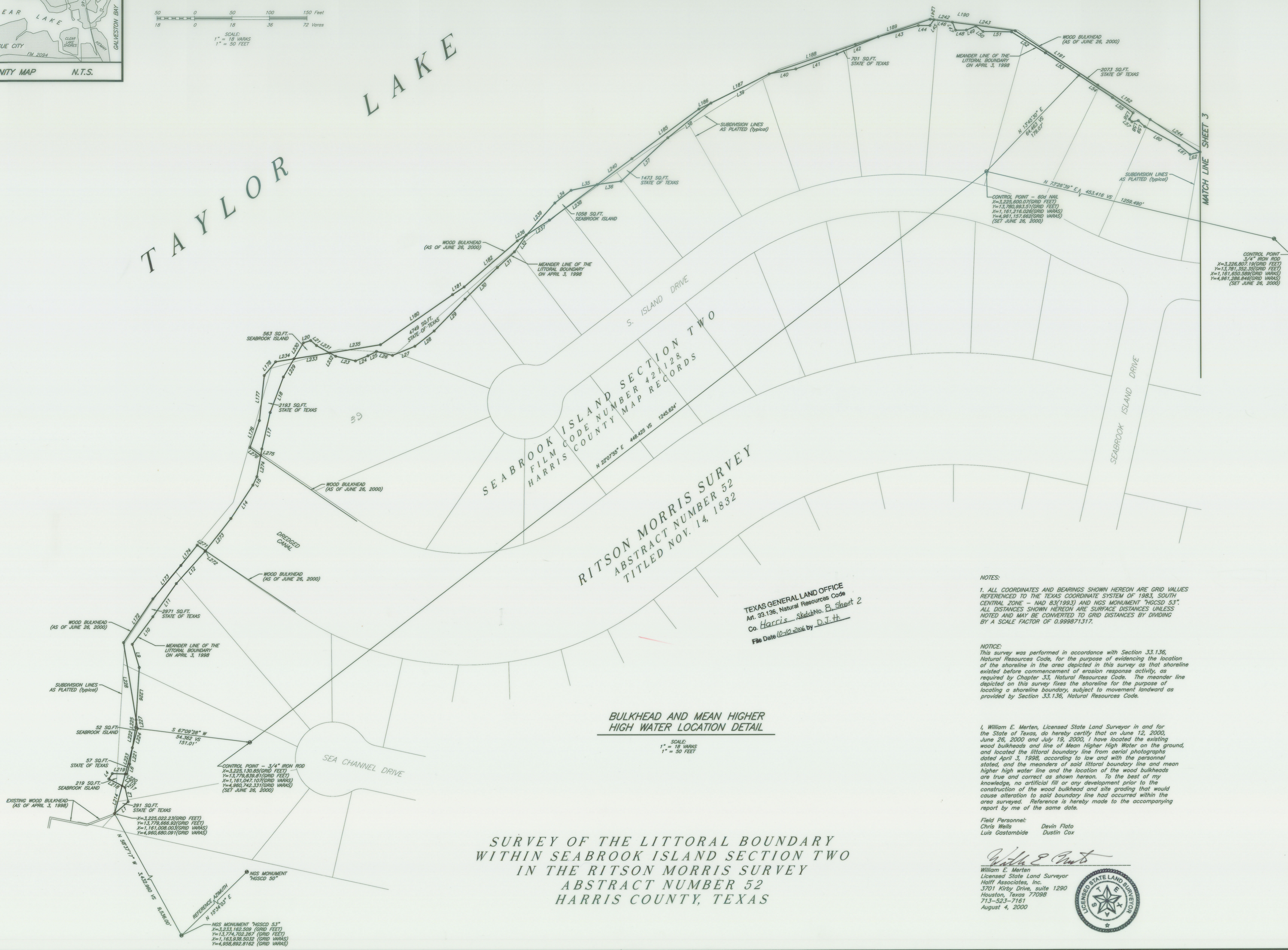


# TAYLOR LAKE



LINE	BEARING	DISTANCE FEET	DISTANCE VARAS
SEE SHEET 1 OF 3 FOR LINES L1 THRU L169			
L170	N 14°57'14" W	118.30'	42.588
L171	N 39°14'09" W	116.97'	42.111
L172	N 03°45'00" E	70.54'	25.394
L173	N 09°59'46" E	58.54'	21.075
L174	N 08°17'35" E	34.85'	12.547
L175	N 01°44'36" W	148.75'	53.350
L176	N 10°49'47" W	38.44'	13.840
L177	N 23°49'52" W	60.62'	21.824
L178	N 09°16'00" E	23.64'	8.509
L179	N 50°47'36" E	141.88'	51.076
L180	N 25°10'16" E	117.26'	42.213
L181	N 26°36'54" E	18.48'	6.654
L182	N 18°55'33" E	94.07'	33.867
L183	N 27°07'17" E	51.06'	18.302
L184	N 23°12'08" E	137.78'	49.599
L185	N 23°18'03" E	111.43'	40.115
L186	N 33°17'08" E	18.04'	6.494
L187	N 33°17'08" E	86.75'	31.230
L188	N 41°07'12" E	122.13'	43.965
L189	N 41°22'27" E	105.37'	37.932
L190	N 67°46'49" E	114.67'	41.282
L191	S 86°10'06" E	132.57'	47.224
L192	S 86°08'30" E	83.83'	30.214
L193	S 86°31'14" E	104.02'	37.447
L194	N 41°07'05" E	92.86'	33.429
L195	N 40°35'05" E	106.05'	38.180
L196	N 20°49'52" E	29.76'	10.715
L197	N 50°19'02" E	105.34'	37.924
L198	N 50°14'39" E	87.31'	31.432
L199	N 50°18'43" E	132.86'	47.830
L200	N 63°09'10" E	210.21'	75.677
L201	N 79°05'30" E	97.66'	35.156
L202	S 89°50'19" E	124.53'	44.830
L203	S 89°30'46" E	87.79'	31.603
L204	S 79°11'07" E	42.31'	15.231
L205	S 61°03'20" E	64.10'	23.075
