

January 15, 2015

MEMORANDUM FOR: Dr. Kate Bosley  
Chief, Field Operations Division (FOD)

FROM: Richard F. Edwing  
Director, Center for Operational Oceanographic Products and  
Services (CO-OPS)

SUBJECT: CY 2015 Project Instructions – Coastal and Great Lakes Observing  
Systems

The enclosed document, “Project Instructions: Installation, and Maintenance of Coastal and Great Lakes Observing Systems for CY 2015,” is forwarded for implementation.

These Project Instructions are technical requirements provided in three parts. PART A, General Requirements, and PART B, Standing Project Instructions for the Coastal and Great Lakes Water Level Stations, Updated October 2014 are applicable to all stations. PART C, Specific Requirements, addresses National Water Level Observation Network (NWLON) and subordinate stations project support, specific categories of priority work, and individual station requirements. These instructions apply to both the coastal “sea level” and Great Lakes observing systems.

PART B, the Standing Project Instructions, provides general requirements essential for maintenance of station integrity and the collection of high quality data for the NWLON. Standing Project Instructions document the program standards to which the data is collected. Adherence to these standards is very important for accomplishing CO-OPS’ goals. The products derived from the observing system data are used for NOS multi-purpose applications such as the Physical Oceanographic Real-Time Systems (PORTS<sup>®</sup>), tsunami detection and notification, control for hydrographic and photogrammetric surveys, long-term sea level analysis and trends, boundary determinations, etc.

The Standing Project Instructions cannot take into account the dynamic year-to-year budget situations in CO-OPS, and when operational decisions have to be made because of the lack of funding, the Field Operations Division (FOD) and the Engineering Division (ED) will consult and recommend a course of action. Recommendations affecting performance measures and milestones must be approved by CO-OPS’ Director.

These instructions apply to all types of stations that are installed, maintained, or removed by CO-OPS or CO-OPS’ Indefinite Delivery Indefinite Quantity (IDIQ) contractors. The requirements are explicit; available resources throughout the year will govern actual accomplishments at each station.

Prior to the scheduling of each field trip, FOD and the Configuration and Operational Engineering Team (COET) will hold a pre-inspection meeting and customized station specific requirements for each station will be discussed, agreed, and performed. The agreed upon station specific instructions will be documented. This modified procedure is applicable only to FOD maintained stations.

PARTS A and C provide background information and list individual station requirements. An Excel file, 2015 Station Operational Lists, has been prepared to identify stations supporting various programs such as PORTS<sup>®</sup>, Operational Forecast Systems (OFS), Continuous Operating Reference Systems (CORS), climate/sea level, hydro, international treaties, tsunami/storm surge, or ecosystem restoration. The list also groups the stations according to the NOAA mission goals they support. Counters are provided at the end of the list to indicate the number of stations supporting each type of project as well as the groupings of NOAA mission goals.

The specific requirements for each station in PART C, Section 2.0 have been prioritized in descending order of importance. Field personnel will accomplish as many of the requirements as possible based on the order listed in PART C, Section 2.0.

In an effort to standardize the requirements for all of CO-OPS field efforts, and to ensure that the critical information is verified immediately by COET, submissions of the 1-day site report (eSite report, as applicable) and level abstract (within one working day) requirement applies to all annual maintenance and emergency maintenance activities for FOD and contractors. The 1-day site report will indicate if the requirements were completed. Final documentation shall be submitted to COET within 30 calendar days of completion of annual maintenance and leveling for stations maintained by FOD and IDIQ contractors. COET will evaluate the station package (final documentation) and then inform the documentation submitter of any corrective actions.

COET will provide FOD and contractors bench mark stability reports that indicate which marks were not leveled the previous year, as an aid to help ensure that all marks are leveled every two years. The reports are available on the network server for those who have access to CO-OPS' secure network. Task Managers should provide the reports to their IDIQ contractors, or COET will supply the report upon request.

When GPS observations are performed on the designated GPS bench mark (annually or every five years as indicated in the Part C), that mark shall be included in that year's level run. This is important for connecting tidal, geodetic, and ellipsoidal datums. Some pre-planning for leveling routes and schemes (which marks will be connected each year based upon the GPS observations requirement) shall be investigated.

FOD should update the planned monthly schedule of stations to visit and work to be accomplished based upon the maintenance requirements specified in PART C, Section 2.0, and the best use of their available resources.

The stations and the meteorological sensors maintained by IDIQ contractors shall follow the requirements listed in the specific Task and in PART C, Section 2.0.

FOD and IDIQ contractors should take updated station photos, as necessary, which are free of debris, tools, and personnel. The photos required include: a general view, enclosure or shelter, interior of shelter, primary water level sensor and protective well/sump, Met mast, wind sensor,

air temp sensor, and CORS antenna, SAE encoder, ETG, and sump in the Great Lakes. A sample set of standard station photos used on the station home page of the Tides and Currents website can be found in Appendix A of the Standing Project Instructions for Coastal and Great Lakes Water Level Stations.

This year all observing systems - water level, meteorological, and real-time current meter stations for NWLON and PORTS that are maintained by CO-OPS and CO-OPS' IDIQ contractors are included in these Project Instructions. The task requirements and these project instructions shall be used to maintain all PORTS stations. In addition, ADCPX upgrades are required at seven stations as identified in Section 1.13 of the PART C where PORTS partner funding is identified. CO-OPS has upgraded 14 stations with ADCPX and when these seven stations are upgraded, all side lookers and bottom mounted ADCP's for real-time PORTS current meters would have been completed.

8762482 West Bank, Bayou Gauche has been added to the NWLON list and has replaced the 8762372 East Bank, Bayou LaBranche station. This swap was made to adjust for the NWLON gap in Louisiana.

CO-OPS has set an operational goal of 195 annual inspections in CY 2015; accomplishments towards this goal are reported at the quarterly project reviews. Assigned regional managers, team leaders and contract task managers shall continually update the CO-OPS field activities schedules and calendars on Google calendar.

Enclosures

cc:

All CO-OPS Personnel



# **CY 2015 Project Instructions for Coastal and Great Lakes Observing Systems**

January 2015

Engineering Division  
Center for Operational Oceanographic Products and Services  
National Ocean Service  
National Oceanic and Atmospheric Administration

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## **PART A: GENERAL REQUIREMENTS**

These project instructions provide the requirements for installation, maintenance, and removal of observing systems in the National Ocean Service (NOS) National Water Level Observation Network (NWLON), Physical Oceanographic Real Time Systems® (PORTS®), Resilience Program, Hydrographic and Photogrammetric Survey Operations, and reimbursable special projects. These stations provide critical data to support the following activities: ensure safe navigation; determine tidal datums for the National Nautical Charting Program and Shoreline Mapping Program; determine the baseline from which marine boundaries are delineated; determine flow rates to support International treaties; National Weather Service tsunami/storm surge warning programs; coastal resource restoration and management; and long-term sea level trend analyses. The NWLON supports the following four NOAA Mission Goals: Climate Adaptation and Mitigation; Weather Ready Nation; Resilient Coastal Communities and Economies; and Healthy Oceans. These goals are directly supported by all observing systems, research and development, and modeling. The objective of the CO-OPS data collection effort is to acquire continuous, reliable, defect-free data that can be efficiently analyzed, and ensure that multi-purpose observing systems products are developed.

### ***1. General Maintenance Guidance***

#### ***1.1 Operational Maintenance Decision-Making Support***

All NWLON and other subordinate water level and met stations support a variety of NOAA mission goals and projects. It is emphasized that the ultimate goal is to collect high quality data from all stations and sensors continuously. The establishment of new, or relocation of existing stations, will also be assigned the appropriate priority each year. Changes in priority may occur and will be at the direction of the Director of CO-OPS.

These instructions apply to all types of stations that are installed, maintained, or removed by CO-OPS or CO-OPS' Indefinite Delivery Indefinite Quantity (IDIQ) contractors. The requirements are explicit; available resources throughout the year will govern actual accomplishments at each station.

A listing of stations and the programs they support, such as PORTS®, hydrographic and photogrammetric surveys, treaties, tsunami, or ecosystem restoration, climate/sea level, is provided in the attached file, 2015 Station Operational Lists.xls. Counters are provided at the bottom of the list to indicate the number of stations supporting each type of project as well as the groupings of NOAA mission goals. The following provides a brief overview of the four main NOAA mission goals supported by CO-OPS' observing systems. Some of the observing systems support multiple program categories.

- **Mission Goal 1: Resilient Coastal Communities and Economies**

Stations supporting PORTS® activities, Hydrographic and Photogrammetric survey control activities, navigation safety, treaties, other stations supporting reimbursable and special projects, and stations supporting coastal hazard resilience and climate adaptation.

- **Mission Goal 2: Weather Ready Nation**  
Stations supporting NOAA Tsunami program, NOAA Storm Surge program, and NOAA Coastal Storms Program.
- **Mission Goal 3: Climate Adaptation and Mitigation**  
Stations supporting various climate-monitoring programs, climate adaptation activities, and stations supporting special projects
- **Mission Goal 4: Healthy Oceans**  
Stations supporting ecosystem restoration and ecosystem modeling projects

There are 34 stations identified as critical for Climate (Global Sea Level Observing System (GLOSS) program) Monitoring, 33 of which are NWLON. Bermuda is the 34<sup>th</sup> station, and is both a Global Sea Level station and a Tsunami-Capable station, but it is not a part of the NWLON.

### ***1.2 Maintenance Requirements and Reference Document***

Water level station standard annual maintenance shall be accomplished in accordance with the Standing Project Instructions for the Coastal and Great Lakes Water Level Stations, Updated October 2014, and specific station requirements in PART C, Section 2.0.

All other applicable reference documents are provided in the Standing Project Instructions, Section 1.2. There are maintenance requirements for stations where the funding is not identified or not appropriated to perform the annual maintenance; or the annual maintenance is not required this year for some other reason. If maintenance is not required due to lack of funding or for some other reason, the field team will be informed.

A goal of the annual maintenance is to gather information to determine the mean time between failures of every major component deployed. The information collected will help predict when the component will more than likely fail based on the parts history, manufacturer recommendations, operating time, environment conditions (hot, cold, humid, salty, icy, foggy, etc.), long-term tests and evaluations, and field experience. If a component, in our professional judgment, will more than likely fail between inspections, we will look to replace that component with a new or refurbished component and test the removed component back in the lab to see how close it was to failure. This will be an iterative process with ED and FOD working closely to refine the process and analyze the findings. CO-OPS will modify our procedures in future years based on the analysis.

Maintenance for reimbursable special projects shall be performed in accordance with their respective agreements, and all associated travel and supplies shall be charged to the appropriate reimbursable task numbers as approved in the project spending plans.

### **1.3 Field Operations Division (FOD) Maintenance**

It is the responsibility of FOD to assess available resources and perform annual and emergency maintenance at any station with operational problems to restore the site to full operational capabilities with a minimum loss of data. FOD shall consult with ED, as necessary, when making operational decisions, planning annual inspections, or emergency maintenance activities. The ED Chesapeake Instrument Lab (CIL) and Seattle Instrument Lab (SIL) will coordinate with FOD to provide additional emergency maintenance support as needed.

The Data Management and Assessment Team (DMAT) shall review any station problems of concern, and communicate those to FOD and ED. FOD shall provide direction should multiple problems compete for available resources.

There are many online resources available to personnel to assist in the evaluation of station and sensor status. A few of the more useful resources are provided in the following table. For CO-OPS IDIQ contractors, access to these online resources will have to be granted by the Planning Monitoring and Analysis Branch Chief. Contact the CO-OPS Contracting Office Representative (COR) or the Task Manager for more information.

<b>Online IP Address</b>	<b>Description of Resource</b>
<a href="http://extranet.co-ops.nos.noaa.gov/mambo/index.php">http://extranet.co-ops.nos.noaa.gov/mambo/index.php</a>	CO-OPS Extranet panel
<a href="http://extranet.co-ops.nos.noaa.gov/cgi-bin/diag_diagnostics.cgi">http://extranet.co-ops.nos.noaa.gov/cgi-bin/diag_diagnostics.cgi</a>	Diagnostic single and multiple station plotting tool, for checking the configuration of a station, or for checking the status of satellite transmissions

## **2. Coordination Guidance for the Installation, Maintenance, and Removal of Observing Systems**

### **2.1 PORTS®**

Installation, maintenance, and removal of stations for PORTS® shall be coordinated between Darren Wright (PORTS Program Manager), Robert Loesch (Observing Systems Manager (OSM)), the IDIQ Task Managers, and FOD. Contractors or local user groups maintain nearly all PORTS® projects; FOD shall support these maintenance groups as necessary. PORTS® Met only, Air Gap and Visibility station requirements are covered under each individual PORTS® operation and maintenance contract.

### **2.2 Hydrographic and Photogrammetric Surveys**

The requirements for the installation and removal of subordinate water level stations for NOAA in-house hydrographic and photogrammetric surveys shall be coordinated between the Products and Services Branch (PSB) Hydrographic Planning Team (HPT), FOD, and the Operations Branch (OB) of the Hydrographic Surveys Division of the NOS Office of Coast Survey (OCS), or the Remote Sensing Division (RSD) of the National Geodetic Survey (NGS). The coordination is generally done through Laura Rear McLaughlin, Mapping and Charting Program Manager (MCPM), Robert Loesch (OSM), and Jerry Hovis, Chief PSB, as CO-OPS' representative for the tri-office survey support team. The DCP, sensor, and other equipment gauging activities shall also be coordinated between FOD and OB/RSD. The selection and installation of subordinate stations and sensors by FOD for these surveys shall be coordinated with OB/RSD and approved by MCPM, in concurrence with the ED and OD/PSB/HPT.

According to CO-OPS' policy, NOAA platforms, CO-OPS personnel or CO-OPS' IDIQ contractors shall install the subordinate stations for NOAA in-house hydrographic or photogrammetric surveys. CO-OPS is responsible for maintaining control and subordinate stations for NOAA in-house hydrographic and photogrammetric surveys. Priority stations will be added to the Hydro Hot List. For NOAA contract hydrographic or photogrammetric surveys, the subordinate stations shall be installed by OCS contractors according to the OCS Hydrographic Surveys Specifications and Deliverables document, available on the OCS web site at <http://nauticalcharts.noaa.gov/hsd/specs/specs.htm>

For NOAA contract photogrammetric surveys, NGS contractors shall install the subordinate stations for Shoreline Mapping Surveys, according to the NGS Water Level Specifications and Deliverables document, available on the CO-OPS publications web page.

CO-OPS is in the process of transitioning the Microwave Water Level (MWWL) sensor to operations and stations where the transition is approved for FY15 are listed in Section C. Generally, the acoustic or MWWL system shall be preferred for hydrographic or photogrammetric subordinate station installations. In cases where acoustic wells or MWWL sensor support arm cannot be installed due to terrain or in cold climates, installation of a portable digital bubbler system is authorized. For projects in the Great Lakes, the shaft angle encoder sensor is preferred.

The Commanding Officer of the survey ship or the Chief, Hydrographic Field Party, together with CO-OPS personnel, will be jointly responsible for monitoring the proper operation of these stations during the periods of survey operations. Problems shall be reported to FOD for corrective actions. Artara Johnson of ED is designated as the technical point of contact for NOAA in-house and contract hydrographic and photogrammetric survey projects, and may be contacted for daily activities related to hydro operations. Contact Colleen Fanelli of OD/HPT regarding hydro project planning activities.

### **2.3 *NWLON Water Level Stations***

Installation, maintenance, and removal of subordinate stations by CO-OPS personnel for future NWLON, PORTS<sup>®</sup>, and Resilience programs shall be coordinated among Kate Bosley, Robert Loesch, Manoj Samant, David Lane, Rolin Meyer, Jerry Hovis, Scott Mowery, Darren Wright, Audra Luscher, Laura Rear McLaughlin, and the appropriate operational personnel in ED and FOD.

Robert Loesch, CO-OPS Observing Systems Manager (OSM), focuses on the CO-OPS observing network infrastructure to meet the operational requirements of the program managers. The OSM provides recommendations, planning, programming, and project management as needed to support new installations of temporary or permanent stations and shepherding them through applicable portions of the declare operations process. To that end, the OSM tracks new NWLON, PORTS, & partner station installations and major repair and enhancement projects.

Kate Bosley, the FOD Chief, coordinates reporting of NWLON performance metrics in-house via FOD ongoing plan. Data availability and the number of annual inspections performed are reported quarterly. These details must be reported well in advance of the preparation of quarterly meetings, and it is the responsibility of the AOB and POB Branch Chiefs to ensure the FOD Chief has these statistics well in advance (at least 3 weeks prior to the quarterly meeting).

### **2.4 *Resilience Program***

Installation, maintenance, and removal of stations by CO-OPS personnel for the Resilience Program (including ecosystem restoration, climate, storm surge, and tsunami) shall be coordinated between Resilience Program Manager, OD Applied Analysis Team (AAT) Lead, OSM, and the Resilience project team, as well as any additional operational ED and FOD personnel, as appropriate.

### **2.5 *Special Projects and Contract Projects***

Installation, maintenance, and removal of NWLON stations and subordinate stations for special projects shall be coordinated among the Task and Project Manager, Program Managers, OSM, ED, and FOD managers, and shall follow the guidelines and specifications provided in “Standing Project Instructions for the Coastal and Great Lakes Water Level Stations, Updated October 2014.

## **2.6 *USACE Comprehensive Evaluation of Project Datums Projects***

In FY 13 CO-OPS signed a MOU with the U.S. Army Corps of Engineers (USACE) for supporting their Comprehensive Evaluation of Project Datums (CEPD) Program. Twenty-one of forty-four USACE districts are coastal, and those 21 districts are required to plan CEPD projects and will need CO-OPS' help for computing and updating datums. The coordination of new projects is coordinated between Laura Rear McLaughlin, Robert Bassett, Jerry Hovis and Manoj Samant. Artara Johnson and Kelly Kriner are designated respectively as technical points of contact for documentation and datum computation. They should be contacted for day-to-day operations.

### **3. Work Plan and Reporting**

To systematize operations and handle growth, CO-OPS uses an operating procedure called the Reliable Operating System (ROS). ROS has eight steps as follows:

- Step 1: Project Scoping and Approval
- Step 2: Requirements Analysis and Project Planning
- Step 3: System Design and Resource Allocation
- Step 4: Procurement, Assembly, and Testing
- Step 5: Installation and System Verification
- Step 6: Operation and Maintenance
- Step 7: Operational Declaration, Data Management and Product Delivery
- Step 8: Assessment and Outreach

Each of the steps has identified necessary products such as Standard Operating Procedures (SOP), templates, checklists, guidelines, handbooks, etc., that are relevant to the tasks for that step. All of the activities conveyed by these Project Instructions must follow the ROS guidelines as they are listed on the wiki pages. The products that are relevant for CO-OPS' contracts are made available on the CO-OPS web page at <http://tidesandcurrents.noaa.gov/pub.html> or through CO-OPS Field Reference Library at <http://tidesandcurrents.noaa.gov/fieldlibrary/Welcome>.

#### **3.1 Schedule, Reports, and Training**

FOD shall develop and maintain an annual operations plan based upon the monthly schedule of stations' maintenance, and the work to be accomplished as required in PART C, Section 2.0, making best use of available resources. Assigned team leaders and contract task managers shall continually update the CO-OPS field activities calendar on the CO-OPS Google Calendar web site.

Contractors shall coordinate their schedules through their task managers, who in turn will coordinate with FOD to enter the contractors' schedules on the field calendar.

An annual Tides Training Class shall be offered to the appropriate personnel of the NOAA hydrographic survey ships and hydrographic field parties. Two training classes shall be scheduled – one each at Chesapeake and Seattle field office—as per the NOS milestone. The training class shall cover all aspects of tide station installation, operation, and maintenance. In addition to HPT, ED/OD shall participate with FOD, as appropriate, in the annual OCS field procedures workshop held each winter to coordinate survey or training activities.

**PART B: STANDING PROJECT INSTRUCTIONS FOR THE COASTAL AND GREAT LAKES WATER LEVEL STATIONS, UPDATED OCTOBER 2014**

See:

<http://www.tidesandcurrents.noaa.gov/fieldlibrary/ViewDoc?d=35>

## **PART C: SPECIFIC REQUIREMENTS**

### ***1. Station Operational Groups***

All operational NWLON and subordinate stations are listed in the Excel file “2015 Station Operational Lists.xls”. The file contains three worksheets: 1) 2015 NWLON Station Project Support Status; 2) 2015 NWLON Great Lakes Station Project Support Status; and 3) 2015 Subordinate Station Project Support Status (all other non-NWLON). The Great Lakes stations are distinguished from the coastal stations since they support projects not common to the coastal stations. Stations supporting various programs and NOAA mission goals are indicated with an “X”. These three worksheets are provided as a reference for the field parties.

#### ***1.1 CY 2015 Diving Requirements for FOD Maintained Stations***

The station specific dive frequency and last dive information are provided for each station in Part C, Section 2.0. It is the responsibility of FOD to determine diving requirements based on field experience, and the dive frequency information listed. Any changes in the diving requirements are only applicable for CY 2015; changes are being considered due to known funding and resource limitations and are not a permanent change in requirements.

#### ***1.2 PORTS® Support***

Forty-six (46) stations on the NWLON list provide support for the PORTS® navigational operations. PORTS® stations having meteorological sensors only are denoted on the subordinate station list.

In addition, in the Great Lakes, five master control stations and 18 stations supporting International treaties shall be considered highest priority for continuous data collection. These stations provide water level and flow data to support International Treaties, the International Joint Commission (IJC) and the International Boards of Control supporting the IJC, the International Forecast, Lake Regulations and Modeling efforts by the USACE and Environment Canada as well as monitoring the sharing of the water for power generation between the United States and Canada.

In CY 2015, four new PORTS® will be established: Savannah PORTS®, Port of Morgan City PORTS®, Matagorda PORTS® and Port Fourchon®. CO-OPS will coordinate with the local partners on these associated station installations. CO-OPS FOD personnel will inspect the newly established stations. See Part C, Section 2.0., for specific requirements for each site.

CO-OPS will lead the coordination with local partners to add additional sensors to the existing PORTS® below. The sensors listed will be contract installations executed using existing IDIQ contracts or local partner contracts. CO-OPS Pacific Operations Branch will install the MWWL sensor at the Tacoma PORTS® station.

- San Francisco PORTS®: Installation of a new air gap sensor
- Delaware PORTS®: Installation of a new air gap sensor
- Chesapeake Bay PORTS®: Installation of two visibility sensors and an air gap sensor
- Narragansett PORTS®: Installation of three visibility sensors
- Port of Tacoma PORTS®: Upgrade of the primary water level sensor to a MWWL sensor.

CO-OPS will lead the coordination with local partners to relocate stations or sensors at the existing PORTS® below. The changes listed will be executed using existing IDIQ contracts or local partner contracts. CO-OPS Pacific Operations Branch will install the Cape Disappointment water level station.

- Lower Columbia River PORTS® – replace the Port Hammond water level station with a new water level station at USCG Cape Disappointment
- Port of Houston/Galveston PORTS® – relocate the Exxon current meter to Spilman Terminal
- Delaware PORTS® – relocate the Tacony Palmyra water level station to Tioga Terminal.

### ***1.3 Hydrographic and Photogrammetric Survey Support***

Control stations designated on both the NWLON and subordinate operational station lists shall provide support for hydrographic and photogrammetric survey operations. Survey dates, platforms, and the required subordinate stations, and any changes or additions to this list will be provided by HPT in the hydro and photo project status sheet file under a separate cover. The dates listed in the period are preliminary and might change, but dates are provided for preliminary planning of field trips, as appropriate. Some of the planned NOAA in-house hydrographic and photogrammetric subordinate station installations may be handled through the IDIQ task orders. For individual hydro/photo projects, the project instructions developed by OD/HPT provide information about the number and names of subordinate projects needed for each project.

### ***1.4 Emergency Repairs and Operational Station Status***

Emergency repairs to stations with sensor/system problems shall be addressed immediately; routine maintenance may follow later. In situations where stations require emergency repairs such that data transmission to SSMC has been halted but the sensors still are collecting valid data, all efforts shall be made to download the data from the station's DCP in order to fill all data gaps. These data shall be provided to Configuration and Operational Engineering Team (COET) for ingestion into the database and made available for data processing and product generation. The field crew should be performing preventative maintenance at a station and on the sensors during the regularly scheduled maintenance in an effort to prevent the need to perform emergency maintenance visits in between scheduled visits.

## ***1.5 New, Upgraded or Relocated Stations***

### ***1.5.1 Upgraded Stations***

The following stations need facilities upgrades as described; four stations are also noted in Section 1.5.2 below. See PART C, Section 2.0., for specific requirements at each site.

8467150 Bridgeport, CT - hardening of hurricane Sandy affected station  
8530680 Sandy Hook, NJ - hardening of hurricane Sandy affected station (Contract)  
8635027 Dahlgren, VA – new NWLON station to replace the destroyed Colonial Beach station  
9759394 Mayaguez, PR - hardening of hurricane Sandy affected station and swapped with  
Aguadilla for NWLON count, as agreed with PRSN  
9410170 San Diego, CA – prepare for the upcoming relocation of the water level station  
sometime in the near future  
9752235 Culebra, PR – station rebuild

### ***1.5.2 Microwave Water Level Sensor Transition to Operations***

The following NWLON stations will be installed or upgraded with a Microwave water level sensor in FY15; three stations are also noted above in Section 1.5.1. See PART C, Section 2.0., for specific requirements at each site.

8467150 Bridgeport, CT  
8531680 Sandy Hook, NJ  
8577330 Solomons Island, MD  
8635027 Dahlgren, VA  
8764227 LAWMA, Amerada Pass, LA  
8766072 Freshwater Canal Locks, LA  
9442396 La Push, WA  
9443090 Neah Bay, WA  
9450460 Ketchikan, AK  
9759394 Mayaguez, PR

The following NWLON stations below will require a reconnaissance in preparation of the installation of a Microwave water level sensor in FY16. See PART C, Section 2.0., for specific requirements at each site.

1820000	Kwajalein, Marshall Islands
8447930	Woods Hole, MA
8449130	Nantucket Island, MA
8452660	Newport, RI
8461490	New London, CT
8724580	Key West, FL
8761305	Shell Beach, LA
8771450	Galveston Pier 21, TX
9410840	Santa Monica, CA
9415144	Port Chicago, CA
9440910	Toke Point, WA
9452400	Skagway, AK
9755371	San Juan, PR

### ***1.5.3 Upgraded Stations through the NOAA Office of Climate Observation (OCO)***

The NOAA Climate Program Office (CPO), within NOAA's Office of Climate Observation (OCO) generally provides funding to upgrade the redundant stations/DCPs and/or for upgrading the geodetic network, including co-location of continuous GPS stations in partnership with NOAA's National Geodetic Survey. See PART C, Section 2.0., for specific requirements for each site.

### ***1.5.4 Hurricane Station Reconstruction/Relocations***

The following two stations are proposed relocations or were damaged by hurricanes, typhoons, and/or storm surge over the last several years and need infrastructure improvements. See PART C, Section 2.0., for specific requirements for each site.

8635150 Colonial Beach, VA (to be replaced by a new installation at the Dahlgren Navy facility)  
8762482 West Bank, Bayou Gauche, LA – This station has replaced 8762372 East Bank, Bayou LaBranche, LA on the NWLON list.

### ***1.5.5 Stations Planned for Continuously Operating Reference Station (CORS) Installation***

CO-OPS is collaborating with NGS to document the requirements for new CORS sites. NGS and CO-OPS selected stations, jointly, based on the longest data series. NGS personnel are in the process of performing a reconnaissance of these stations to determine the feasibility of a CORS installation co-located with the NWLON station. The worksheet titled “FY 2015 NWLON Station Project Support Status” of the Excel file “2015 Station Operational Lists.xls” identifies existing co-located NWLON/CORS sites.

1619910	Sand Island, Midway Islands (Planned - funding provided by NOAA OCO)
1820000	Kwajalein
1770000	Pago Pago, American Samoa
1890000	Wake Island (Planned - funding from NOAA OCO)
8418150	Portland, ME
8534720	Atlantic City, NJ (Planned - funding from NOAA OCO)
8670870	Fort Pulaski, GA
8720218	Mayport (Bar Pilots Dock), FL
8723214	Virginia Key, FL (Planned - funding from NOAA OCO)
9414290	San Francisco, CA (Planned - funding from NOAA OCO)
9451600	Sitka, AK (Planned - funding from NOAA OCO)
9455090	Seward, AK (Planned - funding from NOAA OCO)
9462620	Unalaska, AK (Planned - funding from NOAA OCO)
9468756	Nome, AK (Planned - funding from NOAA OCO)
9497645	Prudhoe Bay, AK (Planned - funding from NOAA OCO)
9755371	San Juan, PR
2695540	Bermuda

CO-OPS and NGS envision FY15 as the fourth year in a five-year plan to complete the co-location of CORS station on all US GLOSS stations (that are NWLON sites). This work will include both installation of new antennas and making level connections between existing/new bench marks and the tide station. The Kwajalein and Bermuda sites have been approved and installation of the CORS is planned for FY15. The University of Hawaii is leading the CORS installation for Sand Island, Midway Islands and Pago Pago, American Samoa. San Francisco is on hold and Virginia Key is still in the testing and planning stages. Seward and Sitka (and possibly Nome) are also in the planning stages in FY 15.

Several others require, at a minimum, a level connection between the tide station and an existing monument, and upon further assessment, may also need new CORS antennas. CO-OPS will report the progress of the reconnaissance and installation of the CORS to the Climate Program Office throughout the year, and input will be sought on prioritization of the planned sites.

The following NWLON stations have CORS site co-located or near the station and level connection between the tide station and the CORS site.

1770000	Pago Pago, American Samoa
8720030	Fernandina Beach, FL
8726520	St. Petersburg, FL
8727520	Cedar Key, FL
8729840	Pensacola, FL
9419750	Crescent City, CA

### ***1.6 Stations with Malfunctioning Primary or Backup Sensors***

Stations with malfunctioning primary (A1) sensors or backup bubbler (B1) sensors, indicated on the CORMS control panel and the Backup Water Level Gain and Offset web page, need repair or replacement in a timely manner. Bear in mind that transmission failures will also cause station sensors to appear on these lists as failed. Failure status of a given station backup sensor may not necessarily indicate a failed sensor, but does indicate that the sensor cannot be used if needed to replace the primary sensor data for dissemination. Refer to the CORMS control panel for the station sensor status.

### ***1.7 Stations Supporting CO-OPS Resilience Program Projects***

The stations listed on the Resilience Program web site will be supporting projects that are part of the Resilience Program. Continuous data collection at these sites, both NWLON and subordinate, is critical to the success of the projects. See the following link for the list of stations: <http://tidesandcurrents.noaa.gov/coastal.shtml>. New water level stations will be installed on the Hudson River and Lake Pontchartrain in CY 2015. See Part C, Section 2.0 for station specific requirements for the new water level stations and existing stations supporting this program.

### ***1.8 Stations Supporting NOAA Tsunami and Storm Surge Requirements***

The 2015 Station Operational Lists and the table below identify the NWLON stations supporting the NOAA Tsunami Warning Network and Storm Surge Network. Data collection platforms at all NWLON stations in the Pacific Islands, Alaska, West coast, the East coast and Gulf coast have been upgraded and are designated as “Tsunami-Capable”, and these stations are considered to be part of the tsunami warning network. The web link to the Tsunami web page is: <http://tidesandcurrents.noaa.gov/tsunami/>. The maintenance activities at the 16 Tsunami stations listed below are funded by NWS within the CO-OPS base budget.

9411340 Santa Barbara, CA  
9437540 Garibaldi, OR  
9441102 Westport, WA  
9442396 La Push, WA  
9451054 Port Alexander, AK  
9452634 Elfin Cove, AK  
9457804 Alitak, AK  
9459881 King Cove, AK  
9461710 Atka, Nazan Bay, AK  
9462450 Nikolski, Mueller Cove, AK  
9751364 Christiansted Harbor, St. Croix, VI  
9751381 Lameshur Bay, St John, VI  
9752235 Culebra, PR  
9752695 Vieques Island, PR  
9759412 Aguadilla Pier, PR  
9759938 Mona Island, PR

## 1.9 Special Project Stations for CY 2015

### 1.9.1 Supported Projects

The stations identified in the following table are both reimbursable and non-reimbursable projects that are operating or will be operating in CY 2015 in support of reimbursable, partnership, and/or special projects. Specific station requirements, where applicable, are provided for these stations being maintained by CO-OPS.

<b>Project Station Number</b>	<b>Station Name</b>	<b>Partner</b>	<b>Funding Number</b>	<b>Control Station Number and Name</b>
9411406	Platform Harvest, CA	NASA/JPL	N8R1SE3-P01	9410660 Los Angeles, CA
9414958	Bolinas Lagoon, CA	NGS	1BK6EBL	9415020 Point Reyes, CA
851xxxx	Turkey Point, NY	NERRS	N/A	8518750 Battery, NY
9761115	Barbuda	Antigua-Barbuda Meteorological Services	N8R1SE3-P01	N/A
8419317	Wells, ME	NERRS	TBD	8418150 Portland, ME
8662245	Oyster Landing, SC	Baruch	N/A	8665530 Charleston, SC
8732828	Weeks Bay, AL	NERRS	N/A	8729840 Pensacola, FL
8740166	Grand Bay, MS	NERRS	N/A	8741533 Pascagoula NOAA, MS
8762482	West Bank, LA	St. Charles Parish	N/A	8761724 Grand Isle, LA
9414575	Coyote Creek, CA	USACE	N/A	9414750 Alameda, CA

### 1.10 Global Sea Level Program

The NOS is responsible for maintenance at the following station:

<b><u>Station Number</u></b>	<b><u>Station Name</u></b>
2695540	ESSO Pier, Bermuda

The NOS is also responsible for technical support to other countries, as approved.

### ***1.11 Station, Bench Mark, and Met Photographs***

COET is attempting to complete the catalog of required photos of station components and bench marks for each active station. Over the past several years, CO-OPS ED has asked for photos demonstrating the specific views that are missing from this catalog. These files must be named in accordance with the format described in the Standing Project Instructions.

