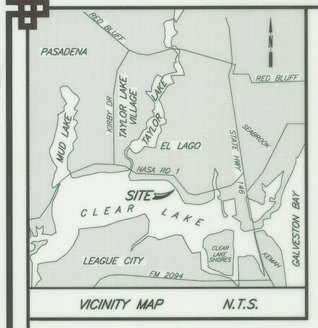
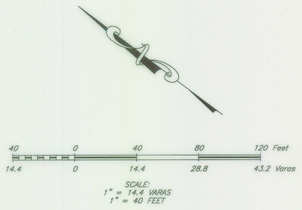
A SURVEY OF THE LINE OF MEAN HIGHER HIGH WATER WITHIN THE SUBDIVISION OF THE REPSDORPH TRACT IN THE RITSON MORRIS SURVEY ABSTRACT NUMBER 52 HARRIS COUNTY, TEXAS

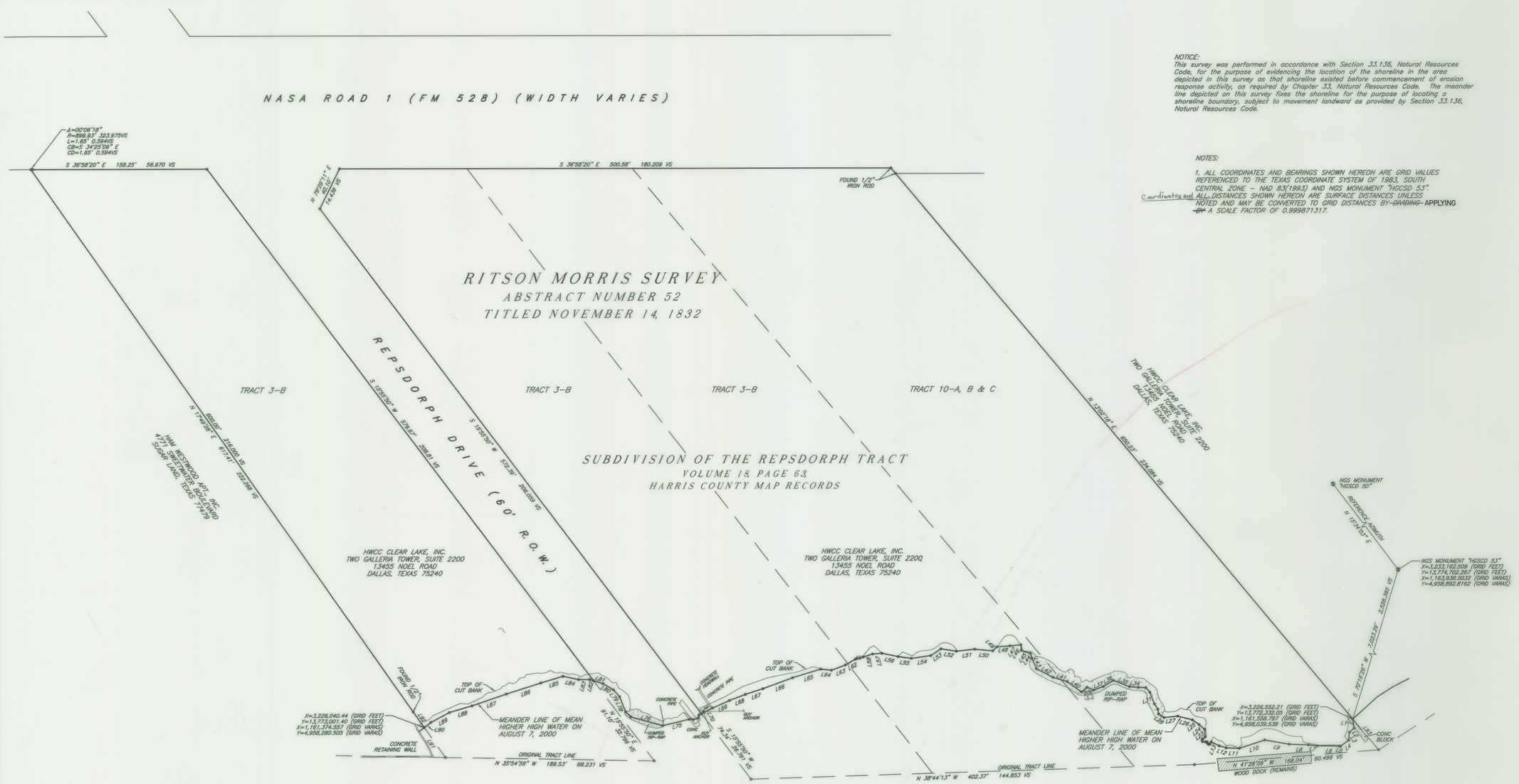




NOTICE:
This survey was performed in accordance with Section 33.136, Natural Resources Code, for the purpose of evidencing the location of the shoreline in the area depicted in this survey as that shoreline existed before commencement of erosion response activity, as required by Chapter 33, Natural Resources 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.

NOTES:

1. ALL COORDINATES AND BEARINGS SHOWN HEREON ARE GRID VALUES REFERENCED TO THE TEXAS COORDINATE SYSTEM OF 1983, SOUTH CENTRAL ZONE – NAD 83(1993) AND NGS MONUMENT "HGCSD 53". Coordinates and ALL DISTANCES SHOWN HEREON ARE SURFACE DISTANCES UNLESS NOTED AND MAY BE CONVERTED TO GRID DISTANCES BY ~~DIVIDING~~ APPLYING ~~BY~~ A SCALE FACTOR OF 0.999871317.



CLEAR LAKE

I, William E. Merten, Licensed State Land Surveyor in and for the State of Texas, do hereby certify that on August 7, 2000, 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:
Chris Wells
Devin Plato

William E. Merten
Licensed State Land Surveyor
Hoff Associates, Inc.
3701 Kirby Drive, Suite 1290
Houston, Texas 77098
713-523-7181
August 17, 2000

