# C. Vertical and Horizontal Control

No Horizontal and Vertical Control Report (HVCR) is required for this survey.

## C.1 Vertical Control

The vertical datum for this project is Mean Lower Low Water.

ERS Datum Transformation

The following ellipsoid-to-chart vertical datum transformation was used:

| Method | Ellipsoid to Chart Datum Separation File |
|---|---|
| ERS via VDATUM | OPR-E350-TJ-19_NAD83-MLLW_Geoid12B.csar |

*Table 11: ERS method and SEP file*

All soundings submitted for H13297 are reduced to MLLW using VDatum techniques as outlined in the DAPR

## C.2 Horizontal Control

The horizontal datum for this project is North American Datum of 1983 (NAD 83).

The projection used for this project is Universal Transverse Mercator (UTM) Zone 18.

PPP

Trimble-RTX service was used with an Applanix POS MVv5 GNSS_INS system to obtain highly accurate ellipsoidally referenced position data to meet ERS specifications for H13297 MBES and SBES data from vessels HSL 2903 and 2904.

WAAS

The Wide Area Augmentation System (WAAS) was used for real-time horizontal control during data acquisition on vessels HSL 2903 and 2904.