The photos requested in the following Station Specifics do not have to be taken this year if the field party chief can find photos recently taken showing the requested view. As long as the photo is properly named and the view represented in the photo is clear, COET will accept it. It would be advantageous to the field party to review previous photos taken prior to visiting the station in case the photos do not meet the criteria and a new photo has to be taken during the site visit.

Bench mark, station and equipment photographs shall be free of persons, tools, vehicles, debris, graffiti and other materials, to the best of the photographer's ability. Personnel appearing in photographs should be properly clothed and equipped with the proper Personal Protective Equipment (PPE) as required for the task executed. These photographs are often placed on CO-OPS websites, included in outreach materials and disseminated to the public for various purposes, and should be appropriate for such uses. A sample set of standard station photos used on the station home page of the TidesandCurrents website can be found in Appendix A of the Standing Project Instructions for Coastal and Great Lakes Water Level Stations.

### ***1.12 Other Technical Support***

FOD shall provide technical support to various groups outside NOS as part of agreements, grants, or developing new programs. For several years, FOD has provided technical support to the Texas Coastal Ocean Observation Network (TCOON). Technical support shall also be provided to the Great Lakes Observing System (GLOS) as required, and perhaps other developing Regional Associations.

The Puerto Rican water level observation network managed by the Puerto Rico Seismic Network (PRSN) received technology transfer support and installed six water level stations at Mayaguez, Penuelas (Guayanilla), Yabucoa, Fajardo, Arecibo, and Vieques Island (Isabel Segunda) during 2007. PRSN signed a new Memorandum of Agreement with CO-OPS in FY 2014. The Resilience Program Manager shall coordinate CO-OPS support for this project with CO-OPS resource managers. There is no funding identified for this effort. CO-OPS is working with PRSN to take over the Mayaguez station as an NWLON station in CY 15 to replace the destroyed NWLON station at Aguadilla. PRSN is planning to install a station at Aguadilla, which will replace Mayaguez in the PRSN. PRSN operates water level stations in other locations outside of Puerto Rico for which CO-OPS has not committed assistance.

### ***1.13 Current meter upgrades – ADCPX Upgrades for Side lookers and bottom mounts***

CO-OPS has started upgrading the side lookers and bottom mounted Acoustic Doppler Current Profilers (ADCP) to ADCPX systems, which are based upon the Sutron 9210 DCP. The ADCPX development allows integration of multiple ADCP sensor types such as Sontek, RDI, Nortek; and stores data on removable SD card. The system allows the polling of the data from remote devices via IP modem, telephone, or internet (via PORTS tag). The system transmits full data set via GOES and that includes setup parameters at sensor startup and allows setup of sensor's time/date and the time of first ping. The system also checks and adjusts the time, which is set to GMT. The designed and integrated system allows flexibility to integrate additional sensors such as meteorological and visibility.

CO-OPS plans to perform ADCPX upgrades at the following seven stations in CY 15 completing the upgrades of the side lookers and bottom mounted ADCP stations. The PORTS partners and the contracts have funding to do these upgrades in CY 15.

cb1001 Cove Point LNG Pier – Chesapeake Bay North PORTS  
cb1201 Tolchester Front Range – Chesapeake Bay North PORTS  
nb0101 Providence Currents - Narragansett PORTS  
nb0201 Fall River Currents - Narragansett PORTS  
nb0301 Quonset Point Currents - Narragansett PORTS  
db0501 Brown Shoal Light - Delaware PORTS  
n03020 The Narrows - Sandy funds to replace equipment. - NY/NJ PORTS

### ***1.14 Great Lakes Current meters***

The following three current meters (side lookers) are maintained on 'as-needed' basis with phone support from the Chesapeake Instrument lab as necessary.

gl0101 Cuyahoga River - Lake Erie, near the Cleveland station.  
gl0201 Maumee River - Lake Erie, near the Toledo station.  
gl0301 St. Clair River - St. Clair River. This is also referred to as the Blue Water Bridge current meter. The station is located just south of Dunn Paper water level station.

## 2. *Individual Station Requirements*

The following individual station requirements, in addition to the required maintenance listed in the Standing Project Instructions (PART B), are based on the information obtained from review of field, data processing, and datum records. FOD and contractors are responsible for reviewing the NGWLMS status reports, e-mails, and CORMS morning reports for a station to determine recent station problems as part of the staging process for the annual inspection. Additional requirements or changes will be addressed in an amendment to Project Instructions. L-numbers for digital leveling are for calendar year 2015. NGS Permanent ID (PID) for the primary bench mark and station GPS mark, where available, are identified below in parenthesis for each station.

Station specific requirements grouped by Regions and Task Numbers as follows:

- |       |   |   |
|-------|---|---|
| 2.1.  | FOD/AOB                                 | East Coast and Gulf Coast Stations                                    |
| 2.2.  | FOD/AOB                                 | Bermuda and the Caribbean Islands Stations                            |
| 2.3.  | Air-Sea Systems – Task 14-01            | Lower MS River PORTS <sup>®</sup> (Funded through 2/28/2015)*         |
| 2.4.  | Air-Sea Systems – Task 14-01            | Port Fourchon PORTS <sup>®</sup> (Funded through 2/28/2015)*          |
| 2.5.  | Air-Sea Systems – Task 14-01            | Lake Charles PORTS <sup>®</sup> (Funded through 06/29/2015)*          |
| 2.6.  | Air-Sea System - Task 14-02             | Pascagoula PORTS <sup>®</sup> (Funded through 06/29/2015)*            |
| 2.7.  | Woods Hole Group - Task 14-02           | Houston/Galveston PORTS <sup>®</sup> (Funded through 1/31/2016)*      |
| 2.8.  | Woods Hole Group - Task 14-02           | Texas NWLON Stations (Funded through 05/31/2016)*                     |
| 2.9.  | Woods Hole Group - Task 14-03           | Narragansett PORTS <sup>®</sup> (Funded through 6/30/2015)*           |
| 2.10. | Woods Hole Group - Task 14-03           | NY/NJ PORTS <sup>®</sup> (Funded through 6/30/2015)*                  |
| 2.11. | Woods Hole Group - Task 14-03           | Delaware River and Bay PORTS <sup>®</sup> (Funded through 8/31/2015)* |
| 2.12. | Woods Hole Group – Task 14-03           | Chesapeake Bay PORTS <sup>®</sup> (Funded through 6/30/2015)*         |
| 2.13. | Woods Hole Group - Task 14-03           | Charleston PORTS <sup>®</sup> (Funded through 05/31/2016)*            |
| 2.14. | Woods Hole Group                        | Jacksonville PORTS <sup>®</sup>                                       |
| 2.15. | FOD/AOB                                 | Great Lakes Stations  |
| 2.16. | FOD/POB                                 | Hawaii and Pacific Islands Stations                                   |
| 2.17. | FOD/POB                                 | California Stations   |
| 2.18. | FOD/POB                                 | Oregon Stations   |
| 2.19. | FOD/POB                                 | Washington Stations   |
| 2.20. | FOD/POB                                 | 16 Alaska Stations  |
| 2.21. | John Oswald and Associates - Task 14-04 | 10 Alaska Stations (Funded through 9/30/2015)*                        |
| 2.22. | PRSN                                    | Puerto Rican Seismic Network Stations                                 |

\* Existing status and the ending dates of the contract tasks are shown above, as tasks are re-competed and awarded, this information will be updated.

## Individual Station Headers

The individual stations have header information that identifies the station and critical information required for performing annual maintenance. The station ID, station name, L-number, and leveling part # are included in the first line. The second line identifies the Primary Bench Mark (PBM) and the PBM elevation above Station Datum (SD). PBM above SD is necessary for properly abstracting the levels performed at the station. The GPS bench mark is identified and the value for Mean Sea Level (MSL) above SD is provided on the third line. MSL above SD is critical for calculating the barometer coefficient. GPS observation frequency and date of last GPS session are noted on line four. This information is essential for determining the necessity of performing GPS this year. For example, if the GPS frequency is every five years, and the last GPS session was in 2010, a session is required this year. This procedure is the same for the fifth and final line that conveys the dive inspection frequency and the date of the last dive. GPS and diving requirements **ARE NOT** identified in the individual requirements below the header.

## 2.1 FOD/AOB - East Coast Stations

### 2.1.1 FOD/AOB – Maine Stations

<b>8410140 Eastport, ME</b>	<b>L28187</b>	<b>Part 1</b>
<i>PBM:</i> 841 0140 TIDAL 3 (PD0006)		<i>PBM above SD:</i> 15.685 m
<i>GPS Bench Mark:</i> EASTPORT 1989 (PID1179)		<i>MSL above SD:</i> 4.420 m
<i>GPS Observation Frequency:</i> Every 5 years	<i>Last GPS Observation Performed:</i> 10/09	
<i>Dive Inspection Frequency:</i> Every year		<i>Last Dive:</i> 08/12

1. **Unresolved from 2014 Project Instructions:** Perform a reconnaissance for locations to install two new bench marks with Class B or higher stability (preferably deep rod marks or in rock outcrop settings).

<b>8411060 Cutler Farris Wharf, ME</b>	<b>L28187</b>	<b>Part 6</b>
<i>PBM:</i> 841 1060 TIDAL 10		<i>PBM above SD:</i> 10.751 m
<i>GPS Bench Mark:</i> 841 1060 A (AJ2727)		<i>MSL above SD:</i> 3.860 m
<i>GPS Observation Frequency:</i> Every 5 years	<i>Last GPS Observation Performed:</i> 08/11	
<i>Dive Inspection Frequency:</i> Every year		<i>Last Dive:</i> 08/11

1. Address the Aquatrak sensor data bottoming out at low tide issue.
2. **Unresolved from 2014 Project Instructions:** Take digital photos of the face, setting, and 2 directional views of bench marks STEEL ROD and 841 1060 TIDAL 10.
3. **Unresolved from 2014 Project Instructions:** Lower solar panels on fiberglass pole (may require three or four persons).
4. **Unresolved from 2014 Project Instructions:** Install small table for laptop.
5. Check the GOES antenna azimuth and elevation.

<b>8413320 Bar Harbor, ME</b>	<b>L28187</b>	<b>Part 3</b>
<i>PBM:</i> 841 3320 TIDAL 13		<i>PBM above SD:</i> 7.544 m
<i>GPS Bench Mark:</i> 841 3320 TIDAL 1 (AI8315)		<i>MSL above SD:</i> 2.786 m
<i>GPS Observation Frequency:</i> Every 5 years	<i>Last GPS Observation Performed:</i> 09/09	
<i>Dive Inspection Frequency:</i> Every year		<i>Last Dive:</i> 07/12

1. Station needs to be completely rebuilt requiring a new frame; coordinate this effort with the harbormaster and city engineer. Perform recon for station rebuild in CY 2015 and rebuild of the station will be considered for the future years.
2. Adjust solar panels to eliminate shading issue.
3. Include bench marks 841 3320 B and 841 3320 TIDAL 11 in the leveling run.
4. Attempt to recover from DCP1 water level data from July 1<sup>st</sup> to July 28<sup>th</sup> 2014.

**8418150 Portland, ME**

**PBM:** TIDAL 31 STA 84 (OC0005)

**GPS Bench Mark:** 841 8150 TIDAL 3

**GPS Observation Frequency:** Every 5 years

**Dive Inspection Frequency:** Every year

**L28187**

**Part 4**

**PBM above SD:** 8.406 m

**MSL above SD:** 4.113 m

**Last GPS Observation Performed:** 09/10

**Last Dive:** 08/08

1. **Unresolved from 2014 Project Instructions: FUNDING DEPENDENT** - The CT well is in place without the sensor installed. Remove the CT well if no longer needed.
2. **Unresolved from 2014 Project Instructions:** Designate a new PBM or perform a reconnaissance for a location to install a Class B or higher stability bench mark that can be designated as the PBM in the future.
3. **Unresolved from 2014 Project Instructions:** Recover and include bench mark TIDAL 38 STA 84 in the level run; this mark was not leveled for more than two years.

**8419317 Wells, ME (Resilience)**

**PBM:** 841 9317 PUMP

**GPS Bench Mark:** 841 9317 A

**GPS Observation Frequency:** Every 5 years

**Dive Inspection Frequency:** Every year

**L28187**

**Part 5**

**PBM above SD:** 10.000 m

**MSL above SD:** 5.954 m

**Last GPS Observation Performed:** 09/10

**Last Dive:** 07/12

1. Coordinate the annual inspection with the Resilience program manager and notify the manager of any stations issues.
2. **Unresolved from 2014 Project Instructions:** The CT well is in place without the sensor installed. Remove the CT well if no longer needed.
3. **Unresolved from 2014 Project Instructions:** Update XPERT Operating System, XPERT DARK Operating System, and the Satlink firmware.
4. **Unresolved from 2014 Project Instructions:** Check and update log sizes as per the Engineering Bulletin 09-003.

**2.1.2 FOD/AOB – New Hampshire Stations**

**8423898 Fort Point, NH**

**L28188**

**Part 1**

***PBM:*** 842 3898 TIDAL 2

***PBM above SD:*** 7.510 m

***GPS Bench Mark:*** CONSTITUTION 147 NO 1 1941 (OC0429)

***MSL above SD:*** 2.259 m

***GPS Observation Frequency:*** Every 5 years

***Last GPS Observation Performed:*** 10/09

***Dive Inspection Frequency:*** Every year

***Last Dive:*** 08/12

1. No additional requirements.

### 2.1.3 FOD/AOB – Massachusetts Stations

<b>8443970 Boston, MA</b>	<b>L28189</b>	<b>Part 1</b>
<i>PBM:</i> K 12 (MY0555)		<i>PBM above SD:</i> 6.858 m
<i>GPS Bench Mark:</i> 844 3970 D TIDAL (AJ4030)		<i>MSL above SD:</i> 2.660 m
<i>GPS Observation Frequency:</i> Every 5 years	<i>Last GPS Observation Performed:</i> 07/10	
<i>Dive Inspection Frequency:</i> Every year		<i>Last Dive:</i> 09/13

1. **Unresolved from 2011 Project Instructions:** Take two directional photos of bench mark 844 3970 C.
2. **Unresolved from 2014 Project Instructions:** Recover and include bench mark 844 3970 TIDAL 16 in the level run; this mark was not leveled for more than two years.
3. Install parallel plates on the Aquatrak well.

<b>8447435 Chatham, MA</b>	<b>L28189</b>	<b>Part 5</b>
<i>PBM:</i> 844 7435 B (AA7166)		<i>PBM above SD:</i> 5.861 m
<i>GPS Bench Mark:</i> 844 7435 B TIDAL		<i>MSL above SD:</i> 1.974 m
<i>GPS Observation Frequency:</i> Every 5 years	<i>Last GPS Observation Performed:</i> 09/10	
<i>Dive Inspection Frequency:</i> Every year		<i>Last Dive:</i> 08/12

1. **Unresolved from 2014 Project Instructions:** Update 9210 XPERT Operating System and the Satlink firmware.
2. **Unresolved from 2014 Project Instructions:** Check and update the log sizes as per the Engineering Bulletin 09-003.
3. Include bench mark 844 7435 D in the leveling run.

<b>8447930 Woods Hole, MA</b>	<b>L28189</b>	<b>Part 3</b>
<i>PBM:</i> 844 7930 B TIDAL (AJ4031)		<i>PBM above SD:</i> 3.447 m
<i>GPS Bench Mark:</i> 844 7930 B TIDAL (AJ4031)		<i>MSL above SD:</i> 1.096 m
<i>GPS Observation Frequency:</i> Every 5 years	<i>Last GPS Observation Performed:</i> 06/09	
<i>Dive Inspection Frequency:</i> Every year		<i>Last Dive:</i> 09/13

1. Perform an engineering reconnaissance to install the MWWL sensor, seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the installation design of the new station.
2. **Unresolved from 2014 Project Instructions:** Provide station photos of the tide house structure, shelter/DCP, sensor, Met mast, and wind sensor, etc.
3. **Unresolved from 2014 Project Instructions:** Review the reconnaissance report submitted in FY13, establish and level two Class B or higher stability bench marks, designation/stamping 844 7930 C/7930 C 2015 and 844 7930 D/7930 D 2015.
4. **Unresolved from 2014 Project Instructions:** Take the face, setting, and location photos for any newly established marks.
5. Update the bench mark diagram to include new marks.

**8449130 Nantucket, MA**

***PBM:*** 844 9130 TIDAL K

***GPS Bench Mark:*** 844 9130 K TIDAL (AJ4032)

***GPS Observation Frequency:*** Every 5 years

***Dive Inspection Frequency:*** Every year

**L28189**

**Part 4**

***PBM above SD:*** 3.125 m

***MSL above SD:*** 1.454 m

***Last GPS Observation Performed:*** 10/09

***Last Dive:*** 09/13

1. Perform an engineering reconnaissance to install the MWWL sensor, seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the installation design of the new station.
2. **Unresolved from 2014 Project Instructions:** Take a photo of the Aquatrak well.
3. **Unresolved from 2014 Project Instructions:** Jet the Aquatrak well and clean the area surrounding the parallel plates.
4. **Unresolved from 2014 Project Instructions:** Vacuum the interior of the station shelter.

#### **2.1.4 FOD/AOB – Rhode Island Stations**

**8452660 Newport, RI (PORTS)**

***PBM:*** 845 2660 L

***GPS Bench Mark:*** 844 9130 L

***GPS Observation Frequency:*** Every 5 years

***Dive Inspection Frequency:*** Every year

**L28190**

**Part 1**

***PBM above SD:*** 4.113 m

***MSL above SD:*** 1.106 m

***Last GPS Observation Performed:*** 10/09

***Last Dive:*** 07/13

1. Perform an engineering reconnaissance to install the MWWL sensor, seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the installation design of the new station.

### 2.1.5 FOD/AOB – Connecticut Stations

#### 8467150 Bridgeport, CT

**PBM:** 846 7150 A (AI1725)

**GPS Bench Mark:** 846 7150 D TIDAL (AJ4034)

**GPS Observation Frequency:** Every 5 years

**Dive Inspection Frequency:** Every year

#### L28191

#### Part 3

**PBM above SD:** 3.544 m

**MSL above SD:** 1.708 m

**Last GPS Observation Performed:** 11/09

**Last Dive:** 06/12

1. **Unresolved from 2014 Project Instructions:** Install an approved MWWL sensor; if any structural modifications are required, seek engineering support and Field Engineering Review Subcommittee (FERS) approval.
2. **Unresolved from 2014 Project Instructions:** Establish and level four new bench marks, of stability class B or higher, during or after the station relocation, designation/stamping as follows: 846 7150 G/7150 G 2015, 846 7150 H/7150 H 2015, 846 7150 J/7150 J 2015, and 846 7150 K/7150 K 2015.
3. **Unresolved from 2014 Project Instructions:** Take the face, setting, and location photos of newly established bench marks.
4. **Unresolved from 2014 Project Instructions:** Measure the elevation of the water temperature sensor above Station Datum.
5. Update the bench mark diagram with newly established marks.

### 2.1.6 FOD/AOB – New York Stations

#### 8510560 Montauk, NY

**PBM:** 851 0560 K (AH6726)

**GPS Bench Mark:** TIDAL 9 STA 2 50 (LW0831)

**GPS Observation Frequency:** Every 5 years

**Dive Inspection Frequency:** Every year

**L28192**

**Part 1**

**PBM above SD:** 3.937 m

**MSL above SD:** 1.554 m

**Last GPS Observation Performed:** 09/10

**Last Dive:** 06/14

1. Provide met sensor heights.
2. Take digital photos of the station and the sensors in accordance with section 2.9 of the Standing Project Instructions.

#### 851xxxx Turkey Point, NY(Resilience)

**PBM:** Undetermined

**GPS Bench Mark:** Undetermined

**GPS Observation Frequency:** Undetermined

**Dive Inspection Frequency:** Undetermined

**L28192**

**Part 7**

**PBM above SD:** Undetermined

**MSL above SD:** Undetermined

**Last GPS Observation Performed:** n/a

**Last Dive:** n/a

1. Coordinate the station installation inspection with the Resilience Program Manager. Notify Sarah Fernald, of the Hudson River NERRS, prior to any site visit.

### 2.1.7 FOD/AOB – New Jersey Stations

**8534720 Atlantic City, NJ**

**PBM:** 853 4720 F

**GPS Bench Mark:** 853 4720 F

**GPS Observation Frequency:** Every 5 years

**Dive Inspection Frequency:** Every year

**L28193**

**Part 2**

**PBM above SD:** 10.554 m

**MSL above SD:** 2.186 m

**Last GPS Observation Performed:** 07/09

**Last Dive:** 08/09

1. **Unresolved from 2014 Project Instructions:** Re-measure the elevation of the barometer above station datum (should be ~ 10 m, but is currently documented as 1.4 m).
2. Include bench marks 853 4720 G, 853 4720 H, 853 4720 I, 853 4720 J, 853 4720 M, and TIDAL 31 RESET in the leveling run.
3. Perform GPS survey observations.
4. Perform bench mark reconnaissance to increase the inventory of class B or higher marks.
5. Replace the lock on the enclosure.

### 2.1.8 FOD/AOB – Maryland and DC Stations

**8570283 Ocean City Inlet, MD** **L28196** **Part 1**  
*PBM:* 857 0283 J TIDAL *PBM above SD:* 4.979 m  
*GPS Bench Mark:* 857 0283 J TIDAL *MSL above SD:* 2.839 m  
*GPS Observation Frequency:* Every 5 years *Last GPS Observation Performed:* 07/14  
*Dive Inspection Frequency:* Every year *Last Dive:* 05/13

1. Include bench marks TIDAL 6, F104 RESET, OCM 1B 99, OC 1 1997, OC 2 1997, and SPEICHER in the leveling run.
2. Perform a reconnaissance for a new bench mark, class B or higher, to replace bench mark OC 2 1997.

**8571421 Bishops Head, MD** **L28196** **Part 11**  
*PBM:* 857 1421 A *PBM above SD:* 10.000 m  
*GPS Bench Mark:* 857 1421 GRANGER *MSL above SD:* 9.128 m  
*GPS Observation Frequency:* Every 5 years *Last GPS Observation Performed:* 10/13  
*Dive Inspection Frequency:* Every year *Last Dive:* 04/12

1. **Unresolved from 2014 Project Instructions:** Recover or establish and level two deep rod marks, designation/stamping as follows: 8571421 E/1421 E 2015 and 8571421 F/1421 F 2015.
2. **Unresolved from 2014 Project Instructions:** Take face, setting, and location photos from two cardinal directions of bench mark 857 1421 D.
3. Replace the wind bird nose cone.
4. Inspect solar panels and charging components on DCP2.
5. Replace the DCP2 battery.
6. Update the bench mark diagram with the new marks.

**8571892 Cambridge, MD** **L28196** **Part 2**  
*PBM:* 857 1892 D TIDAL (AC6854) *PBM above SD:* 3.344 m  
*GPS Bench Mark:* 857 1892 D TIDAL (AC68540) *MSL above SD:* 1.060 m  
*GPS Observation Frequency:* Every 5 years *Last GPS Observation Performed:* 06/14  
*Dive Inspection Frequency:* Every year *Last Dive:* 04/12

1. Investigate the condition of the pier. Perform an reconnaissance with EDB during the regular AI to determine the condition of the pier.
2. Update NOSGoesFormat.txt to change BBAT flag from "=" to "<".
3. **Unresolved from 2014 Project Instructions:** Recover or establish and level one surface mark, designation/stamping as follows: 857 1892 H/1982 H 2015.
4. **Unresolved from 2014 Project Instructions:** Recover and level bench marks 857 1892 TIDAL 4, BM USE, 857 1892 A, BALTO MARYLAND, and CAM in the level run; these marks were not leveled for more than two years.
5. Take the face, setting, and location photos of newly established bench marks.
6. Update the bench mark diagram with the new marks.

### 2.1.9 FOD/AOB – Virginia Stations

#### 8631044 Wachapreague, VA

L28198

Part 1

*PBM:* 863 1044 B

*PBM above SD:* 4.130 m

*GPS Bench Mark:* 863 1044 K TIDAL (AJ4587)

*MSL above SD:* 1.401 m

*GPS Observation Frequency:* Every 5 years

*Last GPS Observation Performed:* 07/09

*Dive Inspection Frequency:* Every year

*Last Dive:* Unknown

1. Relocate the water level station to the new VIMS dock.
2. **Unresolved from 2014 Project Instructions:** Verify the MWWL and Aquatrak data comparison analysis is complete and accepted by the MWWL TOP Committee. If approved, remove the Aquatrak, associated DCP, and assign the DCP associated with the MWWL sensor as DCP 1, if necessary.
3. **Unresolved from 2014 Project Instructions:** Verify the Druck sensor serial number.
4. Relocate the GPS antenna connected to the XPERT DCP.

#### 8635027 Dahlgren, Naval Proving Ground, VA

L28198

Part 3

*PBM:* TBD

*PBM above SD:* Undecided

*GPS Bench Mark:* TBD

*MSL above SD:* TBD

*GPS Observation Frequency:* Every 5 years

*Last GPS Observation Performed:* Unknown

*Dive Inspection Frequency:* Every year

1. Install the new NWLON station with an approved MWWL sensor; if any structural modifications are required, seek engineering support and Field Engineering Review Subcommittee (FERS) approval. This station is to be installed to replace the destroyed Colonial Beach NWLON station.

### 2.1.10 FOD/AOB – North Carolina Stations

<b>8651370 Duck, NC</b>	<b>L28199</b>	<b>Part 1</b>
<b>PBM:</b> 865 1370 B TIDAL, (FW0688)		<b>PBM above SD:</b> 10.061 m
<b>GPS Bench Mark:</b> 865 1370 C (FW0686)		<b>MSL above SD:</b> 6.202 m
<b>GPS Observation Frequency:</b> Every 5 years	<b>Last GPS Observation Performed:</b> 03/14	
<b>Dive Inspection Frequency:</b> Every year		<b>Last Dive:</b> 03/13

1. **Unresolved from 2014 Project Instructions:** Remove or fix the conductivity sensor.
2. Replace the GPS antenna and inspect the cable.
3. Include the barometer in the level run.

<b>8652587 Oregon Inlet Marina, NC</b>	<b>L28199</b>	<b>Part 5</b>
<b>PBM:</b> 865 2587 NO 3 TIDAL (EX0150)		<b>PBM above SD:</b> 5.214 m
<b>GPS Bench Mark:</b> 865 2587 TIDAL A		<b>MSL above SD:</b> 0.965 m
<b>GPS Observation Frequency:</b> Every 5 years	<b>Last GPS Observation Performed:</b> 03/14	
<b>Dive Inspection Frequency:</b> Every year		<b>Last Dive:</b> 03/13

1. **Unresolved from 2014 Project Instructions:** Repair and/or install parallel plates on the primary water level sensor well.
2. Include bench mark NC12 35 2000, NO 1 1974, and NO 2 1974 in the leveling run.
3. Update the WinDesc file removing SSN 0513 and update the remaining SSN's accordingly.

<b>8654467 USCG Station Hatteras, NC</b>	<b>L28199</b>	<b>Part 6</b>
<b>PBM:</b> 865 4467 C		<b>PBM above SD:</b> 10.000
<b>GPS Bench Mark:</b> H 1 NC 79		<b>MSL above SD:</b> 8.431
<b>GPS Observation Frequency:</b> Every 5 years	<b>Last GPS Observation Frequency:</b> 04/10	
<b>Dive Inspection Frequency:</b> Every year		<b>Last Dive:</b> 03/12

1. Establish and level one deep rod mark and four surface marks, designation/stamping as follows: 865 4467 D/4467 D 2015, 865 4467 E/4467 E 2015, 865 4467 F/4467 F 2015, 865 4467 G/4467 G 2015, and 865 4467 H/4467 H 2015.
2. Replace the GPS antenna.
3. Inspect the GPS cable for issues and replace if necessary.
4. Update the bench mark diagram with the new marks.
5. Replace the mast base plate.

<b>8656483 Duke Marine Lab, NC</b>	<b>L28199</b>	<b>Part 3</b>
<i>PBM:</i> 865 6483 NO 11 (AI9505)		<i>PBM above SD:</i> 3.097 m
<i>GPS Bench Mark:</i> 865 6483 E TIDAL (DE7961)		<i>MSL above SD:</i> 1.083 m
<i>GPS Observation Frequency:</i> Every 5 years		<i>Last GPS Observation Performed:</i> 08/08
<i>Dive Inspection Frequency:</i> Every year		<i>Last Dive:</i> 01/11

1. Perform GPS survey observations.
2. **Unresolved from 2014 Project Instructions:** Take face, setting, and directional photos of bench mark NCCOS BEAUFORT.

<b>8658120 Wilmington, NC</b>	<b>L28199</b>	<b>Part 4</b>
<i>PBM:</i> 865 8120 D		<i>PBM above SD:</i> 2.454 m
<i>GPS Bench Mark:</i> 865 8120 C TIDAL RM 1 (EA3063)		<i>MSL above SD:</i> 1.490 m
<i>GPS Observation Frequency:</i> Every 5 years		<i>Last GPS Observation Performed:</i> 04/14
<i>Dive Inspection Frequency:</i> Every year		<i>Last Dive:</i> 10/06

1. Address the issue with the remote display.
2. **Unresolved from 2014 Project Instructions:** Provide a description and photo of the Met SRM and include the Met SRM in the leveling run. The Met team suggests using a bolt at the base of the Met tower as the Met SRM.
3. Include bench marks 865 8120 K, 865 8120 L, and 865 8120 F in the leveling run.
4. Retake directional bench mark photos for 865 8120 N and 865 8120 P.

<b>8658163 Wrightsville Beach, NC</b>	<b>L28199</b>	<b>Part 11</b>
<i>PBM:</i> 865 8163 A		<i>PBM above SD:</i> 10.000 m
<i>GPS Bench Mark:</i> C 163 (EA0631)		<i>MSL above SD:</i> 6.415 m
<i>GPS Observation Frequency:</i> Every 5 years		<i>Last GPS Observation Performed:</i> 4/14
<i>Dive Inspection Frequency:</i> Every year		<i>Last Dive:</i> 10/09

1. Repair/replace the display.

### 2.1.11 FOD/AOB – South Carolina Stations

<b>8661070 Springmaid Pier, SC</b>	<b>L28200</b>	<b>Part 1</b>
<i>PBM:</i> 866 1070 J TIDAL (DD1542)		<i>PBM above SD:</i> 11.948 m
<i>GPS Bench Mark:</i> K 137 (DD0853)		<i>MSL above SD:</i> 9.754 m
<i>GPS Observation Frequency:</i> Every 5 years		<i>Last GPS Observation Performed:</i> 9/12
<i>Dive Inspection Frequency:</i> Every year		<i>Last Dive:</i> 8/12

1. **Unresolved from 2014 Project Instructions:** Recover or establish and level two surface marks, designation/stamping as follows: 8661070 N/1070 N 2015 and 8661070 P/1070 P 2015.
2. **Unresolved from 2014 Project Instructions:** Recover and include bench marks K 137 and 1070 G 1977 in the level run; this mark was not leveled for more than two years.
3. Update the bench mark diagram with the new marks.

<b>8662245 Oyster Landing, SC (Resilience)</b>	<b>L28200</b>	<b>Part 8</b>
<i>PBM:</i> 866 2245 A TIDAL (DD1345)		<i>PBM above SD:</i> 2.962 m
<i>GPS Bench Mark:</i> 866 2245 A TIDAL (DD1345)		<i>MSL above SD:</i> 2.031 m
<i>GPS Observation Frequency:</i> Every 5 years		<i>Last GPS Observation Performed:</i> 8/12
<i>Dive Inspection Frequency:</i> Every year		<i>Last Dive:</i> 12/10

Note: CO-OPS will continue to support this partner station.

1. Coordinate the annual inspection with the Resilience Program Manager. Notify the Resilience Program Manager of any station issues.
2. **Unresolved from 2014 Project Instructions:** Relocate the protective well.
3. **Unresolved from 2014 Project Instructions:** Take photos of the, DCPs; the primary sensor; and the protective well.
4. **Unresolved from 2014 Project Instructions:** Check if CIL remotely updated the DCP software to allow Tsunami data transmission. If not, update DCP software.
5. **Unresolved from 2014 Project Instructions:** Update XPERT Operating System and the Satlink firmware if the new version is approved at the time of the annual inspection.
6. **Unresolved from 2014 Project Instructions:** Check and update the log sizes as per the Engineering Bulletin 09-003.

### **2.1.12 FOD/AOB – Georgia Station**

**8670870 Fort Pulaski, GA**

***PBM:*** P 323 (CK0694)

***GPS Bench Mark:*** 867 0870 TIDAL 5 (CK0697)

***GPS Observation Frequency:*** Yearly

***Dive Inspection Frequency:*** Every year

**L28201**

**Part 1**

***PBM above SD:*** 4.877 m

***MSL above SD:*** 2.230 m

***Last GPS Observation Performed:*** 12/13

***Last Dive:*** 11/10

1. Update the XPERT Operating System, XPERT Dark Operating System, and the Satlink firmware if the new version is approved at the time of the annual inspection.
2. Check and update the log sizes as per the Engineering Bulletin 09-003.
3. Include the barometer in the leveling run.
4. Paint tide house door as well as interior and exterior deck surfaces.
5. Take digital photos of the Met mast.
6. Take a close up digital photos of the wind sensor(s), and air temperature sensor.

**2.1.13 FOD/AOB –Savannah PORTS®**

**867xxxx Savannah, GA (PORTS)**

**Air Gap Station**

1. Install the air gap station; seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the station.

### 2.1.14 FOD/AOB – Florida Stations

<b>8720030 Fernandina Beach, FL</b>	<b>L28202</b>	<b>Part 1</b>
<b>PBM:</b> 872 0030 TIDAL 34 (BC0166)		<b>PBM above SD:</b> 4.770 m
<b>GPS Bench Mark:</b> CONTAINER (BC2488)		<b>MSL above SD:</b> 1.522 m
<b>GPS Observation Frequency:</b> Every 5 years	<b>Last GPS Observation Performed:</b> 01/14	
<b>Dive Inspection Frequency:</b> Every year		<b>Last Dive:</b> 01/14

1. **Unresolved from 2014 Project Instructions:** Update the XPERT Operating System, XPERT Dark Operating System, and the Satlink firmware if the new version is approved at the time of the annual inspection.
2. **Unresolved from 2014 Project Instructions:** Check and update the log sizes as per the Engineering Bulletin 09-003.
3. Establish a level connection between the station bench mark network and the newly established CORS station (within 1km).
4. Replace Satlink, DCP data logger, Xpert and Xpert Dark modules.
5. Include bench mark 37 RESET 1970 in the leveling run.

