

## 1.4. Zoning

**1.4.1.** The water level station at Port Fourchon, LA (8762075) is the reference station for predicted tides for hydrography Approaches to Barataria Bay, AL. The time and height correctors listed below for applicable zones should be applied to the predicted tides at the station indicated during the acquisition and preliminary processing phases of this project.

**Predictions may be retrieved in one month increments over the Internet from CO-OPS SOAP web services at <http://opendap.co-ops.nos.noaa.gov/axis/text.html>.** The contractor must notify the COTR or the COTR's authorized representative immediately of any problems concerning the predicted tides. Predictions are six-minute time series data relative to MLLW in metric units on Greenwich Mean Time. For the time corrections, a negative (-) time correction indicates that the time of tide in that zone is earlier than (before) the predicted tides at the reference station. A positive (+) time correction indicates that the time of tide in that zone is later than (after) the predicted tides at the reference station. For height corrections, the water level heights **relative to MLLW** at the reference station are multiplied by the range ratio to estimate the water level heights relative to MLLW in the applicable zone.

<u>Zone</u>	<u>Time Corrector (min)</u>	<u>Range Ratio</u>	<u>Predicted Reference Station</u>
CGM364	-12	x1.09	8762075
CGM369	-12	x1.09	8762075
CGM370	-24	x1.09	8762075
CGM372	-18	x1.09	8762075
CGM389	-6	x1.09	8762075
CGM390	-12	x1.09	8762075
CGM727	-18	x1.09	8762075

**1.4.2.** Polygon nodes and water level corrections referencing Port Fourchon, LA (8762075) are provided in ASCII format denoted by a \*.zdf extension file name. Zoning diagrams, created in MapInfo, are provided in both digital and hard copy format to assist with the zoning. Longitude and latitude coordinates are in decimal degrees. Negative (-) longitude is a MapInfo representation of West longitude.

“Preliminary” data for the control water level station, Port Fourchon, LA (8762075), are available in near real-time and verified data will be available on a weekly basis for the previous week. **These water level data may be obtained from CO-OPS SOAP web services at <http://opendap.co-ops.nos.noaa.gov/axis/text.html>.**

Overall, the tide correctors were modeled well for Survey H12426, showing good agreement between survey days. Still, there were several areas where tide-related vertical offsets on the scale of 10 to 15 centimeters were noted between MBES data collected on different days. The tide-related vertical offset is most apparent when MBES data collected on June 19, 2012 (DN 171) intersects MBES lines collected between June 6 and 9, 2012 (DNs 158 to 161) (Figure 21). Survey date June 19, 2012 (DN 171) coincided with a spring tide and building seas associated with Tropical Storm Debby, evident in the large deviation between the predicted and verified tide data at the Port Fourchon, LA gauge from approximately June 17, 2012 (DN 169) to June 28, 2012 (DN 180) (Figure 22). Survey operations for Project OPR-K339-KR-12 were suspended from June 22, 2012 (DN 174) through June 27, 2012 (DN 179) while Tropical Storm Debby passed.

