayou and the privately owned uplands.

The surveyed meander line was tied to the Texas Coordinate System of 1983, South Central Zone using NGS Monument "HGCSD 53" for reference. The scale factor used for this project is 0.99986940.

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To the best of my knowledge no artificial fill or development, other than previously stated, that would cause alteration to the line of mean higher high water, has occurred within the area surveyed.

A plat showing the results of this survey was prepared and accompanies this report.

Respectfully submitted,

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