September 28, 2015

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

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

SUBJECT: FY 2016 Project Instructions – Coastal and Great Lakes Observing Systems

The enclosed document, "Project Instructions: Installation and Maintenance of Coastal and Great Lakes Observing Systems, for FY 2016," is forwarded for implementation.

These instructions apply to all observing systems- water level, meteorological, and real-time current meter stations for NWLON and PORTS® installed, maintained, and removed by CO-OPS and CO-OPS' IDIQ contractors. Starting with FY 2016, these instructions are distributed on a fiscal year basis. The requirements are explicit; available resources throughout the year will govern actual accomplishments at each station. The stations maintained by IDIQ contractors shall follow the requirements listed in the specific Task Order and in PART C, Section 2.0.

These Project Instructions are technical requirements provided in three parts. PART A, CO-OPS Observing System Support, and PART B, the Maintenance Requirements and References are applicable to all stations. PART C, Station Specific Requirements, provides station specific instructions for both the coastal "sea level" and Great Lakes observing systems. The station specific instructions are prioritized in descending order of importance. Field personnel will accomplish as many of the requirements as resources permit.

The 2016 Operational Station List is available for reference. The spreadsheet identifies all the operational NWLON and subordinate stations. It contains three worksheets: 1) 2016 NWLON Station Project Support Status; 2) 2016 NWLON Great Lakes Station Project Support Status; and 3) 2016 Subordinate Station Project Support Status (all other non-NWLON). The Great Lakes stations are distinguished on a separate worksheet because they support projects not common to the coastal stations. An "X" indicates which stations support the various programs and NOAA mission goals. 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 long-term bench mark network stability analysis spreadsheet is also available for reference. The spreadsheet identifies bench mark network stability issues and resolutions. The resolutions

are also documented in PART C, Section 2.0.. This spreadsheet does not include an analysis of the bench mark networks in the Great Lakes region; this region will be assessed in FY 2016.

Recently, the CO-OPS Measurement Systems Configuration Subcommittee (MSCS) approved three new Engineering Bulletins. The new bulletins along with previously released bulletins shall be applicable to all stations listed in Part C, Section 2. Descriptions of the bulletins are provided in PART C, Section 2.0.

It is emphasized that the ultimate goal of the Project Instructions is to ensure high quality data is collected at all stations and sensors continuously. The establishment of new, or the relocation of existing stations, will be assigned an appropriate priority each year. Changes in priority may occur and will be at the direction of the Director of CO-OPS.

Enclosures

cc:

All CO-OPS Personnel

FY 2016 Project Instructions for Coastal and Great Lakes Observing Systems

October 2015

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

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For Coastal and Great Lakes Observing Systems

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PART A: CO-OPS Observing Systems Support

These project instructions provide the requirements for installation, maintenance, and removal of observing systems for the CO-OPS Maritime Services Program, the Mapping and Charting Program, and the Resilience Program. This includes the National Ocean Service (NOS) National Water Level Observation Network (NWLON), Physical Oceanographic Real Time Systems® (PORTS®), Resilience projects, Hydrographic and Remote Sensing Survey Operations, and reimbursable special projects. The observing systems provide critical data to support the following activities: ensuring safe navigation; providing tidal datums for the National Nautical Charting Program and Shoreline Mapping Program; delineating the baseline from which marine boundaries are finalized; determining flow rates to support International treaties; providing National Weather Service tsunami/storm surge warnings; planning coastal resource restoration and informing coastal management decisions; and analyzing long-term sea level trends. The objective is to collect continuous, reliable, defect-free data from the observing systems to be used to generate multi-purpose products.

The NWLON and subordinate observing systems support the following four NOAA Mission Goals: Climate Adaptation and Mitigation; Weather Ready Nation; Resilient Coastal Communities and Economies and Healthy Oceans. All CO-OPS observing systems research and development, and modeling activities directly support these goals.

- **Mission Goal 1:** Resilient Coastal Communities and Economies
  Stations supporting PORTS® activities, Hydrographic and Remote Sensing 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

All NWLON and other subordinate water level and meteorological (met) stations support a variety of NOAA mission goals and projects. The Great Lakes NWLON contains 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 US Army Corp of Engineers (USACE) and Environment Canada as well as monitoring the sharing of the water for power generation between the United States and Canada.

Program Coordination for the Installation, Maintenance, and Removal of Observing Systems

NWLON Water Level Stations

Installation, maintenance, and removal of stations by CO-OPS personnel for future NWLON shall be coordinated among the CO-OPS Observing Systems Manager (OSM), the Engineering Division (ED) Branch Chief, Oceanographic Division (OD) Branch Chief, and FOD Branch Chiefs, the CO-OPS Program Management Team (PMT), and the appropriate operational personnel in ED and FOD.

The CO-OPS OSM focuses on ensuring that CO-OPS observing network infrastructure meets the operational requirements of the program managers. In consultation with the Branch Chiefs, 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®, and partner station installations and major repair and enhancement projects.

PORTS®

Installation, maintenance, and removal of stations for PORTS® shall be coordinated between the Maritime Services Program Manager, the OSM, the IDIQ Technical Representative, and FOD. Contractors or local user groups maintain nearly all PORTS® stations. FOD shall support these maintenance groups as necessary. PORTS® Met only, Air Gap, Visibility, Current Meter, and Meteorological station requirements are covered under each individual PORTS® operation and maintenance contract.

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.

CO-OPS is establishing four new PORTS® in FY 2016: Savannah PORTS®, Matagorda PORTS® Cape Cod Bay PORTS®, and Cleveland PORTS®. CO-OPS will coordinate with the local partners on the station installations and 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 relocate stations/sensors or add additional sensors to the existing PORTS® as listed below. The sensors listed will be contract installations executed using existing IDIQ contracts or local partner contracts as applicable. CO-OPS Pacific Operations Branch will install the MWWL sensors at the Tacoma PORTS® station.

- Los Angeles/Long Beach PORTS®: Installation of a new air gap sensor at Vincent Thomas Bridge
- CT DOT Hardening of New Haven and New London NWLON stations
- Delaware PORTS®: Installation of a water level station at Tioga Terminal (relocation from Tacony-Palmyra water level station)
- Delaware PORTS®: Installation of a new air gap sensor at Benjamin Franklin Bridge
- Delaware PORTS®: Salinity sensors at existing water level stations at Lewes, DE; Cape May, NJ; and Chesapeake City, MD

- Port of Tacoma PORTS®: Upgrade of the primary and backup water level sensors to MWWL sensors
- Chesapeake Bay PORTS®: Installation of a visibility sensor near the Francis Scott Key Bridge
- Narragansett PORTS®: Installation of a visibility sensor near the Providence, RI water level station
- Houston Galveston PORTS®: Installation of a current meter station at the Fred Hartman Bridge G&H (replacing the removed Exxonmobil current meter station)

Hydrographic and Remote Sensing Surveys

The requirements for the installation and removal of subordinate water level stations for NOAA in-house hydrographic and remote sensing (formerly called photogrammetric) surveys shall be coordinated between the Products and Services Branch (PSB) Hydrographic Planning Team (HPT), FOD, 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 the CO-OPS Mapping and Charting Program Manager (MCPM), the OSM, and the PSB Chief, as CO-OPS' representatives on the tri-office (OCS, NGS, and CO-OPS) survey support team . The DCP, sensor, and other equipment required for 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 (OCS NRT and OMAO Ships) or CO-OPS' IDIQ contractors shall install the subordinate stations for NOAA in-house hydrographic or remote sensing surveys. CO-OPS is responsible for maintaining control and subordinate stations for NOAA in-house hydrographic and remote sensing surveys.

Priority stations will be added to the Hydro Hot List at http://tidesandcurrents.noaa.gov/hydro_hotlist.html. For NOAA contract hydrographic 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 Remote Sensing 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.

Control stations designated on both the NWLON and subordinate operational station lists shall provide support for hydrographic and remote sensing 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 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 remote sensing 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.

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. The Hydrographic Planning Team (HPT) lead is the CO-OPS point of contact for hydro project planning activities and other operational support. Problems with the station installation, maintenance and/or operation shall be reported to FOD whom shall provide a corrective course of action. The Configuration and Operational Engineering Team (COET) lead is designated as the technical point of contact for subordinate station installation, operation, and maintenance requirements and metadata documentation for NOAA in-house and contract hydrographic and remote sensing survey projects, and may be contacted for daily activities related to hydro operations.

CO-OPS is in the process of transitioning the Microwave Water Level (MWWL) sensor to operations and where the transition is approved for FY 2016 the stations are listed in Part C. Generally, the acoustic or MWWL system shall be preferred for hydrographic or remote sensing subordinate station installations. In cases where acoustic wells or MWWL sensor support arm cannot be installed due to terrain or in ice environment, installation of a portable digital bubbler system is authorized. For projects in the Great Lakes, the shaft-angle encoder sensor is preferred.

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. The training class shall cover all aspects of tide station installation, operation, and maintenance. In addition to HPT, ED, OD, and FOD shall participate, as appropriate, in the annual OCS field procedures workshop held each winter to coordinate survey or training activities.

Resilience Projects

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 the Resilience Program Manager, the OD Applied Analysis Team (AAT) Lead, the OSM, and the Resilience project team, as well as any additional operational ED and FOD personnel, as appropriate.

The CO-OPS Partner station list will identify stations supporting projects that are part of the Resilience Program. Continuous data collection at these sites, both NWLON and subordinate stations, is critical to the success of the projects. See the following link for the list of stations http://tidesandcurrents.noaa.gov/coastal.shtml. See Part C, Section 2.0 for station specific requirements for the new water level stations and existing stations supporting this program.

Special Projects and Contract Projects

Installation, maintenance, and removal of NWLON stations and subordinate stations for special projects shall be coordinated between the Task Manager, Project Lead, the PMT, the OSM, and the ED and FOD Branch Chiefs, and shall follow the guidelines and specifications provided in "Standing Project Instructions for the Coastal and Great Lakes Water Level Stations".

The stations identified in the following table are both reimbursable and non-reimbursable projects that are operating or will be operating in FY 2016 in support of reimbursable, partnership, and/or special projects. Specific station requirements, where applicable, are provided for these stations being maintained by CO-OPS. A complete list of operational CO-OPS partner and special project stations can be found on the CO-OPS Partners Stations List http://tidesandcurrents.noaa.gov/coastal.

Project Station Number	Station Name	Partner	Funding Number	Control Station Number and Name
8447435	Chatham, MA	NPS	TBD	8449130 Nantucket Island, MA
9411406	Platform Harvest, CA	NASA/JPL	N8R1SE3-P01	9410660 Los Angeles, CA
9414958	Bolinas Lagoon, CA	MCOSD	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
8762483	I-10 Bonnet Carre Floodway, LA	NWS		TBD
8762484	Frenier Landing, LA	NWS		N/A
9414575	Coyote Creek, CA	USACE	N/A	9414750 Alameda, CA
9468333	Unalakleet, AK	NWS		TBD

USACE Comprehensive Evaluation of Project Datums (CEPD) Projects

In FY 2013, CO-OPS signed a MOU with the USACE to provide support to the 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 the MCPM, CO-OPS Agreements Coordinator, the PSB Chief and the EDB Chief. Artara Johnson (COET) and Kelly Kriner (Datums Team) are designated respectively as technical points of contact for documentation and datum computation. They should be contacted for day-to-day operations.

Texas Coastal Ocean Observing Network (TCOON)

CO-OPS has signed a MOA with the USACE Galveston District to manage, operate, maintain, repair, and disseminate water level data observed by the TCOON. The TCOON consists of thirty stations located along the Texas coastline. The network collects water level data along with other oceanographic and meteorological data. Coordination of the maintenance and repair of the stations is done through the MCPM, the CO-OPS Agreements Coordinator, the OSM, the Task Manager, the OD Branch Chief, the ED Branch Chiefs, and the FOD Branch Chief. See Part C, Section 2.0., for specific requirements for each site.

National Park Service (NPS)

The Department of the Interior, National Park Service (NPS) and the Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service has entered into an interagency agreement. Under this agreement, CO-OPS will provide products and services to include station planning, design, testing, installation, operation and maintenance, bench mark recovery and/or installation, leveling, technical training, data acquisition, data processing and other related products and services. NPS is planning to install five long-term stations with one possible location being Snug Harbor, AK. The other locations will be determined later. The coordination of new projects is coordinated between the MCPM, the CO-OPS Agreement Coordinator, the OSM, the Task Manager, the OD Chief, the ED Chief, and the FOD Chief. Part C, Section 2.0 documents the station specific instructions.

PART B: MAINTENANCE REQUIREMENTS AND REFERENCES

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 http://intranet.nos-tcn.noaa.gov/roslibrary/ViewDoc?d=543 and the station specific requirements in PART C, Section 2.0. The 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 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 FOD and the ED will consult and recommend a course of action. Recommendations affecting performance measures and milestones must be approved by CO-OPS' Director.

All other applicable reference documents are provided in the Standing Project Instructions, Section 1.2 and can be retrieved from the CO-OPS Reliable Operating System (ROS) library http://intranet.nos-tcn.noaa.gov/roslibrary/Welcome or the CO-OPS Field Library http://tidesandcurrents.noaa.gov/fieldlibrary/Welcome. The ROS library is only accessible to CO-OPS personnel. The CO-OPS Field Library is accessible to both FOD and CO-OPS IDIQ contractors.

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.

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.

PART C: STATION SPECIFIC REQUIREMENTS

1. Field Operations Division (FOD) Maintenance Support

It is the responsibility of FOD to assess available resources and perform routine and unscheduled maintenance at any station with operational problems to restore the site to full operational capabilities with a minimal loss of data. FOD shall consult with ED, as necessary, when making operational decisions, planning annual inspections, or unscheduled 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.

FOD shall develop and maintain an annual operations plan based upon the monthly schedule of station maintenance, and the work to be accomplished as required in PART C, Section 2.0, making the best use of available resources. Assigned FOD Team Leaders, Regional Coordinators, and contract oversight personnel shall periodically update the applicable CO-OPS field calendar.

The FOD and COET will hold pre-inspection meetings to discuss the individual station specific requirements. The agreed upon station specific instructions will be documented in the Dynamic Project Instructions. (This meeting is applicable only for FOD maintained stations.)

Contractors shall coordinate their schedules through their contract oversight specialist, who in turn will coordinate with FOD to enter the contractors' maintenance schedules on the applicable field calendar.

There are many online resources available to personnel to assist in the evaluation of station and sensor status. One resource is the CO-OPS Diagnostic tool capable of plotting single and multiple stations sensors', checking the configuration of a station, and checking the status of satellite transmissions, and more. For CO-OPS IDIQ contractors, access to this online resource will have to be granted by the Planning Monitoring and Analysis Branch (PMAB) Chief. Contact the CO-OPS Contracting Office Representative (COR) or the Technical Representative for more information. Here is the link to the tool https://extranet.co-ops.nos.noaa.gov/cgi-bin/diagtool/diag_login.cgi.

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

1.1 Emergency Repairs and Operational Station Status

FOD and/or IDIQ contractors shall immediately address emergency repairs to stations with sensor/system problems; routine maintenance may follow later. In situations where stations require emergency repairs such that data transmission to CO-OPS database ceases but the sensors are still collecting valid data, all efforts shall focus on the data download from the station's DCP in order to fill all data gaps. The field party shall provide the data to COET for ingestion into the database. After data ingestion is complete, the data are available for data processing and product generation. The field crew should be performing preventative maintenance on the sensors at a station during the regularly scheduled maintenance in an effort to prevent the need to perform emergency maintenance visits in between scheduled visits.

1.2 FY 2016 Diving Requirements for FOD Maintained Stations

Part C, Section 2.0 provides the station specific dive frequency and last dive information for each station. 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 FY 2016; changes due to known funding and resource limitations and are not a permanent change in requirements.

1.3 Long-Term Bench Mark Network Stability

Per the Standing Project Instructions for Coastal and Great Lakes Water Level Stations, FOD and IDIQ contractors are required to perform annual leveling at NWLON and subordinate water level stations. COET will provide FOD and IDIQ contractors bench mark stability reports that document the active bench marks in the network, details each bench mark's elevation history, and indicates which marks were not leveled to in the previous year. This information will aid in ensuring all marks are leveled to every two years. It also identifies the bench marks with elevation changes of more than 6mm with respect to the Primary Bench Mark (PBM) and/or more than 9mm over a two epoch period. The resolutions to address the bench marks with elevation changes larger than the allowable threshold are included in Part C, Section 2.0 for each station.

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 reports upon request.

The NWLON stations listed below have notable bench mark network stability concerns to be addressed during the FY 2016 maintenance:

8760922 Pilots Station, SW Pass
8771341 Galveston Bay Entrance, North Jetty
8761724 Grand Isle
9410660 Los Angeles
8726724 Clearwater Beach
9452400 Skagway
8531680 Sandy Hook
8534720 Atlantic City
8594900 Washington, DC
8467150 Bridgeport, CT
9063007 Ashland Ave., Niagara Falls, Niagara R. NY
9075080 Mackinaw City, Straits of Mackinac MI

1.4 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, COET 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 Part C, Section 2.0 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.

1.5 New, Upgraded or Relocated Stations

1.5.1 Upgraded Stations

The following stations need facilities upgrades as described. See PART C, Section 2.0., for specific requirements at each site.