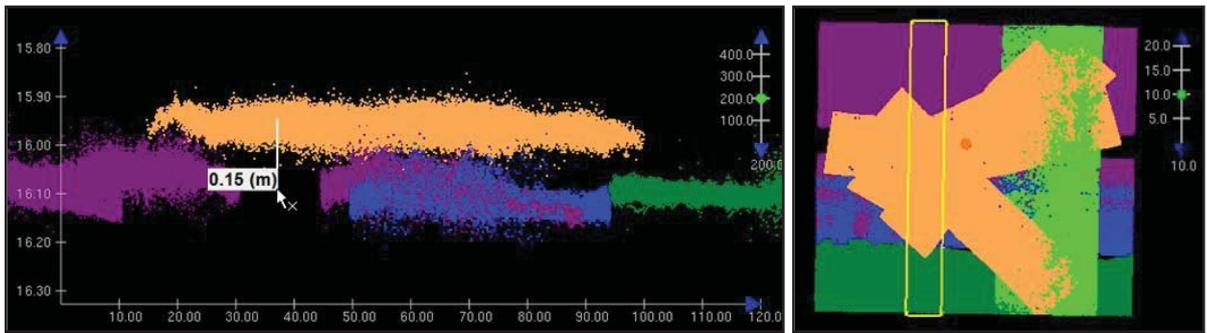


Figure 21. The left image is an example of the tide-related vertical offset between soundings collected on DN 171 (orange), and DNs 158 (purple), 160 (green) and 161 (blue) shown in CARIS HIPS Subset Editor 2D View. Depths and distances are in meters. The right image shows a plan view of the subset window displayed in Subset Editor 3D View with the soundings colored by line. Depths from the investigation lines collected on DN 171 were 10 to 15 centimeters shallower than depths from the mainscheme MBES lines.

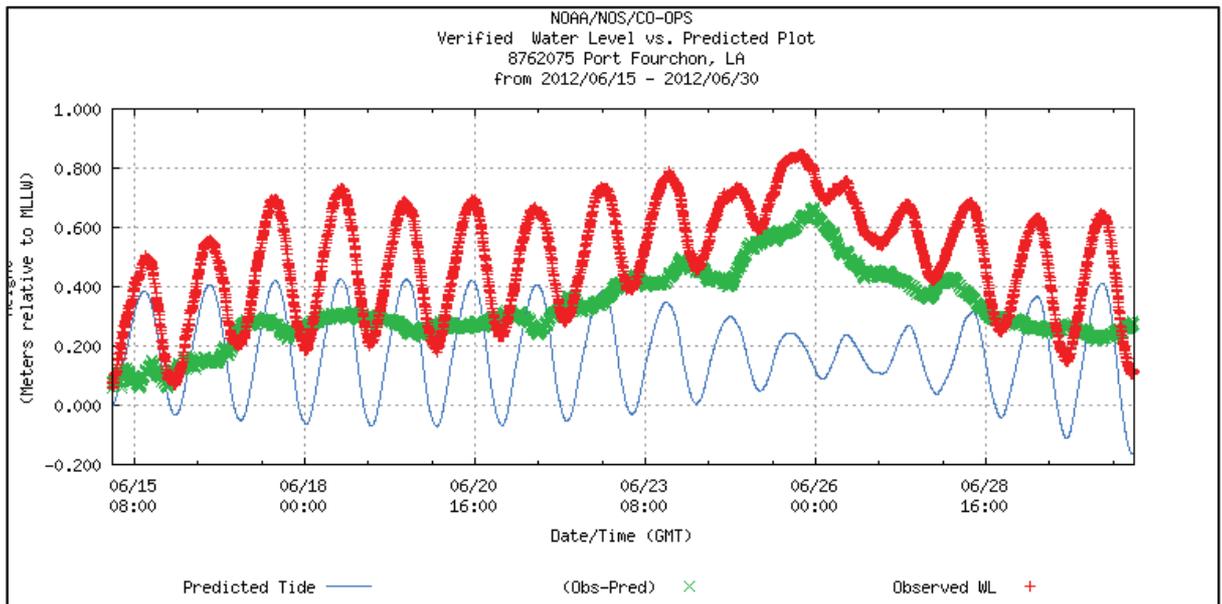


Figure 22. A verified tide versus predicted tide plot for the Port Fourchon, LA gauge downloaded from the NOS Tides and Currents website. It appears that the spring tide coupled with tropical storm conditions had a relatively large influence on the Port Fourchon tide gauge starting around June 16, 2012 (DN 168), and then beginning to dissipate on June 26, 2012 (DN 178).

Tide-related vertical offsets on the order of 10-12 centimeters were also observed between depths from cross lines acquired on May 28, 2012 (DN 149) and mainscheme MBES lines acquired on July 7, 2012 (DN 189) (Figure 23) and between mainscheme MBES lines acquired on July 3, 2012 (DN 185) and mainscheme MBES lines acquired on July 4, 2012 (DN 186) (Figure 24). Severe thunderstorms over Port Fourchon on July 3, 2012 (DN 185) into July 4, 2012 (DN 186) caused an approximate 2 hour gap in the preliminary tide data (Figure 25) which was interpolated in the verified tide file. The difference in meteorological conditions on these dates at the tide gauge and offshore may have accounted for the observed vertical offset between tide-corrected soundings.