<b>8720218 Mayport Bar Pilots Dock, FL</b>	<b>L28202</b>	<b>Part 2</b>
<b>PBM:</b> 872 0218 A TIDAL (DI9221)		<b>PBM above SD:</b> 5.000 m
<b>GPS Bench Mark:</b> 872 0220 A TIDAL (BC2486)		<b>MSL above SD:</b> 3.516 m
<b>GPS Observation Frequency:</b> Every 5 years	<b>Last GPS Observation Performed:</b> 01/13	
<b>Dive Inspection Frequency:</b> Every year		<b>Last Dive:</b> 01/14

1. **Unresolved from 2014 Project Instructions:** Repair the structure supporting the gauge house; seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the design of the upgrades to the station.
2. Evaluate and tighten the structural fasteners.
3. Replace Satlink, DCP data logger, Xpert and Xpert Dark modules.
4. Include bench mark 872 0218 C in the leveling run.

<b>8721604 Trident Pier, FL</b>	<b>L28202</b>	<b>Part 19</b>
<b>PBM:</b> 872 1604 A		<b>PBM above SD:</b> 9.303 m
<b>GPS Bench Mark:</b> 872 1604 C TIDAL (AJ2449)		<b>MSL above SD:</b> 6.053 m
<b>GPS Observation Frequency:</b> Every 5 years	<b>Last GPS Observation Performed:</b> 06/09	
<b>Dive Inspection Frequency:</b> Every year		<b>Last Dive:</b> 02/14

1. **Unresolved from 2014 Project Instructions:** Update the XPERT Operating System, XPERT Dark Operating System, and the Satlink firmware if the new version is approved at the time of the annual inspection.
2. **Unresolved from 2014 Project Instructions:** Check and update the log sizes as per the Engineering Bulletin 09-003.
3. Replace Satlink, DCP data logger, Xpert and Xpert Dark modules.
4. Perform GPS survey observations.
5. Include bench marks 872 1604 CCAFS-23, 872 1604 CC AFS 24, 872 1604 CCAFS-22, 872 1604 CH 70, and L 190 in the leveling run.

<b>8722670 Lake Worth Pier, FL</b>	<b>L28202</b>	<b>Part 6</b>
<i>PBM:</i> P 317 (AD2724)		<i>PBM above SD:</i> 15.111m
<i>GPS Bench Mark:</i> N 317 RESET		<i>MSL above SD:</i> 9.602m
<i>GPS Observation Frequency:</i> Every 5 years	<i>Last GPS Observation Performed:</i> 06/10	
<i>Dive Inspection Frequency:</i> Every year		<i>Last Dive:</i> 02/13

1. Verify the elevation difference between the digibub leveling point (DCP 2 N1) and the digibub orifice zero on an annual basis.
2. Replace Satlink, DCP data logger, Xpert and Xpert Dark modules.
3. Establish and level two deep rod marks or stability class B marks, and one surface marks designation/stamping as follows: 872 2670 M/2670 M 2015, 872 2670 N/2670 N 2015 and 872 2670 P/2670 P 2015.
4. Include bench mark 872 2670 K in the leveling run.
5. Verify the barometer serial number.
6. Update the bench mark diagram with the new marks.

<b>8723214 Virginia Key, FL</b>	<b>L28202</b>	<b>Part 5</b>
<i>PBM:</i> 872 3214 B (AH5251)		<i>PBM above SD:</i> 5.000 m
<i>GPS Bench Mark:</i> 872 3214 G		<i>MSL above SD:</i> 3.431 m
<i>GPS Observation Frequency:</i> Every 5 years	<i>Last GPS Observation Performed:</i> 02/09	
<i>Dive Inspection Frequency:</i> Every year		<i>Last Dive:</i> 02/13

1. Perform a reconnaissance to relocate the station once the pier construction is complete.
2. Replace Satlink, DCP data logger, Xpert and Xpert Dark modules.
3. Replace the barometer sensor.
4. Establish and level a deep rod mark, designation/stamping as follows: 872 3214 N/3214 N 2015.
5. Perform GPS survey observations.
6. Remove marks 872 3214 E and 872 3214 A from the WinDesc file and update the SSN's accordingly.
7. Update the benchmark diagram removing and/or adding bench marks as appropriate.

<b>872XXXX Biscayne Bay, FL</b>	<b>L28202</b>	<b>Part 25</b>
<i>PBM:</i> Undetermined		<i>PBM above SD:</i> Undetermined
<i>GPS Bench Mark:</i> Undetermined		<i>MSL above SD:</i> Undetermined
<i>GPS Observation Frequency:</i> Undetermined	<i>Last GPS Observation Performed:</i> n/a	
<i>Dive Inspection Frequency:</i> Undetermined		<i>Last Dive:</i> n/a

1. Perform reconnaissance in support of the installation of a new NWLON station; provide engineering design support and contract specifications to USACE point of contact.

<b>8723970 Vaca Key, FL</b>	<b>L28202</b>	<b>Part 7</b>
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**PBM:** 872 3970 M TIDAL (AA1706)  
**GPS Bench Mark:** 872 3970 Q  
**GPS Observation Frequency:** Every 5 years  
**Dive Inspection Frequency:** Every year

**PBM above SD:** 2.285 m  
**MSL above SD:** 0.931 m  
**Last GPS Observation Performed:** 02/14  
**Last Dive:** 02/14

1. Establish and level two bench marks (set in bedrock or deep rod marks) designation/stamping as follows: 872 3970 R/3970 R 2015, and 872 3970 S/3970 S 2015.
2. Take the face, setting, and location photos of newly established bench marks.
3. Update the bench mark diagram with the new marks.

**8724580 Key West, FL**

**L28202**

**Part 8**

**PBM:** 872 4580 E TIDAL (AJ2450)  
**GPS Bench Mark:** 872 4580 E TIDAL (AJ2450)  
**GPS Observation Frequency:** Every 5 years  
**Dive Inspection Frequency:** Every year

**PBM above SD:** 3.116 m  
**MSL above SD:** 1.662 m  
**Last GPS Observation Performed:** 02/14  
**Last Dive:** 02/14

1. Perform an engineering reconnaissance to install the MWWL sensor, seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the installation design of the new station.
2. Perform a reconnaissance to relocate the met sensors.
3. Field crew must contact Danny Franco, Maintenance Manager of the Truman Annex Master Property Owner's Association in order to survey across the property of Truman Annex. (305)296-0556, (305)923-3922, [danny@tampona.com](mailto:danny@tampona.com).

**8725110 Naples, FL**

**L28202**

**Part 9**

**PBM:** 872 5110 TIDAL 7 (AD5731)  
**GPS Bench Mark:** 872 5110 C TIDAL (AD6337)  
**GPS Observation Frequency:** Every 5 years  
**Dive Inspection Frequency:** Every year

**PBM above SD:** 4.225 m  
**MSL above SD:** 1.155 m  
**Last GPS Observation Performed:** 02/14  
**Last Dive:** 02/14

1. Provide a description and photo of the MET SRM and include the MET SRM in the leveling run. The MET Team suggests a spot at the base of the house where the wind sensor is mounted.
2. Measure wind bird sensors and air temperature sensor above the MET SRM.

**8725520 Fort Myers, FL**

**L28202**

**Part 10**

**PBM:** 872 5520 A TIDAL (AD7888)  
**GPS Bench Mark:** 872 5520 A TIDAL (AD7888)  
**GPS Observation Frequency:** Every 5 years  
**Dive Inspection Frequency:** Every year

**PBM above SD:** 2.746 m  
**MSL above SD:** 1.522 m  
**Last GPS Observation Performed:** 01/14  
**Last Dive:** 01/14

1. No additional requirements.

**8726384 Port Manatee, FL (PORTS)**

**L28202**

**Part 20**

**PBM:** 872 6384 E (AG7341)  
**GPS Bench Mark:** 872 6384 E (AG7341)  
**GPS Observation Frequency:** Every 5 years  
**Dive Inspection Frequency:** Every year

**PBM above SD:** 2.6660 m  
**MSL above SD:** 0.417 m  
**Last GPS Observation Performed:** 02/14  
**Last Dive:** 02/14

1. Include the barometer in the level run.

**8726520 St. Petersburg, FL (PORTS)**  
**PBM:** 872 6520 D  
**GPS Bench Mark:** 872 6520 A  
**GPS Observation Frequency:** Every 5 years  
**Dive Inspection Frequency:** Every year

**L28202** **Part 11**  
**PBM above SD:** 2.8504 m  
**MSL above SD:** 1.394 m  
**Last GPS Observation Performed:** 02/14  
**Last Dive:** 02/14

1. Establish a level connection between the station bench mark network and the newly established CORS station (within 1km).

**8726607 Old Port Tampa, FL (PORTS)**  
**PBM:** 872 6607 A  
**GPS Bench Mark:** 872 6607 A  
**GPS Observation Frequency:** Every 5 years  
**Dive Inspection Frequency:** Every year

**L28202** **Part 21**  
**PBM above SD:** 10.0000 m  
**MSL above SD:** 9.012 m  
**Last GPS Observation Performed:** 02/14  
**Last Dive:** 02/14

1. No additional requirements.

**8726667 McKay Bay Entrance, FL (PORTS)**  
**PBM:** 872 6667 J  
**GPS Bench Mark:** 872 6667 J  
**GPS Observation Frequency:** Every 5 years  
**Dive Inspection Frequency:** Every year

**L28202** **Part 22**  
**PBM above SD:** 3.1200 m  
**MSL above SD:** 0.521 m  
**Last GPS Observation Performed:** 02/14  
**Last Dive:** 02/14

1. No additional requirements.

**8726724 Clearwater Beach, FL**  
**PBM:** LP 10 1 FLHD (AG7197)  
**GPS Bench Mark:** 872 6724 R 44 (AG6373)  
**GPS Observation Frequency:** Every 5 years  
**Dive Inspection Frequency:** Every year

**L28202** **Part 12**  
**PBM above SD:** 2.234 m  
**MSL above SD:** 0.980 m  
**Last GPS Observation Performed:** 02/14  
**Last Dive:** 02/14

1. **Unresolved from 2013 Project Instructions:** Provide a photo of the Met SRM.

**8727520 Cedar Key, FL**

**L28202**

**Part 13**

**PBM:** TIDAL STATION 3-60 TIDAL 8 (AR1204)  
**GPS Bench Mark:** 872 7520 L  
**GPS Observation Frequency:** Every 5 years  
**Dive Inspection Frequency:** Every year

**PBM above SD:** 2.347 m  
**MSL above SD:** 1.171 m  
**Last GPS Observation Performed:** 11/10  
**Last Dive:** 10/12

1. Evaluate the foundation surrounding bench marks 872 7520 TIDAL 18 and D 280 and the concrete post surrounding bench mark TANK RM 3 looking for cracks, breaks, etc., and submit updated photos of each bench marks condition.

**8728690 Apalachicola, FL**  
**PBM:** 872 8690 TIDAL 1 (AS0240)  
**GPS Bench Mark:** APALACHICOLA (AS0244)  
**GPS Observation Frequency:** Every 5 years  
**Dive Inspection Frequency:** Every year

**L28202**  
**Part 15**  
**PBM above SD:** 5.669 m  
**MSL above SD:** 1.584 m  
**Last GPS Observation Performed** 11/14  
**Last Dive:** 11/14

1. Include the DCP2 N1 leveling point in this year's leveling run.
2. Verify the elevation difference between the digibub leveling point (DCP 2 N1) and the digibub orifice zero on an annual basis.
3. Include bench mark D 689, P 294, Q 294, and STA 3-66 West Point NO 2 in the level run as these marks have not been leveled since 1991.

**8729108 Panama City, FL**  
**PBM:** 872 9108 L TIDAL (BE3028)  
**GPS Bench Mark:** 872 9108 L TIDAL (BE3028)  
**GPS Observation Frequency:** Every 5 years  
**Dive Inspection Frequency:** Every year

**L28202**  
**Part 16**  
**PBM above SD:** 3.965 m  
**MSL above SD:** 1.222 m  
**Last GPS Observation Performed:** 11/14  
**Last Dive:** 11/14

1. Measure the height of the air temperature sensor above the Met SRM.

**8729210 Panama City Beach, FL**  
**PBM:** 872 9210 A (AJ6758)  
**GPS Bench Mark:** 872 9210 1  
**GPS Observation Frequency:** Every 5 years  
**Dive Inspection Frequency:** Every year

**L28202**  
**Part 17**  
**PBM above SD:** 12.725 m  
**MSL above SD:** 8.436 m  
**Last GPS Observation Performed:** 09/13  
**Last Dive:** 09/13

1. Investigate connecting AC power at the station.
2. Repair the Aquatrak copper tube insert.

**8729840 Pensacola, FL**

**L28202**

**Part 18**

**PBM:** 872 9840 M TIDAL (BG4867)  
**GPS Bench Mark:** 872 9840 M TIDAL (BG4867)  
**GPS Observation Frequency:** Every 5 years  
**Dive Inspection Frequency:** Every year

**PBM above SD:** 4.368 m  
**MSL above SD:** 2.757 m  
**Last GPS Observation Performed:** 11/14  
**Last Dive:** 11/14

1. Establish a level connection between the station bench mark network and the newly established CORS station (within 1km).

### **2.1.15 FOD/AOB – Alabama Stations**

**8732828 Weeks Bay, AL (Resilience)** **L28203** **Part 16**  
*PBM: 873 2828 A* *PBM above SD: 10.000 m*  
*GPS Bench Mark: 873 2828 A* *MSL above SD: 9.457 m*  
*GPS Observation Frequency: Every year* *Last GPS Observation Performed: 3/11*  
*Dive Inspection Frequency: Every year* *Last Dive: 3/11*  
 Note: CO-OPS will continue to support this partner station.

1. Coordinate requirements with the Resilience Program Manager. Notify NERRS personnel prior to arrival.
2. Update the XPERT Operating System, XPERT Dark Operating System and Satlink firmware if the new version is approved at the time of the annual inspection.
3. Check and update the log sizes as per the Engineering Bulletin 09-003.

**8734673 Fort Morgan, AL (PORTS)** **Meteorological Station**

1. Update the 9210 DCP Operating System and Satlink firmware if the new version is approved at the time of the annual inspection.
2. Check and update the log sizes as per the Engineering Bulletin 09-003.
3. Cover exposed cabling with conduit.
4. Replace Yagi GOES antenna.
5. Replace IP modem.
6. Place wind bird cables.

**8735180 Dauphin Island, AL (PORTS)** **L28203** **Part 1**  
*PBM: 873 5180 TIDAL 1 (BH1756)* *PBM above SD: 6.288 m*  
*GPS Bench Mark: 873 5180 21D – 2E* *MSL above SD: 1.049 m*  
*GPS Observation Frequency: Every year* *Last GPS Observation Performed: 09/14*  
*Dive Inspection Frequency: Every year* *Last Dive: 09/13*

1. Repair platform, as needed (i.e. bracing of the handrails, etc.), seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the design of the upgrades to the station.
2. Repair the large holes and gaps in areas under the station workbench.
3. Wind and air temperature sensors need replacement after lightning strike.

**8735391 Dog River Bridge, AL** **L28203** **Part 12**  
*PBM: 873 5391 E* *PBM above SD: 10.000 m*  
*GPS Bench Mark: 873 5391 E* *MSL above SD: 9.115 m*  
*GPS Observation Frequency: Every year* *Last GPS Observation Performed: 9/14*  
 Dive Inspection Frequency: N/A

1. No additional requirements.

**8735523 East Fowl River Bridge, AL** **L28203** **Part 13**

**PBM:** 873 5523 C  
**GPS Bench Mark:** 873 5523 C  
**GPS Observation Frequency:** Every year  
**Dive Inspection Frequency:** N/A

**PBM above SD:** 10.000 m  
**MSL above SD:** 4.355 m  
**Last GPS Observation Performed:** 9/14

1. No additional requirements.

**8736163 Middle Bay Port, AL (PORTS)**

**Meteorological Station**

1. No additional requirements.

**8736897 Coast Guard Sector Mobile, AL (PORTS) L28203**

**Part 7**

**PBM:** 873 6897 A  
**GPS Bench Mark:** 873 6897 C  
**GPS Observation Frequency:** Every year  
**Dive Inspection Frequency:** Every year

**PBM above SD:** 10.000 m  
**MSL above SD:** 8.989 m  
**Last GPS Observation Performed:** 9/14  
**Last Dive:** 9/14

1. Replace the base plate for the Met mast.

**8737005 Pinto Island, AL (PORTS)**

**Meteorological Station**

1. Replace the relative humidity and air temperature sensors.

**8737048 Mobile State Docks, AL (PORTS)**

**L28203**

**Part 10**

**PBM:** 873 7048 C  
**GPS Bench Mark:** 873 7048 E  
**GPS Observation Frequency:** Every year  
**Dive Inspection Frequency:** Every year

**PBM above SD:** 2.083 m  
**MSL above SD:** 0.707 m  
**Last GPS Observation Performed:** 9/14  
**Last Dive:** 9/14

1. Replace the voltage regulator on DCP 1.
2. Restore A/C power.

**8737138 Chickasaw Creek, AL**

**L28203**

**Part 11**

**PBM:** No Stamp DOT 1  
**GPS Bench Mark:** 873 7138 A  
**GPS Observation Frequency:** Every year  
**Dive Inspection Frequency:** Every year

**PBM above SD:** 11.815 m  
**MSL above SD:** 7.756 m  
**Last GPS Observation Performed:** 9/14  
**Last Dive:** 11/11

1. No additional requirements.

**8738043 West Fowl River Bridge, AL**

**L28203**

**Part 14**

**PBM:** 873 8043 E 482  
**GPS Bench Mark:** 873 8043 E 482  
**GPS Observation Frequency:** Every year  
**Dive Inspection Frequency:** N/A

**PBM above SD:** 10.000 m  
**MSL above SD:** 6.223 m  
**Last GPS Observation Performed:** 9/12

1. Install a backup DCP and MWWL sensor, if the equipment can be purchased under the new agreement.

**8739803 Bayou LaBatre, AL**  
**PBM:** 873 9803 A  
**GPS Bench Mark:** 873 9803 A  
**GPS Observation Frequency:** Every year  
**Dive Inspection Frequency:** Every year

**L28203**  
**Part 15**  
**PBM above SD:** 10.000 m  
**MSL above SD:** 8.406 m  
**Last GPS Observation Performed:** 08/14  
**Last Dive:** 08/14

1. No additional requirements.

**mb0101 Mobile Bay Buoy M, AL (PORTS)**

**Current Meter Station**

1. Refer to the task order for station specific requirements.

**mb0301 Mobile State Dock Pier E, AL (PORTS)**

**Current Meter Station**

1. Refer to the task order for station specific requirements.

**mb0401 Mobile Container Terminal, AL (PORTS)**

**Current Meter Station**

1. Refer to the task order for station specific requirements.

### **2.1.16 FOD/AOB – Mississippi Stations**

**8740166 Grand Bay, MS (Resilience)****L28204****Part 50****PBM:** 874 0166 B**PBM above SD:** 5.000 m**GPS Bench Mark:** unknown**MSL above SD:** 4.533 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** unknown**Dive Inspection Frequency:** Every year**Last Dive:** unknown

Note: CO-OPS will continue to support this partner station.

1. Coordinate requirements with the Resilience Program Manager. Notify NERRS personnel prior to arrival.
2. Perform a GPS survey on an existing bench mark that meets the requirements.
3. Verify the water temperature sensor is configured correctly in the DCP.
4. Swap the batteries.
5. Verify all equipment serial numbers and update the eSite report as necessary.
6. Update the bench mark sketch.

**8747437 Bay Waveland Yacht Club, MS****L28204****Part 3****PBM:** 874 7437 TIDAL 1 (BH0937)**PBM above SD:** 2.473 m**GPS Bench Mark:** 876 7437 E (AB7179)**MSL above SD:** 0.994 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 09/10**Dive Inspection Frequency:** Every year**Last Dive:** 11 /12

1. Verify the MWWL and Aquatrak data comparison analysis is complete and accepted by the MWWL TOP Committee. If approved, remove the Aquatrak, associated DCP, and assign the DCP associated with the MWWL sensor as DCP 1, if necessary.
2. A dive inspection **MUST** be performed during this site visit. Photographs of the underwater anodes and a report on the condition are required on the Site Report under Dive comments.
3. Evaluate the foundation surrounding bench marks 874 7437 C, 874 7437 TIDAL 2, and 874 7437 E looking for cracks, breaks, etc., and submit updated photos of each bench marks condition.
4. Include bench mark 874 7437 E in all future level runs.
5. Update the XPERT Operating System, XPERT Dark Operating System and Satlink firmware if the new version is approved at the time of the annual inspection.
6. Check and update the log sizes as per the Engineering Bulletin 09-003.
7. Investigate communications issue between XPERT and XPERT Dark DCP.
8. Verify serial number of Druck sensor.
9. Verify all DCP 2 components serial numbers (modules, modems, boards, etc.)

**2.1.17 FOD/AOB – Louisiana Stations**

**8760922 Pilots Station East, SW Pass, LA****L28205****Part 29****PBM:** 876 0922 F**PBM above SD:** 10.198 m**GPS Bench Mark:** 876 0922 F**MSL above SD:** 9.442 -m**GPS Observation Frequency:** Every year**Last GPS Observation Performed:** 11/13**Dive Inspection Frequency:** Every year**Last Dive:** 09/13

1. Investigate and fix the GPS sync issue at the remote met station.
2. Measure elevation of wind and air temperature sensors above Met SRM. Ask building owners for height of building to help with calculating sensor heights.
3. Use 12 foot 4x4 posts painted orange, buried 5-6 feet deep as witness posts for all bench marks in the marsh.
4. Create a new bench mark diagram.

**8761305 Shell Beach, LA****L28205****Part 35****PBM:** 876 1305 E**PBM above SD:** 10.000 m**GPS Bench Mark:** 876 1305 D**MSL above SD:** 9.765 m**GPS Observation Frequency:** Every year**Last GPS Observation Performed:** 09/11**Dive Inspection Frequency:** Every year**Last Dive:** 09/11

1. Perform an engineering reconnaissance to install the MWWL sensor, seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the installation design of the new station.
2. A dive inspection **MUST** be performed during this site visit. Photographs of the underwater anodes and a report on the condition are required on the Site Report under Dive comments.
3. Update the XPERT Operating System, XPERT Dark Operating System and Satlink firmware if the new version is approved at the time of the annual inspection.
4. Check and update the log sizes as per the Engineering Bulletin 09-003.
5. Replace the GPS antenna, check placement, and inspect cable.
6. Include bench mark 876 1305 A in the level run.

**8761724 Grand Isle, LA****L28205****Part 1****PBM:** 10 (AT0687)**PBM above SD:** 2.810 m**GPS Bench Mark:** 876 1724 TIDAL 11 (AT0685)**MSL above SD:** 2.015 m**GPS Observation Frequency:** Every year**Last GPS Observation Performed:** 10/11**Dive Inspection Frequency:** Every year**Last Dive:** 11/12

1. Update the XPERT Operating System, XPERT Dark Operating System and Satlink firmware if the new version is approved at the time of the annual inspection.
2. Check and update the log sizes as per the Engineering Bulletin 09-003.
3. Include all bench marks in this year's run.
4. Update the handheld GPS positions of all bench marks in the WinDesc file.

**8761927 USCG New Canal Station, LA**

**PBM:** ALCO (BJ1342)

**GPS Bench Mark:** ALCO (BJ1342)

**GPS Observation Frequency:** Every year

**Dive Inspection Frequency:** Every year

**L28205**

**Part 10**

**PBM above SD:** 3.149 m

**MSL above SD:** 1.380 m

**Last GPS Observation Performed:** 11/12

**Last Dive:** 11/10

1. Coordinate with Resilience and Maritime Services Program Managers prior to inspection to discuss the NWS partnership project to install meteorological sensors.
2. Update the XPERT Operating System, XPERT Dark Operating System and Satlink firmware if the new version is approved at the time of the annual inspection.
3. Check and update the log sizes as per the Engineering Bulletin 09-003.
4. **Unresolved From 2014 Project Instructions:** Recover, level, take face photos and provide the handheld GPS for bench marks 876 1927 A, 876 1927 B, and X 374. If these bench marks cannot be recovered, mark them destroyed in the WinDesc file.
5. Provide a description of the Met SRM and include the Met SRM in the leveling run.

**8762372 East Bank 1, Bayou LaBranche, LA (Resilience)**

**PBM:** 876 2372 E

**GPS Bench Mark:** 876 2372 E

**GPS Observation Frequency:** Every year

**Dive Inspection Frequency:** Every year

**L28205**

**Part 3**

**PBM above SD:** 10.000 m

**MSL above SD:** 9.903 m

**Last GPS Observation Performed:** 11/10

**Last Dive:** 11/10

1. **FUNDING DEPENDENT:** Coordinate the installation of the station with the Resilience Program Manager and the OSM.

**8762482 West Bank 1, Bayou Gauche, LA****L28205****Part 4****PBM:** 876 2482 A**PBM above SD:** 10.000 m**GPS Bench Mark:** 876 2482 G**MSL above SD:** 9.694 m**GPS Observation Frequency:** Every year**Last GPS Observation Performed:** 11/11**Dive Inspection Frequency:** Every year**Last Dive:** 11/11

1. Please coordinate the annual inspection with the Resilience Program Manager and the OSM.
2. Perform reconnaissance to upgrade the station to NWLON specifications, seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the installation design of the new station.
3. Update the XPERT Operating System, XPERT Dark Operating System and Satlink firmware if the new version is approved at the time of the annual inspection.
4. Check and update the log sizes as per the Engineering Bulletin 09-003.
5. **Unresolved From 2014 Project Instructions:** Take setting photos of bench mark 876 2482 G.
6. **Unresolved From 2014 Project Instructions:** Contact the phone company to troubleshoot the phone problem.
7. Measure the elevation of wind and air temperature sensors above Met SRM.
8. Measure elevation of barometer above station datum.
9. Provide a description and photo of the Met SRM and include the Met SRM in the leveling run.

**8764044 Berwick, LA****L28205****Part 34****PBM:** 876 4044 E**PBM above SD:** 5.000 m**GPS Bench Mark:** 876 4044 E**MSL above SD:** 6.088 m**GPS Observation Frequency:** Every year**Last GPS Observation Performed:** 04/12**Dive Inspection Frequency:** Every year**Last Dive:** 04/12

1. Update the XPERT Operating System, XPERT Dark Operating System and Satlink firmware if the new version is approved at the time of the annual inspection.
2. Check and update the log sizes as per the Engineering Bulletin 09-003.
3. Provide a description and photo of the Met SRM and include the Met SRM in the leveling run.
4. Establish two deep rod marks with the designations/stamping as follows: 876 4044 H/4044 H 2015 and 876 4044 J/4044 J 2015.
5. Take setting photos of all existing benchmarks. Take face, setting, and directional photos of all newly established bench marks.
6. Update the bench mark diagram with the new marks.
7. Verify the handheld GPS position of bench mark 877 4044 C and update the Windesc file if necessary.

**8764227 LAWMA, Amerada Pass, LA**  
**PBM:** 876 4227 A  
**GPS Bench Mark:** GPS GAGE 36 (DJ9384)  
**GPS Observation Frequency:** Every year  
**Dive Inspection Frequency:** Every year

**L28205**

**Part 11**

**PBM above SD:** 8.759 m

**MSL above SD:** 7.414 m

**Last GPS Observation Performed:** 06/12

**Last Dive:** 11/12

1. Install an approved MWWL sensor; if any structural modifications are required, seek engineering support and Field Engineering Review Subcommittee (FERS) approval.
2. A dive inspection **MUST** be performed during this site visit. Photographs of the underwater anodes and a report on the condition are required on the Site Report under Dive comments.
3. Replace the GPS antenna, check placement, and inspect cable.
4. Update DCP with the current datum offset.

**8766072 Freshwater Canal Locks, LA**  
**PBM:** 876 6072 A (DJ9334)  
**GPS Bench Mark:** 876 6072 C  
**GPS Observation Frequency:** Every year  
**Dive Inspection Frequency:** Every year

**L28205**

**Part 8**

**PBM above SD:** 8.887m

**MSL above SD:** 6.764m

**Last GPS Observation Performed:** 11/13

**Last Dive:** None

1. Install an approved MWWL sensor; if any structural modifications are required, seek engineering support and Field Engineering Review Subcommittee (FERS) approval.
2. Update the XPERT Operating System, XPERT Dark Operating System and Satlink firmware if the new version is approved at the time of the annual inspection.
3. Check and update the log sizes as per the Engineering Bulletin 09-003.
4. **Unresolved From 2014 Project Instructions:** Take a setting photo of bench mark 24 R.
5. Repair/Replace the DCP 2 wind sensor.
6. Measure the elevation of the wind and air temperature sensors above Met SRM.
7. Establish a deep rod mark with designation/stamping as follows: 876 6072 E/6072 E 2015.
8. Investigate the condition of bench mark 876 6072 B to determine if the mark has been disturbed or reset.
9. Update bench mark diagram with new marks.
10. Identify the MET SRM in the comment section of the sensors tab in the eSite report.

**876xxxx Lake Pontchartrain, LA (Resilience)**  
**PBM:** Undetermined  
**GPS Bench Mark:** Undetermined  
**GPS Observation Frequency:** Undetermined  
**Dive Inspection Frequency:** Undetermined

**L28205**

**Part 37**

**PBM above SD:** Undetermined

**MSL above SD:** Undetermined

**Last GPS Observation Performed:** n/a

**Last Dive:** n/a

1. Install the approved water level station; seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the station.

1. Install the meteorological station; seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the station.

**2.1.18 FOD/AOB – Port of Morgan City PORTS®**

**8764314 Eugene Island, LA (PORTS)**

***PBM:*** Undetermined

***GPS Bench Mark:*** Undetermined

***GPS Observation Frequency:*** Undetermined

***Dive Inspection Frequency:*** Undetermined

**L28205**

**Part 36**

***PBM above SD:*** Undetermined

***MSL above SD:*** Undetermined

***Last GPS Observation Performed:*** n/a

***Last Dive:*** n/a

1. Inspect the water level station installation.

**8764401 Atchafalya Bar Channel, LA (PORTS)**

**Conductivity Station**

1. Inspect the conductivity station installation.

**mc0101 Atchafalya Bar Channel, LA (PORTS)**

**Current Meter Station**

1. Inspect the current meter station.

**2.1.19 FOD/AOB – Matagorda Bay PORTS®**

**mg0101 Matagorda Bay, LA (PORTS)**

**Current Meter Station**

1. Inspect the current meter station.

## 2.2 FOD/AOB – Bermuda and the Caribbean Island Stations

<b>2695540 Bermuda Esso Pier</b>	<b>L28210</b>	<b>Part 1</b>
<i>PBM:</i> 269 5540 A		<i>PBM above SD:</i> 14.298 m
<i>GPS Bench Mark:</i> 269 5540 A		<i>MSL above SD:</i> 1.434 m
<i>GPS Observation Frequency:</i> Every 5 years	<i>Last GPS Observation Performed:</i> 04/08	
<i>Dive Inspection Frequency:</i> Every year		<i>Last Dive:</i> 07/14

Note: Maintenance costs for this station shall be charged to the Global Sea Level task number.

1. Perform a reconnaissance for possible locations to install the gauge house. The structure the gauge house is bolted on is deteriorating.
2. **Unresolved from 2014 Project Instructions:** Recover or establish and level two surface marks, designation/stamping as follows: 269 5540 J/5540 J 2015 and 269 5540 K/5540 K 2015.
3. Remove 268 5535 H and 268 5535 G from WinDesc file and update the SSN's accordingly.
4. Update the bench mark diagram with the new mark.

<b>9751364 Christiansted Harbor, St. Croix, VI</b>	<b>L28208</b>	<b>Part 3</b>
<i>PBM:</i> 975 1364 A		<i>PBM above SD:</i> 10.000 m
<i>GPS Bench Mark:</i> 975 1364 A		<i>MSL above SD:</i> 8.365 m
<i>GPS Observation Frequency:</i> Every 5 years	<i>Last GPS Observation Performed:</i> 03/13	
<i>Dive Inspection Frequency:</i> Every year		<i>Last Dive:</i> 03/14

1. Replace or repair the backup sensor and the IP modem.
2. **Unresolved from 2014 Project Instructions:** Establish and level one deep rod mark or bench mark set in rock outcrop, designation/stamping as follows: 975 1364 M/1364 M 2015.
3. Include bench mark 975 1364 K in the leveling run.
4. Update the bench mark diagram with the new mark.

**9751381 Lameshur Bay, St John, VI**  
**PBM:** 975 1381 A  
**GPS Bench Mark:** 975 1381 A  
**GPS Observation Frequency:** Every 5 years  
**Dive Inspection Frequency:** Every year

**L28208**

**Part 4**

**PBM above SD:** 10.000 m

**MSL above SD:** 8.925 m

**Last GPS Observation Performed:** 03/13

**Last Dive:** 04/14

1. **Unresolved from 2014 Project Instructions:** Recover or establish and level four surface marks, designation/stamping as follows: 9751381 D/1381 D 2015, 9751381 E/1381 E 2015, 9751381 F/1381 F 2015 and 9751381 G/1381 G 2015.
2. **Unresolved from 2014 Project Instructions:** Re-measure the elevation of the barometer above station datum (should be at an elevation of ~11 m -12 m, current elevation documented as 1.4 m).
3. Replace the Aquatrak well conduit with rigid aluminum conduit.
4. Replace the DCP1 datalogger.
5. Include the barometer sensor and bench marks 975 1381 B and 975 1381 TIDAL 5 in the leveling run.