LICENSED STATE LAND SURVEYOR — STATE OF TEXAS

LINE	BEARING	DISTANCE FEET	DISTANCE VARAS
L1	S 44°12'47" W	8.50'	3.059
L2	N 77°13'51" W	5.82'	2.096
L3	S 57°38'26" W	7.16'	2.577
L4	N 73°31'03" W	9.26'	3.335
L5	N 24°28'46" W	1.22'	0.439
L6	N 36°06'26" W	19.65'	7.074
L7	N 31°25'09" W	8.50'	3.059
L8	N 35°09'59" W	17.40'	6.265
L9	N 27°13'40" W	22.66'	8.158
L10	N 54°57'31" W	24.30'	8.749
L11	N 34°43'27" W	11.91'	4.287
L12	N 20°34'05" W	6.63'	2.386
L13	N 11°37'20" W	8.17'	2.940
L14	S 80°36'47" W	2.36'	0.850
L15	N 40°03'13" W	1.45'	0.523
L16	N 25°55'41" E	1.23'	0.442
L17	N 20°56'03" E	1.41'	0.508
L18	N 45°12'39" W	1.14'	0.410
L19	N 30°35'11" W	2.81'	1.012
L20	N 32°34'25" E	1.43'	0.514
L21	N 82°43'52" E	1.38'	0.497
L22	S 74°02'30" E	2.81'	1.010
L23	N 48°01'36" E	7.00'	2.521
L24	N 04°05'53" E	6.47'	2.328
L25	N 01°40'16" W	7.50'	2.699
L26	N 22°27'57" W	13.72'	4.939
L27	N 42°54'15" W	12.57'	4.526
L28	N 03°45'28" W	6.07'	2.184
L29	N 45°54'31" E	4.25'	1.530
L30	N 20°06'10" E	5.98'	2.152
L31	N 31°49'37" E	11.24'	4.048
L32	N 12°33'18" E	5.57'	2.006
L33	N 35°24'01" W	6.67'	2.402
L34	N 32°27'20" W	8.24'	2.968
L35	N 15°33'59" W	15.62'	5.624
L36	N 68°11'31" W	10.74'	3.867
L37	N 56°28'32" W	9.30'	3.349
L38	N 13°56'06" W	6.50'	2.342
L39	N 77°16'02" W	6.67'	2.400
L40	N 00°55'21" W	15.87'	5.712
L41	N 20°03'53" W	13.47'	4.848
L42	N 09°20'53" W	16.90'	6.084
L43	N 29°09'53" E	10.10'	3.638
L44	N 36°53'18" E	4.57'	1.646
L45	N 18°50'45" W	8.76'	3.152
L46	N 49°39'17" E	5.05'	1.818
L47	N 42°18'47" W	10.10'	3.638
L48	N 41°11'11" W	11.69'	4.208
L49	N 80°40'30" W	5.16'	1.858
L50	N 31°38'05" W	16.53'	5.950
L51	N 43°05'28" W	16.79'	6.045
L52	N 27°52'10" W	14.01'	5.044
L53	N 70°45'37" W	11.05'	3.978
L54	N 44°53'06" W	17.63'	6.345
L55	N 29°39'19" W	12.20'	4.391
L56	N 24°57'09" W	14.93'	5.373
L57	N 41°26'53" W	8.39'	3.021
L58	N 55°01'20" W	8.85'	3.187
L59	N 55°58'38" W	3.37'	1.212
L60	N 41°12'31" W	2.56'	0.922
L61	N 58°08'05" W	1.80'	0.647
L62	N 67°03'25" W	10.31'	3.712
L63	N 57°06'55" W	13.52'	4.868
L64	N 30°50'17" W	9.82'	3.535
L65	N 53°57'46" W	26.77'	9.636
L66	N 56°54'18" W	28.61'	10.299
L67	N 54°41'46" W	16.91'	6.086
L68	N 57°50'26" W	15.33'	5.518
L69	N 60°57'15" W	16.59'	5.973
L70	N 63°57'43" W	11.57'	4.164
L71	N 63°57'43" W	2.67'	0.962