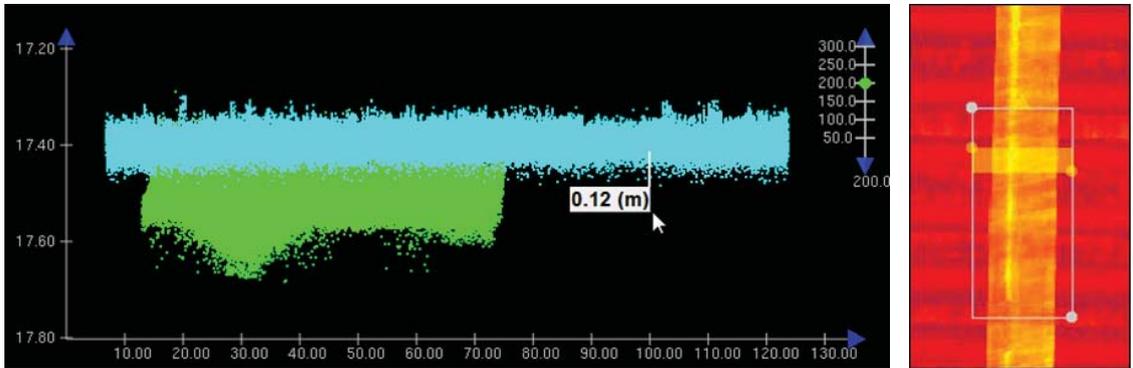


Figure 23. The left image is an example of the tide-related vertical offset between soundings collected on DN 149 (green) and DN 189 (turquoise) shown in CARIS HIPS Subset Editor 2D View. Depths and distances are in meters. The right image shows the subset window displayed over the Standard Deviation layer from the H12426 2-meter CUBE surface. In this color map, areas with higher standard deviation are represented in yellow.

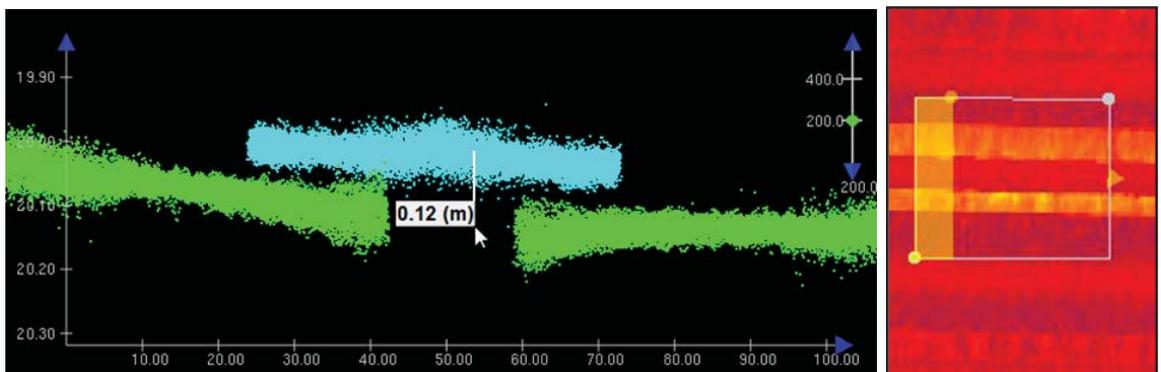


Figure 24. The left image is an example of the tide-related vertical offset between soundings collected on DN 186 (green) and DN 185 (turquoise) shown in CARIS HIPS Subset Editor 2D View. Depths and distances are in meters. The right image shows the subset window displayed over the Standard Deviation layer from the H12426 2-meter CUBE surface. In this color map, areas with higher standard deviation are represented in yellow.