8467150 Bridgeport, CT - hardening of hurricane Sandy affected station
8465705 New Haven, CT - hardening with CDOT funding
8461490 New London, CT - hardening with CDOT funding
8530680 Sandy Hook, NJ - hardening of hurricane Sandy affected station (Contract)
9410170 San Diego, CA – prepare for the upcoming relocation of the water level station sometime in the near future
9446484 Tacoma, WA - replace the Aquatrak sensor with a MWWL sensor
9752235 Culebra, PR – station rebuild

1.5.2 Microwave Water Level Sensor Transition to Operations

The installation or an upgrade of the primary sensor will be performed at the NWLON stations identified below. See PART C, Section 2.0., for specific requirements at each site.

1820000	Kwajalein, Marshall Islands
8443970	Boston, MA
8452660	Newport, RI
8461490	New London, CT
8638863	Chesapeake Bay Bridge Tunnel, VA
8720030	Fernandina Beach, FL
8724580	Key West, FL
8726520	St. Petersburg, FL
8761305	Shell Beach, LA
8762482	West Bank, LA
8771450	Galveston Pier 21, TX
9410840	Santa Monica, CA
9415144	Port Chicago, CA

9440910 Toke Point, WA
9440422 Longview, WA
9751401 Lime Tree Bay, PR
9755371 San Juan, PR

The following NWLON stations below may require a reconnaissance in preparation for the installation of a Microwave water level sensor in FY17. See PART C, Section 2.0., for specific requirements at each site.

1619910 Sand Island, Midway Island
8720218 Mayport, FL
8721604 Trident Pier, FL
8723214 Virginia Key, FL
8723970 Vaca Key, FL
8725110 Naples, FL
8725520 Fort Myers, FL
9414290 San Francisco, CA
9419750 Crescent City, CA
9431647 Port Orford, OR
9452400 Skagway, AK
9452210 Juneau, AK

1.5.3 Upgraded Stations through the NOAA Climate Observation Division (COD)

The NOAA Climate Program Office (CPO), Climate Observation Division (COD) 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 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 2016 NWLON Station Project Support Status" of the Excel file "2016 Station Operational Lists.xls" identifies existing co-located NWLON/CORS sites.

8418150 Portland, ME
8452660 Newport, RI
8534720 Atlantic City, NJ (Scoped, but co-location is not possible; no action in FY 2016)
8670870 Fort Pulaski, GA
8723214 Virginia Key, FL (On Hold - Siting and building ownership issues)
9414290 San Francisco, CA (In permitting - FY 2016 or FY 2017 installation)
9455090 Seward, AK (Planned - FY 2016 funding from NOAA CPO)
9461380 Adak, AK (Scoping - FY 2016 thru FY2017)
9462620 Unalaska, AK (Scoping - FY 2016 thru FY2017)

9468756 Nome, AK (Scoping - FY 2016 thru FY2017)
9497645 Prudhoe Bay, AK (Planned - FY 2016 funding from NOAA CPO)
9755371 San Juan, PR (Planned for FY 2016)

FY 2016 is the fifth year in a five-year plan to complete the co-location of a CORS station on all Global Seal Level Observing System (GLOSS) stations (that are NWLON sites). Co-location includes both installation of new antennas and making level connections between existing/new bench marks and the tide station. The logistics associated with siting and permitting CORS stations has taken longer than anticipated with many stations. Therefore, the five-year plan will be extended until the GLOSS list can be completed where feasible.

Stations in Alaska will be the major focus in FY 2016-2017. NGS is planning to travel in September 2015 to further coordination associated with the siting and permitting at Seward and Prudhoe Bay. The three other Alaska CORS site locations (Adak, Unalaska, and Nome) will be scoped in FY 2016, with installation potentially extended to FY 2018. In addition to Alaska stations, NGS will also continue coordination associated with San Francisco, CA and San Juan, PR. San Francisco siting and permitting progressed in FY 2015, but installation is not likely until FY 2016 or FY 2017. In FY 2015, the Kwajalein, Bermuda, and Sitka CORS stations were installed. Virginia Key is on hold due to permitting and building ownership issues.

In addition, the University of Hawaii is leading the CORS installation for Sand Island, Midway Islands and Pago Pago, American Samoa, with all co-locations being complete by October 2016.

CO-OPS will report the progress of the reconnaissance and installation of the CORS to the CPO throughout the year, and input will be sought on the prioritization of the planned sites.

The following NWLON stations have a CORS site co-located or near the station.

1619910* Sand Island, Midway Islands
1770000* Pago Pago, American Samoa
1820000 Kwajalien
1890000* Wake Island
2695540 Bermuda
8410140 Eastport, ME
8452660 Newport, RI
8518750 Battery, NY
8631044 Wachapreague, VA
8632200 Kiptopeke, VA
8651370* Duck, NC
8571892 Cambridge, MD
8720030 Fernandina Beach, FL
8726520 St. Petersburg, FL
8727520 Cedar Key, FL
8729840 Pensacola, FL
8761305 Shell Beach, LA
8761724 Grand Isle, LA

8764228 LAWMA, Armerada Pass, LA
8768094 Calcasieu Pass, LA
9052030 Oswego, NY
9063020 Buffalo, NY
9063063 Cleveland, OH
9063079 Marblehead, OH
9075065 Alpena, MI
9076027 West Neebish, MI
9087023 Ludington, MI
9087044 Calumet, IL
9099018 Marquette, MI
9099090 Grand Marais, MN
9419750 Crescent City, CA
9435380* South Beach, OR
9451600* Sitka, AK

*Indicates stations that are part of the GLOSS Network, http://www.gloss-sealevel.org/publications/documents/GLOSS_Implementation_Plan_2012.pdf

1.6 Stations with Malfunctioning Primary or Backup Sensors

Stations with malfunctioning primary sensor or backup bubbler (B1) sensors listed on the CORMS control panel require repair or replacement in a timely manner. 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. The CORMS control panel is an internal CO-OPS tool. CO-OPS IDIQ contractors are provided daily operational station and sensor status, issue and error reports via e-mail.

1.7 Stations Supporting NOAA Tsunami and Storm Surge Requirements

The "2016 Station Operational Lists" identifies 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 17 Tsunami stations listed below are funded by NWS within the CO-OPS base budget.

1770000 Pago Pago, American Samoa
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
9759394 Mayaguez, PR
9759938 Mona Island, PR

1.8 Global Sea Level Observing Program (GLOSS)

CO-OPS is responsible for maintenance at the following station:

2695540 Bermuda, St. Georges Island

There are 34 stations identified as critical for Climate (GLOSS) Program Monitoring, 33 of which are NWLON. Bermuda is the 34th station, and is both a Global Sea Level and tsunami-capable station, but it is not a part of the NWLON.

CO-OPS is also responsible for technical support to other countries, as approved.

1.9 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). In FY 2016, CO-OPS will take over the responsibilities for the operation and maintenance of 30 TCOON stations.

Technical support shall also be provided to the Great Lakes Observing System 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) in 2007. PRSN signed a new Memorandum of Agreement with CO-OPS in FY 2014. CO-OPS has reached an agreement with PRSN to incorporate the Mayaguez station into the NWLON. The Mayaguez NWLON station was installed in CY 2015. PRSN has installed a station at Aguadilla, replacing Mayaguez in the PRSN. PRSN operates water level stations in other locations outside of Puerto Rico for which CO-OPS has not committed assistance.

The Resilience Program Manager shall coordinate CO-OPS support for this project with CO-OPS Branch Chiefs. There is no funding identified for this effort.

1.10 Current Meter Upgrades

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 continue to perform ADCPX upgrades at seven bottom mounted current meter stations in FY 2016 completing the upgrades of the all side lookers and bottom mounted ADCP stations. The PORTS partners and the contracts have funding to do these upgrades in FY 2016. Systems Support and Evaluation Branch (SSEB) is working on the resolution of the cable length issue for RS 432.

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 – NY/NJ PORTS® - Sandy funds to replace equipment

1.11 Great Lakes Current Meters

The following three current meters (side lookers) are maintained 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 - 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 specific requirements, in addition to the required maintenance listed in the Standing Project Instructions (see PART B), are based on the information obtained from the review of field documentation, data processing results, datum records, and the results of continuous data monitoring. FOD and IDIQ contractors are responsible for reviewing the operational status reports, e-mails, operational issues tickets, and CORMS morning reports to determine recent station problems as part of the staging process for the annual inspection. Additional requirements or changes, as needed, will be addressed in an amendment to these Project Instructions.

Recently, the CO-OPS MSCS will release three Engineering Bulletins addressing the following maintenance activities identified below. The new bulletins along with previously released bulletins shall be applicable to all observing systems listed in Part C, Section 2.

- Verifying the GOES format file in all DCPs to ensure the backup battery voltage flag is correctly set (Engineering Bulletin 15-001, Correct GOES Flag for Backup Battery Voltage)
- Upgrading of all Satlink 2 GOES transmitters to firmware version 7.24 (Engineering Bulletin 15-002: Upgrade the Satlink2 GOES Satellite Transmitters to v7.24)
- Swapping out all compact flash storage cards in the Xpert1 DCPs for units with correctly formatted log files (Engineering Bulletin 15-003: Perform Storage Card Swap on Xpert1 DCPs Running Xpert OS V2.10.0.1)

The L-numbers for digital leveling are for calendar year 2015 (the 1st quarter of FY 2016) and 2016 (the 2nd through 4th quarters of FY 2016). 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, Gulf Coast, Great Lakes, Bermuda and the Caribbean Islands Stations
2.2.	Air-Sea Systems-Task 14-01	Lower MS River PORTS® (Funded through 2/29/2016)*
2.3.	Air-Sea Systems -Task 14-01	Port Fourchon PORTS® (Funded through 3/4/2016)*
2.4.	Air-Sea Systems -Task 14-01	Pascagoula PORTS® (Funded through 06/29/2016)*
2.5.	Woods Hole Group-Task 14-01	Lake Charles PORTS® (Funded through 06/29/2016)*
2.6.	Woods Hole Group-Task 14-02	Houston/Galveston PORTS® (Funded through 1/31/2016)*
2.7.	Woods Hole Group-Task 14-02	Texas NWLON Stations (Funded through 05/31/2016)*
2.8.	Conrad Blucher Institute	Sabine Neches PORTS®
2.9.	Woods Hole Group-Task 14-03	Narragansett PORTS® (Funded through 6/30/2016)*
2.10.	Woods Hole Group-Task 14-03	New London PORTS® (Funded through 6/30/2016)*

2.11. Woods Hole Group-Task 14-03	New Haven PORTS® (Funded through 6/30/2016)*
2.12. Woods Hole Group-Task 14-03	NY/NJ PORTS® (Funded through 7/21/2016)*
2.13. Woods Hole Group-Task 14-03	Delaware River and Bay PORTS® (Funded through 8/31/2016)*
2.14. Woods Hole Group-Task 14-03	Chesapeake Bay PORTS® (Funded through 6/30/2016)*
2.15. Woods Hole Group-Task 14-03	Charleston PORTS® (Funded through 06/30/2016)*
2.16. Woods Hole Group	Jacksonville PORTS®
2.17. FOD/POB	Hawaii, Pacific Islands, West Coast, and Alaska Stations
2.18. JOA Surveys-Task 14-04	Western Alaska Stations (10) (Funded through 9/30/2016)*
2.19. JOA Surveys – Task 15-03	Unalakleet
2.20. Texas Coastal Oceanographic Observing Network (TCOON)	
2.21. Jacobsen Pilots	Los Angeles/Long Beach PORTS®
2.22. San Francisco Marine Exchange (SFMX)	San Francisco Bay PORTS®
2.23. Humboldt University Humboldt Bay PORTS®	
2.24. Puerto Rican Seismic Network (PRSN) 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 (2015/2016), 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, Gulf Coast, Great Lakes, Bermuda and the Caribbean Islands Stations

2.1.1 FOD/AOB – Maine Stations

8410140 Eastport, ME **L28187/L38302** **Part 1**
PBM: 841 0140 TIDAL 4 (PD0007) ***PBM above SD:*** 16.604 m
GPS Bench Mark: EASTPORT 1989 (PID1179) ***MSL above SD:*** 4.420 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 6/15
Dive Inspection Frequency: Every year ***Last Dive:*** 08/12

1. Establish and level two bench marks of stability Class B or higher marks, designation/stamping as follows: 841 0140 M/0140 M 2016 and 841 0140 N/0140 N 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.

8411060 Cutler Farris Wharf, ME **L28187/L38302** **Part 6**
PBM: 841 1060 TIDAL 10 ***PBM above SD:*** 10.751 m
GPS Bench Mark: 841 1060 A (AJ2727) ***MSL above SD:*** 3.860 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 08/11
Dive Inspection Frequency: Every year ***Last Dive:*** 08/11

1. Address the Aquatrak sensor data bottoming out at low tide issue.
2. Perform a reconnaissance to move the station due to pier construction.
3. **Unresolved from 2014:** Take digital photos of the face, setting, and two directional views of bench mark STEEL ROD.

8413320 Bar Harbor, ME **L28187/L38302** **Part 3**
PBM: 841 3320 D ***PBM above SD:*** 7.001 m
GPS Bench Mark: 841 3320 TIDAL 1 (AI8315) ***MSL above SD:*** 2.786 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 06/15
Dive Inspection Frequency: Every year ***Last Dive:*** 07/12

1. Adjust the solar panels to eliminate shading issues.
2. Install new cover for light fixture inside of tide house.
3. Secure shelter bolts. Replace the left side bolts holding the shelter with two ¾ -inch flat washers that are 3 inches in diameter.
4. Include bench marks 841 3320 B, 841 3320 TIDAL 11, and 841 3320 TIDAL 1 in the level run.

8418150 Portland, ME **L28187/L38302** **Part 4**
PBM: TIDAL 31 STA 84 (OC0005) ***PBM above SD:*** 8.406 m
GPS Bench Mark: 841 8150 TIDAL 3 ***MSL above SD:*** 4.113 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 06/15
Dive Inspection Frequency: Every year ***Last Dive:*** 08/08

1. **Unresolved from 2014 FUNDING DEPENDENT:** Remove the CT well if no longer needed. To remove the CT Well a dive is required.
2. **Unresolved from 2014:** 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. Coordinate with Miss Utility. Check with Portland Public Services, 55 Portland St. 1-207-874-8801 for assistance.
3. **Unresolved from 2014:** Establish and level one bench mark of stability Class B or higher, in the grassy area of the Promenade Trail along Commercial Street and Thame Street, designation/stamping as follows: 841 8150 G/8150 G 2016. Check with Portland Public Services, 55 Portland St. 1-207-874-8801, for assistance with reconnaissance.
4. **Unresolved from 2014:** Recover and include bench mark TIDAL 38 STA 84 and 841 8150 TIDAL 3 in the level run; TIDAL 38 STA 84 was not leveled for more than two years.
5. Take face, setting, and location photos for any newly established marks.
6. Update the bench mark diagram to include any newly established marks.

8419317 Wells, ME (Resilience) **L28187/L38302** **Part 5**
PBM: 841 9317 PUMP ***PBM above SD:*** 10.000 m
GPS Bench Mark: 841 9317 A ***MSL above SD:*** 5.954 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 06/15
Dive Inspection Frequency: Every year ***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 FUNDING DEPENDENT:** Remove the CT well. Prepare to dive to lower clamp/bracket.

2.1.2 FOD/AOB – New Hampshire Stations

8423898 Fort Point, NH **L28188/L38303** **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

8443970 Boston, MA **L28189/L38304** **Part 1**
PBM: K 12 (MY0555) ***PBM above SD:*** 6.858 m
GPS Bench Mark: 844 3970 D TIDAL (AJ4030) ***MSL above SD:*** 2.660 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 07/10
Dive Inspection Frequency: Every year ***Last Dive:*** 06/15

1. Coordinate with GSA to relocate the station due to impending construction of the sea wall.
2. Install an approved MWWL sensor; if any structural modifications are required seek engineering support and Field Engineering Review Subcommittee (FERS) approval.
3. Repair, if necessary, the small crack on the ceiling of the tide house.
4. Establish and level a bench mark of stability class B or higher mark, designation/stamping as follows: 844 3970 F/3970 F 2016.
5. Take face, setting, and location photos for any newly established marks.
6. Update the bench mark diagram to include any newly established marks.

8447435 Chatham, MA **L28189/L38304** **Part 5**
PBM: 844 7435 B (AA7166) ***PBM above SD:*** 5.861 m
GPS Bench Mark: 844 7435 B TIDAL ***MSL above SD:*** 1.974 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every year ***Last Dive:*** 08/12

1. Install a polymer (PVC) and fiber bolts. Parallel plates were missing due to galvanic corrosion.
2. Resolve freezing issues during winter season.

8447930 Woods Hole, MA **L28189/L38304** **Part 3**
PBM: 844 7930 B TIDAL (AJ4031) ***PBM above SD:*** 3.397 m
GPS Bench Mark: 844 7930 B TIDAL (AJ4031) ***MSL above SD:*** 1.096 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every year ***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.

8449130 Nantucket, MA **L28189/L38304** **Part 4**

PBM: 844 9130 TIDAL N ***PBM above SD:*** 3.125 m

GPS Bench Mark: 844 9130 N TIDAL ***MSL above SD:*** 1.454 m

GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 07/15

Dive Inspection Frequency: Every year ***Last Dive:*** 07/15

1. Include bench mark 844 9130 TIDAL 22 1934 in the leveling run.
2. Establish and level one bench mark of stability class B or higher, designation/stamping as follows: 844 9130 R/9130 P 2016
3. Take face, setting, and location photos for any newly established marks.
4. Update the bench mark diagram to include any newly established marks.