L206	S 34°57'03" E	59.62'	21.464
L207	S 13°42'38" E	92.90'	33.445
L208	S 08°47'18" W	63.52'	22.868
L209	S 08°50'43" W	112.39'	40.461
L210	S 08°39'02" E	78.06'	28.102
L211	S 11°17'07" E	69.91'	25.168
L212	S 02°45'39" E	53.68'	19.324
L213	S 29°18'44" W	55.29'	19.903
L214	N 14°57'14" W	38.54'	13.873
L215	N 14°57'14" W	16.40'	5.904
L217	S 88°21'51" W	4.42'	1.590
L218	S 88°21'51" W	19.63'	7.065
L219	N 62°27'51" E	17.02'	6.126
L220	N 62°27'51" E	2.22'	0.799
L221	N 20°51'14" W	22.21'	7.994
L222	N 20°51'14" W	27.84'	10.021
L223	N 14°57'14" W	36.66'	13.178
L224	N 14°57'14" W	26.76'	9.633
L225	N 26°31'58" W	10.12'	3.645
L226	N 26°31'58" W	70.30'	25.307
L227	N 39°14'09" W	11.09'	4.284
L228	N 39°14'09" W	105.08'	37.827
L229	N 00°12'53" E	28.15'	10.134
L230	N 00°12'53" E	24.66'	8.878
L231	N 89°15'20" E	20.42'	7.353
L232	N 89°15'20" E	8.89'	3.235
L233	N 50°47'36" E	48.50'	17.093
L234	N 50°47'36" E	24.97'	8.988
L235	N 50°47'36" E	68.41'	24.629
L236	N 27°07'17" E	14.122'	5.084
L237	N 27°07'17" E	36.94'	13.298
L238	N 23°12'08" E	79.64'	28.671
L239	N 11°37'08" E	57.69'	20.767
L240	N 23°12'08" E	58.13'	20.928
L241	N 67°46'49" E	5.00'	1.800
L242	N 67°46'49" E	25.00'	9.000
L243	N 67°46'49" E	84.67'	30.482
L244	S 88°31'14" E	79.65'	28.674

TEXAS GENERAL LAND OFFICE  
 Art. 93.136, Natural Resources Code  
 Co. Harris, Sketch No. 8, Sheet 2  
 File Date 02-12-2006 by D.J.H.