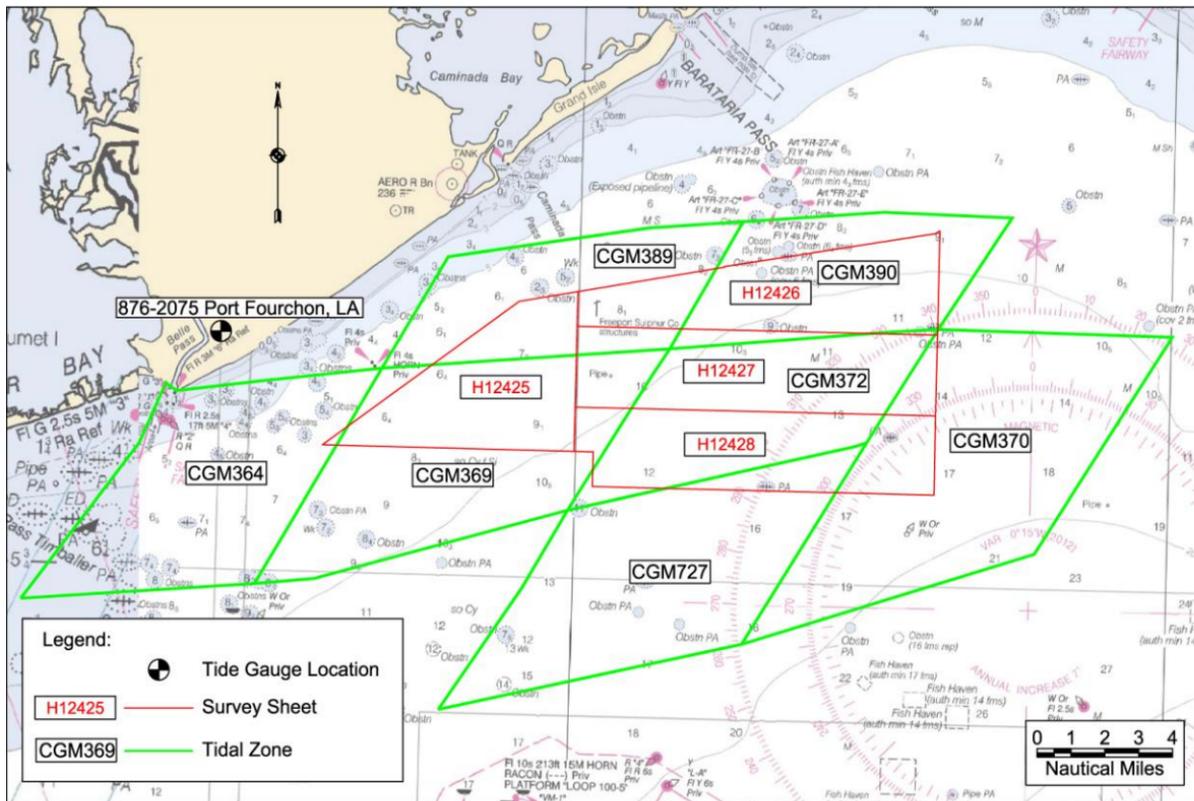


Figure 1. Project survey boundaries (red lines), tidal zone boundaries (green lines), and the Port Fourchon tide station location.

