

C.1.2 Existing Tidal Infrastructure

Bay Waveland Yacht Club (BWYC) gauge (ID #: 8747437) is the nearest tide gauge (about 4.5 nautical miles away) to the Pass Christian Harbor and its approaches. It is operated by the NOAA NOS.

A temporary tidal station was deployed at the PCYC (ID #: 8746819) from 20 June 1979 to 17 December 1980. The historic tidal station datum was analyzed for the period of 01 December 1979 up to 30 November 1980. On 12 June 2003, the tidal datum was accepted and was valid for the current NTDE 1983-2001 epoch.

C.1.3 Tide Gauge Calibration

The pressure type In-Situ Level TROLL 700 tide gauge was calibrated in a freshwater cylindrical tank at John C. Stennis Space Center before and after deployment. The gauge met the NOAA's 1-mm resolution specification. Pre-deployment calibration was done on 19 May 2015. During post-deployment calibration, it was observed that the sensor readings were about 0.15 m off the actual water height. It was suspected that the discrepancy with the gauge happened during the dismantling of the tide gauge. A least-squares linear fit of the data from the simultaneous observations between tide staff and tide gauge readings was conducted. This was done to ensure there were no significant changes in the uncertainty with tide gauge readings from the initial calibration up to its deployment. Maximum water level reading uncertainty of the tide gauge remained the same from the initial calibration to before its retrieval. A 0.005 m tide gauge

water level measuring uncertainty was used in the computation of the SEP uncertainty value. More detailed calibration can be found in the HCVR.

C.1.4 Tidal Zoning

Pass Christian project site is relatively small in terms of area coverage and is situated in between two operational NOAA tide stations—Bay Waveland and Pascagoula. Bay Waveland tide station is about 7.5 km from the survey area and 72 km from Pascagoula. There used to be a NOAA tide station at Cat Island, which is about 15 km southeast of Pass Christian. All three stations (Figure 7) have published datums corrected to the present NTDE Epoch 1983-2001.



Figure 7. Nearest NOAA tide station to the survey area.

Considering Bay Waveland as the main tide gauge and using the published great diurnal range (Gt) values (Table 9), a linear interpolation was done to generate co-range curves. From the co-range curves it was shown that a single tide range value may be used for the entire Pass Christian survey. A 0.506 m Gt for Pass Christian was determined from the datum transfer.

There were no high water interval (HWI) or low water interval (LWI) values published for all three stations. To test whether a single tide phase may be used for the entire survey area, the differences in time of high and low waters in Pascagoula (verified) and Cat Island (predicted) with Bay Waveland from 01-25 June 2015 were noted. During the same period, the time difference values between high water and low water between Bay Waveland and the USM-established tide station in Pass Christian were also noted. Both the mean high water and mean low water time intervals between Bay Waveland and Pass Christian were approximately 0.04 hours (2.4 minutes). This confirms that a single tide zone is sufficient for the whole survey area. More details on tide zoning are discussed in HVCR.