

January 14, 2007

Doug Howard Surveying Division General Land Office P.O. Box 12873 Austin, TX 78711-2873

Re: Cedar Crossing Mitigation Plan

Dear Mr. Howard:

CESI was asked by Steven Mitchell of your LaPorte field office to provide you with the LSLS survey of the Cedar Crossing Barge Terminal Project Site and proposed mitigation site. If you require anything else, please email me at <u>ryan@crouchenvironmental.com</u> or call me at 713-868-1043.

Sincerely,

Ryan Nelson Project Manager

Enclosures

TEXAS GENERAL LAND OFFICE Art. 33.136, Natural Resources Code Co. Chambers, skett No. 6, street. 1 File Date 3-31-200 8 by D. J. H.

P) 713-868-1043 • F) 713-863-7944

www.crouchenvironmental.com

SURVEYORS REPORT SURVEY OF THE LINE OF MEAN HIGHER HIGH WATER ON CEDAR BAYOU AND GALVESTON BAY ALONG A PORTION OF THE JOHN JIAMS SURVEY CHAMBERS COUNTY, TEXAS

At the request of the Crouch Environmental Services, Inc. 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 Cedar Bayou and Galveston Bay adjacent to the John Jiams Survey, Abstract Number 15, Chambers 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 John Jiams Survey was received from the Mexican Government on August 7, 1824. Cedar Bayou runs generally from north to south and lies to the west of this grant. Galveston Bay lies along the southerly boundary of this grant. The waters in this area, having a direct connection to the Gulf of Mexico, are 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 [and Republic of Texas] 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). Therefore, the littoral boundary within the John Jiams Survey, 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

TEXAS GENERAL LAND OFFICE Art. 33.136, Natural Resources Code Co. <u>Chambers</u>, <u>Skotch</u>No. <u>6</u>, <u>Sheet</u> 2 File Date <u>3.31.2008</u> by <u>D. J. H.</u>

Counter 88803

Surveyors Report Cedar Bayou – Jiams Survey Page 2 of 3

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.

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 close proximity of the Morgans Point 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 August, 2007, and using the standard method, the Morgans Point Tide Gauge was adjusted to this same epoch.

During the month of November, 2007, elevations were run directly from the Eagle Point Tide Gauge Benchmarks to the project site. The project site runs along approximately 210 varas of the easterly shore of Cedar Bayou, and 85 varas of the northerly shore of Galveston Bay. In general, the site lies at the southwest end of Oak Point Road, southwest of FM 2354 in the Tri-City Beach area of Chambers County.

On November 20, 2007 points were located on the line of Mean Higher High Water along the shoreline for the entire project length. These points were incorporated into surveyed meanders delineating the littoral boundary between the seabed of Cedar Bayou and Galveston Bay and the privately owned uplands.

As shown of the survey, there is an area that has been filled to form an earth berm leading to a concrete dock offloading facility. There exists several above ground pipelines along the berm as part of the facility. Evidence of excavation activity can be seen on various portions of the uplands, however I believe that this excavation has not altered the location of Mean Higher High Water.

The surveyed meander line was tied to the Texas Coordinate System of 1983, South Central Zone. The scale factor used for this project is 0.999884658.

TEXAS GENERAL LAND OFFICE Art. 33.136, Natural Resources Code Co. <u>Chambers</u>, <u>Staten</u> No. <u>6</u>, <u>sheat</u> 3 File Date <u>3-31-2008</u> by <u>D.J.H.</u> Surveyors Report Cedar Bayou – Jiams Survey Page 3 of 3

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,

William E. Merten Licensed State Land Surveyor Cobb Fendley & Associates 13430 Northwest Freeway, Suite 1100 Houston, Texas 77040 713-462-3242

Project No. 0702-028-01 Date: November 26, 2007



TEXAS GENERAL LAND OFFICE Art. 33.136, Natural Resources Code Co. <u>Chambers</u>, skolon No. <u>G</u>sbeet 4 File Date <u>3-31-2008</u> by <u>D.J.H</u>.



February 20, 2008

Doug Howard Surveying Division General Land Office P.O. Box 12873 Austin, TX 78711-2873

Re: Cedar Crossing Mitigation Plan

Dear Mr. Howard:

I have enclosed mylar copies of the LSLS survey performed by William Mertens on both the mitigation and project sites as requested. Thank you for your time, and if you have any other questions please call me at 713-868-1043.