**9751401 Lime Tree Bay, St. Croix, VI**  
**PBM:** 975 1401 M  
**GPS Bench Mark:** 975 1401 M  
**GPS Observation Frequency:** Every 5 years  
**Dive Inspection Frequency:** Every year

**L28208**

**Part 1**

**PBM above SD:** 13.612 m

**MSL above SD:** 10.501 m

**Last GPS Observation Performed:** 03/13

**Last Dive:** 03/14

1. Perform recon to rebuild the gauge house, seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the design of the upgrades to the station.
2. Include bench mark 975 1401 NO STAMPING in the leveling run.
3. Take face, setting, and two directional location photos of bench mark 975 1401 S.

**9751639 Charlotte Amalie, St. Thomas, VI**  
**PBM:** 975 1639 F  
**GPS Bench Mark:** 975 1639 M (TV1548)  
**GPS Observation Frequency:** Every 5 years  
**Dive Inspection Frequency:** Every year

**L28208**

**Part 2**

**PBM above SD:** 3.267 m

**MSL above SD:** 1.715 m

**Last GPS Observation Performed:** 03/13

**Last Dive:** 04/14

1. Replace or repair the Druck sensor.
2. Perform recon to rebuild the gauge house with custom aluminum stand and aluminum box, seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the design of the upgrades to the station.
3. **Unresolved from 2014 Project Instructions:** Verify bench marks 975 1639 TIDAL 3 and 975 1639 TIDAL 5 are destroyed. Special permission may be required to access the grounds.
4. Recover and include in the leveling run bench marks 975 1639 TIDAL 3, 975 1639 L, and 975 1639 TIDAL 5.
5. Update the GPS coordinates in the WinDesc file for all the bench marks.
6. Update the bench mark diagram, if necessary.

**9752235 Culebra, PR**

**L28207**

**Part 6**

**PBM:** 975 2235 D

**PBM above SD:** 9.490 m

**GPS Bench Mark:** 975 2235 D

**MSL above SD:** 8.517 m

**GPS Observation Frequency:** Every 5 years

**Last GPS Observation Performed:** 03/08

**Dive Inspection Frequency:** Every year

**Last Dive:** 02/12

1. Perform reconnaissance to reinstall the NWLON station, seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the installation design of the new station.

**9752695 Vieques Island, PR**

**L28207**

**Part 7**

**PBM:** 975 2695 A TIDAL

**PBM above SD:** 10.000 m

**GPS Bench Mark:** 975 2695 A TIDAL

**MSL above SD:** 8.055 m

**GPS Observation Frequency:** Every 5 years

**Last GPS Observation Performed:** 03/13

**Dive Inspection Frequency:** Every year

**Last Dive:** 04/14

1. Replace all of the solar panel cables and rerun the cables inside the fiberglass Shakespeare mast.
2. Provide photos of the destroyed bench mark 975 2695 G.

**9755371 San Juan, PR****L28207****Part 3****PBM:** 975 5371 A TIDAL (TV1513)**PBM above SD:** 2.600 m**GPS Bench Mark:** 975 5371 M**MSL above SD:** 1.266 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 03/13**Dive Inspection Frequency:** Every year**Last Dive:** 04/14

1. Perform an engineering reconnaissance to install the MWWL sensor, seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the installation design of the new station.
2. Replace the 3/4" red heads securing the stainless steel clamps for the primary Well.
3. Recover or establish and level one surface mark along the USCG sea wall, designation/stamping as follows: 975 5371 S/5371 S 2015.
4. Update the WinDesc file removing bench mark 975 5371 SJH-21 and update the SSN's as appropriate.
5. Update the bench mark diagram with newly established bench marks.

**9759110 Magueyes Island, PR****L28207****Part 4****PBM:** 975 9110 BM 1**PBM above SD:** 4.755 m**GPS Bench Mark:** 975 9110 G**MSL above SD:** 1.191 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 02/08**Dive Inspection Frequency:** Every year**Last Dive:** 04/13

1. Perform a reconnaissance to install the gauge house from the current location.
2. **Unresolved from 2014 Project Instructions:** Establish a new bench mark suitable for GPS observations, designation/stamping as follows: 975 9110 J/9110 J 2015.
3. Take the face, setting, and location photos of newly established bench marks.
4. Include bench mark TIDAL BM NO 2 CAMA UPR 1955 ELEV in the leveling run.
5. Update the bench mark diagram with newly established bench marks.

**9759394 Mayaguez, PR****L28207****Part 10****PBM:** 975 9394 TIDAL 1**PBM above SD:** 2.683**GPS Bench Mark:** 975 9394 E**MSL above SD:** 1.265**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 02/09**Dive Inspection Frequency:** Every year**Last Dive:** TBD

1. Install a new NWLON station with an approved MWWL sensor; if any structural modifications are required, seek engineering support and Field Engineering Review Subcommittee (FERS) approval.

**9759938 Mona Island, PR**

***PBM:*** 975 9938 A

***GPS Bench Mark:*** 975 9938 A

***GPS Observation Frequency:*** Every 5 years

***Dive Inspection Frequency:*** Every year

**L28207**

**Part 9**

***PBM above SD:*** 10.000 m

***MSL above SD:*** 8.842 m

***Last GPS Observation Performed:*** 04/13

***Last Dive:*** 03/14

1. **Unresolved from 2014 Project Instructions:** Take photos showing handheld GPS coordinates for all bench marks.
2. Verify the elevation difference between the digibub leveling point and the digibub orifice zero for both orifices on an annual basis.
3. Replace conduit with stainless steel.
4. Replace all solar panel wires.
5. Repair the water temperature sensor.

**9761115 Barbuda**

***PBM:*** 976 1115 A

***GPS Bench Mark:*** 976 1115 J

***GPS Observation Frequency:*** Every 5 years

***Dive Inspection Frequency:*** Every year

**L28209**

**Part 9**

***PBM above SD:*** 10.000 m

***MSL above SD:*** 8.665 m

***Last GPS Observation Performed:*** 08/12

***Last Dive:*** 06/11

1. Install backup Paros and water temperature sensor.
2. Provide serial number of water level sensors.
3. Replace the wind bird cable.

### 2.3 Air-Sea Systems - Task 14-02: Lower Mississippi River PORTS®

Jim Lewis, Task Manager/Technical Representative (TR)

**The operations and maintenance responsibility for the stations listed under Task 14-02 Lower MS River PORTS® will be taken over by AOB after the funded time period is over as listed in Section 2.0**

<b>8760721 Pilottown, LA (PORTS)</b>	<b>L28205</b>	<b>Part 40</b>
<i>PBM: W 279 1971</i>		<i>PBM above SD: 1.912 m</i>
<i>GPS Bench Mark: 876 0721 PILOT</i>		<i>MSL above SD: 1.699 m</i>
<i>GPS Observation Frequency: Every year</i>	<i>Last GPS Observation Performed: 08/14</i>	
<i>Dive Inspection Frequency: Every year</i>		<i>Last Dive: 08/14</i>

1. Replace/Repair the bubbler well.
2. Include bench mark 876 0721 D in the level run; this mark was not leveled last year.
3. Create a new bench mark diagram.

<b>8761955 Carrollton, LA (PORTS)</b>	<b>L28205</b>	<b>Part 36</b>
<i>PBM: DISTRICT 1 A (AU2196)</i>		<i>PBM above LWRP: 3.075 m</i>
<i>GPS Bench Mark: DISTRICT 1 A (AU2196)</i>		<i>MSL above SD: 2.336 m</i>
<i>GPS Observation Frequency: Every year</i>	<i>Last GPS Observation Performed: 11/13</i>	
<i>Dive Inspection Frequency: Every year</i>		<i>Last Dive: 11/13</i>

Note: The PBM elevation is set to Mississippi River-LWRP datum for this station.

1. Verify DCP and components serial numbers.
2. Create a new bench mark diagram.

<b>8761847 Crescent City Bridge, LA (PORTS)</b>	<b>Air Gap Station</b>
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2. No additional requirements.

<b>8762002 Huey Long Bridge, LA (PORTS)</b>	<b>Air Gap Station</b>
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1. Replace battery charger.

<b>Im0101 First Street Wharf, LA (PORTS)</b>	<b>Current Meter Station</b>
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1. Refer to the task order for station specific requirements.

<b>Im0201 Port Allen, LA (PORTS)</b>	<b>Current Meter Station</b>
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1. Refer to the task order for station specific requirements.

**2.4 Air-Sea Systems - Task 14-02: Port Fourchon PORTS®**  
Jim Lewis, Task Manager/Technical Representative (TR)

**8762075 Port Fourchon, LA (PORTS)**

**L28205**

**Part 33**

***PBM:*** 876 2075 B

***PBM above SD:*** 10.129 m

***GPS Bench Mark:*** 876 2075 B

***MSL above SD:*** 9.214m

***GPS Observation Frequency:*** Every year

***Last GPS Observation Performed:*** 11/12

***Dive Inspection Frequency:*** Every year

***Last Dive:*** 10/11

Note: Pending the signing of an agreement with the Port, the station will be funded by the Port in the future.

1. Update the Satlink firmware.
2. Route sensor cables through conduits.

**2.5 Air-Sea Systems - Task 14-02: Pascagoula PORTS®**  
Jim Lewis, Task Manager/Technical Representative (TR)

**8741003 Petit Bois, MS (PORTS)**

**Meteorological Station**

1. Refer to the task order for station specific requirements.

**8741041 Pascagoula Dock E, MS (PORTS)**

**L28204**

**Part 7**

**PBM:** USACE RM 1 TIDAL

**PBM above SD:** 10.000 m

**GPS Bench Mark:** 874 1041 E

**MSL above SD:** 6.829 m

**GPS Observation Frequency:** Every year

**Last GPS Observation Performed:** 03/14

Dive Inspection Frequency: Every year

Last Dive: 03/14

1. Evaluate the foundations surrounding bench marks 874 1041 D and 874 1041 E looking for cracks, breaks, etc. and provide photographs of the each bench marks condition.
2. Include bench marks 874 1041 D and 874 1041 E in the leveling run.

**8741094 Rear Range, MS (PORTS)**

**Meteorological Station**

1. Refer to the task order for station specific requirements.

**8741501 Dock C, MS (PORTS)**

**Meteorological Station**

1. Refer to the task order for station specific requirements.

**8741533 Pascagoula NOAA Lab, MS (PORTS)**

**L28204**

**Part 6**

**PBM:** 874 1429 B 1980

**PBM above SD:** 9.1014 m

**GPS Bench Mark:** 874 1533 A

**MSL above SD:** 6.903 m

**GPS Observation Frequency:** Every year

**Last GPS Observation Performed:** 03/14

Dive Inspection Frequency: Every year

Last Dive: 03/14

1. Replace Aquatrak controller.
2. Include all the bench marks in this year's leveling run.
3. Replace the DCP1 datalogger to resolve the logging issues.

**ps0201 Pascagoula Harbor LB 17, MS (PORTS)**

**Current Meter Station**

1. Refer to the task order for station specific requirements.

**ps0301 Northrop Grumman Pier, MS (PORTS)**

**Current Meter Station**

1. Refer to the task order for station specific requirements.

**ps0401 Pascagoula Harbor LB 10, MS (PORTS)**

**Current Meter Station**

1. Refer to the task order for station specific requirements.

## 2.6 Woods Hole Group - Task 14-02: Lake Charles PORTS®

Jim Lewis, Task Manager/Technical Representative (TR)

**The operations and maintenance responsibility for the stations listed under Task 14-02 Lake Charles PORTS® will be taken over by AOB after the funded time period is over as listed in Section 2.0**

<b>8767816 Lake Charles, LA (PORTS)</b>	<b>L28205</b>	<b>Part 9</b>
<i>PBM: A 269 (BK1489)</i>		<i>PBM above SD: 10.000 m</i>
<i>GPS Bench Mark: CIVIC (BK3291)</i>		<i>MSL above SD: 8.294 m</i>
<i>GPS Observation Frequency: Every year</i>		<i>Last GPS Observation Performed: 09/14</i>
<i>Dive Inspection Frequency: Every year</i>		<i>Last Dive: 09/14</i>

1. No additional requirements.

<b>8767931 I-210 Bridge Air Gap, LA (PORTS)</b>	<b>Air Gap Station</b>
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1. No additional requirements.

<b>8767961 Bulk Terminal, LA (PORTS)</b>	<b>L28205</b>	<b>Part 15</b>
<i>PBM: 876 7961 C</i>		<i>PBM above SD: 10.000 m</i>
<i>GPS Bench Mark: 876 7961 C</i>		<i>MSL above SD: 7.282 m</i>
<i>GPS Observation Frequency: Every year</i>		<i>Last GPS Observation Performed: 09/14</i>
<i>Dive Inspection Frequency: Every year</i>		<i>Last Dive: 09/14</i>

1. No additional requirements.

<b>8768094 Calcasieu Pass, East Jetty LA (PORTS)</b>	<b>L28205</b>	<b>Part 5</b>
<i>PBM: 876 8094 E (DJ9387)</i>		<i>PBM above SD: 9.9670 m</i>
<i>GPS Bench Mark: 876 8094 E TIDAL (DJ9387)</i>		<i>MSL above SD: 8.553 m</i>
<i>GPS Observation Frequency: Every year</i>		<i>Last GPS Observation Performed: 09/14</i>
<i>Dive Inspection Frequency: Every year</i>		<i>Last Dive: 09/14</i>

1. A dive inspection **MUST** be performed during this site visit. Photographs of the underwater anodes and a report on the condition are required on the Site Report under Dive comments.

<b>lc0101 Calcasieu Channel LB36 (PORTS)</b>	<b>Current Meter Station</b>
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1. Refer to the task order for station specific requirements.

<b>lc0201 Cameron Fishing Pier (PORTS)</b>	<b>Current Meter Station</b>
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1. Refer to the task order for station specific requirements.

**lc0301 Lake Charles City Docks (PORTS)**

**Current Meter Station**

1. Refer to the task order for station specific requirements.

## 2.7 Woods Hole Group - Task 14-02: Houston/Galveston PORTS®

Jim Lewis, Task Manager/Technical Representative (TR)

### **8770613 Morgan's Point, TX (PORTS)**

**PBM:** E 1201 (AW1556)

**GPS Bench Mark:** 877 0613 TIDAL 10 (AW4857)

**GPS Observation Frequency:** Every year

**Dive Inspection Frequency:** Every year

**L28206**

**Part 8**

**PBM above SD:** 5.9855 m

**MSL above SD:** 1.807 m

**Last GPS Observation Performed:** 04/14

**Last Dive:** 04/14

1. No additional requirements.

### **8771013 Eagle Point, TX (PORTS)**

**PBM:** 877 1013 B

**GPS Bench Mark:** 877 1013 A (AJ4424)

**GPS Observation Frequency:** Every year

**Dive Inspection Frequency:** Every year

**L28206**

**Part 13**

**PBM above SD:** 3.913 m

**MSL above SD:** 1.467 m

**Last GPS Observation Performed:** 04/14

**Last Dive:** 04/14

1. No additional requirements.

### **8771341 Galveston Entrance Channel, TX (PORTS) L28206**

**PBM:** 877 1314 J

**GPS Bench Mark:** 877 1341 J

**GPS Observation Frequency:** Every year

**Dive Inspection Frequency:** Every year

**Part 41**

**PBM above SD:** 4.009 m

**MSL above SD:** 3.072 m

**Last GPS Observation Performed:** 04/14

**Last Dive:** 04/14

1. A dive inspection **MUST** be performed during this site visit. Photographs of the underwater anodes and a report on the condition are required on the Site Report under Dive comments.
2. Include all marks in future level runs.
3. Include the barometer in this year's level run.

**8771450 Galveston Pier 21, TX (PORTS)**

**PBM:** 877 1450 C

**GPS Bench Mark:** 877 1450 C

**GPS Observation Frequency:** Every year

**Dive Inspection Frequency:** Every year

**L28206**

**Part 2**

**PBM above SD:** 3.153 m

**MSL above SD:** 1.588 m

**Last GPS Observation Performed:** 01/14

**Last Dive:** 02/13

1. Perform an engineering reconnaissance to install the MWWL sensor, seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the installation design of the new station.
2. A dive inspection **MUST** be performed during this site visit; last dive was done in (02/13). A report on the condition of marine growth on the outside of the well, around the plates and orifice, and inside the well is required on the Site Report under Dive comments.
3. **Unresolved from 2014:** Update the XPERT Operating System, XPERT Dark Operating System and Satlink firmware if the new version is approved at the time of the annual inspection.
4. **Unresolved from 2014:** Check and update the log sizes as per the Engineering Bulletin 09-003.
5. **Unresolved from 2014:** Provide a set of new chest-high and directional photos of all bench marks, include an object in the directional photos delineating where the bench mark is located.
6. **Unresolved from 2014:** Provide a description and photo of the Met SRM and include the Met SRM in the leveling run.
7. **Unresolved from 2014:** Perform a steel tape measurement from bench mark 877 1450 G to the Aquatrak head and add the method and measurement to the leveling comments section of eSite report.

**gxxxxx Spilman Terminal, TX (PORTS)**

**Current Meter Station**

1. Refer to the task order for station installation and maintenance requirements.

## 2.8 Woods Hole Group - Task 14-02: Texas NWLON

Jim Lewis, Task Manager/Technical Representative (TR)

<b>8770570 Sabine Pass North, TX (PORTS)</b>	<b>L28206</b>	<b>Part 1</b>
<i>PBM: 877 0570 A TIDAL (AV1014)</i>		<i>PBM above SD: 3.264 m</i>
<i>GPS Bench Mark: 877 0570 A TIDAL (AV1014)</i>		<i>MSL above SD: 1.343 m</i>
<i>GPS Observation Frequency: Every year</i>	<i>Last GPS Observation Performed: 11/14</i>	
<i>Dive Inspection Frequency: Every year</i>		<i>Last Dive: 11/14</i>

1. Include all deep rod marks in all future leveling runs in support of stability analysis.
2. Measure the wind and air temperature sensors above the Met SRM.

<b>8770822 Texas Point, TX</b>	<b>L28206</b>	<b>Part 48</b>
<i>PBM: 877 0822 B</i>		<i>PBM above SD: 1.567 m</i>
<i>GPS Bench Mark: TXPT01</i>		<i>MSL above SD: 4.363 m</i>
<i>GPS Observation Frequency: Every year</i>	<i>Last GPS Observation Performed: 08/2013</i>	
<i>Dive Inspection Frequency: Every year</i>		<i>Last Dive: unknown</i>

1. A dive inspection **MUST** be performed during this site visit. Photographs of the underwater anodes and a report on the condition are required on the Site Report under Dive comments.
2. Include the barometer in this year's level run.

<b>8772447 USCG Freeport, TX</b>	<b>L28206</b>	<b>Part 47</b>
<i>PBM: 877 2447 A TIDAL</i>		<i>PBM above SD: 10.000 m</i>
<i>GPS Bench Mark: 877 2447 E TIDAL</i>		<i>MSL above SD: 8.723 m</i>
<i>GPS Observation Frequency: Every year</i>	<i>Last GPS Observation Performed: 11/14</i>	
<i>Dive Inspection Frequency: Every year</i>		<i>Last Dive: 11/14</i>

1. No additional requirements.

<b>8774770 Rockport, TX</b>	<b>L28206</b>	<b>Part 5</b>
<i>PBM: 877 4770 A</i>		<i>PBM above SD: 3.207 m</i>
<i>GPS Bench Mark: 877 4770 B</i>		<i>MSL above SD: 2.025 m</i>
<i>GPS Observation Frequency: Every year</i>	<i>Last GPS Observation Performed: 9/14</i>	
<i>Dive Inspection Frequency: Every year</i>		<i>Last Dive: 9/14</i>

1. Include the barometer in this year's level run.

**8775870 Corpus Christi, TX****PBM:** 877 5870 A TIDAL (AC8459)**GPS bench mark:** 877 5870 H TIDAL (AH1762)**GPS Observation Frequency:** Every 5 years**Dive Inspection Frequency:** Every year**L28206****Part 6****PBM above SD:** 9.098 m**MSL above SD:** 6.635 m**Last GPS Observation Performed:** 03/12**Last Dive:** 03/10

1. A dive inspection **MUST** be performed during this site visit; last dive was done in (03/10). A report on the condition of marine growth on the outside of the well, around the plates and orifice, and inside the well is required on the Site Report under Dive comments.

**8779770 Port Isabel, TX****PBM:** 877 9770 TIDAL 10 (AB1227)**GPS Bench Mark:** X 1406 (AB1225)**GPS Observation Frequency:** Every 5 years**Dive Inspection Frequency:** Every year**L28206****Part 7****PBM above SD:** 4.276 m**MSL above SD:** 1.423 m**Last GPS Observation Performed:** 10/12**Last Dive:** 10/14

1. Update the sensor elevation diagram.

**2.9 Woods Hole Group - Task 14-03: Narragansett PORTS®**  
John Stepnowski, Task Manager/Technical Representative (TR)

<b>8447386 Fall River, MA (PORTS)</b>	<b>L28189</b>	<b>Part 2</b>
<i>PBM:</i> STATE (LW2264)		<i>PBM above SD:</i> 10.000 m
<i>GPS Bench Mark:</i> 844 7386 A		<i>MSL above SD:</i> 7.028 m
<i>GPS Observation Frequency:</i> Every 5 years	<i>Last GPS Observation Performed:</i> 09/14	
<i>Dive Inspection Frequency:</i> Every year		<i>Last Dive:</i> 04/14

1. **Unresolved from 2014 Project Instructions:** Replace the conductivity sensor.
2. Replace the Xpert and Xpert Dark modules if equipment is available to resolve slow re-boot times.
3. Verify Barometer serial number and update the eSite report if necessary.

**8447387 Borden Flats Light, MA (PORTS) Meteorological Station**

1. Refer to the task order for station specific requirements.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, updated October 2014.
3. Take digital photos of the Met mast.

**8447412 Fall River, MA (PORTS) Visibility Station**

1. Refer to the task order for the installation and maintenance requirements for this visibility station.

**8452314 Prudence Island, RI (PORTS) Visibility Station**

1. Refer to the task order for the installation and maintenance requirements for this visibility station.

<b>8452944 Conimicut Light, RI (PORTS)</b>	<b>L28190</b>	<b>Part 2</b>
<i>PBM:</i> 845 2944 BOLT		<i>PBM above SD:</i> 10.532 m
<i>GPS Bench Mark:</i> N/A		<i>MSL above SD:</i> 6.292 m
<i>GPS Observation Frequency:</i> (Waived – not feasible)		
<i>Dive Inspection Frequency:</i> Every year		<i>Last Dive:</i> 05/13

1. No additional requirements.

**8452951 Potter Cove, RI (PORTS) Meteorological Station**

1. Refer to the task order for station specific requirements.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, updated October 2014.
3. Take digital photos of the Met mast.

<b>8454000 Providence, RI (PORTS)</b>	<b>L28190</b>	<b>Part 3</b>
<i>PBM:</i> 845 4000 TIDAL 9 (LW0154)		<i>PBM above SD:</i> 4.475 m
<i>GPS Bench Mark:</i> 845 4000 L TIDAL (AJ4033)		<i>MSL above SD:</i> 1.749 m
<i>GPS Observation Frequency:</i> Every 5 years		<i>Last GPS Observation Performed:</i> 10/09
<i>Dive Inspection Frequency:</i> Every year		<i>Last Dive:</i> 08/14

1. **Unresolved from 2014 Project Instructions:** Update solar panels serial numbers.
2. **Unresolved from 2015 Project Instructions:** Establish and level six new bench marks, of class B or higher stability, designation/stamping as follows: 845 4000 P/4000 P 2015, 845 4000 Q/4000 Q 2015, 845 4000 R/4000 R 2015, 845 4000 S/4000 S 2015, 845 4000 T/4000 T 2015, and 845 4000 U/4000 U 2015.
3. Take the face, setting, and location photos of newly established bench marks.
4. Update the bench mark diagram with new marks.

<b>8454049 Quonset Point, RI (PORTS)</b>	<b>L28190</b>	<b>Part 4</b>
<i>PBM:</i> 845 4049 D		<i>PBM above SD:</i> 10.000 m
<i>GPS Bench Mark:</i> 845 4049 D		<i>MSL above SD:</i> 7.587 m
<i>GPS Observation Frequency:</i> Every 5 years		<i>Last GPS Observation Performed:</i> 8/14
<i>Dive Inspection Frequency:</i> Every year		<i>Last Dive:</i> 06/13

1. Perform a reconnaissance for the establishment of new bench mark.

<b>8461490 New London, CT (PORTS)</b>	<b>L28191</b>	<b>Part 1</b>
<i>PBM:</i> 846 1490 B		<i>PBM above SD:</i> 5.032 m
<i>GPS Bench Mark:</i> 846 1490 K TIDAL (LX3418)		<i>MSL above SD:</i> 1.542 m
<i>GPS Observation Frequency:</i> Every 5 years		<i>Last GPS Observation Performed:</i> 11/09
<i>Dive Inspection Frequency:</i> Every year		<i>Last Dive:</i> 08/14

1. Perform an engineering reconnaissance to install the MWWL sensor, seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the installation design of the new station.
2. Verify all solar panel serial numbers and record all panels in the eSite report.

<b>8465705 New Haven, CT (PORTS)</b>	<b>L28191</b>	<b>Part 2</b>
<i>PBM:</i> 846 5705 D		<i>PBM above SD:</i> 10.000 m
<i>GPS Bench Mark:</i> 846 5705 C		<i>MSL above SD:</i> 6.630 m
<i>GPS Observation Frequency:</i> Every 5 years		<i>Last GPS Observation Performed:</i> 09/14
<i>Dive Inspection Frequency:</i> Every year		<i>Last Dive:</i> 08/14

1. No additional requirements.

<b>nb0101 New London (PORTS)</b>	<b>Current Meter Station</b>
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2. Refer to the task order for station specific requirements.

**nb0201 Fall River (PORTS)**

**Current Meter Station**

2. Refer to the task order for station specific requirements.

**nb0301 Quonset Point (PORTS)**

**Current Meter Station**

1. Refer to the task order for station specific requirements.

**nl0101 Groton, Pier 6 (PORTS)**

**Current Meter Station**

1. Refer to the task order for station specific requirements.

## 2.10 Woods Hole Group - Task 14-03: New York/New Jersey PORTS®

John Stepnowski, Task Manager/Technical Representative (TR)

### 8516945 Kings Point, NY (PORTS)

L28192

Part 2

*PBM:* 851 6945 A

*PBM above SD:* 9.662 m

*GPS Bench Mark:* 851 6945 TIDAL 5

*MSL above SD:* 5.113 m

*GPS Observation Frequency:* Every 5 years

*Last GPS Observation Performed:* 07/14

*Dive Inspection Frequency:* Every year

*Last Dive:* 07/14

1. Verify the MWWL and Aquatrak data comparison analysis is complete and accepted by the MWWL TOP Committee. If approved, remove the Aquatrak, associated DCP, and assign the DCP associated with the MWWL sensor as DCP 1.
2. Establish and level one new bench mark designation/stamping as follows:  
6945 H/6945 H 2015.
3. Include bench marks 851 6945 TIDAL 5 and 851 6945 D in the leveling run.
4. Identify the Alpine and RM Young wind sensors and update the eSite report accordingly.
5. Replace the clamps (12 total) with 2 1/4 inch stainless steel clamps, if the Aquatrak sensor remains installed per PI #1.
6. Update the bench mark diagram with new mark.

### 8517986 Verrazano Narrows Bridge Air Gap, NY (PORTS)

Air Gap Station

1. No additional requirements.

### 8518750 The Battery, NY (PORTS)

L28192

Part 3

*PBM:* 851 8750 TIDAL 7 (AB6736)

*PBM above SD:* 5.470 m

*GPS Bench Mark:* R 340 (KV0587)

*MSL above SD:* 1.785 m

*GPS Observation Frequency:* Every 5 years

*Last GPS Observation Performed:* 09/09

*Dive Inspection Frequency:* Every year

*Last Dive:* 05/14

1. Verify the MWWL and Aquatrak data comparison analysis is complete and accepted by the MWWL TOP Committee. If approved, remove the Aquatrak, associated DCP, and assign the DCP associated with the MWWL sensor as DCP 1, if necessary.
2. **Unresolved from 2014 Project Instructions:** Replace the Waterlog pump dryer.
3. **Unresolved from 2014 Project Instructions:** Record handheld GPS positions for SRM BOLT.
4. Include bench mark S 340 Reset 1991 and 851 8750 CI Landmark in the leveling run.
5. Perform bench mark reconnaissance for class B or higher marks.
6. Update barometer serial number.

### 8519461 Bayonne Bridge Air Gap, NY (PORTS)

Air Gap Station

1. No additional requirements.

**8519483 Bergen Point, NY (PORTS)**  
**PBM:** 851 9483 B TIDAL (AH6737)  
**GPS Bench Mark:** 851 9483 H  
**GPS Observation Frequency:** Every 5 years  
**Dive Inspection Frequency:** Every year

**L28192**

**Part 4**

**PBM above SD:** 6.428 m  
**MSL above SD:** 2.137 m  
**Last GPS Observation Performed:** 09/14  
**Last Dive:** 05/14

1. **Unresolved from 2014 Project Instructions:** Establish and level two deep rod marks and one surface mark, designation/stamping as follows if new mark(s): 851 9483 J/9483 J 2015, 851 9483 K/9483 K 2015, and 851 9483 L/9483 L 2015.
2. **Unresolved from 2014 Project Instructions:** Relocate the met sensor tower to resolve the obstruction of winds at the present site.
3. Update the bench mark diagram with new marks.

**8519532 Mariner's Harbor, NJ (PORTS)**

**Meteorological Station**

1. Refer to the task order for station specific requirements. Note: The task order will be amended to include this station in CY2016.

**8530973 Robbins Reef, NJ (PORTS)**

**Meteorological Station**

1. Refer to the task order for station specific requirements.

**8531680 Sandy Hook, NJ (PORTS)**  
**PBM:** 853 1680 D TIDAL (AB6711)  
**GPS Bench Mark:** SIMPSON 2 RM 3 (KV0707)  
**GPS Observation Frequency:** Every 5 years  
**Dive Inspection Frequency:** Every year

**L28193**

**Part 1**

**PBM above SD:** 3.683 m  
**MSL above SD:** 1.551 m  
**Last GPS Observation Performed:** 09/09  
**Last Dive:** 05/14

1. Station destroyed by Hurricane Sandy. Rebuild the station as approved by FERS. Seek engineering support and Field Engineering Review Subcommittee (FERS) approval.
2. Install an approved MWWL sensor; if any structural modifications are required, seek engineering support and Field Engineering Review Subcommittee (FERS) approval.
3. Recover and include bench marks 853 1680 TIDAL 8 and 863 1680 F in the level run; these marks were not leveled greater than two years.
4. Provide a description and photo of the Met SRM and include the Met SRM in the leveling run. The Met Team suggests using a bolt at the base of the met tower.

**n01010 Bergen Point, NY (PORTS)**

**Current Meter Station**

1. Refer to the task order for station specific requirements.

**n02010 Bayonne Bridge, NY (PORTS)**

**Current Meter Station**

1. Refer to the task order for station specific requirements.

**n03020 The Narrows, NY (PORTS)**

**Current Meter Station**

1. Refer to the task order for station specific requirements.

**n05010 Gowanus Flats LBB 32, NY (PORTS)**

**Current Meter Station**

1. Refer to the task order for station specific requirements.

## 2.11 Woods Hole Group - Task 14-03: Delaware River and Bay PORTS®

John Stepknowski, Task Manager/Technical Representative (TR)

<b>8536110 Cape May, NJ (PORTS)</b>	<b>L28193</b>	<b>Part 3</b>
<i>PBM:</i> 853 6110 TIDAL 1 (HU1194)		<i>PBM above SD:</i> 4.892 m
<i>GPS Bench Mark:</i> 853 6110 D		<i>MSL above SD:</i> 1.521 m
<i>GPS Observation Frequency:</i> Every 5 years	<i>Last GPS Observation Performed:</i> 04/14	
<i>Dive Inspection Frequency:</i> Every year		<i>Last Dive:</i> 06/14

1. Include bench marks 853 6110 N, 853 6110 S, and 853 6110 TIDAL 5 RESET in the leveling run.

<b>8537121 Ship John Shoal, NJ (PORTS)</b>	<b>L28193</b>	<b>Part 4</b>
<i>PBM:</i> 853 7121 TIDAL 1		<i>PBM above SD:</i> 8.666 m
<i>GPS Bench Mark:</i> N/A		<i>MSL above SD:</i> 6.529 m
<i>GPS Observation Frequency:</i> (Waived – not feasible)		
<i>Dive Inspection Frequency:</i> Every year		<i>Last Dive:</i> 09/14

1. No additional requirements.

<b>8538886 Tacony-Palmyra, NJ (PORTS)</b>	<b>L28193</b>	<b>Part 5</b>
<i>PBM:</i> 853 8886 A		<i>PBM above SD:</i> 10.084 m
<i>GPS Bench Mark:</i> N/A		<i>MSL above SD:</i> 6.404 m
<i>GPS Observation Frequency:</i> (Waived – not feasible)		
<i>Dive Inspection Frequency:</i> Every year		<i>Last Dive:</i> 11/13

1. Relocate the station to Tioga Terminal. Seek Engineering infrastructure design support and FERS approval.
2. **Unresolved from 2014 Project Instructions:** Update the XPERT Operating System, XPERT Dark Operating System and Satlink firmware if the new version is approved at the time of the annual inspection.
3. **Unresolved from 2014 Project Instructions:** Check and update the log sizes as per the Engineering Bulletin 09-003.
4. **Unresolved from 2014 Project Instructions:** Replace the DCP enclosure, stand, and bridge cribbing.
5. **Unresolved from 2014 Project Instructions:** Replace the primary water level sensor and well.
6. **Unresolved from 2014 Project Instructions:** Replace the Druck conduit and tubing.