2.1.4 FOD/AOB – Rhode Island Stations

8452660 Newport, RI (PORTS) **L28190/L28305** **Part 1**
PBM: 845 2660 L ***PBM above SD:*** 4.113 m
GPS Bench Mark: 844 9130 L ***MSL above SD:*** 1.106 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 10/09
Dive Inspection Frequency: Every year ***Last Dive:*** 06/15

1. Install an approved MWWL sensor; if any structural modifications are required seek engineering support and Field Engineering Review Subcommittee (FERS) approval.
2. Provide hand held GPS positions for the station.

2.1.5 FOD/AOB – Connecticut Stations

8467150 Bridgeport, CT **L28191/L28306** **Part 3**
PBM: 846 7150 E ***PBM above SD:*** 6.195 m
GPS Bench Mark: 846 7150 D TIDAL (AJ4034) ***MSL above SD:*** 1.708 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 11/09
Dive Inspection Frequency: Every year ***Last Dive:*** 06/12

1. Install an approved MWWL sensor, once area construction is complete; if any structural modifications are required, seek engineering support and Field Engineering Review Subcommittee (FERS) approval.
2. Establish and level two new bench marks of stability class B or higher and two marks of stability class C or higher, during or after the station relocation, designation/stamping as follows: 846 7150 G/7150 G 2016, 846 7150 H/7150 H 2016, 846 7150 J/7150 J 2016, and 846 7150 K/7150 K 2016.
3. Resolve missing data from the backup DCP referring to Jira ticket OPS-754.
4. Take face, setting, and location photos for any newly established marks.
5. Update the bench mark diagram to include any newly established marks.
6. **Unresolved from 2014:** Measure the elevation of the water temperature sensor above Station Datum.
7. Provide hand held GPS positions for the station.

2.1.6 FOD/AOB – New York Stations

8510560 Montauk, NY **L28192/L28307** **Part 1**
PBM: 851 0560 K (AH6726) ***PBM above SD:*** 3.937 m
GPS Bench Mark: TIDAL 9 STA 2 50 (LW0831) ***MSL above SD:*** 1.554 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 09/10
Dive Inspection Frequency: Every year ***Last Dive:*** 06/14

1. Relocate the solar panels and/or connect the station to A/C power.
2. Provide met sensor heights.
3. Take digital photos of the station and the sensors in accordance with Section 2.9 of the Standing Project Instructions.
4. Provide hand held GPS positions for the station.

851xxxx Turkey Point, NY(Resilience) **L28192/L28307** **Part 7**
PBM: Undetermined ***PBM above SD:*** Undetermined
GPS Bench Mark: Undetermined ***MSL above SD:*** Undetermined
GPS Observation Frequency: Undetermined ***Last GPS Observation Performed:*** n/a
Dive Inspection Frequency: Undetermined ***Last Dive:*** n/a

1. Coordinate the station 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 **L28193/L28308** **Part 2**
PBM: 853 4720 F ***PBM above SD:*** 10.554 m
GPS Bench Mark: 853 4720 F ***MSL above SD:*** 2.1.216 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 06/15
Dive Inspection Frequency: Every year ***Last Dive:*** 06/15

1. Include bench marks 853 4720 G, 853 4720 H TIDAL, and 27659 in the level run.
2. Resolve the eminent danger to APX enclosure/equipment from the falling light pole that is breaking free of the pier.
3. Repair/Replace the APX enclosure.
4. Replace the GOES antenna U-bolts.

2.1.8 FOD/AOB – Maryland Stations

8570283 Ocean City Inlet, MD **L28196/L28311** **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 STA, F104 RESET, 857 0283 OCM 1B, 857 0283 OC 1, 857 0283 OC 2, and SPEICHER in the level run.
2. Perform a reconnaissance for a bench mark of stability class B or higher to replace bench mark 857 0283 OC 2.
3. Take face, setting, and location photos for any newly established marks.
4. Update the bench mark diagram to include any newly established marks.

8571421 Bishops Head, MD **L28196/L28311** **Part 11**
PBM: K 59 ***PBM above SD:*** 9.657 m
GPS Bench Mark: 857 1421 GRANGER ***MSL above SD:*** 9.128 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every year ***Last Dive:*** 06/15

1. **Unresolved from 2014:** Establish and level two bench marks of stability Class B or higher marks, designation/stamping as follows: 857 1421 E/1421 E 2016 and 857 1421 F/1421 F 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.
4. **Unresolved from 2014:** Take face, setting, and location photos from two cardinal directions of bench mark 857 1421 D.
5. Replace the wind bird nose cone.
6. Inspect solar panels and charging components on DCP2.
7. Replace the DCP2 battery.

8571892 Cambridge, MD **L28196/L28311** **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. Perform a reconnaissance to relocate the station due to the current condition of the pier.
2. **Unresolved from 2014:** Recover or establish and level one bench mark of stability Class B or higher marks, designation/stamping as follows: 857 1892 H/1982 H 2016.
3. Take face, setting, and location photos for any newly established marks.
4. Update the bench mark diagram to include any newly established marks.
5. **Unresolved from 2014:** 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.

2.1.9 FOD/AOB – Virginia Stations

8631044 Wachapreague, VA **L28198/L28313** **Part 1**
PBM: 863 1044 G ***PBM above SD:*** 2.787 m
GPS Bench Mark: 863 1044 G ***MSL above SD:*** 1.401 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 04/15
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. **Unresolved from 2014:** Verify the MWWL and Aquatrak data comparison analysis is complete and accepted by the MWWL TOP Committee. If approved, remove the Aquatrak, associated DCP (if applicable), and assign the DCP associated with the MWWL sensor as DCP1.
2. **Unresolved from 2014:** Verify the Druck sensor serial number.
3. Relocate the GPS antenna connected to the XPERT DCP.

8635027 Dahlgren, Naval Proving Ground, VA **L28198/L28313** **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 will replace the destroyed Colonial Beach NWLON station.

2.1.10 FOD/AOB – North Carolina Stations

8651370 Duck, NC **L28199/L28314** **Part 1**
PBM: 865 1370 B TIDAL, (FW0688) ***PBM above SD:*** 10.061 m
GPS Bench Mark: 865 1370 C (FW0686) ***MSL above SD:*** 6.202 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 03/14
Dive Inspection Frequency: Every year ***Last Dive:*** 03/13

1. Include both the existing Aquatrak and MWWL sensors in all future leveling and download all data from the DCPs to support the long term microwave data comparison.
2. **Unresolved from 2014:** Repair or Remove the conductivity sensor. Report the status of the conductivity sensor.
3. Replace the wind bird nose cone for the primary and redundant station.
4. Include the barometer in the level run. Update the elevation in eSite report.

8652587 Oregon Inlet Marina, NC **L28199/L28314** **Part 5**
PBM: 865 2587 NO 3 TIDAL (EX0150) ***PBM above SD:*** 5.214 m
GPS Bench Mark: 865 2587 TIDAL A ***MSL above SD:*** 0.965 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 03/14
Dive Inspection Frequency: Every year ***Last Dive:*** 03/13

1. Include bench marks 865 2587 NC12 35, 865 2587 TIDAL 1, and 865 2587 TIDAL 2 in the level run.
2. Provide hand held GPS positions for the station.

8654467 USCG Station Hatteras, NC **L28199/L28314** **Part 6**
PBM: 865 4467 C ***PBM above SD:*** 10.000
GPS Bench Mark: H 1 NC 79 ***MSL above SD:*** 8.431
GPS Observation Frequency: Every 5 years ***Last GPS Observation Frequency:*** 04/10
Dive Inspection Frequency: Every year ***Last Dive:*** 03/12

1. Report the condition of the Met mast base plate.
2. Establish and level one bench mark of stability Class B or higher, designation/stamping as follows: 865 4467 E/4467 E 2015.
3. Take face, setting, and location photos for any newly established marks.
4. Update the bench mark diagram to include any newly established marks.

8656483 Duke Marine Lab, NC **L28199/L28314** **Part 3**
PBM: 865 6483 NO 11 (AI9505) ***PBM above SD:*** 3.097 m
GPS Bench Mark: 865 6483 E TIDAL (DE7961) ***MSL above SD:*** 1.083 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 08/08
Dive Inspection Frequency: Every year ***Last Dive:*** 11/14

1. Perform a reconnaissance to relocate the station due to pier construction.
2. Repair the phone line.
3. **Unresolved from 2014:** Take face, setting, and directional photos of bench mark NCCOS BEAUFORT.
4. Provide hand held GPS positions for the station.

8658120 Wilmington, NC **L28199/L28314** **Part 4**
PBM: 865 8120 D ***PBM above SD:*** 2.454 m
GPS Bench Mark: 865 8120 C TIDAL RM 1 (EA3063) ***MSL above SD:*** 1.490 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 04/14
Dive Inspection Frequency: Every year ***Last Dive:*** 12/14

1. **Unresolved from 2014:** 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.

8658163 Wrightsville Beach, NC **L28199/L28314** **Part 11**
PBM: 865 8163 A ***PBM above SD:*** 10.000 m
GPS Bench Mark: C 163 (EA0631) ***MSL above SD:*** 6.415 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 4/14
Dive Inspection Frequency: Every year ***Last Dive:*** 01/15

1. No additional requirements.

2.1.11 FOD/AOB – South Carolina Stations

8661070 Springmaid Pier, SC **L28200/L28315** **Part 1**
PBM: 866 1070 J TIDAL (DD1542) ***PBM above SD:*** 11.948 m
GPS Bench Mark: K 137 (DD0853) ***MSL above SD:*** 9.754 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 9/12
Dive Inspection Frequency: Every year ***Last Dive:*** 8/12

1. **Unresolved from 2014:** Recover or establish and level two bench marks of stability Class C or higher, designation/stamping as follows: 8661070 N/1070 N 2016 and 8661070 P/1070 P 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.
4. **Unresolved from 2014:** 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.
5. Provide hand held GPS positions for the station.

8662245 Oyster Landing, SC (Resilience) **L28200/L28315** **Part 8**
PBM: 866 2245 A TIDAL (DD1345) ***PBM above SD:*** 2.962 m
GPS Bench Mark: 866 2245 A TIDAL (DD1345) ***MSL above SD:*** 2.031 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 8/12
Dive Inspection Frequency: Every year ***Last Dive:*** 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:** Relocate the protective well.
3. **Unresolved from 2014:** Take photos of the DCP's, the primary water level sensor and the protective well.

2.1.12 FOD/AOB – Savannah PORTS®

8670870 Fort Pulaski, GA **L28201/L28316** **Part 1**
PBM: P 323 (CK0694) ***PBM above SD:*** 4.756 m
GPS Bench Mark: 867 0870 TIDAL 5 (CK0697) ***MSL above SD:*** 2.230 m
GPS Observation Frequency: Every year ***Last GPS Observation Performed:*** 12/13
Dive Inspection Frequency: Every year ***Last Dive:*** 12/14

1. Establish and level two bench marks of stability Class B or higher, designation and stamping as follows: 867 0870 N/0870 N 2016 and 867 0870 P/0870 P 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.
4. Replace water temperature cable with a 60ft cable.
5. Replace the propeller on the wind bird.
6. Include bench mark 867 0870 TIDAL 11 in the level run. Movement of 8mm noticed in 2014 levels.
7. Provide digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions.
8. Provide hand held GPS positions for the station.

8670674 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.

2.1.13 FOD/AOB – Florida Stations

8720030 Fernandina Beach, FL **L28202/L28317** **Part 1**
PBM: 872 0030 TIDAL 34 (BC0166) ***PBM above SD:*** 4.770 m
GPS Bench Mark: CONTAINER (BC2488) ***MSL above SD:*** 1.522 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 01/14
Dive Inspection Frequency: Every year ***Last Dive:*** 01/15

1. Include the existing Aquatrak and MWWL sensors in the level run and download all data from the DCPs.
2. Verify the MWWL and Aquatrak data comparison analysis is complete and accepted by the MWWL TOP Committee. If complete, remove the Aquatrak, associated DCP (if applicable), and assign the DCP associated with the MWWL sensor as DCP1, if necessary.
3. Repair the tide house.
4. Include bench mark 872 0030 TIDAL 37 RESET in the level run.

8720218 Mayport Bar Pilots Dock, FL **L28202/L28317** **Part 2**
PBM: 872 0218 A TIDAL (DI9221) ***PBM above SD:*** 5.000 m
GPS Bench Mark: 872 0220 A TIDAL (BC2486) ***MSL above SD:*** 3.516 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 01/13
Dive Inspection Frequency: Every year ***Last Dive:*** 01/15

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. Evaluate and tighten the structural fasteners, annually.
3. Replace Satlink, DCP data logger, Xpert and Xpert Dark modules.
4. Include bench mark 872 0218 C in the level run.

8721604 Trident Pier, FL **L28202/L28317** **Part 19**
PBM: 872 1604 A ***PBM above SD:*** 9.303 m
GPS Bench Mark: 872 1604 C TIDAL (AJ2449) ***MSL above SD:*** 6.053 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 01/15
Dive Inspection Frequency: Every year ***Last Dive:*** 01/15

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. Consult CIL and OSTEP prior to reconnaissance, a nonstandard sensor configuration will be required given the distance from the station to the sensor location.
2. Provide hand held GPS positions for the station.

8722670 Lake Worth Pier, FL **L28202/L28317** **Part 6**
PBM: P 317 (AD2724) ***PBM above SD:*** 15.111 m
GPS Bench Mark: N 317 RESET ***MSL above SD:*** 9.602 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 06/10
Dive Inspection Frequency: Every year ***Last Dive:*** 02/13

1. Include both the existing Aquatrak and MWWL sensors in all level runs and download all data from the DCPs to support the microwave data comparison.
2. Verify the MWWL and Aquatrak data comparison analysis is complete and accepted by the MWWL TOP Committee. If complete, remove the Aquatrak, associated DCP (if applicable), and assign the DCP associated with the MWWL sensor as DCP 1, if necessary.
3. Establish and include in the level run the DCP2 N1 orifice leveling point.
4. Measure the elevation difference between the DCP2 N1 leveling point and the DCP 2 N1 orifice zero on an annual basis.
5. Verify Paros settings.
6. Replace Satlink, DCP data logger, Xpert and Xpert Dark modules.
7. Include bench mark 872 2670 K in the level run.
8. Establish and level a stability class B mark, designation/stamping as follows: 872 2670 P/2670 P 2016.
9. Take face, setting, and location photos for any newly established marks.
10. Update the bench mark diagram to include any newly established marks.
11. Retake face, setting, and directional photos of bench marks 872 2670 M and 872 2670 R.
12. Provide hand held GPS positions for the station.
13. Correct the DCP configurations removing non-existent sensors: DCP 1/I1, DCP 2/B1.
14. Remove the wave equipment.

8723214 Virginia Key, FL **L28202/L28317** **Part 5**
PBM: 872 3214 B (AH5251) ***PBM above SD:*** 5.000 m
GPS Bench Mark: 872 3214 G ***MSL above SD:*** 3.431 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 02/15
Dive Inspection Frequency: Every year ***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. Perform a reconnaissance to relocate the station once the pier construction is complete.
3. Establish and level a bench mark of stability Class B or higher, designation/stamping as follows: 872 3214 N/3214 N 2016.
4. Take face, setting, and location photos for any newly established marks.
5. Update the bench mark diagram to include any newly established marks.
6. Provide hand held GPS positions for the station.
7.

872XXXX Biscayne Bay, FL **L28202/L28317** **Part 25**
PBM: Undetermined ***PBM above SD:*** Undetermined
GPS Bench Mark: Undetermined ***MSL above SD:*** Undetermined
GPS Observation Frequency: Undetermined ***Last GPS Observation Performed:*** n/a
Dive Inspection Frequency: Undetermined ***Last Dive:*** 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.

8723970 Vaca Key, FL **L28202/L28317** **Part 7**
PBM: 872 3970 M TIDAL (AA1706) ***PBM above SD:*** 2.285 m
GPS Bench Mark: 872 3970 Q ***MSL above SD:*** 0.931 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 02/14
Dive Inspection Frequency: Every year ***Last Dive:*** 02/15

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. Include bench marks 872 3970 Q, 872 3970 R, and 872 3970 S in the level run.
3. **Unresolved from 2015:** Take the face, setting, and location photos of bench marks 872 3970 R and 872 3970 S.

8724580 Key West, FL **L28202/L28317** **Part 8**
PBM: 872 4580 E TIDAL (AJ2450) ***PBM above SD:*** 3.116 m
GPS Bench Mark: 872 4580 E TIDAL (AJ2450) ***MSL above SD:*** 1.662 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 02/15
Dive Inspection Frequency: Every year Last Dive: 02/15

1. 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@tampoa.com.
2. Install an approved MWWL sensor; if any structural modifications are required seek engineering support and Field Engineering Review Subcommittee (FERS) approval.
3. Replace the Druck sensor.
4. Include bench marks 872 4580 TIDAL 24, 872 4580 TIDAL 25, 872 4580 TIDAL 26, 872 4580 TIDAL 30, KEY WEST GSL, and KH-8 1962 JAX in the level run.

8725110 Naples, FL **L28202/L28317** **Part 9**
PBM: 872 5110 TIDAL 7 (AD5731) ***PBM above SD:*** 4.225 m
GPS Bench Mark: 872 5110 C TIDAL (AD6337) ***MSL above SD:*** 1.155 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 02/14
Dive Inspection Frequency: Every year ***Last Dive:*** 02/15

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. Re-install the met station.
3. Include bench marks 872 5110 A, 872 5110 J, 872 5110 TIDAL 5, and 872 5110 TIDAL 6 in the level run.