NOTES:  
 1. ALL COORDINATES AND BEARINGS SHOWN HEREON ARE GRID VALUES REFERENCED TO THE TEXAS COORDINATE SYSTEM OF 1983, SOUTH CENTRAL ZONE - NAD 83(1983) AND NGS MONUMENT "HGCSD 53". ALL DISTANCES SHOWN HEREON ARE SURFACE DISTANCES UNLESS NOTED AND MAY BE CONVERTED TO GRID DISTANCES BY DIVIDING BY A SCALE FACTOR OF 0.999871317.

NOTICE:  
 This survey was performed in accordance with Section 33.136, Natural Resources Code, for the purpose of evidencing the location of the shoreline in the area depicted in this survey as that shoreline existed before commencement of erosion response activity, as required by Chapter 33, Natural Resources Code. The meander line depicted on this survey fixes the shoreline for the purpose of locating a shoreline boundary subject to movement landward as provided by Section 33.136, Natural Resources Code.

I, William E. Merten, Licensed State Land Surveyor in and for the State of Texas, do hereby certify that on June 12, 2000, June 26, 2000 and July 19, 2000, I have located the existing wood bulkheads and line of Mean Higher High Water on the ground, and located the littoral boundary line from aerial photographs dated April 3, 1998, according to law and with the personal stated, and the meanders of said littoral boundary line and mean higher high water line and the location of the wood bulkheads are true and correct as shown hereon. To the best of my knowledge, no artificial fill or any development prior to the construction of the wood bulkhead and site grading that would cause alteration to said boundary line had occurred within the area surveyed. Reference is hereby made to the accompanying report by me of the same date.

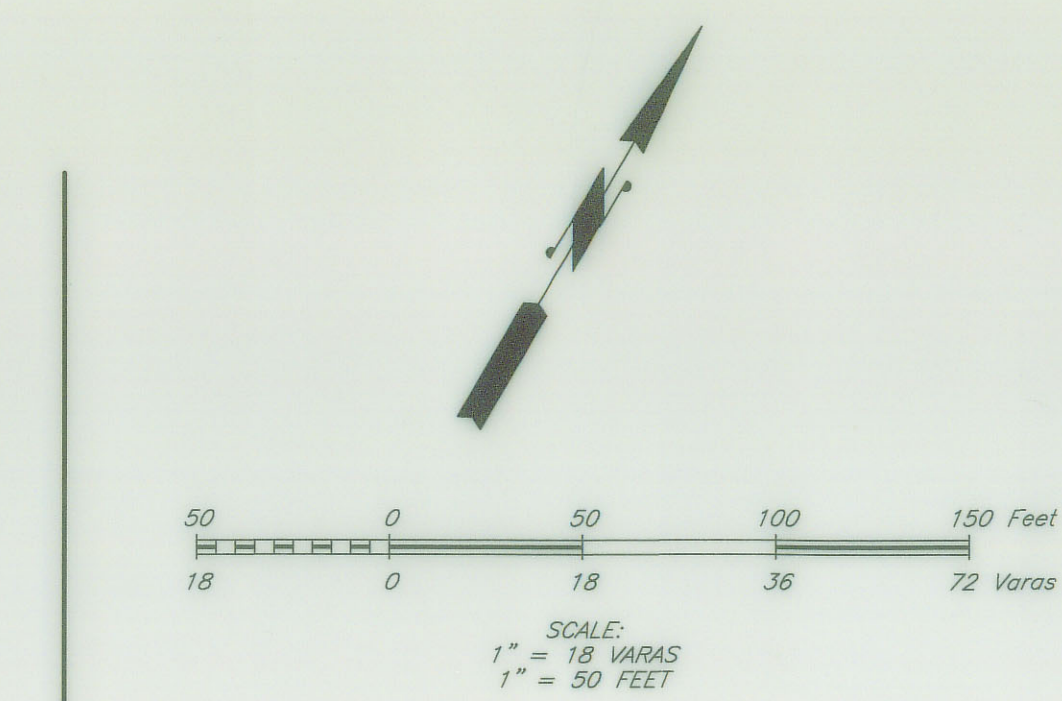
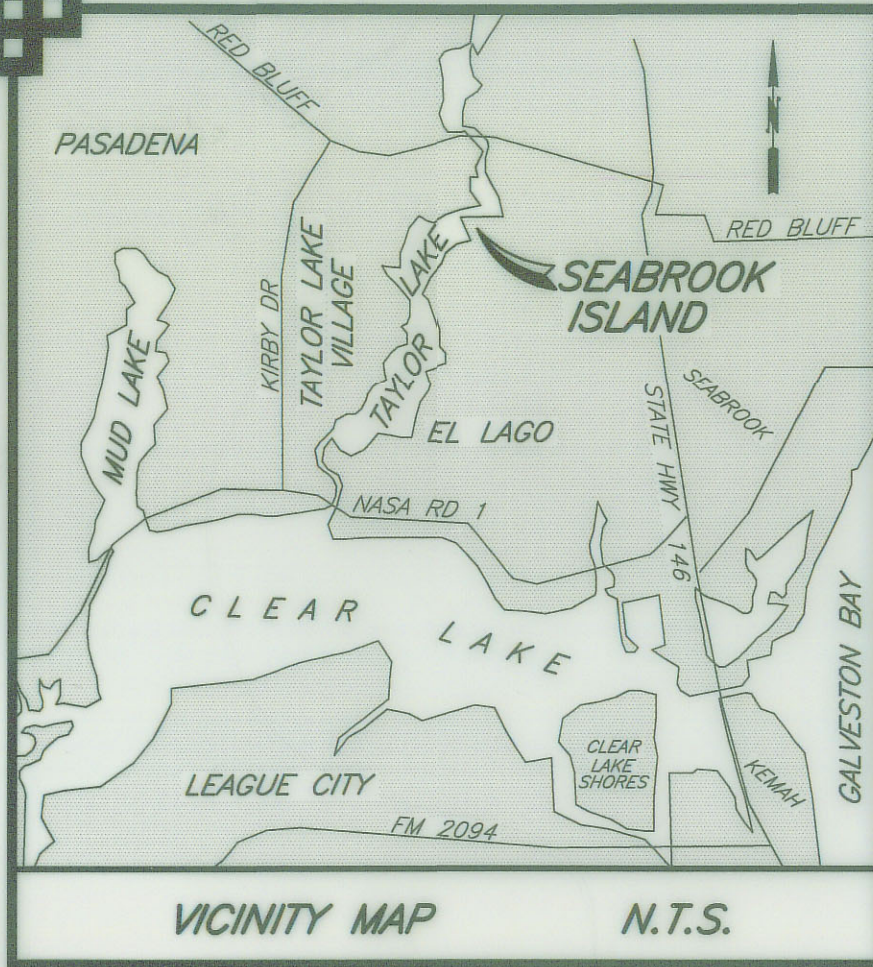
Field Personnel:  
 Chris Wells Devin Flato  
 Luis Gastambide Dustin Cox