**8539094 Burlington Bridge, NJ (PORTS)** **L28193** **Part 6**  
*PBM: 853 9094 F* *PBM above SD: 9.731 m*  
*GPS Bench Mark: N/A* *MSL above SD: 6.355 m*  
*GPS Observation Frequency: (Waived – not feasible)*  
*Dive Inspection Frequency: Every year* *Last Dive: 09/14*

1. **Unresolved from 2014 Project Instructions:** Replace the solar panel for the Xpert DCP.
2. **Unresolved from 2014 Project Instructions:** Replace the GPS antenna, checking the placement, and inspecting cable.
3. **Unresolved from 2014 Project Instructions:** Update the To Reach statement to reflect the current location of the station.

**8540433 Marcus Hook, PA (PORTS)** **L28042** **Part 1**  
*PBM: 854 0433 E* *PBM above SD: 10.000 m*  
*GPS Bench Mark: 854 0433 E* *MSL above SD: 7.539 m*  
*GPS Observation Frequency: Every 5 years* *Last GPS Observation Performed: 09/09*  
*Dive Inspection Frequency: Every year* *Last Dive: 09/14*

1. **Unresolved from 2014 Project Instructions:** Recover or establish and level two surface marks with the designation/stamping as follows: 854 0433 H/0433 H 2015 and 854 0433 J/0433 J 2015.
2. Update the bench mark diagram with new marks.

**8545240 Philadelphia, PA (PORTS)** **L28042** **Part 2**  
*PBM: 854 5240 A* *PBM above SD: 4.688 m*  
*GPS Bench Mark: 854 5240 C* *MSL above SD: 2.228 m*  
*GPS Observation Frequency: Every 5 years* *Last GPS Observation Performed: 09/09*  
*Dive Inspection Frequency: Every year* *Last Dive: 05/13*

1. **Unresolved from 2014 Project Instructions:** Check and possibly replace the COM PORT on the XPERT DCP to troubleshoot the data download and/or setup files issues.
2. **Unresolved from 2014 Project Instructions:** Provide a description and photo of the Met SRM and include the Met SRM in the leveling run. The Met Team suggests using a bolt at the base of the met tower.

**8548989 Newbold, PA (PORTS)** **L28042** **Part 3**  
*PBM: 854 8989 A* *PBM above SD: 10.000 m*  
*GPS Bench Mark: 854 8989 A* *MSL above SD: 5.694 m*  
*GPS Observation Frequency: Every 5 years* *Last GPS Observation Performed: 09/09*  
*Dive Inspection Frequency: Every year* *Last Dive: 09/14*

1. Perform a desktop reconnaissance for class B marks before visiting the station and establish and level two 3D rod mark, designation/stamping as follows:  
854 8989 F/8989 F 2015 and 854 8989 G/8989 G 2015.
2. **Unresolved from 2014 Project Instructions:** Measure the Met SRM height above water and document this elevation along with the date/time in the comments section of the site report.
3. **Unresolved from 2014 Project Instructions:** Measure the elevation of the air temperature sensors above Met SRM.
4. **Unresolved from 2014 Project Instructions:** Measure the elevation of the water temperature sensor above Station Datum.

**8551762 Delaware City, DE (PORTS)** **L28043** **Part 1**  
*PBM: 855 1762 C* *PBM above SD: 10.000 m*  
*GPS Bench Mark: 855 1762 E* *MSL above SD: 7.727 m*  
*GPS Observation Frequency: Every 5 years* *Last GPS Observation Performed: 09/09*  
*Dive Inspection Frequency: Every year* *Last Dive: 09/14*

1. No additional requirements.

**8555889 Brandywine Shoal Light, DE (PORTS)** **L28043** **Part 3**  
*PBM: 855 5889 A* *PBM above SD: 10.3975 m*  
*GPS Bench Mark: N/A* *MSL above SD: 6.584 m*  
*GPS Observation Frequency: (Waived – not feasible)*  
*Dive Inspection Frequency: Every year* *Last Dive: 12/13*

1. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, updated October 2014.
2. Take digital photos of the station Met mast.

**8557380 Lewes, DE (PORTS)** **L28043** **Part 4**  
*PBM: 855 7380 TIDAL 20 (AJ8038)* *PBM above SD: 3.990 m*  
*GPS Bench Mark: 855 7380 TIDAL 20 (AJ8038)* *MSL above SD: 1.528 m*  
*GPS Observation Frequency: Every 5 years* *Last GPS Observation Performed: 04/14*  
*Dive Inspection Frequency: Every Year* *Last Dive: 06/14*

1. **Unresolved from 2014 Project Instructions:** Include the barometer in the leveling run.
2. Recover and include bench marks GPS S 5 and GPS S 5 A in the level run; these marks were not leveled greater than two years.

**855xxxx Ben Franklin Bridge, DE (PORTS)**

**Air Gap Station**

1. Refer to the task order for station specific requirements.

**db0201 Reedy Point (PORTS)**

**Current Meter Station**

2. Refer to the task order for station specific requirements.

**db0301 Philadelphia (PORTS)**

**Current Meter Station**

1. Refer to the task order for station specific requirements.

**db0501 Brown Shoal Light (PORTS)**

**Current Meter Station**

1. Refer to the task order for station specific requirements.

## 2.12 Woods Hole Group - Task 14-03: Chesapeake Bay PORTS®

John Stepnowski, Task Manager/Technical Representative (TR)

### 8551910 Reedy Point, DE (PORTS)

L28043

Part 2

*PBM:* R 41 (JU2187)

*PBM above SD:* 2.031 m

*GPS Bench Mark:* 855 1910 G (AJ6314)

*MSL above SD:* 1.301 m

*GPS Observation Frequency:* Every 5 years

*Last GPS Observation Performed:* 09/09

*Dive Inspection Frequency:* Every year

*Last Dive:* 06/14

1. **Unresolved from 2014 Project Instructions:** Document the Aquatrak head serial number prior to replacing it.

### 8551911 Reedy Point Air Gap, DE (PORTS)

Air Gap Station

1. No additional requirements.

### 8573364 Tolchester Beach, MD (PORTS)

L28196

Part 3

*PBM:* 857 3364 A

*PBM above SD:* 2.963 m

*GPS Bench Mark:* Undetermined

*MSL above SD:* 1.294 m

*GPS Observation Frequency:* Every 5 years

*Last GPS Observation Performed:* 08/09

*Dive Inspection Frequency:* Every year

*Last Dive:* 6/14

1. Perform a reconnaissance for the establishment of new GPS suitable bench mark.
2. **Unresolved from 2014 Project Instructions:** Establish and level a deep rod mark, designation/stamping as follows: designation/stamping: 857 3364 E/ 3364 E 2015.
3. **Unresolved from 2014 Project Instructions:** Take face, setting, and location photos for any newly established marks.
4. Update the bench mark diagram with new mark.

### 8573927 Chesapeake City, MD (PORTS)

L28196

Part 4

*PBM:* U 2 (JU1833)

*PBM above SD:* 3.158 m

*GPS Bench Mark:* 857 3927 D (PID)

*MSL above SD:* 1.432 m

*GPS Observation Frequency:* Every 5 years

*Last GPS Observation Performed:* 04/13

*Dive Inspection Frequency:* Every year

*Last Dive:* 06/14

1. No additional requirements.

### 8573928 Chesapeake City Air Gap, MD (PORTS)

Air Gap Station

1. **Unresolved from 2014 Project Instructions:** Update the XPERT Operating System, XPERT Dark Operating System and Satlink firmware if the new version is approved at the time of the annual inspection.
2. **Unresolved from 2014 Project Instructions:** Check and update the log sizes as per the Engineering Bulletin 09-003.

**8574680 Baltimore, MD (PORTS)****L28196****Part 5****PBM:** 857 4680 TIDAL 32 (JV0586)**PBM above SD:** 3.158 m**GPS Bench Mark:** 857 4680 TIDAL BASIC (JV0578)**MSL above SD:** 1.495 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 04/14**Dive Inspection Frequency:** Every year**Last Dive:** 06/14

1. Establish and level a deep rod mark, designation/stamping as follows:  
857 4680 D/4680 D 2015.
2. Include bench mark 28 1922, 29 1922, and FORT MCHENRY 1982 in leveling run.
3. Update the bench mark diagram with new mark.
4. Replace and re-shingle the plywood on the roof.
5. Paint the entire station exterior.

**8574727 Francis Scott Key Bridge, MD (PORTS)****Visibility Station**

1. Refer to the task order for the installation and maintenance requirements for this visibility station.

**8574728 Baltimore Key Bridge, MD (PORTS)****Meteorological Station**

1. Refer to the task order for station specific requirements.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, updated October 2014.
3. Take digital photos of the station Met mast.

**8574729 Francis Scott Key Bridge, NE Tower, MD (PORTS)****Meteorological Station**

1. Refer to the task order for station specific requirements.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, updated October 2014.
3. Take digital photos of the station Met mast.

**857xxxx Francis Scott Key Bridge, MD (PORTS)****Air Gap Station**

1. Refer to the task order for the installation and maintenance requirements for this visibility station.

**8575432 Bay Bridge Air Gap, MD (PORTS)****Air Gap Station**

1. **Unresolved from 2014 Project Instructions:** Update the XPERT Operating System, XPERT Dark Operating System and Satlink firmware if the new version is approved at the time of the annual inspection.
2. **Unresolved from 2014 Project Instructions:** Check and update the log sizes as per the Engineering Bulletin 09-003.

**8575432 Chesapeake Bay Bridge, MD (PORTS)****Visibility Station**

1. Refer to the task order for the installation and maintenance requirements for this visibility station.

**8575512 Annapolis, MD (PORTS)****L28196****Part 6****PBM:** 857 5512 B TIDAL (AC6864)**PBM above SD:** 3.101 m**GPS Bench Mark:** 857 5512 D TIDAL (AJ8035)**MSL above SD:** 1.596 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 01/14**Dive Inspection Frequency:** Every year**Last Dive:** 06/14

1. Establish and level two deep rod mark, designation/stamping as follows:  
857 5512 F/5512 F 2015 and 857 5512 G/5512 G 2015.
2. Contact Michele Morgado before arrival to station @ 410-293-5623,morgado@usna.edu.
3. Update the bench mark diagram with new marks.

**8577018 Cove Point LNG Pier, MD (PORTS)****Meteorological Station**

1. Refer to the task order for station specific requirements.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, updated October 2014.
3. Take digital photos of the station Met Mast.

**8577330 Solomons Island, MD (PORTS)****L28196****Part 7****PBM:** 857 7330 E TIDAL (AJ8036)**PBM above SD:** 4.456 m**GPS Bench Mark:** 857 7330 J**MSL above SD:** 1.366 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 07/09**Dive Inspection Frequency:** Every year**Last Dive:** 05/13

1. Install an approved MWWL sensor; if any structural modifications are required, seek engineering support and Field Engineering Review Subcommittee (FERS) approval.
2. Update the datum offset in the XPERT DCP to 3.659 m (assuming the leveling point did not exceed the 6mm tolerance after this year's leveling run).
3. **Unresolved from 2014 Project Instructions:** Monitor station equipment documenting any noticeable corrosion.
4. Include bench mark 857 7330 D in the leveling run.

**8578240 Piney Point, MD (PORTS)****Meteorological Station**

1. Refer to the task order for station specific requirements.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, updated October 2014.
3. Take digital photos of the station Met Mast.

**8594900 Washington, DC (PORTS)**  
**PBM:** 859 4900 TIDAL 1 (HV1980)  
**GPS Bench Mark:** 859 4900 K  
**GPS Observation Frequency:** Every 5 years  
**Dive Inspection Frequency:** Every year

**L28045**

**Part 1**

**PBM above SD:** 4.115 m  
**MSL above SD:** 1.859 m  
**Last GPS Observation Performed:** 06/10  
**Last Dive:** 06/14

1. **Unresolved from 2014 Project Instructions:** Perform a desktop recon to set one deep rod mark and one surface mark. Make contact with the local contact to ensure the bench marks will not be destroyed by area construction.
2. Replace the Satlink and the GPS antenna.
3. Update the datum offset in XPERT DCP to 6.145 m (assuming the leveling point did not exceed the 6mm tolerance after this year's leveling run).

**8632200 Kiptopeke, VA (PORTS)**  
**PBM:** L 418 (FW0303)  
**GPS Bench Mark:** 863 2200 B TIDAL (AJ4588)  
**GPS Observation Frequency:** Every 5 years  
**Dive Inspection Frequency:** Every year

**L28198**

**Part 2**

**PBM above SD:** 4.093 m  
**MSL above SD:** 1.539 m  
**Last GPS Observation Performed:** 06/14  
**Last Dive:** 06/14

1. Include bench mark 863 2022 TIDAL 4 and 863 2200 L in the leveling run.

**8632837 Rappahannock Light Front Range, VA (PORTS)**

**Meteorological Station**

1. Refer to the task order for station specific requirements.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, updated October 2014.
3. Take digital photos of the station Met Mast.

**8635750 Lewisetta, VA (PORTS)**  
**PBM:** 863 5750 H  
**GPS Bench Mark:** 863 5750 J TIDAL (AJ4589)  
**GPS Observation Frequency:** Every 5 years  
**Dive Inspection Frequency:** Every year

**L28198**

**Part 4**

**PBM above SD:** 2.647 m  
**MSL above SD:** 1.685 m  
**Last GPS Observation Performed:** 06/13  
**Last Dive:** 08/14

1. Perform a reconnaissance to install the tide house. The pier the station is located on is unstable.
2. Establish and level a deep rod mark, designation/stamping as follows:  
863 5075 N/5750 N 2015.
3. Include bench mark 863 5750 TIDAL 3 in the leveling run and note the condition of the mark in eSite.
4. Take the face, setting, and location photos of newly established bench mark.
5. Update the bench mark diagram with new mark.

**8636580 Windmill Point, VA (PORTS)**  
**PBM:** 863 6580 E  
**GPS Bench Mark:** 863 6580 E  
**GPS Observation Frequency:** Every 5 years  
**Dive Inspection Frequency:** Every year

**L28198**

**Part 5**

**PBM above SD:** 2.189 m  
**MSL above SD:** 0.903 m  
**Last GPS Observation Performed:** 6/14  
**Last Dive:** 05/14

1. Verify the MWWL and Aquatrak data comparison analysis is complete and accepted by the MWWL TOP Committee. If approved, remove the Aquatrak, associated DCP, and assign the DCP associated with the MWWL sensor as DCP 1, if necessary.
2. **Unresolved from 2014 Project Instructions:** Establish and level one to three bench marks designation/stamping as follows: designation/stamping: 863 6580 L/6580 L 2015, 863 6580 M/6580 M 2015, and 863 6580 N/6580 N 2015.
3. **Unresolved from 2014 Project Instructions:** Take face, setting, and location photos for any newly established marks.
4. Include bench mark 863 6580 K in the leveling run.
5. Update the bench mark diagram with new bench marks.

**8637611 York River East Range Light, VA (PORTS)**

**Meteorological Station**

1. Refer to the task order for station specific requirements.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, updated October 2014.
3. Take digital photos of the station Met mast.

**8637689 Yorktown, VA (PORTS)**  
**PBM:** 863 7689 C  
**GPS Bench Mark:** 863 7689 C  
**GPS Observation Frequency:** Every 5 years  
**Dive Inspection Frequency:** Every year

**L28198**

**Part 6**

**PBM above SD:** 10.301 m  
**MSL above SD:** 1.964 m  
**Last GPS Observation Performed:** 08/10  
**Last Dive:** 06/14

1. **Unresolved from 2014 Project Instructions:** Replace the wind bird nose cone.
2. **Unresolved from 2014 Project Instructions:** Establish and level two new deep rod bench marks, designation/stamping as follows: designation/stamping: 863 7689 D/7689 D 2015 and 863 7689 E/7689 E 2015.
3. **Unresolved from 2014 Project Instructions:** Take the face, setting, and location photos of newly established bench marks.
4. Update the bench mark diagram with new marks.

**8638511 Dominion Terminal, VA(PORTS)**

**Meteorological Station**

1. Refer to the task order for station specific requirements.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, updated October 2014.
3. Take digital photos of the station Met mast.

**8638595 South Craney Island, VA (PORTS)****Meteorological Station**

1. Refer to the task order for station specific requirements.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, updated October 2014.
3. Take digital photos of the station Met mast.

**8638610 Sewells Point, VA (PORTS)****L28198****Part 7****PBM:** 863 8610 G TIDAL**PBM above SD:** 4.314 m**GPS Bench Mark:** 863 8610 F**MSL above SD:** 1.748 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 05/10**Dive Inspection Frequency:** Every year**Last Dive:** 07/13

1. **Unresolved from 2012 Project Instructions:** Verify and document the length of the conductivity sensor well.
2. **Unresolved from 2014 Project Instructions:** Recover and level bench mark L 308 RESET 1985 to get a geodetic connection.
3. **Unresolved from 2014 Project Instructions:** Provide a description and photo of the Met SRM and include the Met SRM in the leveling run.
4. **Unresolved from 2014 Project Instructions:** Measure the elevation of the water temperature sensor above Station Datum.

**8638614 Willoughby Degaussing Station, VA (PORTS)****Meteorological Station**

1. Refer to the task order for station specific requirements.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, updated October 2014.
3. Take digital photos of the station Met mast.

**8638863 Chesapeake Bay Bridge Tunnel, VA (PORTS)****L28198****Part 8****PBM:** 863 8863 NO 2 TIDAL (AJ4591)**PBM above SD:** 15.914 m**GPS Bench Mark:** 863 8863 NO 2 TIDAL (AJ4591)**MSL above SD:** 8.135 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 06/14**Dive Inspection Frequency:** Every year**Last Dive:** 06/14

1. **Unresolved from 2014 Project Instructions:** Repair or replace the conductivity sensor.
2. Include bench marks 863 8863 NO 1 TIDAL and 863 8863 A in the leveling run.
3. **Unresolved from 2014 Project Instructions:** Remove the top hat.

**8638999 Cape Henry, VA (PORTS)****Meteorological Station**

1. Refer to the task order for station specific requirements.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, updated October 2014.
3. Take digital photos of the station Met mast.

**8639348 Money Point, VA (PORTS)**  
*PBM:* 863 9348 E  
*GPS Bench Mark:* 863 9348 D  
*GPS Observation Frequency:* Every 5 years  
*Dive Inspection Frequency:* Every year

**L28198**

**Part 9**  
*PBM above SD:* 10.000 m  
*MSL above SD:* 7.065 m  
*Last GPS Observation Performed:* 6/14  
*Last Dive:* 06/14

1. Include the Microwave sensor in the leveling run.

**cb0102 Cape Henry LB 2 CH (PORTS)**

**Current Meter Station**

1. Refer to the task order for station specific requirements.

**cb0201 York Spit Channel LBB 22 (PORTS)**

**Current Meter Station**

1. Refer to the task order for station specific requirements.

**cb0301 thimble Shoal Channel LB 18 (PORTS)**

**Current Meter Station**

1. Refer to the task order for station specific requirements.

**cb0402 Naval Station Norfolk LB 7 (PORTS)**

**Current Meter Station**

1. Refer to the task order for station specific requirements.

**cb0601 Newport News Channel LB 18 (PORTS)**

**Current Meter Station**

1. Refer to the task order for station specific requirements.

**cb0701 Dominion Terminal (PORTS)**

**Current Meter Station**

1. Refer to the task order for station specific requirements.

**cb0801 Rappahannock Shoal Channel LBB 60 (PORTS)**

**Current Meter Station**

1. Refer to the task order for station specific requirements.

**cb0901 Potomac River Mid-Channel LWB B (PORTS)**

**Current Meter Station**

1. Refer to the task order for station specific requirements.

**cb1001 Cove Point LNG Pier (PORTS)**

**Current Meter Station**

1. Refer to the task order for station specific requirements.

**cb1101 Chesapeake Channel LBB 92 (PORTS)**

**Current Meter Station**

1. Refer to the task order for station specific requirements.

**cb1201 Tolchester Front Range (PORTS)**

**Current Meter Station**

1. Refer to the task order for station specific requirements.

**cb1301 Chesapeake City (PORTS)**

**Current Meter Station**

1. Refer to the task order for station specific requirements.

**tplm2 Thomas Point Light (PORTS)**

**Meteorological Station**

1. No additional requirements.

**wv44099 Cape Henry (PORTS)**

**Wave Sensor Station**

1. Refer to the task order for station specific requirements.

**2.13 Woods Hole Group - Task 14-03: Charleston PORTS®**  
John Stepnowski, Task Manager/Technical Representative (TR)

**8665530 Charleston, SC (PORTS)**

**L28200**

**Part 2**

**PBM:** 866 5530 TIDAL 13 (CJ0085)

**PBM above SD:** 4.020 m

**GPS Bench Mark:** PORT 1962 (CJ0326)

**MSL above SD:** 1.733 m

**GPS Observation Frequency:** Every 5 years

**Last GPS Observation Performed:** 08/12

**Dive Inspection Frequency:** Every year

**Last Dive:** 8/12

1. **Unresolved from 2014 Project Instructions:** Update the XPERT Operating System, XPERT Dark Operating System, and the Satlink firmware if the new version is approved at the time of the annual inspection.
2. **Unresolved from 2014 Project Instructions:** Check and update the log sizes as per the Engineering Bulletin 09-003.
3. **Unresolved from 2014 Project Instructions:** Recover and include bench marks 866 5530 TIDAL 11, 10.945 and 866 5530 TIDAL 12 in the level run; these marks were not leveled greater than two years.
4. Include all bench marks in this year's leveling run.
5. Paint tide house door as well as interior and exterior deck surfaces.
6. Provide a description and photo of the Met SRM and include the Met SRM in the leveling run. The Met Team suggests using a bolt at the base of the Met tower as the met SRM.
7. Verify Xpert module serial number.
8. Replace old solar panel and raise solar panels on the tower.

**8664753 Don Holt Bridge, SC (PORTS)**

**Air Gap Station**

1. Replace the laser sensor.

**2.14 Woods Hole Group - Jacksonville PORTS®**

**8720215 Navy Fuel Depot, FL (PORTS)**

**Meteorological Station**

1. No additional requirements.

**8720219 Dames Point, FL (PORTS)**

**L28198**

**Part 40**

**PBM:** 872 0219 A TIDAL

**PBM above SD:** 3.826 m

**GPS Bench Mark:** 872 0219 P

**MSL above SD:** 1.727 m

**GPS Observation Frequency:** Every 5 years

**Last GPS Observation Performed:** 12/13

**Dive Inspection Frequency:** Every year

**Last Dive:** TBD

1. No additional requirements.

**8720226 Southbank Riverwalk, FL (PORTS)**

**L28198**

**Part 41**

**PBM:** 872 0226 E

**PBM above SD:** 1.1420 m

**GPS Bench Mark:** 872 0226 E

**MSL above SD:** -0.080 m

**GPS Observation Frequency:** Every 5 years

**Last GPS Observation Performed:** 3/14

**Dive Inspection Frequency:** N/A

**Last Dive:** TBD

1. No additional requirements.

**8720228 Little Jetties, FL (PORTS)**

**Meteorological Station**

1. No additional requirements.

**8720233 Blount Island Command, FL (PORTS)**

**Meteorological Station**

1. No additional requirements.

**8720245 Jacksonville University, FL (PORTS)**

**Meteorological Station**

1. No additional requirements.

**8720357 I-295 Bridge, FL (PORTS)**

**L28198**

**Part 42**

**PBM:** 872 0357 A

**PBM above SD:** 10.000 m

**GPS Bench Mark:** 872 0357 A

**MSL above SD:** -0.035 m

**GPS Observation Frequency:** Every 5 years

**Last GPS Observation Performed:** 12/13

**Dive Inspection Frequency:** Every year

**Last Dive:** TBD

1. No additional requirements.

**8720376 Dames Point Bridge, FL (PORTS)**

**Air Gap Station**

1. No additional requirements.

**8720503 Red Bay Point, FL (PORTS)**  
**PBM:** 872 0503 B TIDAL  
**GPS Bench Mark:** 872 0503 C  
**GPS Observation Frequency:** Every 5 years  
**Dive Inspection Frequency:** Every year

**L28198** **Part 43**  
**PBM above SD:** 1.279 m  
**MSL above SD:** -0.011 m  
**Last GPS Observation Performed:** 6/14  
**Last Dive:** TBD

1. No additional requirements.

**8720625 Racy Point, FL (PORTS)**  
**PBM:** 872 0625 A TIDAL  
**GPS Bench Mark:** 872 0625 C TIDAL  
**GPS Observation Frequency:** Every 5 years  
**Dive Inspection Frequency:** Every year

**L28198** **Part 44**  
**PBM above SD:** 1.7970 m  
**MSL above SD:** 0.009 m  
**Last GPS Observation Performed:** 12/13  
**Last Dive:** TBD

1. No additional requirements.

## 2.15 FOD/AOB – Great Lakes

### 2.15.1 St. Lawrence River

#### 8311030 Ogdensburg, NY

*PBM:* 831 1030 A (PH0768)

*GPS Bench Mark:* 831 1030 H (DE7800)

*GPS Observation Frequency:* Every 5 years (NGS)

*Dive Inspection Frequency:* Every 5 years

#### L28217

#### Part 1

*PBM Elevation (Dynamic):* 84.6140 m

*Hydraulic Corrector:* +0.000 m

*Last GPS Observation Performed:* 06/10

*Last Dive:* 05/09

1. Provide a photo/copy of the station visit log.
2. Complete obstruction diagram for 2015 NGS GPS survey (if not done by contractor).

#### 8311062 Alexandria Bay, NY

*PBM:* 831 1062 LAND (LX4057)

*GPS Bench Mark:* 831 1062 LMN (DE7816)

*GPS Observation Frequency:* Every 5 years (NGS)

*Dive Inspection Frequency:* Every year

#### L28217

#### Part 2

*PBM Elevation (Dynamic):* 86.1691 m

*Hydraulic Corrector:* +0.000 m

*Last GPS Observation Performed:* 06/10

*Last Dive:* 11/11

1. Provide a photo/copy of the station visit log.
2. Complete obstruction diagram for 2015 NGS GPS survey (if not done by contractor).

## 2.15.2 Lake Ontario

### 9052000 Cape Vincent, NY

**PBM:** 905 2000 CAPE (PJ0033)

**GPS Bench Mark:** 905 2000 F (AH9230)

**GPS Observation Frequency:** Every 5 years (NGS)

**Dive Inspection Frequency:** Every year

**L28218**

**Part 1**

**PBM Elevation (Dynamic):** 77.0712 m

**Hydraulic Corrector:** +0.008 m

**Last GPS Observation Performed:** 06/10

**Last Dive:** 06/09

1. Complete obstruction diagram for 2015 NGS GPS survey (if not done by contractor).
2. Provide a photo/copy of the station visit log.
3. **UNRESOLVED FROM 2014 PROJECT INSTRUCTIONS** - Include bench mark 905 2000 G 17 in the level run.

### 9052030 Oswego, NY (MASTER)

**PBM:** 905 2030 LAKE (OF0658)

**GPS Bench Mark:** 905 2030 D (DJ5176)

**GPS Observation Frequency:** Every 5 years (NGS)

**Dive Inspection Frequency:** Every 5 years

**L28218**

**Part 2**

**PBM Elevation (Dynamic):** 77.4870 m

**Hydraulic Corrector:** +0.000 m

**Last GPS Observation Performed:** 06/10

**Last Dive:** 05/09

1. Complete obstruction diagram for 2015 NGS GPS survey (if not done by contractor).
2. Provide a photo/copy of the station visit log.
3. Inspect all CORS station components for proper operation and notify NGS of any problems found. Indicate all findings, actions, and contact information on the station report.
4. Verify handheld GPS location of benchmarks 905 2030 E, 905 2030 Son, 905 2030 Will, 905 2030 Parking and 905 2030 Oswego.

### 9052058 Rochester, NY

**PBM:** 905 2058 SUB (OF1082)

**GPS Bench Mark:** 905 2058 K (AH9232)

**GPS Observation Frequency:** Every 5 years (NGS)

**Dive Inspection Frequency:** Every 5 years

**L28218**

**Part 3**

**PBM Elevation (Dynamic):** 76.8041 m

**Hydraulic Corrector:** +0.006 m

**Last GPS Observation Performed:** 06/10

**Last Dive:** 05/09

1. Complete obstruction diagram for 2015 NGS GPS survey (if not done by contractor).
2. Provide a photo/copy of the station visit log.

### 9052076 Olcott, NY

**PBM:** 905 2076 WEST (OG0098)

**GPS Bench Mark:** 905 2076 H (AH9233)

**GPS Observation Frequency:** Every 5 years (NGS)

**Dive Inspection Frequency:** Every 5 years

**L28218**

**Part 4**

**PBM Elevation (Dynamic):** 77.4920 m

**Hydraulic Corrector:** +0.008 m

**Last GPS Observation Performed:** 06/10

**Last Dive:** 05/09

1. Complete obstruction diagram for 2015 NGS GPS survey (if not done by contractor).
2. Provide a photo/copy of the station visit log.

### 2.15.3 Niagara River

**9063007 Ashland Avenue, NY** **L28219** **Part 1**  
**PBM:** 906 3007 POOL (OG0229) **PBM Elevation (Dynamic):** 111.4279 m  
**GPS Bench Mark:** N/A **Hydraulic Corrector:** +0.000 m  
**GPS Observation Frequency:** (Waived – not feasible) **Last GPS Observation Performed:** N/A  
**Dive Inspection Frequency:** Every year **Last Dive:** 06/14

1. Complete obstruction diagram for 2015 NGS GPS survey (if not done by contractor).
2. Provide a photo/copy of the station visit log.
3. **UNRESOLVED FROM 2014 PROJECT INSTRUCTIONS** - Provide second directional photo for all benchmarks.

**9063009 American Falls, NY** **L28219** **Part 2**  
**PBM:** 906 3009 FRONTIER (OG0223) **PBM Elevation (Dynamic):** 171.8554 m  
**GPS Bench Mark:** W 411 (OG0350) **Hydraulic Corrector:** +0.000 m  
**GPS Observation Frequency:** Every 5 years (NGS) **Last GPS Observation Performed:** Unknown  
**Dive Inspection Frequency:** Diving Not Allowed

1. Complete obstruction diagram for 2015 NGS GPS survey (if not done by contractor).
2. Provide a photo/copy of the station visit log.

**9063012 Niagara Intake, NY** **L28219** **Part 3**  
**PBM:** 906 3012 Intake (OG0215) **PBM Elevation (Dynamic):** 173.3803 m  
**GPS Bench Mark:** 906 3012 RAIL (OG0217) **Hydraulic Corrector:** +0.000 m  
**GPS Observation Frequency:** Every 5 years (NGS) **Last GPS Observation Performed:** 06/10  
**Dive Inspection Frequency:** Diving Not Allowed

1. Complete obstruction diagram for 2015 NGS GPS survey (if not done by contractor).
2. Provide a photo/copy of the station visit log.

#### 2.15.4 Lake Erie

##### **9063020 Buffalo, NY**

**PBM:** 906 3020 MACHINE (NC0403)

**GPS Bench Mark:** 906 3020 H (AH9234)

**GPS Observation Frequency:** Every 5 years (NGS)

**Dive Inspection Frequency:** Every 5 years

**L28220**

**Part 1**

**PBM Elevation (Dynamic):** 176.5548 m

**Hydraulic Corrector:** -0.026 m

**Last GPS Observation Performed:** 06/10

**Last Dive:** 05/13

1. Complete obstruction diagram for 2015 NGS GPS survey (if not done by contractor).
2. Provide a photo/copy of the station visit log.
3. Inspect all CORS station components for proper operation and notify NGS of any problems found. Indicate all findings, actions, contact, and other information on the station report.

##### **9063028 Sturgeon Point, NY**

**PBM:** 906 3028 WATER (NC0430)

**GPS Bench Mark:** 906 3028 L (DE7802)

**GPS Observation Frequency:** Every 5 years (NGS)

**Dive Inspection Frequency:** Every 5 years

**L28220**

**Part 2**

**PBM Elevation (Dynamic):** 197.5510 m

**Hydraulic Corrector:** -0.023 m

**Last GPS Observation Performed:** 06/10

**Last Dive:** 04/04

1. Complete obstruction diagram for 2015 NGS GPS survey (if not done by contractor).
2. Provide a photo/copy of the station visit log.

##### **9063038 Erie, PA**

**PBM:** 906 3083 POPLAR (ND0161)

**GPS Bench Mark:** D 362 (ND0163)

**GPS Observation Frequency:** Every 5 years (NGS)

**Dive Inspection Frequency:** Every 5 years

**L28220**

**Part 3**

**PBM Elevation (Dynamic):** 174.6781 m

**Hydraulic Corrector:** -0.025 m

**Last GPS Observation Performed:** 06/10

**Last Dive:** 05/13

1. Evaluate possibility of replacing wooden slats in gauge house window with Plexiglas or other material.
2. Re-caulk wooden slats in door window.
3. Provide a photo/copy of the station visit log.

**9063053 Fairport, OH (MASTER)****L28220****Part 4****PBM:** K 321 (MB1625)**PBM Elevation (Dynamic):** 175.9180 m**GPS Bench Mark:** 906 3053 F (AH9235) & X 323 (MB1620) **Hydraulic Corrector:** +0.000 m**GPS Observation Frequency:** Every 5 years (NGS) **Last GPS Observation Performed:** 06/10**Dive Inspection Frequency:** Every 5 years **Last Dive:** 04/08

1. Complete obstruction diagram for 2015 NGS GPS survey (if not done by contractor).
2. Provide a photo/copy of the station visit log.
3. Provide photos showing construction in area resulting in bench mark 906 3053 Garage being destroyed.
4. Provide photo suite for bench mark MSFH 8.

**9063063 Cleveland, OH****L28220****Part 5****PBM:** G 321 (MB1563)**PBM Elevation (Dynamic):** 177.7308 m**GPS Bench Mark:** G 321 (MB1563)**Hydraulic Corrector:** +0.010 m**GPS Observation Frequency:** Every 5 years (NGS) **Last GPS Observation Performed:** 06/10**Dive Inspection Frequency:** Every 5 years **Last Dive:** 05/13

1. Complete obstruction diagram for 2015 NGS GPS survey (if not done by contractor).
2. Provide a photo/copy of the station visit log.
3. Inspect all CORS station components for proper operation and notify NGS of any problems found. Indicate all findings, actions, contact, and other information on the station report.
4. **UNRESOLVED FROM 2014 PROJECT INSTRUCTIONS** - Provide elevation of base of stand-alone Met station. Refer to SOP # 5.4.1.5(P) for approved methods to obtain this height without a long level run.
5. **UNRESOLVED FROM 2014 PROJECT INSTRUCTIONS** - Provide station photo looking down into the sump.
6. Measure wind sensors elevation above Met SRM.
7. Provide face and setting photos for benchmark Liberty and E322.

