C. *Vertical and Horizontal Control*

The vertical control datum of this project is mean lower low water (MLLW). The horizontal control datum is the North American Datum of 1983 (NAD83). All soundings are therefore corrected to MLLW, and all positions are on NAD83. Fieldsheets were projected into UTM Zone 4 North (NAD83).

Preliminary positions were determined using Real Time Kinematic (RTK) GPS. NAD83-based position corrections were broadcast from project base stations. The base stations also logged dual frequency GPS data at a 1 Hz interval, which was periodically downloaded and used to post-process the positions.

Final positions were post-processed in Applanix POSPac POSGNSS, which utilized dual frequency GPS data logged continuously on the survey vessels along with the base station data to produce post-processed kinematic (PPK) navigation files in text format. These navigation files were loaded into all survey lines without exception using CARIS Generic Data Parser (GDP). This replaced all RTK navigation and GPS heights with the PPK solution.

Tide zones were not provided by NOAA for this project. Discrete tide zones were computed using data from three project tide stations and zoning seabird deployments. Per the work instructions, all lines were corrected to MLLW using the discrete tide zones during the final merge process.

Note that the "GPSTide" record within all CARIS HIPS lines was computed using an ellipsoid-MLLW separation model developed for this project (supplied with the CARIS deliverables) and can be used for comparison and troubleshooting purposes.

Refer to the project DAPR for more information regarding PPK processing methods. Refer to the project HVCR for details regarding derivation of tide zones. Abstract of Times of Hydrography and CO-OPS transmittal letters can be found in Appendix I.