8725520 Fort Myers, FL **L28202/L28317** **Part 10**
PBM: 872 5520 A TIDAL (AD7888) ***PBM above SD:*** 2.746 m
GPS Bench Mark: 872 5520 A TIDAL (AD7888) ***MSL above SD:*** 1.522 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 01/14
Dive Inspection Frequency: Every year ***Last Dive:*** 02/15

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. Include bench marks 872 5520 F, 872 5520 H, 872 5520 J, 872 5520 K, and 872 5520 B 242 in the level run.

8726384 Port Manatee, FL (PORTS) **L28202/L28317** **Part 20**
PBM: 872 6384 E (AG7341) ***PBM above SD:*** 2.6660 m
GPS Bench Mark: 872 6384 E (AG7341) ***MSL above SD:*** 0.417 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 02/14
Dive Inspection Frequency: Every year ***Last Dive:*** 02/15

1. **Unresolved From 2015:** Measure the elevation of barometer above station datum.
2. Include bench marks 872 6384 K, 872 6384 N, 872 6384 N, and Z 694 in the level run.

8726520 St. Petersburg, FL (PORTS) **L28202/L28317** **Part 11**
PBM: 872 6520 K ***PBM above SD:*** 3.062 m
GPS Bench Mark: 872 6520 K ***MSL above SD:*** 1.394 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 02/14
Dive Inspection Frequency: Every year ***Last Dive:*** 01/15

1. Verify the MWWL and Aquatrak data comparison analysis is complete and accepted by the MWWL TOP Committee. If complete, remove the Aquatrak, associated DCP (if applicable), and assign the DCP associated with the MWWL sensor as DCP1, if necessary.
2. Perform reconnaissance to relocate or rebuild the station, seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the installation design of the new station.
3. Establish a level connection between the station bench mark network and the newly established CORS station (within 1km).
4. Include bench marks 872 6520 G, 872 6520 J, 872 6520 L, RLS 2512, and SPH 5 in the level run.

8726607 Old Port Tampa, FL (PORTS) **L28202/L28317** **Part 21**
PBM: 872 6607 A ***PBM above SD:*** 10.0000 m
GPS Bench Mark: 872 6607 A ***MSL above SD:*** 9.012 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 02/14
Dive Inspection Frequency: Every year ***Last Dive:*** 02/15

1. Include bench marks 872 6607 B, 872 6607 C, 872 6607 D, and 872 6607 E in the level run.

8726667 McKay Bay Entrance, FL (PORTS) **L28202/L28317** **Part 22**
PBM: 872 6667 J ***PBM above SD:*** 3.1200 m
GPS Bench Mark: 872 6667 J ***MSL above SD:*** 0.521 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 02/14
Dive Inspection Frequency: Every year ***Last Dive:*** 02/15

1. Include all bench marks in the level run.
2. Download water level data for May 1 - June 30, 2015.
3. Relocate the solar panels and/or connect to A/C power.

8726724 Clearwater Beach, FL **L28202/L28317** **Part 12**
PBM: LP 10 1 FLHD (AG7197) ***PBM above SD:*** 2.234 m
GPS Bench Mark: 872 6724 R 44 (AG6373) ***MSL above SD:*** 0.980 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 02/14
Dive Inspection Frequency: Every year ***Last Dive:*** 02/15

1. Include bench marks 872 6724 R, and 872 6724 S in the level run.
2. **Unresolved From 2015:** Extend the ground wire for the Met Shakespeare pole.
3. Download water level data for 8/4/2015 - 8/7/2015.

8727520 Cedar Key, FL **L28202/L28317** **Part 13**
PBM: TIDAL STATION 3-60 TIDAL 8 (AR1204) ***PBM above SD:*** 2.347 m
GPS Bench Mark: FDNY1 ***MSL above SD:*** 1.171 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 01/15
Dive Inspection Frequency: Every year ***Last Dive:*** 01/15

1. Measure the elevation of the water temperature sensor above Station Datum. Add the tape measurement to the comments sections of the eSite report.
2. **Unresolved From 2015:** 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.
3. **Unresolved From 2015:** Install a kick block or protective housing around bench mark 872 7520 K TIDAL.
4. Include bench marks 872 7520 L, D 280, and D 290 in the level run.

8728690 Apalachicola, FL **L28202/L28317** **Part 15**
PBM: 872 8690 TIDAL 1 (AS0240) ***PBM above SD:*** 5.669 m
GPS Bench Mark: APALACHICOLA (AS0244) ***MSL above SD:*** 1.584 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed*** 11/14
Dive Inspection Frequency: Every year ***Last Dive:*** 11/14

1. **Unresolved From 2015:** Establish and level the N1 DCP2 orifice leveling point.
2. **Unresolved From 2015:** Verify the elevation difference between the N1 DCP 2 leveling point and the N1 DCP2 orifice zero on an annual basis.
3. Include bench marks 872 8690 A, 872 8690 B, 872 8690 E, D 689, 872 8690 TIDAL 3, and 872 8690 TIDAL in the leveling run.
4. Verify the PAROS settings.

8729108 Panama City, FL **L28202/L28317** **Part 16**
PBM: 872 9108 L TIDAL (BE3028) ***PBM above SD:*** 3.965 m
GPS Bench Mark: 872 9108 L TIDAL (BE3028) ***MSL above SD:*** 1.222 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 11/14
Dive Inspection Frequency: Every year ***Last Dive:*** 11/14

1. Confirm the height of the air temperature sensor above the Met SRM.
2. Include bench marks 872 9108 TIDAL 1, Nelson, and P 42 in the level run.

8729210 Panama City Beach, FL **L28202/L28317** **Part 17**
PBM: 872 9210 A (AJ6758) ***PBM above SD:*** 12.725 m
GPS Bench Mark: 872 9210 l ***MSL above SD:*** 8.436 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 09/13
Dive Inspection Frequency: Every year ***Last Dive:*** 06/15

1. No additional requirements.

8729840 Pensacola, FL **L28202/L28317** **Part 18**
PBM: 872 9840 M TIDAL (BG4867) ***PBM above SD:*** 4.368 m
GPS Bench Mark: 872 9840 M TIDAL (BG4867) ***MSL above SD:*** 2.757 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 11/14
Dive Inspection Frequency: Every year ***Last Dive:*** 11/14

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

2.1.14 FOD/AOB – Tampa Bay Current Meter Stations

t01010 Sunshine Skyway Bridge (PORTS) **Current Meter Station**

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

t02010 Old Port Tampa Currents (PORTS) **Current Meter Station**

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

2.1.15 FOD/AOB – Alabama Stations

8732828 Weeks Bay, AL (Resilience) **L28203/L28318** **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:*** 05/15
Dive Inspection Frequency: Every year ***Last Dive:*** 05/15

1. Relocate the Aquatrak to resolve silting issues.
2. Include all bench marks in the level run.

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

1. No additional requirements.

8735180 Dauphin Island, AL (PORTS) **L28203/L28318** **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:*** 08/15

1. Perform reconnaissance to relocate or rebuild the station, seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the installation design of the new station.
2. **Unresolved From 2015:** Repair the 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.
3. **Unresolved From 2015:** Repair the large holes and gaps in areas under the station workbench.
4. Include bench marks 873 5180 A, 873 5180 TIDAL STEEL PIPE, 873 5180 TIDAL 2, 873 5180 TIDAL 3, and 873 5180 TIDAL 4 in the level run.

8735391 Dog River Bridge, AL **L28203/L28318** **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:*** 09/14
Dive Inspection Frequency: N/A

1. Include all bench marks in the level run.

8735523 East Fowl River Bridge, AL **L28203/L28318** **Part 13**
PBM: 873 5523 C ***PBM above SD:*** 10.000 m
GPS Bench Mark: 873 5523 C ***MSL above SD:*** 4.355 m
GPS Observation Frequency: Every year ***Last GPS Observation Performed:*** 09/14
Dive Inspection Frequency: N/A

1. Include all bench marks in the level run.

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

1. No additional requirements.

8736897 Coast Guard Sector Mobile, AL (PORTS) L28203/L28318 **Part 7**
PBM: 873 6897 A ***PBM above SD:*** 10.000 m
GPS Bench Mark: 873 6897 C ***MSL above SD:*** 8.989 m
GPS Observation Frequency: Every year ***Last GPS Observation Performed:*** 09/14
Dive Inspection Frequency: Every year ***Last Dive:*** 09/14

1. Replace the base plate for the Met mast.
2. Include bench marks 873 6897 B, AL14 B, and GBC 92-7 in the level run.

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

1. No additional requirements.

8737048 Mobile State Docks, AL (PORTS) **L28203/L28318** **Part 10**
PBM: 873 7048 C ***PBM above SD:*** 2.083 m
GPS Bench Mark: 873 7048 E ***MSL above SD:*** 0.707 m
GPS Observation Frequency: Every year ***Last GPS Observation Performed:*** 07/15
Dive Inspection Frequency: Every year ***Last Dive:*** 08/15

1. Include bench marks 873 7048 D, J 445, N 406, USGS, and Y 9 Reset in the level run.

8737138 Chickasaw Creek, AL **L28203/L28318** **Part 11**
PBM: No Stamp DOT 1 ***PBM above SD:*** 11.815 m
GPS Bench Mark: 873 7138 A ***MSL above SD:*** 7.756 m
GPS Observation Frequency: Every year ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every year ***Last Dive:*** 08/15

1. Include all bench marks in the level run.

8738043 West Fowl River Bridge, AL **L28203/L28318** **Part 14**
PBM: 873 8043 E 482 ***PBM above SD:*** 10.000 m
GPS Bench Mark: 873 8043 E 482 ***MSL above SD:*** 6.223 m
GPS Observation Frequency: Every year ***Last GPS Observation Performed:*** 09/12
Dive Inspection Frequency: N/A

1. Install a backup DCP and MWWL sensor, if the equipment can be purchased under the new agreement. If any structural modifications are required seek engineering support and Field Engineering Review Subcommittee (FERS) approval.
2. Include all bench marks in the level run.

8739803 Bayou La Batre, AL **L28203/L28318** **Part 15**
PBM: 873 9803 A ***PBM above SD:*** 10.000 m
GPS Bench Mark: 873 9803 A ***MSL above SD:*** 8.406 m
GPS Observation Frequency: Every year ***Last GPS Observation Performed:*** 08/14
Dive Inspection Frequency: Every year ***Last Dive:*** 08/15

1. Include all bench marks in the level run.

mb0101 Mobile Bay Buoy M, AL (PORTS) **Current Meter Station**

1. Coordinate the re-installation of this station with the Maritime Services program manager.

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

1. Replace the winch switch in control box.

mb0401 Mobile Container Terminal, AL (PORTS) **Current Meter Station**

1. Repair the chain on the I-beam.

2.1.16 FOD/AOB – Mississippi Stations

8740166 Grand Bay, MS (Resilience) **L28204/L28319** **Part 50**
PBM: 874 0166 B (DO5987) ***PBM above SD:*** 5.000 m
GPS Bench Mark: 874 0166 B (DO5987) ***MSL above SD:*** 4.533 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 01/15
Dive Inspection Frequency: Every year ***Last Dive:*** 01/15

1. Coordinate the annual inspection with the Resilience Program Manager and the OSM.
2. Verify the descriptions for bench mark 874 0166 D and 874 0166 C. Make a comment in eSite to state which bench mark is located near the the intersection, and which bench mark is located near the bend in the road.
3. Include all bench marks in the level run.

8747437 Bay Waveland Yacht Club, MS **L28204/L28319** **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:*** 02/15
Dive Inspection Frequency: Every year ***Last Dive:*** 12/15

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 (if applicable), and assign the DCP associated with the MWWL sensor as DCP1, if necessary.
2. Include bench marks 874 7437 H, 874 7437 K, 874 7437 M, 874 7437 SPIP, and 874 7437 TIDAL 2 in the level run.
3. Provide serial number of DCP3 RTU box.

2.1.17 FOD/AOB – Louisiana Stations

8760922 Pilots Station East, SW Pass, LA **L28205/L28320** **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:*** 01/15
Dive Inspection Frequency: Every year ***Last Dive:*** 01/15

1. Install a temporary water level station to continue data collection during the Bar Pilots construction project.
2. **Unresolved From 2015:** Investigate and fix the GPS sync issue at the remote met station.
3. **Unresolved From 2015:** Install 12 4x4 posts painted orange, buried 5-6 feet deep as witness posts for all bench marks in the marsh.
4. **Unresolved From 2015:** Take digital photos of the setting (waist or chest high view) and general location of bench marks 876 0922 H and 876 0922 J.
5. Include all bench marks in the level run.

8761305 Shell Beach, LA **L28205/L28320** **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:*** 03/15
Dive Inspection Frequency: Every year ***Last Dive:*** 06/15

1. Install an approved MWWL sensor; if any structural modifications are required seek engineering support and Field Engineering Review Subcommittee (FERS) approval.
2. Include bench marks 876 1305 C, 876 1305 F, and 876 1305 K in the level run.
3. Establish and level a new bench mark of stability Class C or higher, designation and stamping as follows: 876 1305 M/1305 M 2016.

8761724 Grand Isle, LA **L28205/L28320** **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:*** 3/15
Dive Inspection Frequency: Every year ***Last Dive:*** 3/15

1. Include bench marks 876 1724 TIDAL 13, 876 1724 A, 876 1724 B, and 876 1724 C in the level run.

8761927 USCG New Canal Station, LA **L28205/L28320** **Part 10**
PBM: ALCO (BJ1342) ***PBM above SD:*** 3.149 m
GPS Bench Mark: ALCO (BJ1342) ***MSL above SD:*** 1.380 m
GPS Observation Frequency: Every year ***Last GPS Observation Performed:*** 5/15
Dive Inspection Frequency: Every year ***Last Dive:*** 5/15

1. Seal conduit boxes to shelter.
2. Include all bench marks in the level run.
3. Confirm serial number of IP modem.

8762482 West Bank 1, Bayou Gauche, LA **L28205/L28320** **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:*** 12/14
Dive Inspection Frequency: Every year ***Last Dive:*** 12/14

1. Upgrade to an NWLON station, seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the installation design of the new station.
2. Install an approved MWWL sensor; seek engineering support and Field Engineering Review Subcommittee (FERS) approval.
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. Jet out the well.
5. Include all bench marks in the level run.

8764044 Berwick, LA **L28205/L28320** **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:*** 2/15
Dive Inspection Frequency: Every year ***Last Dive:*** 2/15

1. Include all bench marks in the level run.

8764227 LAWMA, Amerada Pass, LA **L28205/L28320** **Part 11**
PBM: 876 4227 A ***PBM above SD:*** 8.759 m
GPS Bench Mark: GPS GAGE 36 (DJ9384) ***MSL above SD:*** 7.414 m
GPS Observation Frequency: Every year ***Last GPS Observation Performed:*** 2/15
Dive Inspection Frequency: Every year ***Last Dive:*** 2/15

1. Verify the MWWL and Aquatrak data comparison analysis is complete and accepted by the MWWL TOP Committee. If complete, remove the Aquatrak, associated DCP (if applicable), and assign the DCP associated with the MWWL sensor as DCP1, if necessary.
2. Swap the MWWL sensor due to a bent pin after leveling the previously installed sensor.
3. Include bench marks 876 4227 B, 876 4227 C, 876 4227 F, 876 4227 G, and 876 4227 H in the level run.

8766072 Freshwater Canal Locks, LA **L28205/L28320** **Part 8**
PBM: 876 6072 A (DJ9334) ***PBM above SD:*** 8.887 m
GPS Bench Mark: 876 6072 C ***MSL above SD:*** 6.764 m
GPS Observation Frequency: Every year ***Last GPS Observation Performed:*** 2/15
Dive Inspection Frequency: Every year ***Last Dive:*** None

1. Verify the MWWL and Paroscientific sensor data comparison analysis is complete and accepted by the MWWL TOP Committee. If complete, assign the dual Paroscientific sensors, associated DCP1 as DCP2, and keep the MWWL sensor associated with the DCP1. The backup Druck sensor shall be removed.
2. Verify and submit a graphic of PAROS settings during each site visit.
3. Include all bench marks in the level run.

8762483 I-10 Bonnet Carre Floodway, LA (Resilience) **L28205/L28320** **Part 37**
PBM: 876 2483 B ***PBM above SD:*** 5.910 m
GPS Bench Mark: 876 2483 B ***MSL above SD:*** 0.038 m
GPS Observation Frequency: Annually ***Last GPS Observation Performed:*** 04/2015
Dive Inspection Frequency: Undetermined ***Last Dive:*** n/a

1. Download all data from May 25, 2015 @ 23:36 to the present date.
2. Include all bench marks in the level run.

8762484 Frenier Landing, LA (Resilience) **Meteorological Station**

1. No additional requirements.

2.1.18 FOD/AOB – Port of Morgan City PORTS®

8764314 Eugene Island, LA (PORTS) **L28205/L28320** **Part 36**
PBM: Undetermined ***PBM above SD:*** Undetermined
GPS Bench Mark: Undetermined ***MSL above SD:*** Undetermined
GPS Observation Frequency: Undetermined ***Last GPS Observation Performed:*** 8/15
Dive Inspection Frequency: Undetermined ***Last Dive:*** 2/15

1. Inspect the water level station installation.
2. Perform long-term (6 to 12 hour) simultaneous static GPS observations, every four months, to confirm sensor stability.