**9063079 Marblehead, OH****L28220****Part 6****PBM:** Z 317 (MC0984)**PBM Elevation (Dynamic):** 177.2379 m**GPS Bench Mark:** 906 3079 J (AH9236)**Hydraulic Corrector:** -0.006 m**GPS Observation Frequency:** Every 5 years (NGS) **Last GPS Observation Performed:** 06/10**Dive Inspection Frequency:** Every year **Last Dive:** 05/13

1. Complete obstruction diagram for 2015 NGS GPS survey (if not done by contractor).
2. Provide a photo/copy of the station visit log.

**9063085 Toledo, OH****PBM:** 906 3085 NAVAL (MC0269)**GPS Bench Mark:** 906 3085 G (AH9237)**GPS Observation Frequency:** Every 5 years (NGS)**Dive Inspection Frequency:** Every 5 years (contractor)**L28220****PBM Elevation (Dynamic):** 175.4592 m**Hydraulic Corrector:** -0.005 m**Last GPS Observation Performed:** 06/10**Last Dive:** 09/09**Part 7**

1. Complete obstruction diagram for 2015 NGS GPS survey (if not done by contractor).
2. Provide a photo/copy of the station visit log.
3. Update local contact information as current one is retiring.
4. Include bench mark POL 157.14 in the level run.

**9063090 Fermi Power Plant, MI****PBM:** 906 3090 POWER (MC0873)**GPS Bench Mark:** 906 3090 G (AH9238)**GPS Observation Frequency:** Every 5 years (NGS)**Dive Inspection Frequency:** As Needed (contractor)**L28220****PBM Elevation (Dynamic):** 177.5893 m**Hydraulic Corrector:** +0.023 m**Last GPS Observation Performed:** 06/10**Last Dive:** 11/09**Part 8**

1. Complete obstruction diagram for 2015 NGS GPS survey (if not done by contractor).
2. Provide a photo/copy of the station visit log.
3. Verify the bench mark's agency for marks Naval, Corner.

### 2.15.5 Detroit River

#### 9044020 Gibraltar, MI

*PBM:* M 234 (NE0857)

*GPS Bench Mark:* H 115 X (NE0516)

*GPS Observation Frequency:* Every 5 years (NGS)

*Dive Inspection Frequency:* Every 5 years

L28221

Part 1

*PBM Elevation (Dynamic):* 176.6298 m

*Hydraulic Corrector:* 0.000 m

*Last GPS Observation Performed:* 06/10

*Last Dive:* 11/08

1. Provide a photo/copy of the station visit log.

#### 9044030 Wyandotte, MI

*PBM:* 904 4030 CHIEF (NE0577)

*GPS Bench Mark:* Select most stable mark observable

*GPS Observation Frequency:* Every 5 years (NGS)

*Dive Inspection Frequency:* Every 5 years

L28221

Part 2

*PBM Elevation (Dynamic):* 176.1190 m

*Hydraulic Corrector:* 0.000 m

*Last GPS Observation Performed:* Unknown

*Last Dive:* 11/08

1. **UNRESOLVED FROM 2014 PROJECT INSTRUCTIONS:** Include bench mark 904 4030 Bank in the level run.
2. Provide a photo/copy of the station visit log.

#### 9044036 Fort Wayne, MI

*PBM:* 904 4036 RAMP (NE0622)

*GPS Bench Mark:* FORT WAYNE A (AA8055)

*GPS Observation Frequency:* Every 5 years (NGS)

*Dive Inspection Frequency:* Every 5 years

L28221

Part 3

*PBM Elevation (Dynamic):* 175.2317 m

*Hydraulic Corrector:* 0.000 m

*Last GPS Observation Performed:* 06/10

*Last Dive:* 11/08

1. **UNRESOLVED FROM 2014 PROJECT INSTRUCTIONS:** Install new gauge table.
2. **UNRESOLVED FROM 2014 PROJECT INSTRUCTIONS:** Sand blast or pressure wash and re-paint the outside of the block building.
3. **UNRESOLVED FROM 2014 PROJECT INSTRUCTIONS:** Re-sleeve bench mark 904 4036 Carpenter.
4. **UNRESOLVED FROM 2014 PROJECT INSTRUCTIONS:** Replace the cover on bench mark 904 4036 Fort Wayne A.
5. Provide a photo/copy of the station visit log.

#### 9044049 Windmill Point, MI

*PBM:* 904 4049 USPHS (NE0136)

*GPS Bench Mark:* Select most stable mark observable

*GPS Observation Frequency:* Every 5 years (NGS)

*Dive Inspection Frequency:* Every 5 years

L28221

Part 4

*PBM Elevation (Dynamic):* 176.5770 m

*Hydraulic Corrector:* 0.000 m

*Last GPS Observation Performed:* Unknown

*Last Dive:* 11/08

1. **UNRESOLVED FROM 2014 PROJECT INSTRUCTIONS:** Establish, describe, and connect via leveling one deep rod with open skies for GPS observations (obtain proper permissions), designation/stamping: 904 4049 M/4049 M 2015.
2. Update the bench mark diagram with new mark.
3. Provide a photo/copy of the station visit log.

**2.15.6 Lake St Clair**

**9034052 St. Clair Shores, MI (MASTER)**

***PBM:*** 904 4052 FOOD (NE0165)

***GPS Bench Mark:*** N 235 (NE0898)

***GPS Observation Frequency:*** Every 5 years (NGS)

***Dive Inspection Frequency:*** Every 5 years

**L28222**

**Part 1**

***PBM Elevation (Dynamic):*** 176.9698 m

***Hydraulic Corrector:*** 0.000 m

***Last GPS Observation Performed:*** 06/10

***Last Dive:*** 11/08

1. Provide a photo/copy of the station visit log.

### 2.15.7 St. Clair River

**9014070 Algonac, MI** **L28223** **Part 1**  
*PBM:* 901 4070 TREAT (NE0255) *PBM Elevation (Dynamic):* 176.8682 m  
*GPS Bench Mark:* Select most stable mark observable *Hydraulic Corrector:* 0.000 m  
*GPS Observation Frequency:* Every 5 years (NGS) *Last GPS Observation Performed:* Unknown  
*Dive Inspection Frequency:* Every year *Last Dive:* 11/11

1. Provide a photo/copy of the station visit log.

**9014080 St. Clair State Police, MI** **L28223** **Part 2**  
*PBM:* A 237 (NE0943) *PBM Elevation (Dynamic):* 176.5847 m  
*GPS Bench Mark:* 901 4080 F (AC9129) *Hydraulic Corrector:* 0.000 m  
*GPS Observation Frequency:* Every 5 years (NGS) *Last GPS Observation Performed:* 06/10  
*Dive Inspection Frequency:* Every 5 years *Last Dive:* 10/08

2. Provide a photo/copy of the station visit log.

**9014087 Dry Dock, MI** **L28223** **Part 3**  
*PBM:* Z 236 (NE0953) *PBM Elevation (Dynamic):* 180.7617 m  
*GPS Bench Mark:* Select most stable mark observable *Hydraulic Corrector:* 0.000 m  
*GPS Observation Frequency:* Every 5 years (NGS) *Last GPS Observation Performed:* Unknown  
*Dive Inspection Frequency:* Every 5 years *Last Dive:* 10/08

1. Provide a photo/copy of the station visit log.

**9014090 Mouth of the Black River, MI** **L28223** **Part 4**  
*PBM:* Z 43 (NE0088) *PBM Elevation (Dynamic):* 178.9323 m  
*GPS Bench Mark:* 901 4090 D (NE0955) *Hydraulic Corrector:* 0.000 m  
*GPS Observation Frequency:* Every 5 years (NGS) *Last GPS Observation Performed:* 06/10  
*Dive Inspection Frequency:* Every year *Last Dive:* 10/10

1. Provide a photo/copy of the station visit log.

**9014096 Dunn Paper, MI** **L28223** **Part 5**  
*PBM:* 3060 (NE0081) *PBM Elevation (Dynamic):* 179.1206 m  
*GPS Bench Mark:* Select most stable mark observable *Hydraulic Corrector:* 0.000 m  
*GPS Observation Frequency:* Every 5 years (NGS) *Last GPS Observation Performed:* Unknown  
*Dive Inspection Frequency:* Every year *Last Dive:* 11/14

1. Provide a photo/copy of the station visit log.

**9014098 Fort Gratiot, MI**

**L28223**

**Part 6**

***PBM:*** 901 4098 RETAINING WALL (OJ0009)

***PBM Elevation (Dynamic):*** 179.5533 m

***GPS Bench Mark:*** 901 4098 RETAINING WALL (OJ0009)

***Hydraulic Corrector:*** 0.000 m

***GPS Observation Frequency:*** Every 5 years (NGS)

***Last GPS Observation Performed:*** 06/10

***Dive Inspection Frequency:*** Every 5 years

***Last Dive:*** 09/06

1. Provide a photo/copy of the station visit log.

### 2.15.8 Lake Huron

#### 9075002 Lakeport, MI

**PBM:** 907 5002 BURTCH (OJ0036)

**GPS Bench Mark:** LAKEPORT RM 2 (OJ0599)

**GPS Observation Frequency:** Every 5 years (NGS)

**Dive Inspection Frequency:** Every 5 years

**L28224**

**Part 1**

**PBM Elevation (Dynamic):** 178.7965 m

**Hydraulic Corrector:** +0.013 m

**Last GPS Observation Performed:** 06/10

**Last Dive:** 08/13

1. Provide a photo/copy of the station visit log.

#### 9075014 Harbor Beach, MI (MASTER)

**PBM:** GRIST (OJ0219)

**GPS Bench Mark:** LSC 5C93 (OJ0517) & 907 5014 GRIST (OJ0219)

**GPS Observation Frequency:** Every 5 years (NGS)

**Dive Inspection Frequency:** Every 5 years

**L28224**

**Part 2**

**PBM Elevation (Dynamic):** 180.2756 m

**Hydraulic Corrector:** 0.000 m

**Last GPS Observation Performed:** 06/10

**Last Dive:** 11/14

1. **UNRESOLVED FROM 2014 PROJECT INSTRUCTIONS:** Provide the outside intake invert elevations.
2. Provide a photo/copy of the station visit log.

#### 9075035 Essexville, MI

**PBM:** CON 1948 GER (OJ0526)

**GPS Bench Mark:** ESSEX A (AA8053)

**GPS Observation Frequency:** Every 5 years (NGS)

**Dive Inspection Frequency:** Every 5 years

**L28224**

**Part 3**

**PBM Elevation (Dynamic):** 179.1734 m

**Hydraulic Corrector:** -0.002 m

**Last GPS Observation Performed:** 06/10

**Last Dive:** 08/06

1. Provide a photo/copy of the station visit log.

#### 9075065 Alpena, MI

**PBM:** 907 5065 POST OFFICE (GJ0009)

**GPS Bench Mark:** 907 5065 G

**GPS Observation Frequency:** Every 5 years (NGS)

**Dive Inspection Frequency:** Every 5 years

**L28224**

**Part 7**

**PBM Elevation (Dynamic):** 180.1536 m

**Hydraulic Corrector:** +0.031 m

**Last GPS Observation Performed:** Unknown

**Last Dive:** 09/10

1. Provide a photo/copy of the station visit log.

**9075080 Mackinaw City, MI**

**PBM:** J 299 (QK0428)

**GPS Bench Mark:** 907 5080 STATE DOCK (QK0428)

**GPS Observation Frequency:** Every 5 years (NGS)

**Dive Inspection Frequency:** Every 5 years

**L28224**

**PBM Elevation (Dynamic):** 179.6082 m

**Hydraulic Corrector:** +0.043 m

**Last GPS Observation Performed:** 07/10

**Last Dive:** 08/13

**Part 5**

1. Provide a photo/copy of the station visit log.
2. Inspect all CORS station components for proper operation and notify NGS of any problems found. Indicate all findings, actions, contact, and other information on the station report. Make sure all wiring installed by NGS is run through Panduit and the installation is clean.
3. Verify phone modem serial number.

**9075099 Detour Village, MI (PORTS)**

**PBM:** L 293 (QJ0086)

**GPS Bench Mark:** DETOUR MARINA (AH9228)

**GPS Observation Frequency:** Every 5 years (NGS)

**Dive Inspection Frequency:** Every 5 years

**L28224**

**PBM Elevation (Dynamic):** 179.7044 m

**Hydraulic Corrector:** +0.005 m

**Last GPS Observation Performed:** 06/10

**Last Dive:** 09/10

**Part 6**

1. Provide a photo/copy of the station visit log.

### 2.15.9 Lake Michigan

#### 9087023 Ludington, MI

**PBM:** J 318 (OL0303)

**GPS Bench Mark:** J 318 (OL0303)

**GPS Observation Frequency:** Every 5 years (NGS)

**Dive Inspection Frequency:** Every 5 years

**L28225**

**Part 1**

**PBM Elevation (Dynamic):** 177.9833 m

**Hydraulic Corrector:** +0.087 m

**Last GPS Observation Performed:** 07/10

**Last Dive:** 07/09

1. Provide a photo/copy of the station visit log.
2. Inspect all CORS station components for proper operation and notify NGS of any problems found. Indicate all findings, actions, contact, and other information on the station report.
3. Fill the holes in walls and install new door rubber.

#### 9087031 Holland, MI

**PBM:** 908 7031 K

**GPS Bench Mark:** 908 7031 J (AH5303)

**GPS Observation Frequency:** Every 5 years (NGS)

**Dive Inspection Frequency:** Every 5 years

**L28225**

**Part 2**

**PBM Elevation (Dynamic):** 177.9714 m

**Hydraulic Corrector:** +0.090 m

**Last GPS Observation Performed:** 07/10

**Last Dive:** 07/10

1. **UNRESOLVED FROM 2014 PROJECT INSTRUCTIONS** - Provide the outside intake invert elevation.
2. Provide a photo/copy of the station visit log.

#### 9087044 Calumet Harbor, IL

**PBM:** COM 1958 (ME2189)

**GPS Bench Mark:** 908 7044 H (AE9231)

**GPS Observation Frequency:** Every 5 years (NGS)

**Dive Inspection Frequency:** Every 5 years

**L28225**

**Part 3**

**PBM Elevation (Dynamic):** 178.0648 m

**Hydraulic Corrector:** +0.104 m

**Last GPS Observation Performed:** 07/10

**Last Dive:** 07/09

1. **UNRESOLVED FROM 2014 PROJECT INSTRUCTIONS** - Provide the outside intake invert elevation.
2. Replace gauge table, currently in poor condition.
3. Provide a photo/copy of the station visit log.
4. Inspect all CORS station components for proper operation and notify NGS of any problems found. Indicate all findings, actions, contact, and other information on the station report.

#### 9087057 Milwaukee, WI

**PBM:** NAVY (OL0278)

**GPS Bench Mark:** MILWAUKEE A (AA8061)

**GPS Observation Frequency:** Every 5 years (NGS)

**Dive Inspection Frequency:** Every 5 years

**L28225**

**Part 4**

**PBM Elevation (Dynamic):** 182.9494 m

**Hydraulic Corrector:** +0.106 m

**Last GPS Observation Performed:** 07/10

**Last Dive:** 09/12

Note: The United States Naval Reserve Center is closed on weekends.

1. Provide a photo/copy of the station visit log.

**9087068 Kewaunee, WI**  
**PBM:** 908 7068 ROD (PM0373)  
**GPS Bench Mark:** 908 7068 H (AH5304)  
**GPS Observation Frequency:** Every 5 years (NGS)  
**Dive Inspection Frequency:** Every year

**L28225** **Part 5**  
**PBM Elevation (Dynamic):** 177.9684 m  
**Hydraulic Corrector:** +0.114 m  
**Last GPS Observation Performed:** 07/10  
**Last Dive:** 07/09

1. Provide a photo/copy of the station visit log.
2. Install a new well pipe.
3. Replace the box and stand for the BEI.

**9087069 Kewaunee Met, WI Met Station**

1. No additional requirements

**9087072 Sturgeon Bay Canal, WI**  
**PBM:** 908 7072 GARAGE (PM0361)  
**GPS Bench Mark:** STURGEON A (AA8057)  
**GPS Observation Frequency:** Every 5 years (NGS)  
**Dive Inspection Frequency:** Every 5 years

**L28225** **Part 6**  
**PBM Elevation (Dynamic):** 181.8608 m  
**Hydraulic Corrector:** +0.106 m  
**Last GPS Observation Performed:** 07/10  
**Last Dive:** 07/09

1. Provide a photo/copy of the station visit log.
2. Replace the wheel shaft of valve that is broken below waterline.

**9087079 Green Bay, WI**  
**PBM:** 908 7078 WIS (PN0090)  
**GPS Bench Mark:** 908 7078 E (PN0840)  
**GPS Observation Frequency:** Every 5 years (NGS)  
**Dive Inspection Frequency:** Every year

**L28225** **Part 7**  
**PBM Elevation (Dynamic):** 179.6563 m  
**Hydraulic Corrector:** +0.114 m  
**Last GPS Observation Performed:** 07/10  
**Last Dive:** 03/14

1. Provide a photo/copy of the station visit log.
2. Add the NOAA sticker to the new door.

**9087088 Menominee, WI**  
**PBM:** 908 7088 D (DI7587)  
**GPS Bench Mark:** 35 A (DI7590)  
**GPS Observation Frequency:** Every 5 years (NGS)  
**Dive Inspection Frequency:** Every 5 year

**L28225** **Part 9**  
**PBM Elevation (Dynamic):** 178.0211 m  
**Hydraulic Corrector:** +0.184 m  
**Last GPS Observation Performed:** 07/10  
**Last Dive:** 07/09

1. Provide a photo/copy of the station visit log.
2. Verify all serial numbers DCP equipment and sensors at the SAE station.
3. **UNRESOLVED FROM 2014 PROJECT INSTRUCTIONS** - Provide a description for benchmark Menominee 2009 in WinDesc file.
4. **UNRESOLVED FROM 2014 PROJECT INSTRUCTIONS** - Provide station photo looking down into the sump.
5. Update the benchmark description for the spike at the encoder station.

**9087096 Port Inland, MI**

***PBM:*** 908 7096 F (AC8316)

***GPS Bench Mark:*** 908 7096 J (DJ5177)

***GPS Observation Frequency:*** Every 5 years (NGS)

***Dive Inspection Frequency:*** Every 5 years

**L28225**

**Part 8**

***PBM Elevation (Dynamic):*** 181.8117 m

***Hydraulic Corrector:*** +0.046 m

***Last GPS Observation Performed:*** 07/10

***Last Dive:*** 08/13

1. Provide a photo/copy of the station visit log.
2. Include bench mark 908 7096 H RESET 2001 in the level run. Contact property ahead of time to check schedule of ship in port.

### 2.15.10 St. Mary's River

#### 9076024 Rock Cut, MI (PORTS)

**PBM:** 907 6024 B (DJ5178)

**GPS Bench Mark:** 907 6024 B (DJ5178)

**GPS Observation Frequency:** Every 5 years (NGS)

**Dive Inspection Frequency:** Every year

**L28226**

**Part 3**

**PBM Elevation (Dynamic):** 178.0183 m

**Hydraulic Corrector:** 0.000 m

**Last GPS Observation Performed:** 06/10

**Last Dive:** 08/13

1. Provide a photo/copy of the station visit log.
2. **UNRESOLVED FROM 2014 PROJECT INSTRUCTIONS** - Include bench mark 907 6024 ENG 1988 in level run.

#### 9076027 West Neebish Island, MI (PORTS)

**PBM:** E 297 (RJ0670)

**GPS Bench Mark:** 907 6027 DOCK (RJ0186)

**GPS Observation Frequency:** Every 5 years (NGS)

**Dive Inspection Frequency:** Every 5 years

**L28226**

**Part 6**

**PBM Elevation (Dynamic):** 178.7844 m

**Hydraulic Corrector:** 0.000 m

**Last GPS Observation Performed:** Unknown

**Last Dive:** 08/13

1. Provide a photo/copy of the station visit log.

#### 9076033 Little Rapids (NEW), MI (PORTS)

**PBM:** D 293 (RJ0616)

**GPS Bench Mark:** FERRY DOCK (RJ0617)

**GPS Observation Frequency:** Every 5 years (NGS)

**Dive Inspection Frequency:** Every 5 years

**L28226**

**Part 5**

**PBM Elevation (Dynamic):** 178.3058 m

**Hydraulic Corrector:** 0.000 m

**Last GPS Observation Performed:** 07/10

**Last Dive:** 09/13

1. Provide a photo/copy of the station visit log.
2. Provide second directional photo benchmark Z295.

#### 9076060 U.S. Slip, MI (PORTS)

**PBM:** C 293 (RJ0613)

**GPS Bench Mark:** C 293 (RJ0613)

**GPS Observation Frequency:** Every 5 years (NGS)

**Dive Inspection Frequency:** As Needed (contractor)

**L28226**

**Part 1**

**PBM Elevation (Dynamic):** 184.3007 m

**Hydraulic Corrector:** 0.000 m

**Last GPS Observation Performed:** 06/10

**Last Dive:** 01/05

1. Provide a photo/copy of the station visit log.
2. Contact Ken Smith, with the COE SOO Area Office @ (906)635-3455 or (906)440-7592 (cell) while in the area. Ken is the local observer of both of the COE, SOO Locks PORTS gauges, U.S. Slip and S.W. Pier. Ensure that all gauges have been operating correctly. Indicate all findings, actions, contact, and other information on the station report.
3. To access the PBM inside Brady Park and on the Indian grounds contact Mr. Cecil Pavlat with the Tribal Council, office @ 906-632-7480 or 906-440-7849 cell.
4. Provide photos showing the destruction of bench mark Warehouse E.
5. Provide second directional photo for bench mark PT.
6. Verify serial number for waterlog encoder.

**9076070 S.W. Pier, MI (PORTS)**

***PBM:*** V 295 (RJ0608)

***GPS Bench Mark:*** UNIT 10 106 (AE8008)

***GPS Observation Frequency:*** Every 5 years (NGS)

***Dive Inspection Frequency:*** As Needed

**L28226**

**Part 2**

***PBM Elevation (Dynamic):*** 186.0904 m

***Hydraulic Corrector:*** 0.000 m

***Last GPS Observation Performed:*** 06/10

***Last Dive:*** 06/04

1. Provide a photo/copy of the station visit log.
2. Contact Ken Smith, with the COE SOO Area Office @ (906)635-3455 or (906)440-7592 (cell) while in the area. Ken is our local observer for both of the COE, SOO Locks PORTS' gauges, and stations at U.S. Slip, and S.W. Pier. Ensure that all gauges have been operating correctly. Indicate all findings, actions, contact, and other information on the station report.

### 2.15.11 Lake Superior

#### 9099004 Point Iroquois, MI (PORTS)

**PBM:** A 293 (RJ0586)

**GPS Bench Mark:** A 293 (RJ0586)

**GPS Observation Frequency:** Every 5 years (NGS)

**Dive Inspection Frequency:** Every 5 years

**L28227**

**Part 1**

**PBM Elevation (Dynamic):** 187.7989 m

**Hydraulic Corrector:** -0.100 m

**Last GPS Observation Performed:** 07/10

**Last Dive:** 09/07

1. Provide a photo/copy of the station visit log.
2. Inspect all CORS station components for proper operation and notify NGS of any problems found. Indicate all findings, actions, contact, and other information on the station report.
3. Station block mortar is deteriorating and needs to be monitored for future repair.

#### 9099018 Marquette, MI (MASTER)

**PBM:** NO.11 (RK0113)

**GPS Bench Mark:** 909 9018 K (AH7272)

**GPS Observation Frequency:** Every 5 years (NGS)

**Dive Inspection Frequency:** Every 5 years

**L28227**

**Part 2**

**PBM Elevation (Dynamic):** 188.9570 m

**Hydraulic Corrector:** 0.000 m

**Last GPS Observation Performed:** 07/10

**Last Dive:** 07/13

1. Provide a photo/copy of the station visit log.
2. Inspect all CORS station components for proper operation and notify NGS of any problems found. Indicate all findings, actions, contact, and other information on the station report.

#### 9099044 Ontonagon, MI

**PBM:** 909 9044 VFW (AE8284)

**GPS Bench Mark:** 909 9044 L (DJ5175)

**GPS Observation Frequency:** Every 5 years (NGS)

**Dive Inspection Frequency:** Every 5 years

**L28227**

**Part 3**

**PBM Elevation (Dynamic):** 186.0416 m

**Hydraulic Corrector:** +0.049 m

**Last GPS Observation Performed:** 07/10

**Last Dive:** 08/09

1. Provide a photo/copy of the station visit log.
2. Include bench marks 909 9044 2 and 909 9044 D 135 Reset in the level run.
3. **UNRESOLVED FROM 2014 PROJECT INSTRUCTIONS** - Provide second directional photo for all benchmarks.

#### 9099064 Duluth, MN

**PBM:** 909 9064 F (AE8288)

**GPS Bench Mark:** 602 (AE8289)

**GPS Observation Frequency:** Every 5 years (NGS)

**Dive Inspection Frequency:** Every 5 years

**L28227**

**Part 4**

**PBM Elevation (Dynamic):** 184.7100 m

**Hydraulic Corrector:** +0.079 m

**Last GPS Observation Performed:** 07/10

**Last Dive:** 08/09

1. Contact the Superior NERRS to coordinate a visit to the Duluth gauge during the annual inspection.
2. Provide a photo/copy of the station visit log.

**9099090 Grand Marais, MN**

***PBM:*** 909 9090 SCOTT (SH0674)

***GPS Bench Mark:*** MARAIS RESET (AA2869)

***GPS Observation Frequency:*** Every 5 years (NGS)

***Dive Inspection Frequency:*** Every 5 years

**L28227**

**Part 5**

***PBM Elevation (Dynamic):*** 184.9850 m

***Hydraulic Corrector:*** +0.046 m

***Last GPS Observation Performed:*** 07/10

***Last Dive:*** 08/10

1. Provide a photo/copy of the station visit log.
2. Replace XPERT DCP, XPERT DARK DCP, and relative humidity/air temperature sensor batteries.

## 2.16 FOD/POB – Hawaii and the Pacific Island Stations

<b>1611400 Nawiliwili, HI</b>	<b>L28215</b>	<b>Part 1</b>
<b>PBM:</b> 161 1400 TIDAL 14		<b>PBM above SD:</b> 3.155 m
<b>GPS Bench Mark:</b> 161 1400 TIDAL 5		<b>MSL above SD:</b> 0.949 m
<b>GPS Observation Frequency:</b> Every 5 years	<b>Last GPS Observation Performed:</b> 01/14	
<b>Dive Inspection Frequency:</b> Every 2 years		<b>Last Dive:</b> 02/12

1. Re-install GOES antenna and cable at the water level station.
2. Replace/repair standalone Met station.
3. Replace DCP3 wind sensors.
4. Verify DCP2 serial number.
5. Replace the upper 6-inch well clamp.
6. Replace the DCP1, DCP2, DCP2 pump, DCP3, and DCP3 IP batteries.
7. Include all of the bench marks in the leveling run.
8. Download the 15-second data from the period of March 29, 2014 - April 12, 2014 and forward it to Marie.C.Eble@noaa.gov with a cc to [Lindsey.Wright@noaa.gov](mailto:Lindsey.Wright@noaa.gov).
9. Troubleshoot the phone connectivity to the backup DCPs.

<b>1612340 Honolulu, HI</b>	<b>L28215</b>	<b>Part 2</b>
<b>PBM:</b> 161 2340 BM 8 (TU0286)		<b>PBM above SD:</b> 3.734 m
<b>GPS Bench Mark:</b> GSL 2340 1987		<b>MSL above SD:</b> 1.412 m
<b>GPS Observation Frequency:</b> Every 5 years	<b>Last GPS Observation Performed:</b> 01/14	
<b>Dive Inspection Frequency:</b> Every 2 years		<b>Last Dive:</b> 01/14

1. Repair the severed Druck orifice tubing line.
2. Swap the temperature probe 1 and water temperature sensor leads (leads inadvertently swapped during the 2014 annual inspection).
3. Include all of the bench marks in the leveling run.
4. Replace the DCP2 battery.
5. Update the DCP 1 Aquatrak controller, the DCP 2 phone modem module, and pump in eSite report.

**1612480 Mokuoloe, HI****PBM:** 161 2480 NO 1**GPS Bench Mark:** 161 2480 TIDAL 2 (AA3575)**GPS Observation Frequency:** Every 5 years**Dive Inspection Frequency:** Every 2 years**L28215****Part 3****PBM above SD:** 1.969 m**MSL above SD:** 1.210 m**Last GPS Observation Performed:** 01/14**Last Dive:** 01/14

1. **Unresolved from the 2014 Project Instructions.** Install new setup files on DCP 3 to include logging to storage card.
2. Replace the DCP 3 GPS antenna and/or cable (if necessary).
3. Replace the DCP 3 and DCP 3 IP batteries.
4. Replace the 1/4" Nylock nuts (12) which support the Met mast structure, with non-nylock stainless steel nuts.
5. Replace the air temperature housing.
6. Provide a description and photo of the Met SRM and include the Met SRM in the leveling run. The Met team suggests using a bolt at the base of wind tower.
7. Enter DCP 1 Aquatrak controller information and DCP 3 9210 module in eSite report.

**1615680 Kahului, HI****PBM:** 161 5680 A (DK4805)**GPS Bench Mark:** 161 5680 A (DK4805)**GPS Observation Frequency:** Every 5 years**Dive Inspection Frequency:** Every year**L28215****Part 4****PBM above SD:** 3.007 m**MSL above SD:** 1.075 m**Last GPS Observation Performed:** 01/14**Last Dive:** 01/14

1. Download the 15-second data from the period of March 29, 2014 - April 12, 2014 and forward it to Marie.C.Eble@noaa.gov with a cc to [Lindsey.Wright@noaa.gov](mailto:Lindsey.Wright@noaa.gov).
2. Troubleshoot the phone connectivity to the backup DCP.
3. Take photos of the Aquatrak well and the wind sensors.
4. Replace the DCP 1 pump and DCP 2 batteries.
5. Remove the extra DCP 1 Satlink and phone modem from the eSite report.
6. Enter the DCP 1 water temperature sensor and the barometer offset in eSite report.

**1617433 Kawaihae, HI****PBM:** 161 7433 B (DK3434)**GPS Bench Mark:** 161 7433 B (DK3434)**GPS Observation Frequency:** Every 5 years**Dive Inspection Frequency:** Every year**L28215****Part 5****PBM above SD:** 3.094 m**MSL above SD:** 1.134 m**Last GPS Observation Performed:** 01/14**Last Dive:** 01/14

1. Replace the water temp sensor.
2. Replace the Aquatrak protective well copper insert.
3. Replace the conduit for the backup bubbler tubing; work with the state of Hawaii for permission to perform this work.
4. Repair the top portion of the Met mast.
5. Replace the 10W solar panel pump.
6. Download the 15-second data from the period of March 29, 2014 - April 12, 2014 and forward it to Marie.C.Eble@noaa.gov with a cc to [Lindsey.Wright@noaa.gov](mailto:Lindsey.Wright@noaa.gov).
7. Troubleshoot the phone connectivity to the backup DCP.
8. Calibrate the barometer and enter the barometer offset in the eSite report.
9. Enter the Aquatrak controller information and IP modem serial number into eSite report.
10. Remove the extra DCP 1 phone modem module from the eSite report.

**1617760 Hilo, HI****PBM:** 161 7760 TIDAL 4 (TU0020)**GPS Bench Mark:** 161 7760 A**GPS Observation Frequency:** Every 5 years**Dive Inspection Frequency:** Every 2 years**L28215****Part 6****PBM above SD:** 4.663 m**MSL above SD:** 1.545 m**Last GPS Observation Performed:** 01/14**Last Dive:** 01/09

1. Establish the digibub leveling point and measure the elevation difference between the digibub leveling point and the digibub orifice zero.
2. Establish and level a leveling point for the backup orifice.
3. Replace the water temp sensor.
4. Replace storage cards.
5. Replace the DCP 2 pump solar panel.
6. Take station photos of the Met mast and wind sensors.
7. Document the Paros vent value and the Barometer offset in the eSite report.
8. Update the DCP 1 operating system version in the eSite report.
9. Enter the DCP 2 pump in the eSite report.

**1619910 Sand Island, Midway Islands**  
**PBM:** 161 9910 TIDAL 21  
**GPS Bench Mark:** 161 9910 A  
**GPS Observation Frequency:** Every 5 years  
**Dive Inspection Frequency:** Every year

**L28216**

**Part 1**

**PBM above SD:** 3.243 m  
**MSL above SD:** 1.020 m  
**Last GPS Observation Performed:** 10/09  
**Last Dive:** 11/12

1. Coordinate with the Resilience Program Manager to determine whether any support is needed for a CORS installation.
2. Update the XPERT Operating System, XPERT Dark Operating System and Satlink firmware if the new version is approved at the time of the annual inspection.
3. Check and update the log sizes as per the Engineering Bulletin 09-003.
4. Install an Iridium modem.
5. Replace the T1 and T2 20 m cables with water tight connectors on one end (include mating connector separately).
6. Replace padlock.
7. Replace the DCP 1, DCP 2, DCP 3, and DCP 4 batteries.
8. Replace the DCP 2 pump battery.
9. Include bench marks 161 9910 C and 161 9910 TIDAL 2 in the level run; these marks indicate possible movement.

