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WARREN & SONS INC. ENGINEERING • SURVEYING • DRAFTING 723 NORTH UPPER BROADWAY, SUITE 201 P.O. BOX 2292 CORPUS CHRISTI, TEXAS 78403-2292 PHONE 512 884-5302 Filed March 4

GARRY MAURO, Com'r By <u>Douglas Howard</u>

February 28, 1994

Mr. Ben Thompson, Director of Surveying Texas General Land Office 1700 N. Congress Avenue Stephen F. Austin Bldg. Austin, Texas 78701

Re: Laguna Madre Shore Boundary

Dear Sir:

I am herewith submitting to you the results of a survey of the shore boundary of a certain 52.22 acre tract of land fronting on the western shore of Padre Island and located in Tovar Section No. 1 in Kleberg County, as shown on the enclosed map of the tract.

I have closely followed your guidelines set out in your "COASTAL PUBLIC LAND BOUNDARIES" bulletin.

I have worked with David Pyle, R.P.L.S. No. 4700, on this project and we have also conferred wit Dr. Gary Jefferies and Dr. Patrick Micshaud of the Conrad Blucher Institute concerning the operation of the Packery Channel Tide Gauge and the South Bird Island Tide Gauge.

I did also confer with James R. Hubbard, Chief, Tidal Datum Quality Assurance Section of N.O.A.A. concerning the proper control station to use for the latest 19 year Epoch. Mr. Hubbard designated the Rockport station with a 1960-1978 Epoch.

Dr. Jefferies, as I understand him, does not feel the 1960-1978 Epoch truly reflects the rising incidence of the sea level at this period of time, some 16 years later.

Dr. Jefferies seems to feel the Packery Channel Tide Station would be the best to establish the Mean Higher High Water level due to it's proximity and the fact that this station has been in operation nearly six years whereas the South Bird Island Station has been in operation approximately 3 years.

I had an occasion to confer with Milton Rutstien in 1988 concerning the Mean High Water in Corpus Chriti Bay. In this discussion he told me that the Tide Gauge at Port Isabel did have a 0.21 foot rise in the water level in the latest Epoch which was 1960-1978, the earlier Epoch being 1941-1959.

I mention this since Mr. Hubbard in his 1988 mentioned that NOAA had computed a value of 1.0 feet above NGVD for Corpus Christi (Latitude 27° 47.6' N, Longitude 97° 23.4' W) based on the 1960-1978 Epoch. this seems to indicate that some 16 years later we could expect a rise in the water level in the vicinity of 0.2 foot, thus we could expect to find a NGVD value of 1.2 feet at the given Latitude and Longitude at the present date.

David Pyle and I have used his level control based on NGVD to establish bench marks in the vicinity of the shoreline of the subject 52.22 acre tract that included a loop to the tidal bench marks at Packery Channel giving us a direct relationship to the Packery Channel Gauge readings.

I have many enclosures including the readings obtained from the Conrad Blucher Institute for Packery Channel and South Bird Island Tide Gauges, the readings of the subordinate station at the shoreline site, the graphs of all of these readings in the same time frame, copies of the water transfer calculations you had requested from both the Packery Channel Tide Gauge and the South Bird Island Tide Gauge as control stations using the Cole 1981 Amplitude Ratio Method.

You will notice from the graphs that the rise and fall of the water level at the subordinate station more nearly conforms to that of the South Bird Island station which would give a lower elevation of 1.28 feet NGVD for the Mean Higher High Water (MHHW) than the elevation of 1.38 NGVD calculated based on the Packery Channel Station.

We have chosen to use the 1.38 elevation because it more nearly conforms to the vegetation line along the shore of the subject 52.22 acre tract of our concern.

The uplands of Padre Island in this area have a gentle rise from the shore covered thickly with upland grasses whereas along the vegetation line are found salt grass and succulents such as grow in the wetlands. There are of course some wetlands within the upland area of a higher elevation than that of the MHHW contour except at the mouth of a narrow drain entering the Laguna Madre. Offshore from this tract lies an island not included in within the bounds of the subject 52.22 acres whose landward connection to Padre Island lies below the level of the MHHW contour.

David Pyle has prepared a map of the 52.22 acre tract, which will bear my seal and signature, showing the entire Tovar Section 1, whose northeast line is the Nueces-Kleberg County line. We used the information I now posses of the Sun Oil Company resurvey of the J.S. Boyles survey of Padre Island to compare his meanders with the present meanders based on the call for von Blucher's Nueces-Kleberg County line. We found the county line markers shown on this map to lie in very close proximity to this line which is recognized as the north line of Tovar Section 1.

There is considerable fill on the uplands beginning at the north line of Tovar Section 1, running northerly along the shore. This point is some 2000 feet above (north of) our subject 52.22 acre tract. I understand an arrangement was made with the state as to the existence of this fill and some visible dredged channels. I would presume some shoreline was established which would likely conform to the pattern that we find.

I would also like to point out that David observed in his readings taken at the subordinate station, located at the site, that prior to each peak of the high tide there did occur a lower high tide peak. the difference was only 0.05 foot but it was a regular occurrence with each high tide. This phenomenon seems to conform to the description of a double tide as described in the Tide and Current Glossary, Special Publication No. 228 Revised (1949) Edition.

The City of Corpus Christi is being pressed to acquire this tract soon to avoid mitigation fines. We have, because of this, limited our enclosures to copies of our source information of a quality less than would be suitable for court presentation. Should you need this quality we will be glad to prepare the displays.

I want to thank you for your kind assistance in defining the specific objectives necessary for us to resolve in order to gain approval from the General Land Office of our delineation of the shore boundary of the subject 52.22 acre tract.

We did also received considerable assistance from the staff of the Conrad Blucher Institute and the gentlemen in the Tidal Datum Section of NOAA.

File No. KId. SK. 12 Kleberg County Filed For Information Only Filed March 4 19 94 GARRY MAURO, Com'r By Douglis Howard

Sincerely,

1465, L.S.L.S



Stephen F. Austin Building 1700 North Congress Avenue Austin, Texas 78701-1495 (512) 463-5001

C. B. Thomson Director of Surveying Asset Management Division (512) 463-5212 Fax (512) 463-5098

March 7, 1994

Mr. Harry M. Warren, Jr. Warren & Sons, Inc. P. O. Box 2292 Corpus Christi, Texas 78403-2922

Re: A 52.22 acre tract in the Tovar Section No. 1 of the Subdivision of the Estate of Jose Maria Tovar on Padre Island in Kleberg County.

Dear Mr. Warren:

Your plat of the above referenced tract dated February 28, 1994, together with supporting documentation, has been accepted for filing in the records of the General Land Office as Kleberg County Rolled Sketch No. 12.

If this office can be of further assistance to you, please let me know.

Sincerely,

C. B. Thomson Director, Surveying Division

CBT/jak

cc: David Pyle