L72	S 69°19'32" W	2.86'	1.028
L73	N 54°05'14" W	4.54'	1.633
L74	N 32°02'11" W	3.73'	1.343
L75	N 50°28'25" W	24.58'	8.847
L76	N 21°35'22" W	30.14'	10.852
L77	N 07°40'04" E	6.68'	2.407
L78	N 31°27'12" E	14.63'	5.266
L79	N 11°20'54" E	8.38'	3.018
L80	N 06°14'49" W	10.88'	3.916
L81	N 19°52'57" W	9.13'	3.286
L82	N 19°52'57" W	3.68'	1.326
L83	N 37°11'13" W	10.14'	3.651
L84	N 25°02'30" W	14.36'	5.170
L85	N 53°23'28" W	21.04'	7.574
L86	N 54°35'19" W	32.70'	11.772
L87	N 55°46'47" W	33.10'	11.915
L88	N 53°12'53" W	21.37'	7.694
L89	N 65°15'55" W	18.97'	6.829
L90	N 74°50'18" W	7.61'	2.740
L91	N 17°49'28" E	33.08'	11.909
L92	N 17°49'28" E	17.41'	6.268
L93	S 13°02'18" W	36.52'	13.149

TEXAS GENERAL LAND OFFICE
Art. 33.136, Natural Resources Code
County HARRIS, Sk. No. 2
File Date July 2, 2001 by D.J.H.
~~SURVEYOR'S REPORT~~ ~~HARRIS CO. Art 33.136 Report No. 2, 2A~~

Halff Associates
ENGINEERS • ARCHITECTS • SCIENTISTS
PLANNERS • SURVEYORS

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

August 17, 2000

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

Re: Wetland Mitigation Site, HWCC Clear Lake, Inc. Property, Clear Lake, Seabrook, Texas

Dear Roy,

Enclosed please find the original and 1 blueline copy of a 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
County HARRIS, ~~Sk~~ REPORT SKetch No. 2
File Date July 2, 2001 by D. J. H.
See flattened sketch.

Cc: Mr. John Neal, GLO LaPorte Ofice
Ms. Georganna Collins, Turner Collie & Braden, Inc.

counter 61544

SURVEYORS REPORT
SURVEY OF THE LINE OF MEAN HIGHER HIGH WATER
IN THE SUBDIVISION OF THE REPSDORPH TRACT
ALONG A PORTION OF THE RITSON MORRIS SURVEY
HARRIS COUNTY, TEXAS

At the request of Turner Collie & Braden, Inc. and in my capacity as a Licensed State Land Surveyor in Texas, I have determined the line of Mean Higher High Water for Clear Lake in the Subdivision of the Repsdorph Tract, along a portion of the Ritson Morris Survey, Abstract Number 52, in 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 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 Ritson Morris Survey borders on Galveston Bay and Clear Lake and title was received from the Mexican Government on November 14, 1832. Clear Lake is a tidally influenced lake that empties into Galveston Bay.