8764401 Atchafalaya Bar Channel, LA (PORTS) **Conductivity Station**

1. Inspect the conductivity station installation.

mc0101 Atchafalaya Bar Channel, LA (PORTS) **Current Meter Station**

1. Inspect the current meter station.

2.1.19 FOD/AOB – Matagorda PORTS®

mg0101 Matagorda Bay, LA (PORTS) **Current Meter Station**

1. Inspect the current meter station after installation.

2.1.20 FOD/AOB – Bermuda and the Caribbean Island Stations

2695535 Bermuda, St. Georges Harbor **L28210/L28325** **Part 2**
PBM: Undetermined ***PBM above SD:*** Undetermined
GPS Bench Mark: Undetermined ***MSL above SD:*** Undetermined
GPS Observation Frequency: Undetermined ***Last GPS Observation Performed:*** n/a
Dive Inspection Frequency: Undetermined ***Last Dive:*** n/a
Note: Maintenance costs for this station shall be charged to the Global Sea Level task number.

1. Install the station with a dual Paroscientific sensors; seek engineering support and Field Engineering Review Subcommittee (FERS) approval.

2695540 Bermuda, St. Georges Island **L28210/L28325** **Part 1**
PBM: 269 5540 A ***PBM above SD:*** 14.298 m
GPS Bench Mark: 269 5540 A ***MSL above SD:*** 1.434 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 04/08
Dive Inspection Frequency: Every year ***Last Dive:*** 06/15
Note: Maintenance costs for this station shall be charged to the Global Sea Level task number.

1. Replace all 3/4" bolts, threads and hardware securing the tide house.
2. Inspect and replace (when necessary) the fiberglass tide house.
3. Replace brass ferrule with a stainless steel ferrule.
4. Inspect the old Aquatrak well mounting brackets.
5. **Unresolved from 2014:** Recover or establish and level two bench marks of stability Class C or higher, designation/stamping as follows: 269 5540 J/5540 J 2015 and 269 5540 K/5540 K 2015.
6. Remove 268 5535 H and 268 5535 G from the WinDesc file and update the SSN's accordingly.

9751364 Christiansted Harbor, St. Croix, VI **L28208/L28323** **Part 3**
PBM: 975 1364 A ***PBM above SD:*** 10.000 m
GPS Bench Mark: 975 1364 A ***MSL above SD:*** 8.365 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 03/13
Dive Inspection Frequency: Every year ***Last Dive:*** 03/15

1. **Unresolved From 2015:** Replace or repair the backup water level sensor.
2. **Unresolved from 2015:** Replace or repair the IP modem.
3. Include bench marks 975 1364 E, 975 1364 K, and 975 1364 M in the level run.

9751381 Lameshur Bay, St John, VI **L28208/L28323** **Part 4**
PBM: 975 1381 A ***PBM above SD:*** 10.000 m
GPS Bench Mark: 975 1381 A ***MSL above SD:*** 8.925 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 03/13
Dive Inspection Frequency: Every year ***Last Dive:*** 03/15

1. **Unresolved from 2014:** Recover or establish and level four bench marks of stability Class C or higher, designation/stamping as follows: 975 1381 E/1381 E 2016, 975 1381 F/1381 F 2016, 975 1381 G/1381 G 2016, and 975 1381 H/1381 H 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.
4. Include all bench marks in the level run.
5. Take digital photos of the face, setting (waist or chest high view) and general location of bench mark 975 1381 D.
6. Confirm serial numbers of Xpert boxes and Xpert modules.

9751401 Lime Tree Bay, St. Croix, VI **L28208/L28323** **Part 1**
PBM: 975 1401 M ***PBM above SD:*** 13.612 m
GPS Bench Mark: 975 1401 M ***MSL above SD:*** 10.501 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 03/13
Dive Inspection Frequency: Every year ***Last Dive:*** 03/15

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

9751639 Charlotte Amalie, St. Thomas, VI **L28208/L28323** **Part 2**
PBM: 975 1639 F ***PBM above SD:*** 3.267 m
GPS Bench Mark: 975 1639 M (TV1548) ***MSL above SD:*** 1.715 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 03/13
Dive Inspection Frequency: Every year ***Last Dive:*** 03/15

1. Perform reconnaissance to relocate or rebuild the station, seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the installation design of the new station.
2. Include bench marks 975 1639 J, 975 1639 M, 975 1639 N, 975 1639 P, 975 1639 R, and Betsy in the level run.

9752235 Culebra, PR **L28207/L28322** **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. Install the FERS approved NWLON station.
2. Include all bench marks in the level run.

9752695 Vieques Island, PR **L28207/L28322** **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:*** 03/15

1. **Unresolved From 2015:** Replace all of the solar panel cables and rerun the cables inside the fiberglass Shakespeare mast.
2. **Unresolved From 2015:** Measure the height of the barometer on station datum.
3. Include all bench marks in the level run.

9755371 San Juan, PR **L28207/L28322** **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:*** 03/15

1. Install an approved MWWL sensor; if any structural modifications are required seek engineering support and Field Engineering Review Subcommittee (FERS) approval.
2. Repair phone line.
3. Include bench marks 975 5371 B, 975 5371 P**,** 975 5371 R, and SJH-43 COE in the level run.

9759110 Magueyes Island, PR **L28207/L28322** **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:*** 03/15

1. Perform a reconnaissance to install the gauge house from the current location. Seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the installation design of the new station.
2. Mr. Corrdor and Dr. Otero will, with advanced notice, have the tree near the GPS bench mark (975 9110 G) pruned ahead of FOD arrival. If a new area must be cleared to establish a new GPS bench mark of stability Class C or higher, designation/ stamping as follows: 975 9110 K / 9110 K 2016, they can also assist with advanced notice.
3. If a new GPS bench mark can be set, take digital photos of the face, setting (waist or chest high view) and general location of newly established bench marks.
4. If a new GPS bench mark can be set, update the bench mark diagram with newly established bench marks.
5. Create a new bench mark description for 975 9110 E 1980.
6. Include bench marks 975 9110 B, 975 9110 F, and 975 9110 J in the level run.

9759394 Mayaguez, PR **L28207/L28322** **Part 10**
PBM: 975 9394 TIDAL 1 ***PBM above SD:*** 2.683
GPS Bench Mark: 975 9394 E ***MSL above SD:*** 1.236
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 02/09
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Coordinate with the Resilience Program Manager, James Taylor of COET, and Victor Huerfano (PRSN) (victor@rmquake.uprm.edu) prior to scheduling this site visit. The CO-OPS Director has approved the installation PRSN equipment capable of transmitting the 1-minute tsunami data directly to PRSN databases. PRSN will install the equipment during the FY2016 AI.
2. Relocate the solar array and MET sensors so they do not obstruct the CORS type GPS antenna owned and operated by PRSN.
3. Download primary and redundant microwave data for April 8-15, 2015.
4. Include bench marks 975 9394 E, 975 9394 F, 975 9394 TIDAL 2, 975 9394 TIDAL 3, 975 9394 TIDAL 4, and MHPR-5 in the level run.
5. Verify the height of the water temperature sensor on station datum.
6. Describe bench marks 975 9394 E, 975 9394 F, and 975 9394 G.
7. Verify GPS coordinates of the station enclosure.

9759938 Mona Island, PR **L28207/L28322** **Part 9**
PBM: 975 9938 A ***PBM above SD:*** 10.000 m
GPS Bench Mark: 975 9938 A ***MSL above SD:*** 8.842 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 04/13
Dive Inspection Frequency: Every year ***Last Dive:*** 03/15

1. Verify the elevation difference between the orifice leveling point and the orifice zero for both orifices on an annual basis.
2. Verify PAROS settings.
3. **Unresolved from 2015:** Take digital photos showing handheld GPS coordinates for all bench marks.
4. **Unresolved From 2015:** Replace the conduit with stainless steel.
5. **Unresolved From 2015:** Replace all the solar panel poles, panels, and wires.
6. **Unresolved From 2015:** Replace the GOES and GPS time antennas.
7. Include bench marks 975 9938 B and 975 9938 H in the level run.

9761115 Barbuda **L28209/L28324** **Part 9**

PBM: 976 1115 A ***PBM above SD:*** 10.000 m

GPS Bench Mark: 976 1115 J ***MSL above SD:*** 8.665 m

GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 08/12

Dive Inspection Frequency: Every year ***Last Dive:*** 06/11

1. **Unresolved From 2015:** Replace the wind bird cable.
2. Reset or remove deep rod mark 976 1115 J, if reset the new designation/stamping as follows: 976 1115 J RESET / 975 1115 J 2016 RESET.
3. Establish and level a bench mark of stability class B mark or higher, with designation/stamping as follows: 976 1115 M/1115 M 2016.
4. Take face, setting, and location photos for any newly established marks.
5. Update the bench mark diagram to include any newly established marks.
6. Replace locks on solar panels and house.
7. Include all bench marks in the level run.

2.1.21 FOD/AOB – Great Lakes

2.1.21.1 St. Lawrence River

8311030 Ogdensburg, NY **L28217/L28332** **Part 1**
PBM: 831 1030 A (PH0768) ***PBM Elevation (Dynamic):*** 84.6140 m
GPS Bench Mark: 831 1030 H (DE7800) ***Hydraulic Corrector:*** +0.000 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 06/06

1. Inspect and seal all joints.
2. Establish and level one bench mark of stability class C or higher, designation/stamping 831 1030 J/1030 J 2016.
3. Take face, setting, and location photos for any newly established marks.
4. Update the bench mark diagram to include any newly established marks.
5. Include bench mark 831 1030 OG 1 in the level run.
6. Provide a photo/copy of the station visit log.

8311062 Alexandria Bay, NY **L28217/L28332** **Part 2**
PBM: 831 1062 LAND (LX4057) ***PBM Elevation (Dynamic):*** 86.1691 m
GPS Bench Mark: 831 1062 C (AH7265) ***Hydraulic Corrector:*** +0.000 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every year ***Last Dive:*** 11/11

1. Establish and level four bench marks of class C or higher, designation/stamping 831 1062 F/1062 F 2016, 831 1062 G/1062 G 2016, 831 1062 H/1062 H 2016 and 831 1062 J/1062 J 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.
4. Include bench mark 831 1062 Golf in the level run.
5. Provide pictures showing the bow in the ceiling reported in 2015.
6. Trim tree-line, annually, causing issues with line of sight with GOES.
7. Provide a photo/copy of the station visit log.

2.1.21.2 Lake Ontario

9052000 Cape Vincent, NY **L28218/L28333** **Part 1**
PBM: 905 2000 CAPE (PJ0033) ***PBM Elevation (Dynamic):*** 77.0712 m
GPS Bench Mark: 905 2000 F RESET (AH9230) ***Hydraulic Corrector:*** +0.008 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every year ***Last Dive:*** 05/07

1. Establish and level two bench marks of stability Class C or higher, designation/stamping 905 2000 G/2000 G 2016 and 905 2000 H/2000 H 2016. One of the marks must near the water level sensor to monitor movement of the well.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.
4. Remove all loose rocks down to bedrock and lower well.
5. Provide a photo/copy of the station visit log.

9052030 Oswego, NY (MASTER) **L28218/L28333** **Part 2**
PBM: 905 2030 LAKE (OF0658) ***PBM Elevation (Dynamic):*** 77.4870 m
GPS Bench Mark: 905 2030 J (AH9231) ***Hydraulic Corrector:*** +0.000 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 05/08

1. Repair the breach in the stilling well wall.
2. 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.
3. Establish and level one bench mark of stability Class C or higher and 2 bench mark of stability Class B or higher, designation/stamping 905 2030 K/2030 K 2016, 90, 905 2030 L/2030 L 2016 and 905 2030 M/2030 M 2016.
4. Take face, setting, and location photos for any newly established marks.
5. Update the bench mark diagram to include any newly established marks.
6. Include bench mark 2030 Will and 2030 D in the level run.
7. Provide a photo/copy of the station visit log.

9052058 Rochester, NY **L28218/L28333** **Part 3**
PBM: 905 2058 SUB (OF1082) ***PBM Elevation (Dynamic):*** 76.8041 m
GPS Bench Mark: 905 2058 K (AH9232) ***Hydraulic Corrector:*** +0.006 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 06/06

1. Update the Satlink firmware.
2. Blow out intake. Inspect for breaks in line, inspect gooseneck and install buoy.
3. Establish and level three bench marks of stability Class C or higher, designation/stamping 905 2058 L/2058 L 2016, 90, 905 2058 M/2058 M 2016 and 905 2058 N/2058 N 2016.
4. Take face, setting, and location photos for any newly established marks.
5. Update the bench mark diagram to include any newly established marks.
6. Apply the NOAA sticker/markings to the door.
7. Re-route phone line entrance through gauge wall.
8. Provide a photo/copy of the station visit log.
9. Upgrade heater, as necessary.

9052076 Olcott, NY **L28218/L28333** **Part 4**
PBM: 905 2076 WEST (OG0098) ***PBM Elevation (Dynamic):*** 77.4920 m
GPS Bench Mark: 905 2076 H (AH9233) ***Hydraulic Corrector:*** +0.008 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 06/15

1. Establish and level two bench marks of stability Class C or higher, designation/stamping 905 2076 J/2076 J 2016 and 905 2076 K/2076 K 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.
4. Provide a photo/copy of the station visit log.
5. Paint inside of station and floor.

2.1.21.3 Niagara River

9063007 Ashland Avenue, NY **L28219/L28334** **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:*** 11/14

1. Repair GOES antenna.
2. Establish and level five bench marks of stability Class C or higher, designation/stamping: 906 3007 F/3007 F 2016, 906 3007 G/3007 G 2016, 906 3007 H/3007 H 2016, 906 3007 J/3007 J 2016 and 906 3007 K/3007 K 2016.
3. Take face, setting, and location photos for any newly established marks.
4. Update the bench mark diagram to include any newly established marks.
5. Repair roof.
6. Provide a photo/copy of the station visit log.

9063009 American Falls, NY **L28219/L28334** **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. Include bench marks 3009 F and 3009 Park in the level run.
2. Recover and level bench marks Buffalo Ave, SMC26 and W 411 or establish and level one bench mark of stability Class B or higher and two bench marks of stability Class C or higher, designation/stamping as follows: 906 3009 G/3009 G 2015, 906 3009 H/3009 H 2016, and 906 3009 J/3009 J 2016.
3. Take face, setting, and location photos for any newly established marks.
4. Update the bench mark diagram to include any newly established marks.
5. Install a thermostat and space heater.
6. Power wash the station.
7. Paint the floor.
8. Spray the enclosure for bugs.

9063012 Niagara Intake, NY **L28219/L28334** **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:*** 08/15
Dive Inspection Frequency: Diving Not Allowed

1. Include bench marks 906 3012 J, 906 3012 NW Bolt, 906 3012 Rail, 906 3012 Ajax and Tower Use in the level run.
2. Provide a photo/copy of the station visit log.

2.1.21.4 Lake Erie

9063020 Buffalo, NY **L28220/L28335** **Part 1**
PBM: 906 3020 MACHINE (NC0403) ***PBM Elevation (Dynamic):*** 176.5548 m
GPS Bench Mark: 906 3020 H (AH9234) ***Hydraulic Corrector:*** -0.026 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 05/13

1. 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.
2. Include bench marks 3020 H, 3020 Buffalo LH, and A-25 in the level run.
3. Provide a photo/copy of the station visit log.
4. Paint the inside of the station.

9063028 Sturgeon Point, NY **L28220/L28335** **Part 2**
PBM: 906 3028 WATER (NC0430) ***PBM Elevation (Dynamic):*** 197.5510 m
GPS Bench Mark: 906 3028 L (DE7802) ***Hydraulic Corrector:*** -0.023 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 04/04

1. Replace gauge house floor due to rotting in corners.
2. Establish and level one bench mark of stability Class C or higher, designation/stamping: 906 3028 M/3028 M 2016.
3. Take face, setting, and location photos for any newly established marks.
4. Update the bench mark diagram to include any newly established marks.
5. Add additional pea gravel around the station.
6. Provide a photo/copy of the station visit log.
7. Verify the under floor heat lamp bulb system and space heater is working properly.

9063038 Erie, PA **L28220/L28335** **Part 3**
PBM: 906 3038 POPLAR (ND0161) ***PBM Elevation (Dynamic):*** 174.6781 m
GPS Bench Mark: D 362 (ND0163) ***Hydraulic Corrector:*** -0.025 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 05/13

1. Establish and level one bench mark of stability Class C or higher, designation/stamping: 906 3038 K/3038 K 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.
4. Provide a photo/copy of the station visit log.
5. Trim the trees.

9063053 Fairport, OH (MASTER) **L28220/L28335** **Part 4**
PBM: K 321 (MB1625) ***PBM Elevation (Dynamic):*** 175.9180 m
GPS Bench Mark: 906 3053 D (MB1622) ***Hydraulic Corrector:*** +0.000 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 04/08

1. Include bench marks 906 3053 F, X 323 and MSFH 8 in the level run.
2. Provide a photo/copy of the station visit log.

9063063 Cleveland, OH **L28220/L28335** **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:*** 08/15
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 05/13

1. 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.
2. Replace breaker panel with new panel with proper amount of fuses.
3. Include bench mark F 322 in the level run.
4. Provide photos showing the wind sensor tower and area.
5. Update latitude and longitude for the wind sensors in eSite.
6. Provide a photo/copy of the station visit log.

