

4.1.1 Tides and Water Levels **See also evaluation report.**

The NOAA tide station in Portland, ME 8418150 was the source of preliminary water level heights for this Southern Merrimack Embayment Multibeam Survey. Preliminary tide data for this station were downloaded from the NOAA CO-OPS web page (<http://www.co-ops.nos.noaa.gov/hydro.html>). All tide data were annotated with Coordinated Universal Time (UTC). An alternative tide station Boston Light, MA 8444162 was monitored in case the Portland station was inactive. There were no problems with the Portland, ME data. SAIC created two tide zones for the survey area with the following parameters:

The zoning parameters SAIC created were:

On Portland, ME	(8418150)	+ 8 minutes	ratio 0.964
On Boston Light, MA	(8444162)	+2 minutes	ratio 0.972

All bathymetry data collected during the survey were corrected for water level variations using water level files. Water level files for each tide zone were created from downloaded preliminary NOAA tide data using the SABER Create Water Level Files tool. Water level files contain water level heights that are subtracted algebraically from depths to correct the sounding for tide and water level. These water level files were applied to the multibeam data using the Apply Tides tool within the SABER software.

Comparison of the zoned 6-minute water level heights computed from Boston Light, MA (8444162) to those computed from Portland, ME (8418150) shows an average height difference of 0.009 meters and a standard deviation of 0.042 meters. The maximum and minimum differences were +0.125 meters and -0.078 meters. Because the Portland, ME (8418150) gauge is a NOAA Primary Control Tide Station water level zoned heights from that station were used to correct the soundings.

When the preliminary water level zoned heights file was applied to the GSF files, the program removed the predicted tide corrector and applied the new corrector. Each time a routine was run on the GSF multibeam data file, a history record was written at the end of the GSF file. For quality assurance the Check Tides program was run on all GSF files to confirm that the appropriate water level corrector had been applied to the GSF file.