**1630000 Guam**  
**PBM:** 163 0000 TIDAL 6 (TW0043)  
**GPS Bench Mark:** 163 0000 TIDAL 6 (TW0043)  
**GPS Observation Frequency:** Every 5 years  
**Dive Inspection Frequency:** Every year

**L28216**

**Part 2**

**PBM above SD:** 2.364 m  
**MSL above SD:** 0.826 m  
**Last GPS Observation Performed:** 03/10  
**Last Dive:** 02/14

1. Take updated station photos.

**1631428 Pago Bay, Guam**  
**PBM:** 163 1428 B (DH3105)  
**GPS Bench Mark:** 163 1428 1214 (DH2988)  
**GPS Observation Frequency:** Every 5 years  
**Dive Inspection Frequency:** Every year

**L28216**

**Part 3**

**PBM above SD:** 10.000 m  
**MSL above SD:** 7.740 m  
**Last GPS Observation Performed:** 04/10  
**Last Dive:** 09/14

1. Establish and level a second reef orifice.
2. Replace hose clamps on reef orifice baffle.
3. Check the GOES transmission signal strength moving the antenna if performance improvement is needed.
4. Replace the DCP 3 battery.
5. Replace the storage cards.

**1770000 Pago Pago****PBM:** 177 0000 W**GPS Bench Mark:** 177 0000 S (DE8786)**GPS Observation Frequency:** Every 5 years**Dive Inspection Frequency:** Every year**L28216****Part 4****PBM above SD:** 4.345 m**MSL above SD:** 1.194 m**Last GPS Observation Performed:** 12/09**Last Dive:** 11/13

1. Establish the digibub leveling points for DCP 1, 2, 3, and 4 and measure the elevation difference between the digibub leveling point and digibub orifice zero.
2. Update the XPERT Operating System, XPERT Dark Operating System and Satlink firmware if the new version is approved at the time of the annual inspection.
3. Check and update the log sizes as per the Engineering Bulletin 09-003.
4. Include bench mark 177 0000 Q in this year's level run.
5. Take the setting and directional photos of bench mark 177 0000 Q.
6. Replace all DCP 1 components.
7. Relocate DCP 1 GOES antenna and install a new cable.
8. Re-secure cable conduit using sheetrock anchors.
9. Replace DCP 1 battery.
10. Download the 15-second data from the period of March 29, 2014 - April 12, 2014 and forward it to Marie.C.Eble@noaa.gov with a cc to [Lindsey.Wright@noaa.gov](mailto:Lindsey.Wright@noaa.gov).
11. Troubleshoot the phone connectivity to the backup DCPs.
12. Install an air temperature sensor on DCP 3.
13. Remove the wind sensor on DCP 2 and re-install the wind sensor on DCP 3.
14. Replace the storage cards.
15. Provide a description and photo of the Met SRM and include the SRM in the leveling run.

**1820000 Kwajalein****PBM:** 182 0000 TIDAL 8 (DK7537)**GPS Bench Mark:** 182 0000 TIDAL 12**GPS Observation Frequency:** Every 5 years**Dive Inspection Frequency:** Every year**L28216****Part 5****PBM above SD:** 2.853 m**MSL above SD:** 1.457 m**Last GPS Observation Performed:** 03/10**Last Dive:** 2/14

1. Perform an engineering reconnaissance to install the MWWL sensor, seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the installation design of the new station.
2. Install an air temperature sensor, wind sensor, and barometer on DCP 1.
3. Re-install the Echo pier water level station after the completion of the construction.
4. Replace the Aquatrak sensor, top hat fan, and the 30-ft cable.
5. Attach 10 small stainless steel conduit clamps on wind bird flex conduit (3/4" or 1").
6. Attach 4 stainless steel conduit clamps on the Aquatrak conduit (1 1/2").
7. Patch bench marks with Quik-Crete, as needed.
8. Remove old clamps and old ADR well supports around tide house (tripping hazard).
9. Replace DCP1, DCP2, DCP3, and DCP4 batteries.
10. Remove extra batteries and enter water temp sensor serial number into eSite report.
11. Replace the storage cards.

**1890000 Wake Island**

***PBM:*** 189 0000 TIDAL 12 (TW0169)

***GPS Bench Mark:*** 161 0000 L

***GPS Observation Frequency:*** Every 5 years

***Dive Inspection Frequency:*** Every year

**L28216**

**Part 6**

***PBM above SD:*** 4.353 m

***MSL above SD:*** 1.608 m

***Last GPS Observation Performed:*** 11/06

***Last Dive:*** 11/10

1. A dive inspection **MUST** be performed during this site visit; last dive was done in (11/10). A report on the condition of marine growth on the outside of the well, around the plates and orifice, and inside the well is required on the Site Report under Dive comments.
2. Coordinate with the Resilience Program Manager to determine whether any support is needed for a CORS recon.
3. Update the XPERT Operating System, XPERT Dark Operating System and Satlink firmware if the new version is approved at the time of the annual inspection.
4. Check and update the log sizes as per the Engineering Bulletin 09-003.
5. Replace the water temperature sensor.
6. Replace the Aquatrak protective well copper insert.

## 2.17 FOD/POB – California Stations

### 9410170 San Diego, CA

L28211

Part 1

**PBM:** 941 0170 TIDAL 12 (DC0891)

**PBM above SD:** 6.325 m

**GPS Bench Mark:** 941 0170 W

**MSL above SD:** 2.052 m

**GPS Observation Frequency:** Every 5 years

**Last GPS Observation Performed:** 03/11

**Dive Inspection Frequency:** Every 2 years

**Last Dive:** 04/13

1. Contact USS Midway and the City of San Diego for updates regarding plans to install the tide station and determine if an updated recon will be required.
2. Inspect bottom well bracket when diving is performed. (Explore commercial dive team, if FOD resources are not available and if appropriate).
3. Install additional surface marks near new station site when tide station is moved.
4. Swap DCP 2 with a standard unit with AC power supply.
5. Reattach GOES antenna and solar panel to exterior wall.
6. Replace GOES antenna cable.
7. Replace the DCP 2 pump battery.
8. Replace the DCP 1 water temp sensor.
9. Add existing Aquatrak controller to eSite report.
10. Record the barometer calibration offset in the comments section of the eSite report.

### 9410172 USS MIDWAY South Navy Pier, San Diego, CA

Meteorological Station

1. Update battery dates in the eSite report.

### 9410230 La Jolla, CA

L28211

Part 2

**PBM:** 941 0230 TIDAL 7 (DC0986)

**PBM above SD:** 12.299 m

**GPS Bench Mark:** 941 0230 M TIDAL (DC1313)

**MSL above SD:** 2.163 m

**GPS Observation Frequency:** Every 5 years

**Last GPS Observation Performed:** 03/11

**Dive Inspection Frequency:** Every year

**Last Dive:** 04/13

1. Provide a description and photo of the Met SRM.
2. Recover or establish and level one deep rod mark or mark set in bedrock, designation/stamping if new mark is set: 941 0230 U/0230 U 2015.
3. Inspect and replace GOES antenna bracket as needed.
4. Record the barometer calibration offset in the comments section of the eSite report.
5. Update the bench mark diagram with new mark.

**9410660 Los Angeles, CA (PORTS)****L28211****Part 3****PBM:** 941 0660 TIDAL 8 (DY1083)**PBM above SD:** 5.361 m**GPS Bench Mark:** 941 0660 TIDAL 8 (DY1083)**MSL above SD:** 2.028 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 03/11**Dive Inspection Frequency:** Every year**Last Dive:** 04/13

1. Include bench mark 941 0660 Q in all leveling runs.
2. Monitor condition of the underwater Uni-Strut brackets holding the bubbler tubing conduit, annually.
3. Replace the pump power box with a new style unit.
4. Level to the Met SRM and provide photograph of the Met SRM.

**9410689 Gerald Desmond Bridge Air Gap, CA (PORTS)****Air Gap Only Station**

1. Replace entire DCP, enclosure and sensor.
2. Coordinate with ED Great Lakes Expert for trig levels support if levels are required.
3. Investigate upgrading to an Air Gap sensor with a laser.
4. Replace all three combination locks.

**9410840 Santa Monica, CA****L28211****Part 4****PBM:** 941 0840 TIDAL 12 (EW6840)**PBM above SD:** 15.060 m**GPS Bench Mark:** 941 0840 N TIDAL (AH7469)**MSL above SD:** 1.594 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 03/11**Dive Inspection Frequency:** Every year**Last Dive:** 04/13

1. Perform an engineering reconnaissance to install the MWWL sensor, seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the installation design of the new station.
2. Replace second from bottom piling clamps (20" concrete piling, circumference is 64"). Plan one day of diving for marine growth removal prior to installation. (Explore commercial dive team, if FOD resources are not available and if appropriate).
3. Install marks or recover other marks in the area to bring total number of bench marks to 10.
4. Replace DCP 1 & 2 pump batteries.
5. Add existing Aquatrak controller to eSite report.
6. Record the barometer calibration offset in the comments section of the eSite report.

**9411340 Santa Barbara, CA**

**L28211**

**Part 16**

***PBM:*** 941 1340 S

***PBM above SD:*** 4.141 m

***GPS Bench Mark:*** 941 1340 SB2 RESET

***MSL above SD:*** 1.814 m

***GPS Observation Frequency:*** Every 5 years

***Last GPS Observation Performed:*** 03/11

***Dive Inspection Frequency:*** Every year

***Last Dive:*** 03/11

1. Replace the 5W solar panels with a standard 40W solar panel.
2. Rewire solar panels to pump power supplies.
3. Replace DCP 1 to DCP 2 interconnect cable.
4. Reroute SDI-12 cables for pumps 1 and 2 to DCP 1 (8' lengths).
5. Replace Satlink to Polyphaser interconnect cable (Type-N connectors both ends).
6. Replace the GOES antenna cable.
7. Replace the Polyphaser.
8. Install dust cover cap on DCP1 Xpert port.
9. Investigate antenna/solar panel mounts and address problems with existing wood plate, seek engineering support as needed.
10. Replace the DCP 1 and DCP 2 pump batteries.
11. Record the barometer calibration offset in the comments section of the eSite report.
12. Add existing DCP 1 Xpert module to eSite report.
13. Remove erroneous DCP 3 IP modems and add correct DCP 3 IP modem to eSite report.

**9411406 Oil Platform Harvest, CA (TOPEX)**  
**PBM:** 941 1406 NO STAMPING (+20 LEG 1992)  
**GPS Bench Mark:** N/A  
**GPS Observation Frequency:** Not required  
**Dive Inspection Frequency:** Every year

**L28211**

**Part 19**

**PBM above SD:** 20.150 m  
**MSL above SD:** 14.494 m  
**Last GPS Observation Performed:** N/A  
**Last Dive:** 10/12

1. Install dual microwave sensors; Seek engineering support and FERS approval as needed.
2. Perform a reconnaissance for a location to install a commercial satellite antenna.
3. Install two IP modems and Yagi antennas.
4. Re-establish Riser 1 leveling point using a long ½” bolt, nuts and shoulder washers.
5. Diagnose and repair problems with DCP 1/N1 and DCP 2/N1 sensor bubbler tubing runs/orifice installations.
6. Recover or establish and level one deep rod or mark set in bedrock, designation/stamping if new mark is set: 941 0840 V/0840 V 2015.
7. Update the bench mark diagram with new mark.
8. Add DCP 1 & DCP 2 Xpert/Xpert Dark modules to eSite report.
9. Add pump power box batteries to eSite report.
10. Record N1 vent values on eSite report.
11. Record the barometer calibration offset in the comments section of the eSite report.
12. **NOTE: Use of optical levels at this station is authorized.** There is a permanent GPS unit on site maintained by JPL and connected by leveling to the water level sensor.
13. **NOTE: Dive inspection by CO-OPS is not permitted.** Diving is performed by TOPEX contractors and is paid for by JPL.
14. Replace the DCP2 battery.

**9412110 Port San Luis, CA**  
**PBM:** 941 2110 TIDAL 6 (FV0898)  
**GPS Bench Mark:** 941 2110 TIDAL 6 (FV0898)  
**GPS Observation Frequency:** Every 5 years  
**Dive Inspection Frequency:** Every year

**L28211**

**Part 5**

**PBM above SD:** 5.691 m  
**MSL above SD:** 2.149 m  
**Last GPS Observation Performed:** 02/11  
**Last Dive:** 03/11

1. Update the XPERT Operating System, XPERT Dark Operating System and Satlink firmware if the new version is approved at the time of the annual inspection.
2. Check and update the log sizes as per the Engineering Bulletin 09-003.
3. Reinstall dual winds.
4. Replace the Digital I/O modules in both DCP1 and DCP2 to be v2.04 or higher.
5. Replace the batteries in DCP1 and DCP2.
6. Provide a description and photo of the Met SRM and include the Met SRM in the leveling run.
7. Replace the DCP 2 pump battery.
8. Record the barometer calibration offset in the comments section of the eSite report.

**9413450 Monterey, CA****L28211****Part 6****PBM:** 941 3450 TIDAL 2 (GU2090)**PBM above SD:** 5.669 m**GPS Bench Mark:** 941 3450 M TIDAL (GU4116)**MSL above SD:** 1.893 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 02/11**Dive Inspection Frequency:** Every year**Last Dive:** 12/11

1. Replace the closure latches on the DCP 3 APX enclosure.
2. Replace the DCP 2 pump battery.
3. Add the DCP 3 9210 module to the eSite report
4. Record the barometer calibration offset in the comments section of the eSite report.
5. Swap water temperature sensor in eSite report to record correct serial number.

**9414290 San Francisco, CA (PORTS)****L28211****Part 7****PBM:** 941 4290 TIDAL 180 (HT0702)**PBM above SD:** 5.794 m**GPS Bench Mark:** 941 4290 TIDAL 180 (HT0702)**MSL above SD:** 2.773 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 08/10**Dive Inspection Frequency:** Every year**Last Dive:** 11/13

1. Update the XPERT Operating System, XPERT Dark Operating System and Satlink firmware if the new version is approved at the time of the annual inspection.
2. Check and update the log sizes as per the Engineering Bulletin 09-003.
3. Recover or establish and level one deep rod or mark set in bedrock on the SE of the tide station, designation/stamping if new mark is set: 941 4290 P/4290 P 2015.
4. Update the bench mark diagram with new mark.
5. Replace the Digital I/O module in DCP1 to be v2.04 or higher.
6. Replace the wind bird wire.
7. Replace the Swagelok fitting for backup orifice, if found extremely corroded.
8. Recon for appropriate site for one new bench mark set in bedrock or on a deep rods preferably to the SE of the tide station.
9. Replace DCP 2 with a unit with AC power supply.
10. Replace the DCP 1, DCP 2 and DCP 1 pump batteries.
11. Record the DCP 1 N1 & T1 vent values.
12. Swap the DCP 1 IP modem in eSite report to record correct serial number.
13. Swap the DCP 1 Satlink in eSite report to record correct serial number.
14. Add the DCP 1 Xpert module to the eSite report.
15. Record the barometer calibration offset in the comments section of the eSite report.

**9414523 Redwood City, CA (PORTS)****L28211****Part 8*****PBM:*** 941 4523 A***PBM above SD:*** 4.841 m***GPS Bench Mark:*** 941 4508 C***MSL above SD:*** 3.392 m***GPS Observation Frequency:*** Every 5 years***Last GPS Observation Performed:*** 10/09***Dive Inspection Frequency:*** Every year***Last Dive:*** 10/14

1. Update the XPERT Operating System, XPERT Dark Operating System and Satlink firmware if the new version is approved at the time of the annual inspection.
2. Replace XPERT Dark DCP with an A/C power compatible unit.
3. Replace T1 and T2 sensors (black side on sounding tube only) due to deteriorating insulation on wires.
4. Replace the Digital I/O module in DCP1 to be v2.04 or higher.
5. Replace the batteries in DCP1 and DCP2.
6. Install new pump power box.
7. Replace DCP 2 with a unit with AC power supply.
8. Install new pump power box.
9. Record the barometer calibration offset in the comments section of the eSite report.
10. Remove extra batteries from the eSite report.
11. Correct battery dates in the eSite report.
12. Add DCP 1 phone modem to the eSite report.
13. Add DCP 1 IP modem to the eSite report.
14. Remove extra DCP 2 Analog I/O module from the eSite report.

**9414575 Coyote Creek, CA (Resilience)****L28211****Part 20*****PBM:*** 941 4575 TIDAL 1***PBM above SD:*** 5.405 m***GPS Bench Mark:*** Undetermined***MSL above SD:*** 1.388 m***GPS Observation Frequency:*** N/A***Last GPS Observation Performed:*** N/A***Dive Inspection Frequency:*** N/A***Last Dive:*** N/A

1. No additional requirements.

**9414750 Alameda, CA (PORTS)**

**L28211**

**Part 9**

***PBM:*** 941 4750 TIDAL 8 (HT0890)

***PBM above SD:*** 4.795 m

***GPS Bench Mark:*** 941 4750 TIDAL 7 (HT0882)

***MSL above SD:*** 2.067 m

***GPS Observation Frequency:*** Every 5 years

***Last GPS Observation Performed:*** 08/10

***Dive Inspection Frequency:*** Every year

***Last Dive:*** 11/13

1. Update the XPERT Operating System, XPERT Dark Operating System and Satlink firmware if the new version is approved at the time of the annual inspection.
2. Check and update the log sizes as per the Engineering Bulletin 09-003.
3. Monitor MHHW clamp, fiberglass coated timbers, steel piling attachments, and bubbler conduit clamps annually and evaluate for future replacement with plastic timbers.
4. Replace XPERT Dark DCP with an A/C power compatible unit.
5. Replace the Swagelok fitting for backup orifice, if found extremely corroded.
6. Replace the battery in DCP1.
7. Replace the Water Temp sensor.
8. Install a new pump power box.
9. Install a new solar panel for pump power box.
10. Replace DCP 2 with a unit with AC power supply.
11. Remove DCP 2 power from the pump power box.
12. Install new pump power box.
13. Install a solar panel for the pump power box.
14. Replace DCP 2 pump battery.
15. Record the barometer calibration offset in the comments section of the eSite report.
16. Record the Satlink firmware version in the eSite comments section.

**9414863 Richmond, CA (PORTS)****L28211****Part 10****PBM:** TIDAL 3 STA III 23 (HT0940)**PBM above SD:** 6.376 m**GPS Bench Mark:** 941 4863 M**MSL above SD:** 4.520 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 10/09**Dive Inspection Frequency:** Every year**Last Dive:** 11/13

1. **Unresolved from 2014 PI:** Take one directional photo of 941 4863 E.
2. **Unresolved from 2014 PI:** Install a new bench mark with designation/stamping: 941 4863 P/4863 P 2015 to replace the destroyed bench mark TIDAL 1 STA III 23.
3. Update the XPERT Operating System, XPERT Dark Operating System and Satlink firmware if the new version is approved at the time of the annual inspection.
4. Check and update the log sizes as per the Engineering Bulletin 09-003.
5. Replace the Xpert Dark DCP with an A/C power compatible unit.
6. Replace the Swagelok fitting for backup orifice, if found extremely corroded.
7. Replace the DCP1 Digital I/O module to be v2.04 or higher.
8. Replace the GOES antenna and cable.
9. Replace battery in the Xpert DCP and the pump power box.
10. Replace DCP 2 with a unit with AC power supply.
11. Replace DCP 2 pump power box.
12. Replace DCP 1 & DCP 2 pump batteries.
13. Record the DCP 1 and DCP 2 I/O module firmware versions in the comments section of the eSite report.
14. Add the DCP 2 phone modem module to the eSite report.
15. Add the DCP 1 Aquatrak controller to the eSite report.
16. Record the barometer calibration offset in the comments section of the eSite report.

**9414958 Bolinas Lagoon, CA (Resilience)****L28211****Part 17****PBM:** 941 4958 F**PBM above SD:** 4.823 m**GPS Bench Mark:** 941 4958 F**MSL above SD:** 1.387 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 06/09**Dive Inspection Frequency:** Every year**Last Dive:** 02/13

1. Coordinate the annual inspection with the Resilience Program Manager. Notify James Raives, Marin County Open Space District, prior to any site visit.
2. Update the XPERT Operating System and Satlink firmware if the new version is approved at the time of the annual inspection.
3. Check and update the log sizes as per the Engineering Bulletin 09-003.
4. Replace the DCP and pump batteries.
5. Add DCP 1 Xpert module to the eSite report.
6. Add DCP 1 Satlink module to the eSite report.
7. Record the DCP 1/N1 vent value in the comments section of the eSite report.

**9415020 Point Reyes, CA****L28211****Part 11****PBM:** B 243 (HT1839)**PBM above SD:** 4.977 m**GPS Bench Mark:** 941 5020 Q TIDAL (HT3505)**MSL above SD:** 2.152 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 10/10**Dive Inspection Frequency:** Every year**Last Dive:** 11/13

1. **Unresolved from 2014 PI:** Remove the derelict ADR and ETG wells.
2. Update the XPERT Operating System, XPERT Dark Operating System and Satlink firmware if the new version is approved at the time of the annual inspection.
3. Check and update the log sizes as per the Engineering Bulletin 09-003.
4. Relocate all the station electronics into the APX enclosure, seek engineering support and FERS approval as needed.
5. Install protective junction box for T1/T2/WT sensor terminal; strip or pull all new grey side cables that are continuous from the DCP to the well.
6. Replace the DCP 1 GPS antenna, cable and bracket.
7. Replace the batteries in DCP1, DCP2, and the pump.
8. Install new GPS antenna, cable & bracket outside tide house.
9. Remove existing puck antennas.
10. Include the Met SRM in the leveling run.
11. Install a new witness post and replace the PVC casing for bench mark A 243.
12. Enter DCP 1 Analog I/O module #2 firmware version into comments section of eSite report.
13. Add DCP 2 Satlink to the eSite report.
14. Add DCP 1 Aquatrak controller to the eSite report.
15. Add DCP 2 Digital and Analog I/O modules to the eSite report.
16. Record the barometer calibration offset in the comments section of the eSite report.

**9415102 Martinez Amorco Pier, CA (PORTS)****L28211****Part 16****PBM:** 941 5102 D**PBM above SD:** 20.000 m**GPS Bench Mark:** 941 5102 D**MSL above SD:** 11.554 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 5/13**Dive Inspection Frequency:** N/A**Last Dive:** N/A

1. Verify DCP 1 Satlink firmware versions are v6.40 and update as needed. Verify correct firmware version is recorded in eSite report.

**9415144 Port Chicago, CA (PORTS)****L28211****Part 12****PBM:** 941 5144 H (AH7472)**PBM above SD:** 4.209 m**GPS Bench Mark:** 941 5144 H TIDAL (AH7472)**MSL above SD:** 1.996 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 08/10**Dive Inspection Frequency:** Every year**Last Dive:** 11/13

1. Perform an engineering reconnaissance to install the MWWL sensor, seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the installation design of the new station.
2. Add DCP 1 Aquatrak controller to eSite report.
3. Add IP Modem to eSite report.
4. Add DCP 2 pump battery to eSite report.
5. Swap water temperature sensor in eSite report to record correct serial number and installation date.

**9416841 Arena Cove, CA****L28211****Part 13****PBM:** 941 6841 TIDAL 6 (JT9392)**PBM above SD:** 11.604 m**GPS Bench Mark:** 941 6841 J TIDAL (JT9387)**MSL above SD:** 9.779 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 12/11**Dive Inspection Frequency:** Every year**Last Dive:** 05/13

1. Update the XPERT Operating System, XPERT Dark Operating System and Satlink firmware if the new version is approved at the time of the annual inspection.
2. Check and update the log sizes as per the Engineering Bulletin 09-003.
3. Replace the battery in DCP1.
4. Replace the DCP1 Digital I/O module to be v2.04 or higher.
5. Repair phone line from demarcation to the tide house.
6. Replace the light bulbs for the tide house.
7. Include the Met SRM in the leveling run.
8. Replace DCP 1, DCP 2, DCP 3, and DCP 4 batteries.
9. Replace the storage cards.
10. Troubleshoot the phone connectivity to the backup DCPs.
11. Replace the DCP 1, DCP 2 and DCP 2 pump batteries.
12. Repair phone line from the demarcation to the tide house and verify phone line is functioning.
13. Verify DCP 1 & DCP 2 Xpert/Xpert Dark OS versions are v2.10.0.4 and update as needed. Verify correct OS version is recorded in eSite report.
14. Record the DCP 1 and DCP 2 I/O module firmware versions in the comments section of the eSite report.
15. Add DCP 1 Aquatrak controller to eSite report.
16. Swap water temperature sensor in eSite report to record correct serial number.
17. Record the barometer calibration offset in the comments section of the eSite report.

**9418767 North Spit, CA (PORTS)****L28211****Part 14****PBM:** 941 8767 TIDAL 9 (LV0361)**PBM above SD:** 9.205 m**GPS Bench Mark:** 941 8767 B TIDAL (LV0632)**MSL above SD:** 5.562 m**GPS Observation Frequency:** Every year**Last GPS Observation Performed:** 05/11**Dive Inspection Frequency:** Every year**Last Dive:** 12/11

1. **Unresolved from 2014 Project Instructions:** Change kick blocks for two of the deep rod marks to accommodate the invar rods.
2. Update the XPERT Operating System, XPERT Dark Operating System and Satlink firmware if the new version is approved at the time of the annual inspection.
3. Check and update the log sizes as per the Engineering Bulletin 09-003.
4. Replace the battery in DCPI.
5. Provide a photo of the Met SRM.
6. Take new face and setting photographs of the marks with new kick blocks.
7. Level the barometer verifying its height above station datum.
8. Replace DCP 1 battery.
9. Verify DCP 1, DCP 2 & DCP 4 Xpert/Xpert Dark OS versions are v2.10.0.4 and update as needed. Verify correct OS version is recorded in eSite report.
10. Record the DCP 1 and DCP 3 I/O module firmware versions in the comments section of the eSite report.
11. Remove DCP 3 phone modem from eSite report (duplicate of the IP modem).
12. Remove extra DCP 2 pump battery from eSite report.
13. Swap water temperature sensor in eSite report to record correct serial number.
14. Record the barometer calibration offset in the comments section of the eSite report.

**9419750 Crescent City, CA****L28211****Part 15****PBM:** 941 9750 TIDAL 20 RESET (LV0110)**PBM above SD:** 5.227 m**GPS Bench Mark:** 941 9750 TIDAL 20 RESET (LV0110)**MSL above SD:** 2.254 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 04/11**Dive Inspection Frequency:** Every 2 years**Last Dive:** 12/11

1. **Unresolved from 2014 Project Instructions:** Establish a level connection between the station bench mark network and the newly established CORS station (within 1km).
2. **Unresolved from 2014 Project Instructions:** Replace the kick block for bench mark 941 9750 S TIDAL with 6" PVC and logo cap lid before leveling. (Note: Contact USA North two to fourteen days in advance of the annual inspection to ensure that utilities in the vicinity of any digging are properly marked. <http://www.usanorth.org/>)
3. **Unresolved from 2014 Project Instructions:** Install a new logo cap lid for bench mark 941 9750 V TIDAL.
4. Replace missing parallel plates on Aquatrak well.
5. Swap water temperature sensor in eSite report to record correct serial number.
6. Record the barometer calibration offset in the comments section of the eSite report.

## 2.18 FOD/POB – Oregon Stations

**9431647 Port Orford, OR** **L28212** **Part 1**  
**PBM:** 943 1647 TIDAL 6 (OA0075) **PBM above SD:** 12.256 m  
**GPS Bench Mark:** 943 1647 TIDAL LEAD (OA0790) **MSL above SD:** 8.224 m  
**GPS Observation Frequency:** Every 5 years **Last GPS Observation Performed:** 04/11  
**Dive Inspection Frequency:** Every year **Last Dive:** 4/14

1. Replace GOES antenna and cable.
2. Add the DCP 2 Xpert Dark module to the eSite report.
3. Swap water temperature sensor in eSite report to record correct serial number.
4. Remove the extra barometer from the eSite report.
5. Record the barometer calibration offset in the comments section of the eSite report.

**9432780 Charleston, OR** **L28212** **Part 2**  
**PBM:** 943 2780 A TIDAL (OA0650) **PBM above SD:** 5.895 m  
**GPS Bench Mark:** 943 2780 A TIDAL (OA0650) **MSL above SD:** 2.390 m  
**GPS Observation Frequency:** Every 5 years **Last GPS Observation Performed:** 04/11  
**Dive Inspection Frequency:** Every year **Last Dive:** 04/14

1. Include the Met SRM in the leveling run.
2. Replace AC power supply for the DCP 3 IP modem battery.
3. Test the primary station phone line.
4. Level to 943 2780 E, it was not leveled in 2014.
5. Remove IP modem in boathouse.
6. Replace the DCP 3 9210 module to address the air temperature issue.
7. Replace the DCP 2 & DCP 3 batteries.
8. Record the barometer calibration offset in the comments section of the eSite report.
9. Remove the extra batteries from the eSite report.
10. Add all solar panels to the eSite report
11. Remove the extra air temperature sensor from the eSite report.

**9435380 South Beach, OR** **L28212** **Part 3**  
**PBM:** C 590 (QE1114) **PBM above SD:** 6.194 m  
**GPS Bench Mark:** 943 5380 D TIDAL (QE1615) **MSL above SD:** 2.806 m  
**GPS Observation Frequency:** Every year **Last GPS Observation Performed:** 07/11  
**Dive Inspection Frequency:** Every year **Last Dive:** 04/14

1. Include bench mark 943 5380 L in all future leveling runs until stability concerns have been resolved.
2. Record the barometer calibration offset in the comments section of the eSite report.

**9437540 Garibaldi, OR****L28212****Part 5****PBM:** 943 7540 A**PBM above SD:** 5.827 m**GPS Bench Mark:** 943 7540 H**MSL above SD:** 2.584 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 07/11**Dive Inspection Frequency:** Every year**Last Dive:** 04/14

1. Determine the elevation of Met SRM for winds above water level and note the date/time of the observation in the site report.
2. Measure down from AT and wind bird to new Met SRM.
3. Include the Met SRM in the level run.
4. Update or remove the extra battery from DCP 3 in the eSite report.
5. Record the barometer calibration offset in the comments section of the eSite report.
6. Remove extra air temperature sensor from eSite report.

**9439040 Astoria, OR (PORTS)****L28212****Part 4****PBM:** 943 9040 A**PBM above SD:** 5.827 m**GPS Bench Mark:** 943 9040 TIDAL 12 (SC1055)**MSL above SD:** 2.054 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 07/11**Dive Inspection Frequency:** Every 2 years**Last Dive:** 04/14

1. Verify DCP 1 & DCP 2 Xpert/Xpert Dark OS versions are recorded in eSite report.
2. Record the DCP 1 and DCP 2 I/O module firmware versions in the comments section of the eSite report.
3. Add the DCP 2 phone modem to the eSite report.
4. Record the barometer calibration offset in the comments section of the eSite report.

**9439099 Wauna, OR (PORTS)****L28212****Part 6****PBM:** 943 9909 H**PBM above CRD:** 4.481 m**GPS Bench Mark:** 943 9099 A TIDAL (SC1086)**MSL above SD:** 1.308 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 07/14**Dive Inspection Frequency:** Every year**Last Dive:** 07/14

1. Update the XPERT Operating System.
2. Check and update the log sizes as per the Engineering Bulletin 09-003.
3. Replace DCP 2 with a new unit with AC power supply.
4. Reconfigure DCP2 pump to pull power from XPERT Dark battery.
5. Replace the batteries in DCP 1 and DCP 2.
6. Replace DCP 1 pump battery.

**9439201 St. Helens, OR (PORTS)**

**L28212**

**Part 7**

***PBM:*** 943 9201 A

***PBM above CRD:*** 20.534 m

***GPS Bench Mark:*** 943 9201 OSMB 0502

***MSL above SD:*** 1.006 m

***GPS Observation Frequency:*** Every 5 years

***Last GPS Observation Performed:*** 07/14

***Dive Inspection Frequency:*** Every year

***Last Dive:*** 07/14

1. Update the XPERT Operating System.
2. Check and update the log sizes as per the Engineering Bulletin 09-003.
3. Replace DCP2 with a new unit with AC power supply.
4. Reconfigure DCP2 pump to pull power from XPERT Dark battery.
5. Replace the batteries in DCP 1, DCP 2, pump 1, and pump 2.
6. Swap both primary and backup storage cards to fix both DCP log sizes.
7. Replace DCP 1 GOES antenna and cable.

## 2.19 FOD/POB – Washington Stations

### 9440083 Vancouver, WA (PORTS)

L28213

Part 11

*PBM:* 944 0083 D

*PBM above CRD:* 9.470 m

*GPS Bench Mark:* 944 0083 F

*MSL above SD:* 0.861 m

*GPS Observation Frequency:* Every 5 years

*Last GPS Observation Performed:* 07/14

*Dive Inspection Frequency:* Every year

*Last Dive:* 07/14

1. **Unresolved from 2014 Project Instructions:** Replace DCP 1 and pump solar panels.
2. **Unresolved from 2014 Project Instructions:** Update the handheld GPS handheld positions of bench mark 944 0083 A in the WinDesc file.
3. Repair the phone line.
4. Plug the weather head leading into the tide house.
5. Replace DCP 1 pump battery.
6. Evaluate Paros for replacement and replace as needed; previous vent value was 0.0041.

### 9440422 Longview, WA (PORTS)

L28213

Part 12

*PBM:* 944 0422 E

*PBM above CRD:* 8.949 m

*GPS Bench Mark:* 944 0422 TIDAL 5 (SC1112)

*MSL above SD:* 1.364 m

*GPS Observation Frequency:* Every 5 years

*Last GPS Observation Performed:* 07/14

*Dive Inspection Frequency:* Every year

*Last Dive:* 07/14

1. **Unresolved from 2014 Project Instructions:** Contact Norm Krehbiel regarding availability of funds for future relocation of tide house; seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the design of the upgrades to the station. Port of Longview Engineers - 360.425.3305
2. Update the XPERT Operating System, XPERT Dark Operating System and Satlink firmware if the new version is approved at the time of the annual inspection.
3. Check and update the log sizes as per the Engineering Bulletin 09-003.
4. Replace the DCP1 Paros sensor.
5. Replace the DCP2 solar panel.