9063079 Marblehead, OH **L28220/L28335** **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:*** 08/15
Dive Inspection Frequency: Every year ***Last Dive:*** 05/13

1. Establish and level two bench marks of stability Class C or higher, designation/stamping: 906 3079 M/3079 M 2016 and 906 3079 N/3079 N 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.
4. Replace well thermistors.
5. Include bench mark 906 3079 J in the level run.
6. Provide a photo/copy of the station visit log.

9063085 Toledo, OH **L28220/L28335** **Part 7**
PBM: 906 3085 NAVAL (MC0269) ***PBM Elevation (Dynamic):*** 175.4592 m
GPS Bench Mark: 906 3085 G (AH9237) ***Hydraulic Corrector:*** -0.005 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every 5 years (contractor) ***Last Dive:*** 09/09

1. Include bench marks 906 3085 G, 906 3085 Steel Pile, 906 3085 WL 104 and 906 3085 WL 105 in the level run.
2. Provide a photo/copy of the station visit log.

9063090 Fermi Power Plant, MI **L28220/L28335** **Part 8**
PBM: 906 3090 POWER (MC0873) ***PBM Elevation (Dynamic):*** 177.5893 m
GPS Bench Mark: 906 3090 G (AH9238) ***Hydraulic Corrector:*** +0.023 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: As Needed (contractor) ***Last Dive:*** 11/09

1. Replace BEI display with display for current DCP wiring profile.
2. Establish and level two bench marks of stability Class C or higher, designation/stamping: 906 3090 J/3090 J 2016 and 906 3090 K/3090 K 2016.
3. Take face, setting, and location photos for any newly established marks.
4. Update the bench mark diagram to include any newly established marks.
5. Include bench marks 906 3090 Atomic Use, 906 3090 Exhibits USLS and 906 3090 F in level run.
6. Paint the floor.
7. Provide a photo/copy of the station visit log.

2.1.21.5 Detroit River

9044020 Gibraltar, MI **L28221/L28336** **Part 1**
PBM: M 234 (NE0857) ***PBM Elevation (Dynamic):*** 176.6298 m
GPS Bench Mark: H 115 X (NE0516) ***Hydraulic Corrector:*** 0.000 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 11/08

1. Establish and level two bench marks of stability Class C or higher and one stability class B or higher marks, designation/stamping: 904 4020 F/4020 F 2016, 904 4020 G/4020 G 2016, and 904 4020 H/4020 H 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.
4. Provide a photo/copy of the station visit log.

9044030 Wyandotte, MI **L28221/L28336** **Part 2**
PBM: 904 4030 CHIEF (NE0577) ***PBM Elevation (Dynamic):*** 176.1190 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:*** 11/08

1. **Unresolved from 2014:** Include bench mark 904 4030 Bank in the level run.
2. Establish and level four bench marks of stability Class C or higher, designation/stamping: 904 4030 L/4030 L 2016, 904 4030 M/4030 M 2016, 904 4030 N/4030 N 2016 and 904 4030 P/4030 P 2016.
3. Take face, setting, and location photos for any newly established marks.
4. Update the bench mark diagram to include any newly established marks.
5. Provide a photo/copy of the station visit log.

9044036 Fort Wayne, MI **L28221/L28336** **Part 3**
PBM: 904 4036 RAMP (NE0622) ***PBM Elevation (Dynamic):*** 175.2317 m
GPS Bench Mark: FORT WAYNE A (AA8055) ***Hydraulic Corrector:*** 0.000 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 11/08

1. **Unresolved from 2014:** Install new gauge table.
2. **Unresolved from 2014:** Sand blast or pressure wash and repaint the outside of the block building.
3. **Unresolved from 2014:** Re-sleeve bench mark 904 4036 Carpenter.
4. **Unresolved from 2014:** Replace the cover on bench mark 904 4036 Fort Wayne A.
5. Establish and level one bench mark of stability Class C or higher, designation/stamping: 904 4036 A/4036 A 2016.
6. Take face, setting, and location photos for any newly established marks.
7. Update the bench mark diagram to include any newly established marks.
8. Provide a photo/copy of the station visit log.

9044049 Windmill Point, MI **L28221/L28336** **Part 4**
PBM: 904 4049 USPHS (NE0136) ***PBM Elevation (Dynamic):*** 176.5770 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:*** 11/08

1. **Unresolved from 2014:** Establish and level one bench mark of stability Class B or higher, with open skies for GPS observations (obtain proper permissions), designation/stamping: 904 4049 M/4049 M 2016.
2. Update Satlink firmware.
3. Establish and level three bench marks of stability Class C or higher, designation/stamping: 904 4049 P/4049 P 2016, 904 4049 Q/4049 Q 2016 and 904 4049 R/4049 R 2016.
4. Take face, setting, and location photos for any newly established marks.
5. Update the bench mark diagram to include any newly established marks.
6. Provide a photo/copy of the station visit log.

2.1.21.6 Lake St Clair

9034052 St. Clair Shores, MI (MASTER) **L28222/L28337** **Part 1**
PBM: 904 4052 FOOD (NE0165) ***PBM Elevation (Dynamic):*** 176.9698 m
GPS Bench Mark: N 235 (NE0898) ***Hydraulic Corrector:*** 0.000 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 11/08

1. Establish and level four bench marks of stability Class C or higher, designation/stamping 903 4052 A/4052 A 2016, 903 4052 B/4052 B 2016, 903 4052 C/4052 C 2016 and 903 4052 D/4052 D 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.
4. Provide a photo/copy of the station visit log.

2.1.21.7 St. Clair River

9014070 Algonac, MI **L28223/L28338** **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. Establish and level two bench marks of stability Class C or higher and one bench mark of stability Class B or higher, designation/stamping 901 4070 J/4070 J 2016, 901 4070 K/4070 K 2016, and 901 4070 M/4070 M 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.
4. Provide a photo/copy of the station visit log.

9014080 St. Clair State Police, MI **L28223/L28338** **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:*** 08/15
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 10/08

1. Establish and level three bench marks of stability Class C or higher, designation/stamping 901 4080 G/4080 G 2016, 901 4080 H/4080 H 2016, and 901 4080 J/4080 J 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.
4. Provide a photo/copy of the station visit log.

9014087 Dry Dock, MI **L28223/L28338** **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. Establish and level three bench marks of stability Class C or higher, designation/stamping 901 4087 H/4087 H 2016, 901 4087 J/4087 J 2016, and 901 4087 K/4087 K 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.
4. Provide a photo/copy of the station visit log.

9014090 Mouth of the Black River, MI **L28223/L28338** **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:*** 08/15
Dive Inspection Frequency: Every year ***Last Dive:*** 10/10

1. **Unresolved from 2014:** Provide description for bench mark 901 4090 MBR in Windesc.
2. Include bench mark S 237 in the level run.
3. Establish and level three bench marks of stability Class C or higher, designation/stamping 901 4090 L/4090 L 2016, 901 4090 M/4090 M 2016, and 901 4090 N/4090 N 2016.
4. Take face, setting, and location photos for any newly established marks.
5. Update the bench mark diagram to include any newly established marks.
6. Provide a photo/copy of the station visit log.

9014096 Dunn Paper, MI **L28223/L28338** **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. Include bench mark Tank in the level run.
2. Establish and level four bench marks of stability Class C or higher, designation/stamping 901 4096 J/4096 J 2016, 901 4096 K/4096 K 2016, 901 4096 L/4096 L 2016 and 901 4096 M/4096 M 2016.
3. Take face, setting, and location photos for any newly established marks.
4. Update the bench mark diagram to include any newly established marks.
5. Provide a photo/copy of the station visit log.

9014098 Fort Gratiot, MI **L28223/L28338** **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:*** 08/15
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 04/05

1. Establish and level four bench marks of stability Class C or higher, designation/stamping 901 4098 A/4098 A 2016, 901 4098 B/4098 B 2016, 901 4098 C/4098 C 2016 and 901 4098 D/4098 D 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.
4. Provide a photo/copy of the station visit log.
5. Re-measure heights of wind sensors above SRM.

2.1.21.8 Lake Huron

9075002 Lakeport, MI **L28224/L28339** **Part 1**
PBM: 907 5002 BURTCH (OJ0036) ***PBM Elevation (Dynamic):*** 178.7965 m
GPS Bench Mark: LAKEPORT (OJ0600) ***Hydraulic Corrector:*** +0.013 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 08/13

1. Include bench mark Drive in the level run.
2. Establish and level one bench mark of stability Class C or higher and two bench marks of stability Class C or higher, designation/stamping 907 5002 A/5002 A 2016, 907 5002 B/5002 B 2016, and 907 5002 C/5002 C 2016.
3. Take face, setting, and location photos for any newly established marks.
4. Update the bench mark diagram to include any newly established marks.
5. Provide a photo/copy of the station visit log.

9075014 Harbor Beach, MI (MASTER) **L28224/L28339** **Part 2**
PBM: GRIST (OJ0219) ***PBM Elevation (Dynamic):*** 180.2756 m
Hydraulic Corrector: 0.000 m
GPS Bench Mark: LSC 5C93 (OJ0517) & 907 5014 GRIST (OJ0219)
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 11/14

1. **Unresolved from 2014:** Provide the outside intake invert elevations.
2. Establish and level one bench mark of stability Class C or higher, designation/stamping: 907 5014 K/5014 K 2016.
3. Take face, setting, and location photos for any newly established marks.
4. Update the bench mark diagram to include any newly established marks.
5. Provide a photo/copy of the station visit log.
6. Investigate the battery power fluctuations on DCP 2. Possible issue with the battery charger or minder.

9075035 Essexville, MI **L28224/L28339** **Part 3**
PBM: CON 1948 GER (OJ0526) ***PBM Elevation (Dynamic):*** 179.1734 m
GPS Bench Mark: ESSEX A (AA8053) ***Hydraulic Corrector:*** -0.002 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 08/06

1. Include bench marks FS 9, 907 5035 G and 907 5035 H in the level run.
2. Establish and level one bench mark of stability Class C or higher, designation/stamping: 907 5035 J/5035 J 2016.
3. Take face, setting, and location photos for any newly established marks.
4. Update the bench mark diagram to include any newly established marks.
5. Provide a photo/copy of the station visit log.

9075065 Alpena, MI **L28224/L28339** **Part 7**
PBM: 907 5065 POST OFFICE (GJ0009) ***PBM Elevation (Dynamic):*** 180.1536 m
GPS Bench Mark: 907 5065 G ***Hydraulic Corrector:*** +0.031 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 09/10

1. Include bench marks Rest, Alpena 2, City Hall LDK and Krueger in the levl run.
2. Establish and level one bench mark of stability Class C or higher, designation/stamping: 907 5065 H/5065 H 2016
3. Take face, setting, and location photos for any newly established marks.
4. Update the bench mark diagram to include any newly established marks.
5. Provide a photo/copy of the station visit log.
6. Provide photos of the interpretive sign at the station.

9075080 Mackinaw City, MI **L28224/L28339** **Part 5**
PBM: J 299 (QK0428) ***PBM Elevation (Dynamic):*** 179.6082 m
GPS Bench Mark: 907 5080 STATE DOCK (QK0428) ***Hydraulic Corrector:*** +0.043 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 08/13

1. Establish and level three bench marks of stability Class C or higher and two bench mark of stability Class B or higher, designation/stamping 907 5080 J/5080 J 2016, 907 5080 K/5080 K 2016, 907 5080 L/5080 L 2016, 907 5080 M/5080 M 2016, and 907 5080 N/5080 N 2016.
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. Take face, setting, and location photos for any newly established marks.
4. Update the bench mark diagram to include any newly established marks.
5. Repair the digital display.
6. Inspect/Replace water temperature sensor, as necessary.
7. Power wash the station.
8. Strip and reseal the decorative brick, as necessary.
9. Repair holes in bulkhead.
10. Provide a photo/copy of the station visit log.

9075099 Detour Village, MI (PORTS) **L28224/L28339** **Part 6**
PBM: L 293 (QJ0086) ***PBM Elevation (Dynamic):*** 179.7044 m
GPS Bench Mark: DETOUR MARINA (AH9228) ***Hydraulic Corrector:*** +0.005 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 09/10

1. Establish and level four bench mark of stability Class C or higher, designation/stamping 907 5099 G/5099 G 2016, 907 5099 H/5099 H 2016, 907 5099 J/5099 J 2016 and 907 5099 K/5099 K 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.
4. Replace the floor with ¾-inch hard wood floor.
5. Paint the floor.
6. Replace damaged sump heat lamp bulbs.
7. Inspect the door and frame, replacing and/or painting it as necessary.
8. Remove the old paint and repaint station.
9. Provide a photo/copy of the station visit log.

2.1.21.9 Lake Michigan

9087023 Ludington, MI **L28225/L28340** **Part 1**
PBM: J 318 (OL0303) ***PBM Elevation (Dynamic):*** 177.9833 m
GPS Bench Mark: J 318 (OL0303) ***Hydraulic Corrector:*** +0.087 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 07/09

1. 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.
2. Establish and level three bench marks of stability Class C or higher, designation/stamping 908 7023 J/7023 J 2016, 908 7023 K/7023 K 2016, and 908 7023 L/7023 L 2016.
3. Take face, setting, and location photos for any newly established marks.
4. Update the bench mark diagram to include any newly established marks.
5. Install new door rubber.
6. Replace heater.
7. Replace conduit as necessary.
8. Paint interior as necessary.
9. Provide a photo/copy of the station visit log.
10. Replace barometer due to drift issues.

9087031 Holland, MI **L28225/L28340** **Part 2**
PBM: 908 7031 K ***PBM Elevation (Dynamic):*** 177.9714 m
GPS Bench Mark: 908 7031 J (AH5303) ***Hydraulic Corrector:*** +0.090 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 07/10

1. **Unresolved from 2014:** Provide the outside intake invert elevation.
2. Establish and level two bench marks of stability Class C or higher and one bench mark of stability Class B or higher, designation/stamping 908 7031 M/7031 M 2016, 908 7031 N/7031 N 2016, and 908 7031 P/7031 P 2016.
3. Take face, setting, and location photos for any newly established marks.
4. Update the bench mark diagram to include any newly established marks.
5. Provide a photo/copy of the station visit log.
6. Determine location of leak and repair.
7. Repair holes in station steps.
8. Steam clean the exterior of the building.
9. Spray for bugs.

9087044 Calumet Harbor, IL **L28225/L28340** **Part 3**
PBM: COM 1958 (ME2189) ***PBM Elevation (Dynamic):*** 178.0648 m
GPS Bench Mark: 908 7044 H (AE9231) ***Hydraulic Corrector:*** +0.104 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 07/09

1. **Unresolved from 2014:** Provide the outside intake invert elevation.
2. Replace gauge table.
3. Establish and level four bench marks of stability Class C or higher, designation/stamping 908 7044 K/7044 K 2016, 908 7044 L/7044 L 2016, 908 7044 M/7044 M 2016 and 908 7044 N/7044 N 2016.
4. Take face, setting, and location photos for any newly established marks.
5. Update the bench mark diagram to include any newly established marks.
6. Provide a photo/copy of the station visit log.
7. 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.
8. Update the station To Reach statement.
9. Raise GOES antenna and replace the riser.
10. Replace wood behind flashing.
11. Power wash, steam clean, sand blast and remove paint on exterior of station.

9087057 Milwaukee, WI **L28225/L28340** **Part 4**
PBM: NAVY (OL0278) ***PBM Elevation (Dynamic):*** 182.9494 m
GPS Bench Mark: MILWAUKEE A (AA8061) ***Hydraulic Corrector:*** +0.106 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 09/12
Note: The United States Naval Reserve Center is closed on weekends.

1. Establish and level one bench mark of stability Class C or higher, designation/stamping 908 7057 H/7057 H 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.
4. Power wash and steam clean station and sump.
5. Inspect/Repair the roof as necessary.
6. Inspect/Replace the heater as necessary.
7. Provide a photo/copy of the station visit log.
8. Take face, setting, and location photos for bench mark 77 15.

9087068 Kewaunee, WI **L28225/L28340** **Part 5**
PBM: 908 7068 ROD (PM0373) ***PBM Elevation (Dynamic):*** 177.9684 m
GPS Bench Mark: 908 7068 H (AH5304) ***Hydraulic Corrector:*** +0.114 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every year ***Last Dive:*** 07/09

1. Install a new well pipe.
2. Establish and level three bench marks of stability Class C or higher, designation/stamping 908 7068 J/7068 J 2016, 908 7068 K/7068 K 2016 and 908 7068 M/7068 M 2016.
3. Take face, setting, and location photos for any newly established marks.
4. Update the bench mark diagram to include any newly established marks.
5. Replace the box and stand for the BEI.
6. Provide a photo/copy of the station visit log.

9087069 Kewaunee Met, WI **Meteorological Station**

1. Verify the Met tower is grounded properly.

9087072 Sturgeon Bay Canal, WI **L28225/L28340** **Part 6**
PBM: 908 7072 GARAGE (PM0361) ***PBM Elevation (Dynamic):*** 181.8608 m
GPS Bench Mark: STURGEON A (AA8057) ***Hydraulic Corrector:*** +0.106 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 08/15

1. Establish and level one bench mark of stability Class C or higher, designation/stamping 908 7072 G/7072 G 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.
4. Replace the space heater if necessary.
5. Bury the power lines from transformer to station.
6. Provide a photo/copy of the station visit log.