Sincerely,

Ryan Nelson Project Manager

Enclosures

TEXAS GENERAL LAND OFFICE Art. 33.136, Natural Resources Code Co.<u>Chambers</u>, Skotch No. <u>6</u>, Sheet 5 File Date <u>3-31-2008</u> by <u>D. J. H.</u>



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.



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LINE	BEARING	DISTANCE FEET	DISTANCE VARAS
L1	N. 63°21'58" W	53.58'	19.287 VS
L2	N 34°09'57" W	39.10'	14.078 VS
L3	N 73°47'36" W	25.10'	9.035 VS
L4	N 05°40'22" W	23.29'	8.386 VS
L5	N 36'33'39" W	21.68'	7.805 VS
L6	N 58'33'14" W	37.43'	13.474 VS
L7	N 86'53'25" W	36.44'	13.118 VS
L8	S 86'36'53" E	62.29'	22.426 VS
L9	S 73'07'14" E	54.01'	19.443 VS
L10	S 70°33'41" E	66.36'	23.889 VS
L11	N 87'02'42" E	40.00'	14.400 VS
L12	N 77*59'07" E	40.00'	14.400 VS
L13	N 73'09'29" E	60.00'	21.600 VS
L14	N 63'31'57" E	62.94'	22.659 VS
L15	N 62°04'51" E	49.66'	17.879 VS
L16	N 56*51'47" E	52.80'	19.009 VS
L17	N 43'12'03" E	45.81'	16.490 VS
L18	N 32°25'38" E	43.26'	15.572 VS





I, William E. Merten, Licensed State Land Surveyor in and for the State of Texas, do hereby certify that on November 20, 2007, I have located the natural contour line of Mean Higher High Water on the ground, according to law and with the personnel stated, and that the meanders of said contour line are true and correct as shown hereon. To the best of my knowledge, no artificial fill or any development, other than as shown hereon, that would cause alteration to said contour line has occurred within the area surveyed. Reference is hereby made to the accompanying report by me of the same date.

Field Personnel: Steven Smith S. Meitzler Ruben Perez In William E. Merten Licensed State Land Surveyor



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	AK POINT RO	AD AT CEE	OAR BAYOL	J
Cobb Fendley Associates (713) 462-3242				
DRAWN BY:	DATE: 11/26/2007	SHEET 1	OF 1	REVISED
WEM	SCALE: 1"-50'	ER NO 19	31	
DESIGNED BY:	1 -50	1.5. 10. 13.	· •	
WFM	CHK'D BY: WEM	PROJECT NO.	0702-028-01	



CHK'D BY:

WEM

WEM

REV: 03/14/2008 AS PER COMMENTS

0702-028-01

PROJECT NO.

Counter 8

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SURVEYORS REPORT SURVEY OF THE LINE OF MEAN HIGH WATER ON CEDAR BAYOU ADJACENT TO A PORTION OF THE JOHN STEELE SURVEY, ABSTRACT NUMBER 227 CHAMBERS COUNTY, TEXAS

At the request of Brown & Gay Engineers, Inc. and in my capacity as a Licensed State Land Surveyor in Texas, I have determined the line of Mean High Water for a portion of Cedar Bayou adjacent to the John Steele Survey, Abstract Number 227, Chambers 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).

The John Steele Survey was established as a second class Headright Grant by the Republic of Texas and was surveyed on March 30, 1839 and patent was issued on February 9, 1846 by the State of Texas. Cedar Bayou, having a direct connection to the Gulf of Mexico through Galveston Bay, 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 and the Republic of Texas prior to the adoption of common law) 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 after the adoption of common law) 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 after the adoption of common law) the boundary is the line of Mean Higher High Water (MHHW).

Finally, in the case of Rudder vs. Ponder (293 SW 2nd 736) it was found that "Patent(s) issued for land...after Republic of Texas had adopted the common law of England was governed by the common law even though the land was surveyed while the Republic was under civil law rules, and the seaward boundary of the land was Mean High Water (MHW)....".

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Surveyors Report Cedar Bayou Page 2 of 3

The John Steele Survey was surveyed while Texas was a Republic in 1839 prior to the adoption of Common Law and patented after the adoption of common law, therefore, following Rudder vs. Ponder, the littoral boundary between State owned submerged land and the private ownership of the John Steele Survey will be the line of Mean 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 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.

The project site is located in the general vicinity of the Morgans Point 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 August, 2007 and using the standard method, the Morgans Point Tide Gauge was adjusted to this same epoch.