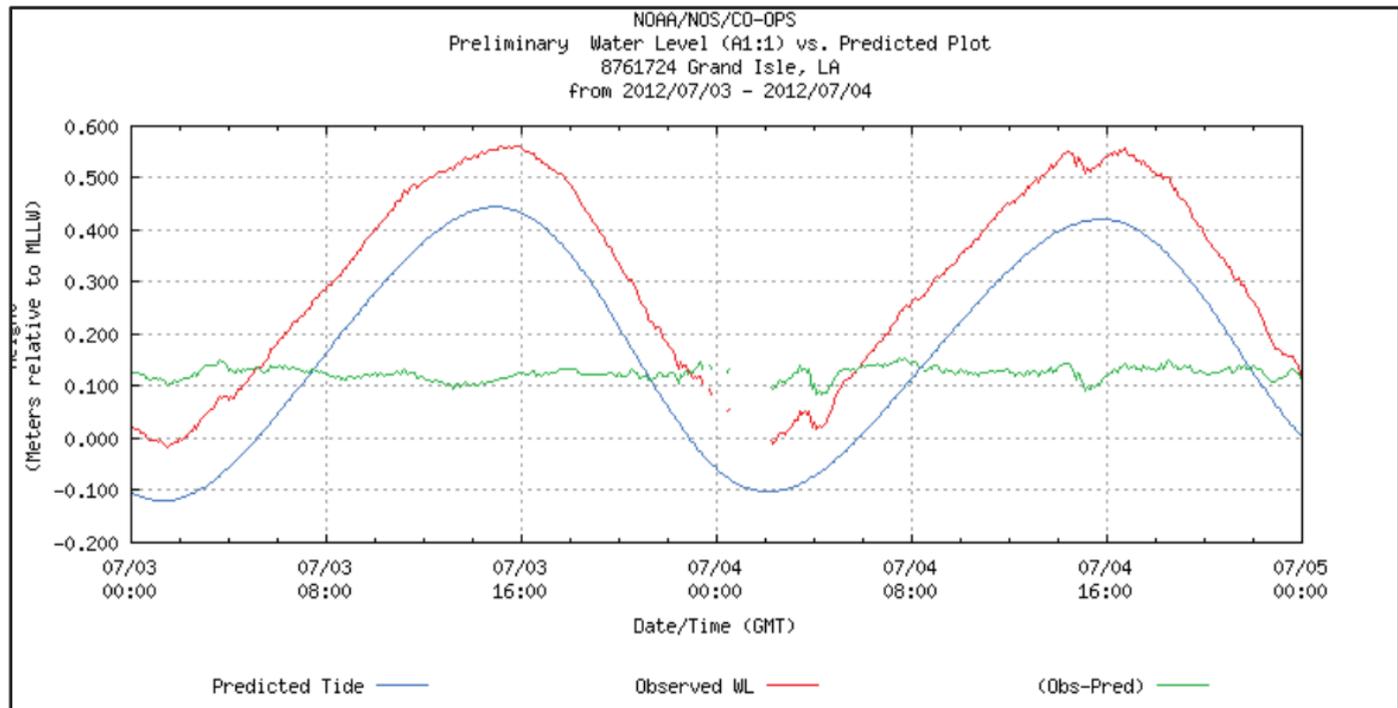


Figure 25. A verified tide versus predicted tide plot for the Port Fourchon, LA gauge downloaded from the NOS Tides and Currents website. There was a brief gap in preliminary tide data on July 3, 2012 (DN 185) and July 4, 2012 (DN 186) that coincided with a severe thunderstorm over land.

Discrete zoning methods were utilized to apply tide correctors in CARIS HIPS and SIPS. The survey area is located within Zones CGM370, CGM372, CGM389 and CGM390 as provided in the preliminary tidal zoning scheme included with the project SOW. Based on the results of cross line analysis, the time and range factors as provided in the preliminary zoning scheme were adequate. Preliminary zoning was accepted as the final zoning for Project OPR-K339-KR-12 (Table 14).

**Table 14**  
**H12426 Tide Correctors**

<b>Zoning Corrector File</b>	<b>Status</b>
OPRK339KR12.zdf	Final

OSI home office and field personnel monitored preliminary tide data available on the NOAA CO-OPS website. The NOAA Port Fourchon (8762075) gauge experienced a preliminary tide gap on survey dates July 3 and 4, 2012 (DNs 185 and 186) for approximately 2 hours. The gap was filled by CO-OPS prior to issuance of verified tide data.

### **1.4.3 Zoning Diagram(s)**

Zoning diagrams, created in MapInfo<sup>®</sup> and Adobe PDF, are provided in digital format to assist with the zoning in section 1.4.1.

## **1.5. Final Zoning**

**1.5.1.** For final processing, apply tidal zoning correctors to “verified” observed data of the NOS control station and/or the final processed data of the subordinate stations.