9087079 Green Bay, WI **L28225/L28340** **Part 7**
PBM: 908 7078 WIS (PN0090) ***PBM Elevation (Dynamic):*** 179.6563 m
GPS Bench Mark: 908 7078 E (PN0840) ***Hydraulic Corrector:*** +0.114 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 07/10
Dive Inspection Frequency: Every year ***Last Dive:*** 03/14

1. Include bench marks 908 7079 E, 908 7079 H Reset, and T227 in the level run.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.
4. Dig a ditch around the station and back to the river. Fill it with 28A gravel.
5. Pressure wash and steam clean both the exterior and interior of station.
6. Replace the wall vent.
7. Paint the inside of the station.
8. Inspect/Replace the electrical systems as necessary.
9. Inspect/Replace the roof as necessary.
10. Provide a photo/copy of the station visit log.
11. Document contractor dive perform in March 2014.

9087088 Menominee, MI **L28225/L28340** **Part 9**
PBM: 908 7088 D (DI7587) ***PBM Elevation (Dynamic):*** 178.0211 m
GPS Bench Mark: 35 A (DI7590) ***Hydraulic Corrector:*** +0.124 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every 5 year ***Last Dive:*** 07/09

1. **Unresolved from 2014:** Provide a description for benchmark 908 7088 Menominee in WinDesc file.
2. **Unresolved from 2014:** Provide station photo looking down into the sump.
3. Verify the serial numbers of the DCP equipment and sensors at the SAE station.
4. Replace RH sensor.
5. Remove the remaining components of old station.
6. Re-seal external platform around sump.
7. Update the benchmark description for the Spike at the SAE station.
8. Verify and replace water temperature sensor as necessary.
9. Provide a photo/copy of the station visit log.
10. Update station To-Reach statement to reflect new station.

9087096 Port Inland, MI **L28225/L28340** **Part 8**

PBM: 908 7096 F (AC8316) ***PBM Elevation (Dynamic):*** 181.8117 m

GPS Bench Mark: 908 7096 J (DJ5177) ***Hydraulic Corrector:*** +0.046 m

GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15

Dive Inspection Frequency: Every 5 years ***Last Dive:*** 08/13

1. Replace encoder tape on both floats.
2. Repair gel coat roof.
3. Establish and level three bench marks of stability Class C or higher, designation/stamping 908 7096 L/7096 L 2016, 908 7096 M/7096 M 2016 and 908 7096 N/7096 N 2016.
4. Take face, setting, and location photos for any newly established marks.
5. Update the bench mark diagram to include any newly established marks.
6. Replace wall heater.
7. Provide a photo/copy of the station visit log.
8. Verify and replace water temperature sensor as necessary.

2.1.21.10 St. Mary's River

9076024 Rock Cut, MI (PORTS) **L28226/L28341** **Part 3**
PBM: 907 6024 B (DJ5178) ***PBM Elevation (Dynamic):*** 178.0183 m
GPS Bench Mark: 907 6024 B (DJ5178) ***Hydraulic Corrector:*** 0.000 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every year ***Last Dive:*** 08/13

1. **Unresolved from 2014:** Include bench mark 907 6024 ENG in level run.
2. Establish and level one bench mark of stability Class C or higher and one bench mark of stability Class B or higher, designation/stamping 907 6024 J/6024 J 2016 and 907 6024 K/6024 K 2016.
3. Take face, setting, and location photos for any newly established marks.
4. Update the bench mark diagram to include any newly established marks.
5. Include bench mark SM 24 and 6024 H in the level run.
6. A dive must be performed this AI. Determine the intake size on old well. Make notes of any structural damage.
7. Provide a photo/copy of the station visit log.
8. Replace thermistor rods.
9. Replace float tape on both encoders.
10. Repair/Replace the door alignment.
11. Inspect/Replace the heater as necessary.

9076027 West Neebish Island, MI (PORTS) **L28226/L28341** **Part 6**
PBM: E 297 (RJ0670) ***PBM Elevation (Dynamic):*** 178.7844 m
GPS Bench Mark: 907 6027 C ***Hydraulic Corrector:*** 0.000 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 08/13

1. Recover and include bench marks J297, MARA and SALE USLS in the level run.
2. Establish and level three bench marks of stability Class C or higher and one bench mark of stability Class B or higher, designation/stamping 907 6027 E/6027 E 2016, 907 6027 F/6027 F 2016, 907 6027 G/6027 G 2016 and 907 6027 H/6027 H 2016. The three bench marks of stability Class C or higher are dependent on which marks in instruction number 1 are recovered.
3. Take face, setting, and location photos for any newly established marks.
4. Update the bench mark diagram to include any newly established marks.
5. Replace roof membrane.
6. Replace air vent and cover.
7. Provide a photo/copy of the station visit log.

9076033 Little Rapids (NEW), MI (PORTS) **L28226/L28341** **Part 5**
PBM: D 293 (RJ0616) ***PBM Elevation (Dynamic):*** 178.3058 m
GPS Bench Mark: FERRY DOCK (RJ0617) ***Hydraulic Corrector:*** 0.000 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 09/13

1. Establish and level three bench marks of stability Class C or higher, designation/stamping 907 6033 A/6033 A 2016, 907 6033 B/6033 B 2016 and 907 6033 C/6033 C 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.
4. Provide a second directional photo of benchmark Z295.
5. Inspect/Replace water temperature sensor as necessary.
6. Provide a photo/copy of the station visit log.

9076060 U.S. Slip, MI (PORTS) **L28226/L28341** **Part 1**
PBM: C 293 (RJ0613) ***PBM Elevation (Dynamic):*** 184.3007 m
GPS Bench Mark: C 293 (RJ0613) ***Hydraulic Corrector:*** 0.000 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: As Needed (contractor) ***Last Dive:*** 01/15

1. 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.
2. 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.
3. Include bench marks PC and PT in the level run.
4. Investigate phone line issue.
5. Provide photos showing the destruction of bench mark Warehouse E.
6. Provide second directional photo for bench mark PT.
7. Verify serial number for waterlog encoder.
8. Provide a photo/copy of the station visit log.
9. Check in with the tower and ensure that the displays are reading correctly and there is no time offset issue.

9076070 S.W. Pier, MI (PORTS) **L28226/L28341** **Part 2**

PBM: V 295 (RJ0608) ***PBM Elevation (Dynamic):*** 186.0904 m

GPS Bench Mark: 788W ***Hydraulic Corrector:*** 0.000 m

GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 06/10

Dive Inspection Frequency: As Needed ***Last Dive:*** 06/04

1. 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. Include bench marks 907 6070 Q and Kristin 1972 USLS in the level run.
3. Inspect the water temperature sensor.
4. Repair under floor light and heat lamp bulb fixtures, as necessary.
5. Provide a photo/copy of the station visit log.
6. Check in with the tower and ensure that the displays are reading correctly and there is no time offset issue.

2.1.21.11 Lake Superior

9099004 Point Iroquois, MI (PORTS) **L28227/L28342** **Part 1**
PBM: A 293 (RJ0586) ***PBM Elevation (Dynamic):*** 187.7989 m
GPS Bench Mark: A 293 (RJ0586) ***Hydraulic Corrector:*** -0.100 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 09/07

1. Establish and level two bench marks of stability Class C or higher, designation/stamping 909 9004 A/9004 A 2016 and 909 9004 B/9004 B 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.
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.
5. Inspect/Repair station block mortar.
6. Install a new door and doorframe.
7. Replace damaged conduit and wiring.
8. Inspect heater, thermostat and wiring. Replace as necessary.
9. Sand blast the exterior of the station.
10. Inspect, repair, seal, prime and paint block, concrete and seams.
11. Provide a photo/copy of the station visit log.

9099018 Marquette, MI (MASTER) **L28227/L28342** **Part 2**
PBM: NO.11 (RK0113) ***PBM Elevation (Dynamic):*** 188.9570 m
GPS Bench Mark: 909 9018 K (AH7272) ***Hydraulic Corrector:*** 0.000 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 07/13

1. 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.
2. Establish and level three bench marks of stability Class C or higher, designation/stamping 909 9018 N/9018 N 2016, 909 9018 P/9018 P 2016 and 909 9018 Q/9018 Q 2016.
3. Take face, setting, and location photos for any newly established marks.
4. Update the bench mark diagram to include any newly established marks.
5. Trim trees, as necessary, to prevent GOES antenna or wind sensor blockage.
6. Paint the door.
7. Paint the inside of gauge station.
8. Inspect/Repair concrete, seams and block as necessary.
9. Provide a photo/copy of the station visit log.

9099044 Ontonagon, MI **L28227/L28342** **Part 3**
PBM: 909 9044 VFW (AE8284) ***PBM Elevation (Dynamic):*** 186.0416 m
GPS Bench Mark: 909 9044 L (DJ5175) ***Hydraulic Corrector:*** +0.049 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 08/09

1. Establish and level four bench marks of stability Class C or higher, designation/stamping 909 9044 M/9044 M 2016, 909 9044 N/9044 N 2016, 909 9044 P/9044 P 2016 and 909 9044 Q/9044 Q 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.
4. Inspect the station structure and well components for damage.
5. Replace electric wall heater.
6. Provide a photo/copy of the station visit log.

9099064 Duluth, MN **L28227/L28342** **Part 4**
PBM: 909 9064 F (AE8288) ***PBM Elevation (Dynamic):*** 184.7100 m
GPS Bench Mark: 602 (AE8289) ***Hydraulic Corrector:*** +0.079 m
GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every 5 years ***Last Dive:*** 08/09

1. Establish and level two bench marks of stability Class C or higher, designation/stamping as follows: 909 9064 G/9064 G 2016 and 909 9064 H/9064 H 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.
4. Provide a photo/copy of the station visit log.
5. Swap nose cone on wind sensor.
6. Paint exterior and interior of the station, as necessary.
7. Caulk holes in station walls.

9099090 Grand Marais, MN **L28227/L28342** **Part 5**

PBM: 909 9090 SCOTT (SH0674) ***PBM Elevation (Dynamic):*** 184.9850 m

GPS Bench Mark: MARAIS RESET (AA2869) ***Hydraulic Corrector:*** +0.046 m

GPS Observation Frequency: Every 5 years (NGS) ***Last GPS Observation Performed:*** 08/15

Dive Inspection Frequency: Every 5 years ***Last Dive:*** 08/10

1. Establish and level two bench marks of stability Class C or higher, designation/stamping as follows: 909 9090 G/9090 G 2016 and 909 9090 H/9090 H 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.
4. Replace XPERT DCP, XPERT DARK DCP, and relative humidity/air temperature sensor batteries.
5. Replace the wall space heater.
6. Caulk the holes and cracks in station walls.
7. Paint and seal the inside of station.
8. Power wash the exterior of station.
9. Spray for pests, as necessary.
10. Provide a photo/copy of the station visit log.

2.1.21.12 Great Lakes Current Meters

gl0101 Cuyahoga River, Toledo, Ohio (PORTS) **Current Meter Station**

1. No additional requirements.

gl0201 Maumee River (PORTS) **Current Meter Station**
Note: Station is currently unfunded. Contact Maritime Services Program Manager for status updates.

1. No additional requirements.

gl0301 St. Clair River, Port Huron, Michigan (PORTS) **Current Meter Station**
Note: Station is currently unfunded. Contact Maritime Services Program Manager for status updates.

1. No additional requirements.

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

Grace Gray, Task Manager/Technical Representative (TR)

8760721 Pilottown, LA (PORTS) **L28205/L28320** **Part 40**
PBM: W 279 1971 ***PBM above SD:*** 1.912 m
GPS Bench Mark: 876 0721 PILOT ***MSL above SD:*** 1.699 m
GPS Observation Frequency: Every year ***Last GPS Observation Performed:*** 08/14
Dive Inspection Frequency: Every year ***Last Dive:*** 08/14

1. Replace/Repair the bubbler well.
2. Create a new bench mark diagram..
3. Include all bench marks in the level run.
4. Check the serial number of the DCP 2. It appears the datalogger serial number was entered as the DCP2 serial number during a replacement in FY15. Update eSite report if needed.

8761847 Crescent City Bridge, LA (PORTS) **Air Gap Station**

1. No additional requirements.

8761955 Carrollton, LA (PORTS) **L28205/L28320** **Part 36**
PBM: DISTRICT 1 A (AU2196) ***PBM above LWRP:*** 3.075 m
GPS Bench Mark: DISTRICT 1 A (AU2196) ***MSL above SD:*** 2.336 m
GPS Observation Frequency: Every year ***Last GPS Observation Performed:*** 11/14
Dive Inspection Frequency: Every year ***Last Dive:*** 11/13
Note: The PBM elevation is set to Mississippi River-LWRP datum for this station.

1. **Unresolved From 2015:** Verify DCP and DCP components serial numbers.
2. **Unresolved From 2015:** Create a new bench mark diagram.
3. Install grounding cable.
4. Include all bench marks in the level run.

8762002 Huey Long Bridge, LA (PORTS) **Air Gap Station**

1. Replace battery charger.

lm0101 First Street Wharf, LA (PORTS) **Current Meter Station**

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

lm0201 Port Allen, LA (PORTS) **Current Meter Station**

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

2.3 Air-Sea Systems - Task 14-02: Port Fourchon PORTS®

Grace Gray, Task Manager/Technical Representative (TR)

8762075 Port Fourchon, LA (PORTS) **L28205/L28320** **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:*** 05/15

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. Include all bench marks in the level run.

2.4 Air-Sea Systems - Task 14-02: Pascagoula PORTS®

Grace Gray, 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/L28319** **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:*** 04/15
Dive Inspection Frequency: Every year ***Last Dive:*** 04/15

1. Establish and level a bench mark of stability Class B or higher, with designation/stamping as follows: 874 1041 F/ 1041 F 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.
4. Verify GPS coordinates of bench mark 874 1041 D.
5. Update the descriptions for all bench marks referencing the building that no longer exists.
6. Include all bench marks in the level run.

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

1. Refer to the task order for station specific requirements.
2. Update the Station Information, To Reach statement, and add the safety gear requirements to the eSite report.

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

1. Refer to the task order for station specific requirements.
2. Update the Station Information, To Reach statement, and add the safety gear requirements to the eSite report.

8741533 Pascagoula NOAA Lab, MS (PORTS) **L28204/L28319** **Part 6**

PBM: 874 1429 B ***PBM above SD:*** 9.1014 m
GPS Bench Mark: 874 1533 B ***MSL above SD:*** 6.903 m
GPS Observation Frequency: Every year ***Last GPS Observation Performed:*** 04/15
Dive Inspection Frequency: Every year Last Dive: 04/15

1. Include all bench marks in the level run.
2. Replace the two short, very sharply bent pieces of flexible conduit below the enclosure.

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.
2. Replace the solar panel cables that have UV damage.

ps0401 Pascagoula Harbor LB 10, MS (PORTS) **Current Meter Station**

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

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

Grace Gray, 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

8767816 Lake Charles, LA (PORTS) **L28205/L28320** **Part 9**
PBM: A 269 (BK1489) ***PBM above SD:*** 10.000 m
GPS Bench Mark: CIVIC (BK3291) ***MSL above SD:*** 8.294 m
GPS Observation Frequency: Every year ***Last GPS Observation Performed:*** 09/14
Dive Inspection Frequency: Every year ***Last Dive:*** 09/14

1. Include bench mark 876 7816 TIDAL 7 in the level run.

8767931 I-210 Bridge Air Gap, LA (PORTS) **Air Gap Station**

1. No additional requirements.

8767961 Bulk Terminal, LA (PORTS) **L28205/L28320** **Part 15**
PBM: 876 7961 C ***PBM above SD:*** 10.000 m
GPS Bench Mark: 876 7961 C ***MSL above SD:*** 7.282 m
GPS Observation Frequency: Every year ***Last GPS Observation Performed:*** 09/14
Dive Inspection Frequency: Every year ***Last Dive:*** 09/14

1. Include all bench marks in the level run.

8768094 Calcasieu Pass, East Jetty LA (PORTS) **L28205/L28320** **Part 5**
PBM: 876 8094 E (DJ9387) ***PBM above SD:*** 9.9670 m
GPS Bench Mark: 876 8094 E TIDAL (DJ9387) ***MSL above SD:*** 8.553 m
GPS Observation Frequency: Every year ***Last GPS Observation Performed:*** 09/14
Dive Inspection Frequency: Every year ***Last Dive:*** 09/14

1. **Unresolved From 2015:** 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. Work with CIL to correct DCP configurations to remove non-existant sensor: 1/J1
3. Include all bench marks in the level run.

lc0101 Calcasieu Channel LB36 (PORTS) **Current Meter Station**

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

lc0201 Cameron Fishing Pier (PORTS) **Current Meter Station**

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

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

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

Grace Gray, Task Manager/Technical Representative (TR)

8770613 Morgan's Point, TX (PORTS) **L28206/L28321** **Part 8**
PBM: E 1201 (AW1556) ***PBM above SD:*** 5.9855 m
GPS Bench Mark: 877 0613 TIDAL 10 (AW4857) ***MSL above SD:*** 1.807 m
GPS Observation Frequency: Every year ***Last GPS Observation Performed:*** 04/14
Dive Inspection Frequency: Every year ***Last Dive:*** 04/14

1. Include all bench marks in the level run.

8771013 Eagle Point, TX (PORTS) **L28206/L28321** **Part 13**
PBM: 877 1013 B ***PBM above SD:*** 3.913 m
GPS Bench Mark: 877 1013 A (AJ4424) ***MSL above SD:*** 1.467 m
GPS Observation Frequency: Every year ***Last GPS Observation Performed:*** 04/14
Dive Inspection Frequency: Every year ***Last Dive:*** 04/14

1. Include all bench marks in the level run.

8771341 Galveston Entrance Channel, TX (PORTS) **L28206/L28321** **Part 41**
PBM: 877 1314 J ***PBM above SD:*** 4.009 m
GPS Bench Mark: 877 1341 J ***MSL above SD:*** 3.072 m
GPS Observation Frequency: Every year ***Last GPS Observation Performed:*** 04/15
Dive Inspection Frequency: Every year ***Last Dive:*** 04/15

1. Include bench marks 877 1341 C and 877 1341 F in the level run.

8771450 Galveston Pier 21, TX (PORTS) **L28206/L28321** **Part 2**
PBM: 877 1450 B ***PBM above SD:*** 3.225 m
GPS Bench Mark: 877 1450 B ***MSL above SD:*** 1.588 m
GPS Observation Frequency: Every year ***Last GPS Observation Performed:*** 01/15
Dive Inspection Frequency: Every year ***Last Dive:*** 01/15

1. Install an approved MWWL sensor; if any structural modifications are required seek engineering support and Field Engineering Review Subcommittee (FERS) approval.
2. Install a safety chain at top of ladder.
3. Include all bench marks in the level run.

g06010 Galveston Bay Entr Channel LB 11 (PORTS) **Current Meter Station**

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

gxxxxx Fred Hartman Bridge, Houston Bay, TX (PORTS) **Current Meter Station**

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

2.7 Woods Hole Group - Task 14-02: Texas NWLON

Grace Gray, Task Manager/Technical Representative (TR)

8770570 Sabine Pass North, TX (PORTS) **L28206/L28321** **Part 1**
PBM: 877 0570 A TIDAL (AV1014) ***PBM above SD:*** 3.264 m
GPS Bench Mark: 877 0570 A TIDAL (AV1014) ***MSL above SD:*** 1.343 m
GPS Observation Frequency: Every year ***Last GPS Observation Performed:*** 11/14
Dive Inspection Frequency: Every year ***Last Dive:*** 11/14

1. **Unresolved From 2015:** Measure the wind and air temperature sensors above the Met SRM.
2. Relocate the solar panel that is zip tied to the railing.