*William E. Merten*  
 William E. Merten  
 Licensed State Land Surveyor  
 Half Associates, Inc.  
 3701 Kirby Drive, suite 1290  
 Houston, Texas 77098  
 713-523-7161  
 August 4, 2000

BULKHEAD AND MEAN HIGHER HIGH WATER LOCATION DETAIL

SCALE:  
 1" = 10 VARAS  
 1" = 50 FEET

## SURVEY OF THE LITTORAL BOUNDARY WITHIN SEABROOK ISLAND SECTION TWO IN THE RITSON MORRIS SURVEY ABSTRACT NUMBER 52 HARRIS COUNTY, TEXAS



SURVEY OF THE LITTORAL BOUNDARY  
WITHIN SEABROOK ISLAND SECTION TWO  
IN THE RITSON MORRIS SURVEY  
ABSTRACT NUMBER 52  
HARRIS COUNTY, TEXAS

TAYLOR LAKE



LINE	BEARING	DISTANCE FEET	DISTANCE VARAS
L245	S 86°31'14" E	24.37'	8.773
L246	N 41°07'05" E	15.08'	5.429
L247	N 41°07'05" E	77.78'	26.001
L248	N 63°26'30" E	14.81'	5.332
L249	N 63°26'30" E	36.07'	12.985
L250	N 63°09'10" E	133.03'	47.889
L251	N 63°09'10" E	40.29'	14.505
L252	N 63°09'10" E	36.90'	13.263
L253	N 39°46'39" E	4.32'	1.556
L254	N 39°46'39" E	22.68'	8.166
L255	N 87°57'45" E	21.45'	7.721
L256	N 87°57'45" E	6.50'	2.339
L257	N 79°05'30" E	14.18'	5.104
L258	N 79°05'30" E	53.58'	19.290
L259	N 79°05'30" E	29.89'	10.761
L260	N 51°10'40" E	24.61'	8.860
L261	N 51°10'40" E	5.56'	2.003
L262	S 80°38'20" E	25.98'	9.352
L263	S 80°38'20" E	6.91'	2.487
L264	S 80°00'14" E	34.81'	12.733
L265	S 80°00'14" E	11.71'	4.215
L266	S 61°03'20" E	16.28'	5.862
L267	S 61°03'20" E	47.81'	17.213
L268	S 60°41'16" E	3.52'	1.266
L269	S 32°55'05" W	55.40'	19.943
L270	S 32°55'05" W	8.00'	2.880
L271	S 89°39'59" E	13.48'	4.852
L272	N 08°00'08" E	0.96'	0.346
L273	N 08°00'08" E	34.94'	12.779
L274	N 20°04'14" W	28.99'	10.435
L275	N 20°04'14" W	8.03'	3.249
L276	N 83°39'44" W	17.84'	6.422
L277	S 61°51'36" E	12.33'	4.437
L278	S 02°45'56" E	13.70'	4.934
L279	S 80°41'53" E	7.99'	2.770
L280	N 81°17'16" E	10.23'	3.684
L281	N 31°56'26" E	11.56'	4.163
L282	N 30°09'59" E	13.90'	5.002
L283	N 47°17'28" E	15.67'	5.643
L284	N 42°57'35" W	19.42'	6.991
L285	N 27°12'05" W	11.83'	4.258
L286	N 28°57'32" E	11.89'	4.280
L287	N 57°27'15" E	6.38'	2.297
L288	S 63°11'18" E	16.57'	5.966
L289	S 89°19'16" E	22.50'	8.098
L290	N 87°56'11" E	21.33'	7.678
L291	N 51°05'17" E	17.18'	6.184
L292	S 87°54'28" E	11.80'	4.247
L293	S 12°43'27" W	19.91'	7.167
L294	S 51°42'34" E	28.21'	10.155
L295	S 82°03'16" E	35.32'	12.715
L296	S 78°54'17" E	27.73'	9.984
L297	N 47°44'12" E	14.98'	5.395
L298	N 08°35'25" E	41.84'	15.063
L299	N 23°05'17" W	26.72'	9.619
L300	N 83°26'26" W	3.61'	1.300
L301	N 00°47'51" W	28.18'	10.145
L302	N 87°56'41" E	6.80'	2.448
L303	N 33°27'14" E	27.48'	9.891
L304	N 39°25'26" E	26.90'	9.683
L305	N 40°06'33" E	28.72'	10.340
L306	N 28°27'13" E	16.33'	5.878
L307	N 40°02'00" W	33.01'	12.085
L308	N 72°19'05" W	29.19'	10.507
L309	N 57°56'53" W	24.39'	8.781
L310	N 53°47'10" W	21.87'	7.872

ACREAGE CALCULATIONS FOR FILLED-IN STATE OF TEXAS LAND

AREA OF FILLED-IN STATE OF TEXAS LAND IN BULKHEAD AREA	- 25,022 SQUARE FEET (0.5744 ACRES)
AREA OF FILLED-IN STATE OF TEXAS LAND IN COVE AREA	- 36,983 SQUARE FEET (0.8490 ACRES)
TOTAL AREA OF FILLED-IN STATE OF TEXAS LAND	- 62,005 SQUARE FEET (1.4234 ACRES)
AREA OF PERMITTED FILLED-IN STATE OF TEXAS LAND	- 8,890 SQUARE FEET (0.2041 ACRES)
TOTAL EXCESS FILLED-IN STATE OF TEXAS LAND	- 53,115 SQUARE FEET (1.2194 ACRES)
AREA OF EXCAVATED "SEABROOK ISLAND" LAND	- 6,488 SQUARE FEET (0.1489 ACRES)

NOTES:  
1. ALL COORDINATES AND BEARINGS SHOWN HEREON ARE GRID VALUES REFERENCED TO THE TEXAS COORDINATE SYSTEM OF 1983, SOUTH CENTRAL ZONE - 14D (831993) AND NGS MONUMENT "MCSO 53". ALL DISTANCES SHOWN HEREON ARE SURFACE DISTANCES UNLESS NOTED AND MAY BE CONVERTED TO GRID DISTANCES BY DIVIDING BY A SCALE FACTOR OF 0.999871317.

