Content within the Tides Statement of Work was superseded by the final Hydrographic Survey Project Instructions which stated that it was only necessary to install one subordinate tide station, Norton Point, NY (851-6891).

TIDES STATEMENT OF WORK
OPR-B310-KR2-2013 New York Harbor and Approaches, NY
(4/10/2013 CFL)

1.0. TIDES AND WATER LEVELS

1.1. Specifications

Tidal data acquisition, data processing, tidal datum computation and final tidal zoning shall be performed utilizing sound engineering and oceanographic practices as specified in National Ocean Service (NOS) Hydrographic Surveys Specifications and Deliverables (HSSD), dated April 2012.

1.2. Vertical Datums

The tidal datums for this project are Chart Datum, Mean Lower Low Water (MLLW) and Mean High Water (MHW). Soundings are referenced to MLLW and heights of overhead obstructions (bridges and cables) are referenced to MHW.

1.2.1. The Hydro Hot List (HHL)

Please contact CO-OPS' Hydrographic Planning Team (HPT) at nos.coops.hpt@noaa.gov and CO-OPS' Operational Engineering Team (OET) at nos.coops.oetteam@noaa.gov at least three business days before survey operations begin, and within 1 business day after survey operations are completed so that the appropriate CO-OPS National Water Level Observation Network (NWLON) control water level station(s), as well as any required subordinate station(s), is/are added to or removed from the CO-OPS Hydro Hotlist (HHL) (http://tidesandcurrents.noaa.gov/hydro). Include start and end survey dates, full project number (e.g. OPR-H355-TJ-10), and control and subordinate station numbers. The notification must be sent to both teams as OET is responsible for configuring the station in the CO-OPS data base and HPT manages the addition and removal of stations from the HHL.

Station	Station ID	Control or Subordinate	Type (e.g. NWLON, PORTS©, etc)	Comment
Sand Hook	8531680	Control	NWLON	

Table 1: All stations that need to be added to the HHL in support of B310-KR2-2013

This project requires a subordinate installation. Therefore, please contact OET and HPT via e-mail at least three business days before the subordinate stations are installed and send the site report listing the DCP and sensor serial numbers and GOES satellite information so that stations can be configured in the database and also can be added to HHL. For station removal, inform OET and HPT 3 business days prior to the actual removal of a station and confirm with OET upon final station removal.

It is important to know that the addition of a water level station to the HHL ensures the station is monitored by CORMS and any problems are reported daily. However, platforms should view the HHL each morning of active survey operations and click on the eyeball icon to double check that there are no problems with the required stations on that day. If a platform notices problems with data on their survey day of operation, please contact HPT at nos.coops.hpt@noaa.gov, CORMS at CORMS@noaa.gov, and their respective headquarters point of contact at HSD or NSD. Stations on the HHL are given priority for maintenance should a station cease normal operation during scheduled times of hydrography. CO-OPS will notify a field unit within 1 business day if a HHL water level station ceases operation during scheduled times of hydrography. This is in addition to the daily CORMS report that CORMS sends to NOAA field units, if the field unit's e-mail address is added to the CORM's daily e-mail list. To be added to the CORMS daily HHL report, the platform should contact CO-OPS' Data Monitoring and Analysis Team (DMAT) at nos.co-ops.dmat@noaa.gov and request to be added.

If the stations are listed on HHL, then weekly priority processing will occur and, for those water level stations, verified 6-minute water level data will be made available every week on Monday or Tuesday. If Monday happens to be a federal holiday, then the 6-minute verified water level data will be made available on the following Tuesday or Wednesday.

1.3. Tide Reducer Stations

The operating water level station at Sandy Hook, NJ (8531680) will also provide water level reducers for this project. Therefore it is critical that they remain in operation during the survey.

1.3.1. CO-OPS Long Term Water Level Station Operation Maintenance

The operating National Water Level Observation Network (NWLON) station at Sandy Hook, NJ (8531680) serves as datum control for the short-term stations Norton Point (8516891), North Channel Bridge (8517201), Coney Island (8517741) and Beach Channel (8517137) for the survey area. Therefore, it is critical that this station remain in operation during all periods of hydrography.

During periods of hydrography, CO-OPS is only responsible for the operation and maintenance of NWLON control stations and the contractor is responsible for the maintenance and operations of all contractor installed (tertiary) stations. The contractor is required to monitor the NWLON control water level data via the CO-OPS Web site at http://tidesandcurrents.noaa.gov/hydro.shtml or through regular communications with the OCS COTR or the OCS COTR's CO-OPS authorized point of contact (Colleen Roche at 301-713-2897 x137 or via e-mail: nos.coops.oetteam@noaa.gov) before and during operations. The OCS COTR or the COTR's CO-OPS authorized point of contact (Colleen Roche) will serve as liaison between the contractor and NOS/CO-OPS to confirm operation of this station and to ensure the acquisition of NWLON control water level data during periods of hydrography. Problems or concerns regarding the acquisition of valid water level data identified by the contractor shall be communicated with the OCS COTR or the COTR's CO-OPS authorized point of contact (Colleen Roche) to coordinate the appropriate course of action to be taken such as gauge repair and/or developing contingency plans for hydrographic survey operations.

1.3.2. Subordinate Station Requirements

For this project, it will be necessary to install and continuously operate a water level measurement system (tide gauge) at a subordinate station location. This station will provide information on tidal datums, water level reducers, refinement of final zoning and harmonic constituents for predictions.

The station listed in Section 1.2.1. will provide control for datum computation at the subordinate station by using the NOS method of comparison of simultaneous observations.

CO-OPS has also identified additional sites for other programs such as the NOS VDatum program which develops VDatum models that will support future surveys. Subordinate stations Coney Island (8517741), Beach Channel (8517137), and North Channel Bridge (8517201) should be installed in support of the VDatum program in the area of New York Harbor and Approaches.

A 30-day minimum of continuous data acquisition is required. For the subordinate stations, data must be collected throughout the entire survey period in specified areas for which it is applicable, from 4 hours before to 4 hours after the period of hydrography and not less than 30 continuous days. This is necessary to facilitate the computation of an accurate datum reference as per NOS standards.

Additionally, supplemental and/or back-up stations may also be necessary based upon the complexity of the hydrodynamics and/or the severity of environmental conditions of the project area. The installation of additional stations is left to the discretion of the contractor, subject to the approval of the COTR.

The following subordinate stations are to be installed:

Station Number	Station Name	Latitude(N)	Longitude(W)
8516891	Norton Point	40° 38’ 6.0”	073° 44’ 48.1”
8517137	Beach Channel	40° 35’ 17.9”	073° 49’ 12.0”
8517201	North Channel Bridge	40° 38’ 42.0”	073° 50’ 12.1”
8517741	Coney Island	40° 34’ 12.0”	073° 58’ 59.9”

1.3.3. Tide Component Error Estimation

The estimated tidal error contribution to the total survey error in the area of New York Harbor and Approaches, NY cannot be computed due to a lack of available water level time series data bounding the survey area. However, we compared extrapolated water level curves using The Battery (8518750) as control, and Sandy Hook (8531680) as control. The root mean square (RMS) of the differences between the two sets of corrected water level curves is 0.20 m. The value of RMSx2, which is 0.20 m, may be served as a rough guesstimate of the zoning error for the survey area but should not be confused with an official estimate of total propagated error.

1.3.4. Water Level Records: Submit water level data, such as leveling records, field reports, and any other relevant data/reports, including the data downloaded onto diskette/CD within 1 week after the end of each month or the end of hydrography to CO-OPS/Engineering Division (ED). Refer to Section 1.1.