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, which is 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 June, 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.

The project site is along approximately 1100 linear feet of the northerly shoreline of Clear Lake against property now owned by HWCC Clear Lake, Inc. with the easterly end of the project located approximately 2 miles from the entrance to Galveston Bay. This area of Clear Lake is an area of extensive erosion as evidenced by the existence of "cut banks" on the shoreline.

Using the calculated elevation for the site staff gauge, points were located on the natural contour line of Mean Higher High Water along the north shore of Clear Lake 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.

Sketch 2
Harris Co. Art. 33.136 ~~Report 2A~~

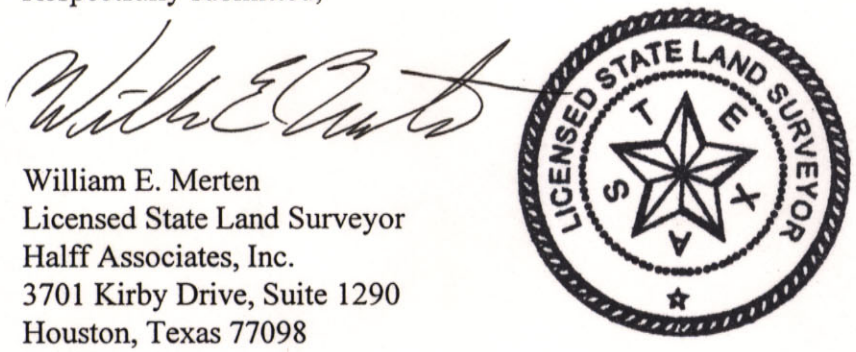
county 61546

The surveyed meander line was tied to the Texas Coordinate System of 1983, South Central Zone – NAD 83 (1993) using NGS Monument "HGCSD 53" for reference. The scale factor used for this project is 0.999871317.

There is several areas of dumped rip-rap and other areas with concrete drainage structures and concrete slabs placed along the coastline in Clear Lake. These areas have been noted on the survey. 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 filed with this report.

Respectfully submitted,



William E. Merten
Licensed State Land Surveyor
Halff Associates, Inc.
3701 Kirby Drive, Suite 1290
Houston, Texas 77098
713-523-7161
August 17, 2000

Sketch 2
HARRIS Co. Art. 33.136 ~~Report 2A~~

county 61547

Halff Associates
ENGINEERS • ARCHITECTS • SCIENTISTS
PLANNERS • SURVEYORS

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

Sketch 2
~~Report~~
File No. Art. 33.136 ~~File~~ No. 3A

HARRIS County

Statement of Correction

Date Filed: Dec. 12, 2001

David Dewhurst, Commissioner

By Douglas Howard

December 11, 2001

Mr. Ben Thomson, RPLS, LSLS
Texas General Land Office
Surveying Division
1700 N. Congress, Room 720
Austin, Texas 78701

Re: Letter of Correction, Repsdorph Tract, Ritson Morris Survey, Harris County, Texas
- See Harris Co. Art. 33.136 Sketch No. 2

Dear Mr. Thomson,

A typographical error was found in the "Notes" section on the face of the plat entitled "A SURVEY OF THE LINE OF MEAN HIGHER HIGH WATER WITHIN THE SUBDIVISION OF THE REPSDORPH TRACT, IN THE RITSON MORRIS SURVEY ABSTRACT NUMBER 52, HARRIS COUNTY, TEXAS" dated August 17, 2000.

On the plat, the last sentence of the notes states:

"All coordinates and distances are surface values, unless noted, and may be converted to grid values by dividing by a scale factor of 0.999871317"

and should read:

"All coordinates and distances are surface values, unless noted, and may be converted to grid values by applying a scale factor of 0.999871317"

Thank you.

Sincerely,

William E. Merten, RPLS, LSLS

county 61549