NOTICE:  
This survey was performed in accordance with Section 33.136, Natural Resources Code, for the purpose of evidencing the location of the shoreline in the area depicted in this survey as that shoreline existed before commencement of erosion response activity, as required by Chapter 33, Natural Resources Code. The meander line depicted on this survey fixes the shoreline for the purpose of locating a shoreline boundary, subject to movement landward as provided by Section 33.136, Natural Resources Code.

I, William E. Merten, Licensed State Land Surveyor in and for the State of Texas, do hereby certify that on June 12, 2000, June 26, 2000 and July 19, 2000, I have located the existing wood bulkheads and line of Mean Higher High Water on the ground, and located the littoral boundary line from aerial photographs dated April 3, 1998, according to law and with the personnel stated, and the meanders of said littoral boundary line and mean higher high water line and the location of the wood bulkheads are true and correct as shown hereon. To the best of my knowledge, no artificial fill or any development prior to the construction of the wood bulkhead and site grading that would cause alteration to said boundary line had occurred within the area surveyed. Reference is made to the accompanying report by me of the same date.

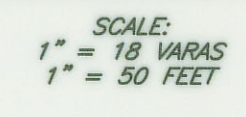
Field Personnel:  
Chris Wells Devin Flato  
Luis Castanblade Dustin Cox

William E. Merten  
Licensed State Land Surveyor  
Hoff Associates, Inc.  
3701 Kirby Drive, suite 1290  
Houston, Texas 77098  
713-523-7161  
August 4, 2000



TEXAS GENERAL LAND OFFICE  
Art. 33.136 Natural Resources Code  
Co. Harris - State No. S. 5182-3  
File Date 10-02-2000 by J.J.H.

BULKHEAD AND MEAN HIGHER HIGH WATER LOCATION DETAIL





# Halff Associates

ENGINEERS • ARCHITECTS • SCIENTISTS  
PLANNERS • SURVEYORS

3701 KIRBY DRIVE, SUITE 1290  
HOUSTON, TEXAS 77098  
(713) 523-7161  
FAX (713) 523-4373

December 1, 2000

Mr. Ben Thomson, RPLS, LSLS  
Texas General Land Office  
Surveying Division  
1700 N. Congress Avenue  
Austin, Texas 78701

Re: Seabrook Island Property, Taylor Lake, Seabrook, Texas

Dear Ben,

Enclosed please find the original and 1 blueline copy of the survey of the above referenced site to be filed in the records of the General Land Office in accordance with the requirements of Section 33.136 of the Natural Resource Code "Property Rights: Preservation of Littoral Rights". Also enclosed is the original and 1 copy of the accompanying Surveyors Report to be filed with the Survey.

If you have any questions or need further information, please do not hesitate to give me a call.

Thank you.

Sincerely,

William E. Merten, RPLS, LSLS  
Director of Surveying - Houston

**TEXAS GENERAL LAND OFFICE**  
Art. 33.136, Natural Resources Code  
Co. Harris, Sketch No. 8, Sheet 4  
File Date 10-10-2000 by D. J. H.

Cc: Mr. Tony Williams, GLO Asset Inspections  
Mr. John Neal, GLO LaPorte Office  
Mr. Jack Carmody, Carmody Investments

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ARCHITECTURE • LANDSCAPE ARCHITECTURE • PLANNING

counter 83090

SURVEYORS REPORT  
SURVEY OF THE LITTORAL BOUNDARY  
WITHIN SEABROOK ISLAND SECTION TWO  
IN THE RITSON MORRIS SURVEY, ABSTRACT NUMBER 52  
HARRIS COUNTY, TEXAS

At the request of Taylor Lake Development and in my capacity as a Licensed State Land Surveyor in and for the State of Texas, I have determined the littoral boundary lines between State owned seabed and private upland owners both prior to and after development in a residential subdivision known as Seabrook Island Section Two on Taylor Lake in southeast Harris 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 project site is located on Taylor Lake in the Ritson Morris Survey, Abstract Number 52, a Mexican Title granted on November 14, 1832. Taylor Lake a tidally influenced lake is completely surrounded by the Morris survey and flows into Clear Lake. The project site has approximately 6000 linear feet of lake frontage. To enhance the development a canal was dredged across the private land forming an "island" thus creating additional "waterfront" residential lots. Wood bulkheads were constructed entirely around the created island and along the dredged canal. Dirt fill was placed throughout the site to backfill the bulkheads and to build up pad sites in and around the Cove area near the eastern end of the project.