During the month of October, 2007, a site staff gauge was installed and observed simultaneously with the Morgans Point Tide Gauge for six high tide cycles. These reading were compared to the adjusted Morgans Point 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.

The project site is along approximately 1,125 linear feet of the easterly shoreline of Cedar Bayou against property owned in part by J. Jennings Investments, L.P. and by Johnnie and Rosemary Jennings, with the southerly end of the project located at the bayou crossing of State

> TEXAS GENERAL LAND OFFICE Art. 33.135, Natural Resources Code Co. Chambers, SketchNo. 6, sht.47 File Date 3-31-2008 by D. J. H.

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Highway 99. This portion of Cedar Bayou is an area of slow moving water with no wave action and relatively high banks on the shoreline.

Using the calculated elevation for the site staff gauge, points were located on the natural contour line of Mean High Water along the east shoreline of Cedar Bayou for the entire project length. These points were incorporated into surveyed meanders delineating the littoral boundary between the state owned seabed and privately owned uplands. The surveyed meander line was tied to the Texas Coordinate System of 1983, South Central Zone – NAD 83. The scale factor used for this project is 0.99988930.

The Bayou in this area appears to be in its natural state with no modification to the alignment or "channelization" by artificial means. There exists an entrance to an "upland" pond which has been cut in to the bank and protected by small areas of rip-rap. To the best of my knowledge no artificial fill or development, other than previously stated, that would cause alteration to the line of Mean High Water has occurred within the area surveyed.

Respectfully submitted,

William E. Merten Licensed State Land Surveyor 1448 Silverpines Houston, Texas 77062 281-488-0460 Rev. March 14, 2008



TEXAS GENERAL LAND OFFICE Art. 33.136, Natural Resources Code Co. Champers, Sketch No. 6, sht, 58 File Date 3-31-2008 by D. J.H.

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13430 Northwest Frwy., Suite 1100 | Houston, Texas 77040 | (713) 462-3242 | (713) 462-3262 Fax

LETTER OF TRANSMITTAL

To: Texas C	General Land Office	Date: March 19, 2008
P.O. Box 12873 Austin, Texas 78711-2873		CFA Job No. 0702-028-01
		Re: Cedar Bayou
		@ SH55
ATTENTION:	Mr. Ben Thomson, RPLS, LSLS	
WE ARE SEND	ING YOU THE FOLLOWING VIA: US	SPS
Prints	⊠ Originals	Other
QUANTITY	/	DESCRIPTION
1	Plat of Survey (original mylar	r)
۹.	Surveyors Report (original)	
	For ApprovalAs Requested	For Your UseFor Review & Comment
REMARKS:	As requested	
	Call if you have any questions Theories Theories	
	Bill	Co. Chambers, sketch No. 6, spt. 89
		File Date 3-31-2008 by D.J.H.
Сору То		
		SIGNED William E. Merten, RPLS, LSLS

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AGENCY General Land Office ISSUE 04/18/2008 ACTION Miscellaneous

Notice of Approval of Coastal Boundary Survey

Pursuant to §33.136 of the Texas Natural Resources Code, notice is hereby given that Jerry Patterson, Commissioner of the General Land Office, approved a **coastal boundary survey** filed as Chambers County NRC §33.136 Sketch 6, Sheet 1 and Sheet 2, submitted by William E. Merten, Licensed State Land Surveyor, locating the following shoreline boundaries:

Sheet 1: MHW line along Cedar Bayou at Spur 55 (SH 99), being a portion of the west boundary of the John Steele Survey, A-227; coastal boundary located on 10-25-2007;

Sheet 2: MHW line along Cedar Bayou and Galveston Bay at Oak Point Road, being a portion of the west boundary of the John Ijams Survey, A-15; coastal boundary located on 11-20-2007.

The line depicted on the survey fixes the shoreline for purposes of locating a shoreline boundary, subject to movement landward of that line. This survey is intended to provide pre-project baseline information related to an erosion response activity on coastal public lands. An owner of uplands adjoining the project area is entitled to continue to exercise littoral rights possessed prior to the commencement of the erosion response activity, but may not claim any additional land as a result of accretion, reliction, or avulsion resulting from the erosion response activity.

For a copy of this survey or more information on this matter, contact Bill O'Hara, Director of the Survey Division, Texas General Land Office by phone at (512) 463-5212, email at bill.ohara@glo.state.tx.us, or fax at (512) 475-4619.

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Larry L. Laine

Chief Clerk, Deputy Land Commissioner

General Land Office

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Filed: April 7, 2008

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