**9440569 Skamokawa, WA (PORTS)**

**L28213**

**Part 13**

**PBM:** N 317 (SC0338)

**PBM above CRD:** 7.232 m

**GPS Bench Mark:** 944 0569 C

**MSL above SD:** 1.268 m

**GPS Observation Frequency:** Every 5 years

**Last GPS Observation Performed:** 07/14

**Dive Inspection Frequency:** Every year

**Last Dive:** 07/14

1. **Unresolved from 2014 Project Instructions:** Perform a joint ED and FOD reconnaissance to determine how to raise the tide house three feet with plastic timbers to place the tide house above the waterline; seek Field Engineering Review Subcommittee (FERS) approval. - contingent upon Port of Portland funding
2. Replace the tide house heater.
3. Separate the solar panels to eliminate shading.
4. Replace the GOES antenna and cable.
5. Plug the weather head leading into the tide house.
6. Repair the phone line.
7. Replace the DCP 1, DCP 2 and DCP 1 pump batteries.
8. Replace the two tide house door padlocks.
9. Add DCP 2 Xpert Dark module to eSite report.

**9440581 Cape Disappointment, WA (PORTS)**

**L28213**

**Part 14**

**PBM:** Undetermined

**PBM above SD:** Undetermined

**GPS Bench Mark:** Undetermined

**MSL above SD:** Undetermined

**GPS Observation Frequency:** Every 5 years

**Last GPS Observation Performed:** n/a

**Dive Inspection Frequency:** Undetermined

**Last Dive:** n/a

1. Install new station with dual MWWL sensors; seek Field Engineering Review Subcommittee (FERS) approval. This station replaces the removed Columbia River Station at Hammond.
2. Perform six-month check levels after installation, per User's Guide to Declaring a Newly Installed Water Level Station Operational.

**9440910 Toke Point, WA****PBM:** 944 0910 P**GPS Bench Mark:** FLAG (SC0916)**GPS Observation Frequency:** Every 5 years**Dive Inspection Frequency:** Every year**L28213****Part 1****PBM above SD:** 5.408 m**MSL above SD:** 2.836 m**Last GPS Observation Performed:** 03/11**Last Dive:** 07/14

1. Perform an engineering reconnaissance to install the MWWL sensor, seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the installation design of the new station.
2. **Unresolved from 2014 PI:** Add a 5-inch PVC and lid with concrete kick block for bench mark 944 0910 K.
3. **Unresolved from 2015 PI:** Install new leveling point for the backup orifice.
4. **Unresolved from 2015 PI:** Recover or establish and level one surface mark, designation/stamping as follows: 944 0910 T/0910 T 2015.
5. Replace backup orifice, existing orifice is corroded.
6. Install dual pump power box to power DCP 1 & DCP 2 pumps with separate batteries
7. Repair water temperature sensor
8. Evaluate external ground wire and reroute/replace as appropriate.
9. Replace the tide house.
10. Replace DCP 1 & DCP 2 pump batteries.
11. Verify height of Met SRM above station datum.
12. Update the bench mark diagram with new mark.

**9441102 Westport, WA****PBM:** 944 1102 K**GPS Bench Mark:** 944 1102 K**GPS Observation Frequency:** Every 5 years**Dive Inspection Frequency:** Every year**L28213****Part 2****PBM above SD:** 5.604 m**MSL above SD:** 2.383 m**Last GPS Observation Performed:** 06/11**Last Dive:** 07/14

1. Replace DCP 3 wind sensor.

**9442396 La Push, WA****PBM:** 944 2396 F**GPS Bench Mark:** 944 2396 G**GPS Observation Frequency:** Every 5 years**Dive Inspection Frequency:** Every year**L28213****Part 3****PBM above SD:** 5.378 m**MSL above SD:** 2.984 m**Last GPS Observation Performed:** 06/11**Last Dive:** 07/13

1. Install an approved MWWL sensor; if any structural modifications are required, seek engineering support and Field Engineering Review Subcommittee (FERS) approval.
2. Destroy bench mark 944 2396 C. Records indicate that this mark was dropped due to movement, but photos indicate this mark cannot be reused and it should be chiseled out of the concrete.

**9443090 Neah Bay, WA** **L28213** **Part 4**  
*PBM:* 944 3090 TIDAL 19 (TS0161) *PBM above SD:* 6.507 m  
*GPS Bench Mark:* 944 3090 TIDAL 19 (TS0161) *MSL above SD:* 1.925 m  
*GPS Observation Frequency:* Every 5 years *Last GPS Observation Performed:* 06/11  
*Dive Inspection Frequency:* Every year *Last Dive:* 05/12

1. Install an approved MWWL sensor; if any structural modifications are required, seek engineering support and Field Engineering Review Subcommittee (FERS) approval.
2. Replace existing 50' coaxial GOES cable for DCP 3 with 75' coaxial cable.

**9444090 Port Angeles, WA** **L28213** **Part 5**  
*PBM:* L 467 (TR0790) *PBM above SD:* 14.475 m  
*GPS Bench Mark:* L 467 (TR0790) *MSL above SD:* 10.534 m  
*GPS Observation Frequency:* Every 5 years *Last GPS Observation Performed:* 08/11  
*Dive Inspection Frequency:* Every 2 years *Last Dive:* 08/14

1. Replace the DCP 2 pump battery.
2. Verify DCP 3 Xpert OS version is v2.10.0.4 and update as needed. Verify correct OS version is recorded in eSite report.
3. Add the DCP 1 Aquatrak controller to the eSite report.
4. Add the DCP 1 Xpert module to the eSite report.
5. Add the DCP 3 9210 module and Satlink module to the eSite report.
6. Add the DCP 1, DCP 2 & DCP 3 Analog and Digital I/O firmware versions to the comments section of the eSite report.
7. Add the DCP 1 Xpert OS version to the comments section of the eSite report.
8. Verify the battery dates and remove the extra DCP 2 battery from the eSite report.
9. Record the battery voltages and capacities for the DCP 2 and DCP 2 pump batteries in the eSite report.

**9444900 Port Townsend, WA** **L28213** **Part 6**  
*PBM:* 944 4900 C TIDAL *PBM above SD:* 6.004 m  
*GPS Bench Mark:* 944 4900 D TIDAL (AI2202) *MSL above SD:* 2.547 m  
*GPS Observation Frequency:* Every 5 years *Last GPS Observation Performed:* 08/11  
*Dive Inspection Frequency:* Every 2 years *Last Dive:* 08/14

1. Level to both the Aquatrak and MWWL sensors in support of ongoing sensor comparison study.
2. Record the DCP 1 and DCP 2 I/O module firmware versions in the comments section of the eSite report.
3. Add the DCP 1 Aquatrak controller to the eSite report.

**9446482 Tacoma Met, WA (PORTS)****Meteorological Station**

1. No additional requirements
2. Swap wind bird sensors.
3. Take photos of the wind bird sensors.

**9446484 Tacoma, WA (PORTS)****L28213****Part 7****PBM:** 944 6484 A**PBM above SD:** 5.326 m**GPS Bench Mark:** 944 6484 B**MSL above SD:** 2.272 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 04/10**Dive Inspection Frequency:** N/A**Last Dive:** 04/10

1. Install an approved MWWL sensor and a backup MWWL sensor; if any structural modifications are required, seek engineering support and Field Engineering Review Subcommittee (FERS) approval.
2. Repair and/or replace the Druck sensor.
3. Recover or establish and level one deep rod or mark set in bedrock, designation/stamping if new mark is set: 944 6484 F/6484 F 2015.
4. Update the bench mark diagram with new mark.
5. Install dust caps on cannon plugs on the Xpert and Xpert Dark DCP.
6. Replace DCP 1, DCP 2 and DCP 2 pump batteries.
7. Install new rod mark and drop POT 101 from network.
8. Replace the water temperature sensor.
9. Add DCP 2 Digital I/O module to the eSite report.
10. Add DCP 1 IP modem to the eSite report.

**9447130 Seattle, WA****L28213****Part 8****PBM:** 944 7130 TIDAL 23**PBM above SD:** 8.851 m**GPS Bench Mark:** DAVE**MSL above SD:** 4.443 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 04/14**Dive Inspection Frequency:** Every 2 years**Last Dive:** 04/12

1. Replace the water temperature sensor.
2. Monitor the stability of bench marks 944 7130 P & 944 7130 M due to waterfront construction.
3. Replace the water temperature sensor.
4. Record the barometer calibration offset on the eSite report.

**9449419 Cherry Point South Dock Met, WA (PORTS)****Meteorological Station**

1. Update the XPERT Operating System and Satlink firmware if the new version is approved at the time of the annual inspection.
2. Check and update the log sizes as per the Engineering Bulletin 09-003.
3. Replace DCP 1 and DCP 1 IP modem batteries.
4. Add DCP 1 9210, Satlink and IP modem to eSite report.
5. Add solar panels to eSite report.
6. Perform tape down measurement from Met SRM to water level. Include the date/time of this measurement in the site report.

**9449424 Cherry Point, WA (PORTS)****L28213****Part 9****PBM:** 944 9424 TIDAL 1**PBM above SD:** 11.226 m**GPS Bench Mark:** 941 9424 J TIDAL (AI2204)**MSL above SD:** 3.543 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 04/11**Dive Inspection Frequency:** Every year**Last Dive:** 08/14

1. Update the XPERT Operating System, XPERT Dark Operating System and Satlink firmware if the new version is approved at the time of the annual inspection.
2. Check and update the log sizes as per the Engineering Bulletin 09-003.
3. Replace the cotter pins on stainless steel Met mast break over plate with new stainless steel pins.
4. Replace the DCP 1, DCP 2, DCP 2 pump and DCP 3 batteries.
5. Swap the DCP 3 Satlink module to record the serial number in the eSite report.
6. Remove the extra DCP 1 pump from the eSite report.

**9449880 Friday Harbor, WA****L28213****Part 10****PBM:** 944 9880 TIDAL 10**PBM above SD:** 4.892 m**GPS Bench Mark:** 944 9880 C TIDAL (AI2205)**MSL above SD:** 2.561 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 08/11**Dive Inspection Frequency:** Every year**Last Dive:** 06/14

1. Replace the 40W solar panel for DCP 2.
2. Replace the bronze bolts and rebuild Aquatrak well.
3. Replace the desiccant in the Met station.
4. Add the DCP 1 Aquatrak controller to the eSite report.
5. Add the DCP 3 Satlink module to the eSite report.
6. Record the barometer calibration offset in the eSite report.
7. Verify and record the DCP 3 Analog and Digital I/O module firmware versions in the eSite report.

**cp0101 Cherry Point (PORTS)**

**Current Meter Station**

1. No additional requirements.

## 2.20 FOD/POB – Alaska Stations

### 9450460 Ketchikan, AK

L28214

Part 1

*PBM:* 945 0460 TIDAL 24

*PBM above SD:* 8.946 m

*GPS Bench Mark:* 945 0460 TIDAL 37

*MSL above SD:* 4.345 m

*GPS Observation Frequency:* Every 5 years

*Last GPS Observation Performed:* 07/11

*Dive Inspection Frequency:* Every year

*Last Dive:* 03/14

1. Install an approved MWWL sensor; if any structural modifications are required, seek engineering support and Field Engineering Review Subcommittee (FERS) approval.
2. Update the XPERT Operating System, XPERT Dark Operating System and Satlink firmware if the new version is approved at the time of the annual inspection.
3. Check and update the log sizes as per the Engineering Bulletin 09-003.
4. Establish and level a new bench mark designation/stamping 945 0460 D.
5. Replace the water temperature sensor.
6. Replace the battery in DCP1 with a 40Ah unit.
7. Replace the DCP2 battery.
8. Install a metal witness post marking bench mark 945 0460 E.
9. Re-measure the elevation of the wind sensor above the Met SRM.
10. Update the bench mark diagram with the new bench mark.
11. Remove bench mark 945 0460 TIDAL 37 from the Windesc file.

### 9451054 Port Alexander, AK

L28214

Part 2

*PBM:* 945 1054 TIDAL 1

*PBM above SD:* 6.148 m

*GPS Bench Mark:* 945 1054 TIDAL 2

*MSL above SD:* 2.871 m

*GPS Observation Frequency:* Every 5 years

*Last GPS Observation Performed:* 06/13

*Dive Inspection Frequency:* Every year

*Last Dive:* 05/14

1. Verify the elevation difference between the digibub leveling point and the digibub orifice zero on an annual basis.
2. Verify the elevation of N1 sensor.
3. Replace the DCP 1, pump 1, and pump 2 batteries.

**9451600 Sitka, AK****L28214****Part 3****PBM:** 945 1600 L**PBM above SD:** 13.669 m**GPS Bench Mark:** 945 1600 N**MSL above SD:** 2.989 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 05/11**Dive Inspection Frequency:** Every 2 years**Last Dive:** 05/14

1. Replace water temp sensor.
2. Establish and level one surface mark, designation/stamping as follows: 945 1600 U/1600 U 2015.
3. Take a photo of the met SRM.
4. Provide station photos of the met mast, and wind sensor if equipment is present at the station.
5. Take face, setting, and location photos for any newly established marks.
6. Update the bench mark diagram with new mark.

**9452210 Juneau, AK****L28214****Part 4****PBM:** 945 2210 C**PBM above SD:** 10.161 m**GPS Bench Mark:** 945 2210 JNU TIDAL GPS (AI4908)**MSL above SD:** 3.712 m**GPS Observation Frequency:** Every year**Last GPS Observation Performed:** 06/14**Dive Inspection Frequency:** Every year**Last Dive:** 06/14

1. Verify the elevation difference between the digibub leveling point and the digibub orifice zero on an annual basis.
2. Establish and level a Class B or higher bench mark designation/stamping: 945 2210 M/2210 M 2015.
3. Update the bench mark sketch with the new bench mark.
4. Replace water temp sensor.
5. Verify the date of the pump 2 battery and update eSite report.

**9452400 Skagway, AK****L28214****Part 5****PBM:** 945 2400 TIDAL 11**PBM above SD:** 11.646 m**GPS Bench Mark:** 945 2400 C (AI4931)**MSL above SD:** 3.494 m**GPS Observation Frequency:** Every year**Last GPS Observation Performed:** 06/14**Dive Inspection Frequency:** Every year**Last Dive:** 06/14

1. Perform an engineering reconnaissance to install the MWWL sensor, seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the installation design of the new station.
2. Verify the elevation difference between the digibub leveling point and the digibub orifice zero on an annual basis.
3. Replace water temp sensor.
4. Include bench marks 945 2400 G and 945 2400 J in all future leveling runs.
5. Verify the date of the pump 2 battery and update the eSite report.
6. Verify the DCP 2 Digital I/O and Analog I/O module and Pic version on the eSite report.
7. Take station photos of the primary sensor, Met mast, and the wind sensors.

**9452634 Elfin Cove, AK****L28214****Part 6****PBM:** 945 2634 F**PBM above SD:** 8.239 m**GPS Bench Mark:** 945 2634 F**MSL above SD:** 4.637 m**GPS Observation Frequency:** Every year**Last GPS Observation Performed:** 05/13**Dive Inspection Frequency:** Every year**Last Dive:** 06/14

1. Verify the elevation difference between the digibub leveling point and the digibub orifice zero on an annual basis.
2. Establish a Met SRM at the base of the mounting structure and include the met SRM in the leveling run.
3. Replace water temp sensor.
4. Repair or replace DCP 2 Satlink.
5. Verify the DCP 1 and DCP 2 serial numbers and Pic versions of the Digital I/O and Analog I/O module and update the eSite report.
6. Measure the air temperature sensor above Met SRM and the barometric pressure sensor above station datum.
7. Provide station photos for the tide house structure, primary sensor and wind sensors.

**9453220 Yakutat, AK****L28214****Part 7****PBM:** 945 3220 Z**PBM above SD:** 8.745 m**GPS Bench Mark:** 945 3220 AA**MSL above SD:** 2.159 m**GPS Observation Frequency:** Every year**Last GPS Observation Performed:** 05/11**Dive Inspection Frequency:** Every year**Last Dive:** 05/11

1. Replace phone modem.
2. Replace Aquatrak protective well copper tube.
3. Verify the DCP 1 and DCP 2 serial numbers for the RTU boxes, Xpert and Xpert Dark modules, phone modems, Satlink, and Digital and Analog I/O modules and update the eSite report.
4. Update the handheld GPS positions of all bench marks in the WinDesc file as needed.
5. Take station photos of the Met mast and wind sensor.

**9454050 Cordova, AK****L28214****Part 8****PBM:** 945 4050 S**PBM above SD:** 10.178 m**GPS Bench Mark:** 945 4050 TIDAL 13**MSL above SD:** 3.972 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 05/11**Dive Inspection Frequency:** Every year**Last Dive:** 05/11

1. Verify the barometer offset and the DCP 2 serial number for the phone modem and update the eSite report.

**9454240 Valdez, AK** **L28214** **Part 9**  
*PBM: 945 4240 TIDAL 21* *PBM above SD: 8.327 m*  
*GPS Bench Mark: 945 4240 T* *MSL above SD: 4.035 m*  
*GPS Observation Frequency: Every 5 years* *Last GPS Observation Performed: 07/11*  
*Dive Inspection Frequency: Every 2 years* *Last Dive: 08/14*

1. Verify DCP 1 and DCP 2 serial numbers for the Xpert and Xpert Dark modules and the Pic versions and update the eSite report.

**9455090 Seward, AK** **L28214** **Part 10**  
*PBM: 945 5090 N* *PBM above SD: 7.717 m*  
*GPS Bench Mark: 945 5090 L* *MSL above SD: 3.566 m*  
*GPS Observation Frequency: Every 5 years* *Last GPS Observation Performed: 06/11*  
*Dive Inspection Frequency: Every 2 years* *Last Dive: 07/14*

1. Replace water temperature sensor.
2. Take station photos of the Met mast and wind sensors.
3. Verify the DCP 1 and DCP 2 serial numbers for the RTU box, the Xpert and Xpert Dark modules, phone modems, Satlink, Digital I/O and Analog I/O modules and update eSite report.

**9455500 Seldovia, AK** **L28214** **Part 11**  
*PBM: 945 5500 B* *PBM above SD: 13.331 m*  
*GPS Bench Mark: 945 5500 TIDAL 22* *MSL above SD: 5.080 m*  
*GPS Observation Frequency: Every year* *Last GPS Observation Performed: 7/14*  
*Dive Inspection Frequency: Every year* *Last Dive: 07/14*

1. Replace DCP1 Solar panel.
2. Take station photos of the Met mast and wind sensors.
3. Remove the PCB on the Parts tab of the eSite report.
4. Update the serial numbers of the Digital I/O module and the Analog I/O module and the Pic versions in eSite report.

**9455760 Nikiski, AK (PORTS)** **L28214** **Part 12**  
*PBM: 945 5760 L* *PBM above SD: 14.850 m*  
*GPS Bench Mark: 945 5760 L* *MSL above SD: 5.541 m*  
*GPS Observation Frequency: Every year* *Last GPS Observation Performed: 06/13*  
*Dive Inspection Frequency: No dive requirement*

1. Verify the elevation difference between the digibub leveling point and the digibub orifice zero on an annual basis.
2. Reposition GOES & GPS antennas, if necessary.
3. Replace the water temperature sensor.
4. Take digital photos of the met SRM (may need to receive permission prior to visit).
5. Measure the elevation of the water temperature sensor above station datum.
6. Verify DCP 1 and DCP 2 phone modem serial numbers and update the eSite report.

**9455920 Anchorage, AK (PORTS)****PBM:** 945 5920 TIDAL 15 1966 (TT0711)**GPS Bench Mark:** 945 5920 TIDAL 16 (TT0713)**GPS Observation Frequency:** Every year**Dive Inspection Frequency:** No dive requirement**L28214****Part 13****PBM above SD:** 13.231 m**MSL above SD:** 6.931 m**Last GPS Observation Performed:** 06/13

1. Replace the upper orifice sensor.
2. Replace the water temperature sensor.
3. Replace the batteries in DCP 2, DCP 1 pump and DCP 2 pump.
4. Troubleshoot the DCP 1 phone system and replace the modem and/or phone switch if necessary.
5. Measure the elevation of the water temperature sensor above station datum.
6. Take station photos of the primary sensor, Met mast and wind sensors.
7. Perform a reconnaissance for a new bench mark (with class B or higher stability) on the eastern side of the port facility.
8. Verify the DCP 2 serial number and Pic version, and the DCP 2 pump power box serial number and update the eSite report.
9. Remove PCBs from the eSite report Parts tab.

**9457292 Kodiak, AK****PBM:** 945 7292 B**GPS Bench Mark:** 945 7292 TIDAL 16**GPS Observation Frequency:** Every year**Dive Inspection Frequency:** Every 2 years**L28214****Part 14****PBM above SD:** 14.124 m**MSL above SD:** 9.160 m**Last GPS Observation Performed:** 08/14**Last Dive:** 08/14

1. Verify the DCP 1 and DCP 2 Pic versions, the DCP 1 phone modem serial number, and the DCP 2 pump power box serial number and update the eSite report.
2. Remove the PCBs on the Parts tab of the eSite report.

**9457804 Alitak, AK****PBM:** 945 7804 TIDAL 6**GPS Bench Mark:** 945 7804 B**GPS Observation Frequency:** Every 5 years**Dive Inspection Frequency:** Every year**L28214****Part 15****PBM above SD:** 7.521 m**MSL above SD:** 3.574 m**Last GPS Observation Performed:** 08/14**Last Dive:** 08/14

1. Verify the elevation difference between the digibub leveling point and the digibub orifice zero on an annual basis.
2. Take station photos of the general tide house location, tide house structure, and primary sensor.
3. Verify the DCP 1 serial numbers of the phone modem, Satlink, and Analog I/O module.
4. Verify the DCP 1 barometer offset.
5. Verify the DCP 2 Analog I/O module.
6. Verify the serial numbers of the Wind bird sensors, the redundant Paros and update the eSite report.
7. Add the redundant pump power box battery in eSite report.

**9497645 Prudhoe Bay, AK**

**L28214**

**Part 26**

***PBM:*** 949 7645 CELL 4B

***PBM above SD:*** 16.389 m

***GPS Bench Mark:*** 949 7645 WINDSOCK

***MSL above SD:*** 11.018 m

***GPS Observation Frequency:*** Every 5 years

***Last GPS Observation Performed:*** 07/11

***Dive Inspection Frequency:*** Diving Not Allowed

1. Replace the DCP1 Digital I/O module to be v2.04 or higher.
2. Update Satlink Firmware to v 6.40.
3. Troubleshoot the phone connection and establish phone communications and remote access to DCP1 and DCP2.
4. Re-configure MET station.
5. Establish the Met SRM at the base of the building housing the DCPs and include the Met SRM in the leveling run.
6. Verify the DCP 2 metadata including the RTU serial number, the Xpert Dark display serial number, the Digital and Analog I/O module serial numbers and the Pic versions, and the phone modem serial number and update the eSite report.
7. Remove the PCB's from the Parts tab of the eSite report.

## 2.21 JOA - Task 14-04: Western Alaska Stations

David Sinson, Task Manager/Technical Representative (TR)

### 9459450 Sand Point, AK

L28214

Part 16

*PBM:* 945 9450 R

*PBM above SD:* 13.894 m

*GPS Bench Mark:* 945 9450 TIDAL 1293-1

*MSL above SD:* 10.482 m

*GPS Observation Frequency:* Every 5 years

*Last GPS Observation Performed:* 05/11

*Dive Inspection Frequency:* Every 2 years

*Last Dive:* 07/14

1. Replace DCP2 battery.
2. Enter Aquatrak controller into eSite report.

### 9459881 King Cove, AK

L28214

Part 17

*PBM:* 945 9881 D

*PBM above SD:* 6.888 m

*GPS Bench Mark:* KCH-1 1998

*MSL above SD:* 2.354 m

*GPS Observation Frequency:* Every 5 years

*Last GPS Observation Performed:* 05/11

*Dive Inspection Frequency:* Every year

*Last Dive:* 07/14

1. Replace the Met mast (GFE).
2. Replace the DCP 1 and DCP 2 batteries.
3. Enter the batteries, Xpert module, DCP 2 pump onto the eSite report.
4. Enter the serial numbers for both Paros sensors, the Druck sensor, the water temperature sensor, and the barometer onto the eSite report.
5. Enter the Paros vent values in the sensor comments field of the eSite report.

### 9461380 Adak, AK

L28214

Part 18

*PBM:* 946 1380 TIDAL 18 (UW7919)

*PBM above SD:* 6.700 m

*GPS Bench Mark:* 946 1380 TIDAL 18 (UW7919)

*MSL above SD:* 1.553 m

*GPS Observation Frequency:* Every 5 years

*Last GPS Observation Performed:* 07/11

*Dive Inspection Frequency:* Every year

*Last Dive:* 07/11

1. Verify the MWWL and Aquatrak data comparison analysis is complete and accepted by the MWWL TOP Committee. If approved, remove the Aquatrak, associated DCP, and assign the DCP associated with the MWWL sensor as DCP 1, if necessary.
2. Update the XPERT Operating System, XPERT Dark Operating System and Satlink firmware if the new version is approved at the time of the annual inspection.
3. Check and update the log sizes as per the Engineering Bulletin 09-003.
4. Take station photos of the primary sensor.
5. Replace the batteries in DCP 2, the pump power box, and the three batteries in the Pier 5 station.
6. Update all DCP and parts information on the eSite report.

**9461710 Atka, Nazan Bay, AK****L28214****Part 19****PBM:** 946 1710 B**PBM above SD:** 15.000 m**GPS Bench Mark:** 946 1710 G**MSL above SD:** 8.804 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 08/11**Dive Inspection Frequency:** Every year**Last Dive:** 05/14

1. Verify the elevation difference between the digibub leveling point and the digibub orifice zero on an annual basis.
2. Replace the DCP 1, DCP 1 pump, DCP 2, and DCP 2 pump batteries.
3. Enter the DCP 1 and DCP 2 Digital and Analog I/O module versions, the DCP 1 phone modem module onto the eSite report.
4. Enter the vent values for both DCP 1 Paros sensors in the eSite sensor comments field.

**9462450 Nikolski, Mueller Cove, AK****L28214****Part 20****PBM:** 945 2450 F**PBM above SD:** 7.782 m**GPS Bench Mark:** 945 2450 ASTRO**MSL above SD:** 1.936 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 08/11**Dive Inspection Frequency:** Every year**Last Dive:** 06/14

1. Verify the elevation difference between the digibub leveling point and the digibub orifice zero on an annual basis.
2. Replace air temperature sensor.
3. Replace the batteries in DCP 1 and DCP 2.
4. Enter the DCP 1 Xpert module and Satlink into eSite report
5. Enter the vent values for both the DCP1 and DCP2 Paros sensors in the eSite sensor comments field.

**9462620 Unalaska, AK****L28214****Part 21****PBM:** 946 2620 TIDAL 7**PBM above SD:** 3.597 m**GPS Bench Mark:** 946 2620 TIDAL 19**MSL above SD:** 1.427 m**GPS Observation Frequency:** Every 5 years**Last GPS Observation Performed:** 08/11**Dive Inspection Frequency:** Every year**Last Dive:** 6/14

1. Enter the DCP 1 and DCP 2 Analog and Digital I/O module version numbers, enter the DCP 1 Analog I/O 2 module serial number, and enter the DCP 1 Satlink into eSite report.
2. Update the water temperature sensor serial number in eSite report.
3. Verify the number of batteries installed and update the eSite report, if necessary.

**9463502 Port Moller, AK** **L28214** **Part 22**  
*PBM: 946 3502 B* *PBM above SD: 15.422 m*  
*GPS Bench Mark: 946 3502 H* *MSL above SD: 10.683 m*  
*GPS Observation Frequency: Every 5 years* *Last GPS Observation Performed: 09/11*  
*Dive Inspection Frequency: Every year* *Last Dive: 09/14*

1. Perform a recon to install a non-dive orifice configuration.

**9464212 Village Cove, AK** **L28214** **Part 23**  
*PBM: 946 4212 RBD 1* *PBM above SD: 9.074 m*  
*GPS Bench Mark: 946 4212 P* *MSL above SD: 0.974 m*  
*GPS Observation Frequency: Every 5 years* *Last GPS Observation Performed: 10/11*  
*Dive Inspection Frequency: Dive not needed; station inspected using waders.*

1. Verify the elevation difference between the digibub leveling point and the digibub orifice zero on an annual basis.
2. Replace zinc on each orifice pipe (the circular zinc fits 1 1/4" OD of pipe) and inspect both pipes for corrosion.
3. Replace the DCP1, DCP1 pump, and DCP2 batteries.
4. Remove the extra DCP2 XPERT Dark module, enter the vent values for both the DCP1 and DCP2 Paros sensor, enter the serial number for the DCP2 Paros sensor and enter the barometer calibration offset in eSite report.

**9468756 Nome, AK** **L28214** **Part 24**  
*PBM: 946 8756 SHEET PILE C* *PBM above SD: 5.611 m*  
*GPS Bench Mark: 946 8756 K* *MSL above SD: 1.375 m*  
*GPS Observation Frequency: Every 5 years* *Last GPS Observation Performed: 06/11*  
*Dive Inspection Frequency: Every year* *Last Dive: 08/13*

1. Verify the elevation difference between the digibub staff stop and the digibub orifices zero on an annual basis.
2. Replace the lower Paros (N1) sensor.
3. Replace the DCP 1 and DCP 2 batteries.
4. Resize the DCP 1 TSU1MIN log to 1.2 MB.
5. Replace the water temperature sensor if feasible.
6. Enter the DCP 1 and DCP 2 Analog and Digital I/O module version numbers into eSite report.
7. Enter the pump batteries onto the eSite report.
8. Enter the vent values for both the DCP 1 and DCP 2 Paros sensor in the eSite sensor notes.
9. Provide photos of the primary sensor.

**9491094 Red Dog, AK**

***PBM:*** 949 1094 A TIDAL

***GPS Bench Mark:*** 949 1094 B

***GPS Observation Frequency:*** Every 5 years

***Dive Inspection Frequency:*** Every year

**L28214**

**Part 25**

***PBM above SD:*** 4.696 m

***MSL above SD:*** 1.719 m

***Last GPS Observation Performed:*** 10/11

***Last Dive:*** 07/14

1. Verify the elevation difference between the digibub leveling point and the digibub orifice zero on an annual basis.
2. Replace the upper Paros (T1) sensor.
3. Replace the water temperature sensor.
4. Replace the batteries in DCP 1, DCP 2, and DCP 1 pump.
5. Measure the elevations of the water temperature sensor above station datum.
6. Enter the DCP 2 Digital and Analog I/O modules onto eSite report.
7. Enter the vent values for both the DCP 1 and DCP 2 Paros sensor in the eSite sensor comments field.

## 2.22 Puerto Rican Seismic Network (PRSN)

**9752619 Vieques/Isabel Seguna, PR** **L28207** **Part 50**  
*PBM: 975 2619 B* *PBM above SD: 8.862 m*  
*GPS Bench Mark: 975 2619 A* *MSL above SD: 7.463 m*  
*GPS Observation Frequency: Unknown* *Last GPS Observation Performed: 07/06*  
*Dive Inspection Frequency: Unknown* *Last Dive: Unknown*

1. Update the bench mark sketch to include all bench marks.
2. Update WinDesc bench mark files to include every bench mark description in a single file. Please refer to the guide to writing bench mark descriptions.
3. Provide all of the met sensor heights and the Met SRM.
4. Include the barometer in this year's level run.

**9753216 Fajardo, PR** **L28207** **Part 51**  
*PBM: 975 3216 B* *PBM above SD: 8.588 m*  
*GPS Bench Mark: 975 3216 F* *MSL above SD: 7.315 m*  
*GPS Observation Frequency: Unknown* *Last GPS Observation Performed: 11/11*  
*Dive Inspection Frequency: Unknown* *Last Dive: Unknown*

1. Update the bench mark sketch with all bench marks.
2. Update WinDesc bench mark files to include every bench mark description in a single file. Please refer to the guide to writing bench mark descriptions.
3. Provide all of the met sensor heights and the Met SRM.
4. Include the barometer in this year's level run.

**9754228 Yabucoa, PR** **L28207** **Part 52**  
*PBM: 975 4228 NO 4* *PBM above SD: 8.080 m*  
*GPS Bench Mark: Unknown* *MSL above SD: 3.454 m*  
*GPS Observation Frequency: Unknown* *Last GPS Observation Performed: 05/2009*  
*Dive Inspection Frequency: Unknown* *Last Dive: Unknown*

1. Update the bench mark sketch with all bench marks.
2. Update WinDesc bench mark files to include every bench mark description in a single file. Please refer to the guide to writing bench mark descriptions.
3. Provide all of the met sensor heights and the Met SRM.
4. Include the barometer in this year's level run.

**9757112 Caja de Muerto, PR** **L28207** **Part 53**  
*PBM: 975 7112 A* *PBM above SD: 10.000 m*  
*GPS Bench Mark: Unknown* *MSL above SD: Undetermined*  
*GPS Observation Frequency: Unknown* *Last GPS Observation Performed: Unknown*  
*Dive Inspection Frequency: Unknown* *Last Dive: Unknown*

1. Update WinDesc bench mark files to include every bench mark description in a single file. Please refer to the guide to writing bench mark descriptions.
2. Provide all of the met sensor heights and the Met SRM.
3. Include the barometer in this year's level run.

**9757809 Arecibo, PR** **L28207** **Part 54**  
*PBM: 975 7809 B* *PBM above SD: 8.752 m*  
*GPS Bench Mark: Unknown* *MSL above SD: 6.990 m*  
*GPS Observation Frequency: Unknown* *Last GPS Observation Performed: 12/2008*  
*Dive Inspection Frequency: Unknown* *Last Dive: Unknown*

1. Update the bench mark sketch with all bench marks.
2. Update WinDesc bench mark files to include every bench mark description in a single file. Please refer to the guide to writing bench mark descriptions.
3. Provide all of the met sensor heights and the Met SRM.
4. Include the barometer in this year's level run.

**9759412 Aguadilla, PR** **L28207** **Part 55**  
*PBM: 975 9412 NO 3* *PBM above SD: 10.000 m*  
*GPS Bench Mark: Unknown* *MSL above SD: 7.087 m*  
*GPS Observation Frequency: Unknown* *Last GPS Observation Performed: 02/08*  
*Dive Inspection Frequency: Unknown* *Last Dive: 01/12*

1. Update WinDesc bench mark files to include every bench mark description in a single file. Please refer to the guide to writing bench mark descriptions.