This survey consisted of three objectives:

1. Location the original littoral boundary line between State owned seabed and private upland owners prior to development of the site.
2. Location of the newly constructed bulkheads in relation to the original littoral boundary determined prior to development.
3. Location of the current line of Mean Higher High Water in the Cove area in relation to the original littoral boundary determined prior to development.

The location of the littoral boundary prior to construction posed a difficult problem in that the original boundary line was destroyed by the construction effort. In a meeting on June 8, 2000, with Tony Williams, Director of Coastal Leasing Asset Inspections, and Ben Thomson, Director of Surveying, both of the General Land Office, it was agreed that the use of rectified aerial photographs of the site prior to construction was the best method to determine the original littoral boundary. After the review of various preliminary aerial photographs, it was also agreed that this site was in an area of erosion where there existed a definite cut bank defining the littoral boundary.

Using Trimble 4000 GPS Equipment and a Topcon 802 Total Station with on board Data Collection, aerial control points surrounding the project area and the newly

constructed bulkhead were located. With this aerial control, a photograph having a scale of 1" = 100' was prepared by Aerial Viewpoints. The photograph was taken on April 3, 1998, the year prior to the commencement of construction. Using the aerial photo, points along the littoral boundary were located and plotted to scale. On the survey plat, these points were incorporated into meander lines defining the littoral boundary. Along with the littoral boundary, the newly constructed bulkhead was plotted on the survey plat.

In the Cove section of the development, dirt fill had been placed in several areas creating a new shore line seaward of the original littoral boundary. The location of this new littoral boundary line was required to determine the extent of fill placed in Taylor Lake.

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 High Water (MHW). This case described that the best method of determining MHHW and MHW is to employ the use of scientific tide gauges.

The Luttes case defined MHHW 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 MHW 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 coastline. The combination of these conditions can result in a wide variation in the elevation of the tidal datum from location to location. Due to this variation, the tidal datum had to be determined at the project location. Because of the impracticality of obtaining 19 years of tide readings at a specific location, methods have been developed to correct short term observations between project site staff gauges, secondary tide gauges (gauges with more than one year but less than 19 years of observations) and a primary tide gauge (gauges with more than 19 years of observations).

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.

The project site 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 1960 to 1979, adjusted for the 5-year series from 1990 through 1994. 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 May, 2000 and using the Standard Method, the Clear Lake Tide Gauge was adjusted to this same epoch.

A site staff gauge was installed and observed simultaneously with the Clear Lake Tide Gauge for three high tide cycles. These reading were compared to the Clear Lake Tide Gauge using the Amplitude Ratio Method resulting in a calculated elevation for mean higher high water at the site staff gauge.

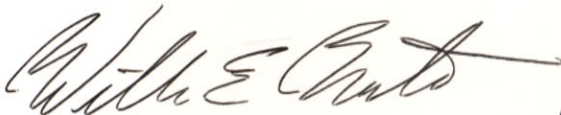
Using the calculated elevation for the site staff gauge, points were located on the natural contour line of Mean Higher High Water throughout the Cove area. These points were incorporated into surveyed meanders delineating the current littoral boundary.

All lines surveyed were tied to the Texas Coordinate System of 1983, South Central Zone – NAD 83 (1993) using NGS Monument "HGCS D 53" for reference. The scale factor used for this project is 0.999871317.

To the best of my knowledge no artificial fill or any development prior to the construction of the wood bulkheads and site grading that would cause alteration to the littoral boundaries has occurred within the area surveyed.

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

Respectfully submitted,



William E. Merten  
Licensed State Land Surveyor  
Half Associates, Inc.  
3701 Kirby Drive, Suite 1290  
Houston, Texas 77098  
713-523-7161  
August 4, 2000