8772447 USCG Freeport, TX **L28206/L28321** **Part 47**
PBM: 877 2447 A TIDAL ***PBM above SD:*** 10.000 m
GPS Bench Mark: 877 2447 E TIDAL ***MSL above SD:*** 8.723 m
GPS Observation Frequency: Every year ***Last GPS Observation Performed:*** 11/14
Dive Inspection Frequency: Every year ***Last Dive:*** 11/14

1. Download redundant water level data between January 1, 2015 and January 9, 2015.
2. Tighten the structure's bolts.
3. Replace the APX enclosure.
4. Run the wiring through the conduit.
5. Include all bench marks in the level run.

8774770 Rockport, TX **L28206/L28321** **Part 5**
PBM: 877 4770 A ***PBM above SD:*** 3.207 m
GPS Bench Mark: 877 4770 B ***MSL above SD:*** 2.025 m
GPS Observation Frequency: Every year ***Last GPS Observation Performed:*** 9/14
Dive Inspection Frequency: Every year ***Last Dive:*** 9/14

1. Include bench marks 877 4770 E and 877 4770 TIDAL 9 TXHD in the level run.
2. Provide updated handheld GPS locations for each bench mark.
3. Replace the IP modem.

8775870 Corpus Christi, TX **L28206/L28321** **Part 6**
PBM: 877 5870 A TIDAL (AC8459) ***PBM above SD:*** 9.098 m
GPS bench mark: 877 5870 H TIDAL (AH1762) ***MSL above SD:*** 6.635 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 03/12
Dive Inspection Frequency: Every year Last Dive: 03/10

1. **Unresolved From 2015:** Replace barometer.
2. **Unresolved From 2015:** Recover and level bench mark 877 5870 D.
3. Replace base plate for Shakespeare pole.
4. Replace conduit.
5. Clean out the enclosure.
6. Relocate IP modem into the DCP 1 RTU box.

8779770 Port Isabel, TX **L28206/L28321** **Part 7**
PBM: 877 9770 TIDAL 10 (AB1227) ***PBM above SD:*** 4.276 m
GPS Bench Mark: X 1406 (AB1225) ***MSL above SD:*** 1.423 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 10/12
Dive Inspection Frequency: Every year ***Last Dive:*** 10/14

1. **Unresolved From 2015:** Update the sensor elevation diagram.
2. Include all bench marks in the level run.

2.8 Conrad Blucher Institute - Sabine Neches PORTS®

sn0102 Sabine Bank Channel LBB 34 (PORTS) **Current Meter Station**

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

sn0201 USCG Sabine (PORTS) **Current Meter Station**

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

sn0301 Sabine Front Range (PORTS) **Current Meter Station**

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

sn0402 West Port Arthur Bridge (PORTS) **Current Meter Station**

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

sn0502 Rainbow Bridge (PORTS) **Current Meter Station**

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

sn0601 Port of Beaumont (PORTS) **Current Meter Station**

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

sn0701 Port Arthur (PORTS) **Current Meter Station**

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

2.9 Woods Hole Group - Task 14-03: Narragansett PORTS®

John Stepnowski, Task Manager/Technical Representative (TR)

8447386 Fall River, MA (PORTS) **L28189/L38304** **Part 2**
PBM: STATE (LW2264) ***PBM above SD:*** 10.000 m
GPS Bench Mark: 844 7386 A ***MSL above SD:*** 7.028 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 09/14
Dive Inspection Frequency: Every year ***Last Dive:*** 04/14

1. **Unresolved from 2014:** Replace the conductivity sensor.
2. Replace the Xpert and Xpert Dark DCP modules.
3. Verify the barometer serial number and update the eSite report if necessary.

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

1. Move the station enclosure to one of the exterior wall on the base floor or install within the Fall River backup DCP.

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

1. Investigate GOES transmission low signal strength.
2. Inspect the GOES antenna/cable.
3. Verify the GOES angle and elevation.

8452314 Sandy Point, Prudence Island, RI (PORTS) **Meteorological Station**

1. No additional requirements.

8452944 Conimicut Light, RI (PORTS) **L28190/L28305** **Part 2**
PBM: 845 2944 BOLT ***PBM above SD:*** 10.532 m
GPS Bench Mark: N/A ***MSL above SD:*** 6.292 m
GPS Observation Frequency: (Waived – not feasible)
Dive Inspection Frequency: Every year ***Last Dive:*** 05/13

1. Verify the MWWL and Aquatrak data comparison analysis is complete and accepted by the MWWL TOP Committee. If complete, remove the Aquatrak, associated DCP (if applicable), and assign the DCP associated with the MWWL sensor as DCP1, if necessary.

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

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

8454000 Providence, RI (PORTS) **L28190/L28305** **Part 3**
PBM: 845 4000 TIDAL 9 (LW0154) ***PBM above SD:*** 4.475 m
GPS Bench Mark: 845 4000 L TIDAL (AJ4033) ***MSL above SD:*** 1.749 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 08/15
Dive Inspection Frequency: Every year ***Last Dive:*** 06/15

1. **Unresolved from 2015:** Establish and level six bench marks of class B or higher stability, designation/stamping as follows: 845 4000 P/4000 P 2016, 845 4000 Q/4000 Q 2016, 845 4000 R/4000 R 2016, 845 4000 S/4000 S 2016, 845 4000 T/4000 T 2016, and 845 4000 U/4000 U 2016.
2. **Unresolved from 2014:** Document the solar panels serial numbers.
3. Take face, setting, and location photos for any newly established marks.
4. Update the bench mark diagram to include any newly established marks.
5. Recover and include in the leveling run bench marks 4000 A TIDAL, 4000 L TIDAL, 4000 M.

8454049 Quonset Point, RI (PORTS) **L28190/L28305** **Part 4**
PBM: 845 4049 D ***PBM above SD:*** 10.000 m
GPS Bench Mark: 845 4049 D ***MSL above SD:*** 7.587 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 08/14
Dive Inspection Frequency: Every year ***Last Dive:*** 06/13

1. Verify the MWWL and Aquatrak data comparison analysis is complete and accepted by the MWWL TOP Committee. If complete, remove the Aquatrak, associated DCP (if applicable), and assign the DCP associated with the MWWL sensor as DCP1, if necessary.
2. Perform bench mark reconnaissance for class B or higher marks. Submit a Google Earth image and photos of proposed locations.

nb0201 Fall River (PORTS) **Current Meter Station**

1. 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.

2.10 Woods Hole Group - Task 14-03: New London PORTS®

John Stepnowski, Task Manager/Technical Representative (TR)

8461490 New London, CT (PORTS) **L28191/L28306** **Part 1**

PBM: 846 1490 B ***PBM above SD:*** 5.032 m

GPS Bench Mark: 846 1490 K TIDAL (LX3418) ***MSL above SD:*** 1.542 m

GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 11/09

Dive Inspection Frequency: Every year ***Last Dive:*** 08/15

1. Install an approved MWWL sensor; if any structural modifications are required seek engineering support and Field Engineering Review Subcommittee (FERS) approval.
2. Verify all solar panel serial numbers and record all panels in the eSite report.

nl0101 Groton, Pier 6 (PORTS) **Current Meter Station**

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

2.11 Woods Hole Group - Task 14-03: New Haven PORTS®

John Stepnowski, Task Manager/Technical Representative (TR)

8465705 New Haven, CT (PORTS) **L28191/L28306** **Part 2**

PBM: 846 5705 D ***PBM above SD:*** 10.000 m

GPS Bench Mark: 846 5705 C ***MSL above SD:*** 6.630 m

GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 09/14

Dive Inspection Frequency: Every year ***Last Dive:*** 08/14

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

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

John Stepnowski, Task Manager/Technical Representative (TR)

8516945 Kings Point, NY (PORTS) **L28192/L28307** **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:*** 06/15

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 (if applicable), and assign the DCP associated with the MWWL sensor as DCP1.
2. Replace the (12) clamps with 2-1/4 inch stainless steel clamps, if the Aquatrak sensor remains installed (see PI #1).
3. Replace the water temperature well.
4. Establish and level one bench mark of stability Class C or higher, designation/stamping as follows:
   851 6945 H/6945 H 2016.
5. Take face, setting, and location photos for any newly established marks.
6. Update the bench mark diagram to include the MWWL, Met SRM, Aquatrak and any newly established marks.
7. Include bench marks 851 6945 TIDAL 5 and 851 6945 D in the level run.
8. Identify the Alpine and RM Young wind sensors and update the eSite report accordingly.
9. Provide hand held GPS positions for the station.

8517986 Verrazano Narrows Bridge Air Gap, NY (PORTS) **Air Gap Station**

1. No additional requirements.

8518750 The Battery, NY (PORTS) **L28192/L28307** **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:*** 06/15

1. Include the Aquatrak and the MWWL sensors in the level run.
2. During the AI, swap the Aquatrak sensor only.
3. Six months after the AI, swap the MWWL sensor only. PI#2 and #3 are essential to determining the 3 cm difference in water level observations being recorded at the stations.
4. **Unresolved from 2014:** Replace the Waterlog pump dryer.
5. **Unresolved from 2014:** Record handheld GPS positions for SRM BOLT.
6. Include bench mark S 340 Reset 1991 and 851 8750 CI Landmark in the level run.
7. Perform bench mark reconnaissance for class B or higher marks.
8. Update barometer serial number in eSite report.
9. Provide the handheld GPS position for the station.

8519461 Bayonne Bridge Air Gap, NY (PORTS) **Air Gap Station**

1. Relocate the air gap station to the eastern side of the bridge during the bridge construction.

8519483 Bergen Point, NY (PORTS) **L28192/L28307** **Part 4**
PBM: 851 9483 B TIDAL (AH6737) ***PBM above SD:*** 6.428 m
GPS Bench Mark: 851 9483 H ***MSL above SD:*** 2.137 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 09/14
Dive Inspection Frequency: Every year ***Last Dive:*** 06/15

1. Verify the MWWL and Aquatrak data comparison analysis is complete and accepted by the MWWL TOP Committee. If complete, remove the Aquatrak, associated DCP (if applicable), and assign the DCP associated with the MWWL sensor as DCP1, if necessary.
2. **Unresolved from 2014:** Establish and level three bench marks of stability Class B or higher and one bench mark of stability Class C or higher, designation/stamping as follows if new mark(s): 851 9483 J/9483 J 2016, 851 9483 K/9483 K 2016, and 851 9483 L/9483 L 2016.
3. Take face, setting, and location photos for any newly established marks.
4. Update the bench mark diagram to include any newly established marks.

8519532 Mariner's Harbor, NY (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.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions.

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

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

8531680 Sandy Hook, NJ (PORTS) **L28193/L28308** **Part 1**
PBM: 853 1680 D TIDAL (AB6711) ***PBM above SD:*** 3.683 m
GPS Bench Mark: SIMPSON 2 RM 3 (KV0707) ***MSL above SD:*** 1.551 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 09/09
Dive Inspection Frequency: Every year ***Last Dive:*** 05/14

1. Recover and include bench marks 853 1680 TIDAL 8 and 863 1680 F in the level run; these marks have not been leveled in over two years.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions.
3. 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.
4. Provide hand held GPS positions for the station.
5. Verify the serial numbers of the DCP components and solar panels and update the eSite report if necessary.
6. Verify the battery dates and update eSite report if necessary.

n03020 The Narrows, NY (PORTS) **Current Meter Station**

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

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

John Stepnowski, Task Manager/Technical Representative (TR)

8536110 Cape May, NJ (PORTS) **L28193/L28308** **Part 3**
PBM: 853 6110 TIDAL 1 (HU1194) ***PBM above SD:*** 4.892 m
GPS Bench Mark: 853 6110 D ***MSL above SD:*** 1.521 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 04/14
Dive Inspection Frequency: Every year ***Last Dive:*** 06/15

1. Install the conductivity sensor.
2. Include bench marks 853 6110 N, 853 6110 S, and 853 6110 TIDAL 5 RESET in the level run.

8537121 Ship John Shoal, NJ (PORTS) **L28193/L28308** **Part 4**
PBM: 853 7121 TIDAL 1 ***PBM above SD:*** 8.666 m
GPS Bench Mark: N/A ***MSL above SD:*** 6.529 m
GPS Observation Frequency: (Waived – not feasible)
Dive Inspection Frequency: Every year ***Last Dive:*** 09/14

1. No additional requirements.

8539094 Burlington Bridge, NJ (PORTS) **L28193/L28308** **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:** Replace the solar panel for the Xpert DCP.
2. **Unresolved from 2014:** Replace the GPS antenna, check the placement, and inspect cable.
3. **Unresolved from 2014:** Update the To Reach statement to reflect the current location of the station.

8540433 Marcus Hook, PA (PORTS) **L28042/L28309** **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:*** 10/14
Dive Inspection Frequency: Every year ***Last Dive:*** 07/15

1. Re-install the station; if any structural modifications are required seek engineering support and Field Engineering Review Subcommittee (FERS) approval.
2. **Unresolved from 2014:** Recover or establish and level two bench marks of stability Class C or higher,designation/stamping as follows: 854 0433 H/0433 H 2016 and 854 0433 J/0433 J 2016.
3. Take face, setting, and location photos for any newly established marks.
4. Update the bench mark diagram to include any newly established marks.

8545240 Philadelphia, PA (PORTS) **L28042/L28309** **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:*** 06/15
Dive Inspection Frequency: Every year ***Last Dive:*** 06/15

1. Repair the gauge house. The gauge house is leaning toward shore due to concrete slab shifting.

8546252 Bridesburg, PA (PORTS) **L28042/L28309** **Part X**
PBM: Undetermined ***PBM above SD:*** x.xxx m
GPS Bench Mark: Undetermined ***MSL above SD:*** x.xxx m
GPS Observation Frequency: Undetermined ***Last GPS Observation Performed:*** n/a
Dive Inspection Frequency: Undetermined ***Last Dive:*** n/a

1. Install the approved MWWL sensor, seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the installation design of the new station.
2. Refer to the task order for station specific requirements.

8548989 Newbold, PA (PORTS) **L28042/L28309** **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:*** 10/14
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 2016 and 854 8989 G/8989 G 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.
4. **Unresolved from 2014:** Measure the Met SRM height above water and document this elevation along with the date/time in the comments section of the site report.
5. **Unresolved from 2014:** Measure the elevation of the air temperature sensors above Met SRM.
6. **Unresolved from 2014:** Measure the elevation of the water temperature sensor above Station Datum.

8551762 Delaware City, DE (PORTS) **L28043/L28310** **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:*** 10/14
Dive Inspection Frequency: Every year ***Last Dive:*** 09/14

1. No additional requirements.

8555889 Brandywine Shoal Light, DE (PORTS) **L28043/L28310** **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.
2. Take digital photos of the station Met mast.

8557380 Lewes, DE (PORTS) **L28043/L28310** **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:*** 06/15

1. Install a conductivity sensor.
2. **Unresolved from 2014:** Include the barometer in the level run.
3. Recover and include bench marks GPS S 5 and GPS S 5 A in the level run; these marks have not been leveled in over than two years.

855xxxx Ben Franklin Bridge, DE (PORTS) **Air Gap Station**

1. 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.

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

John Stepnowski, Task Manager/Technical Representative (TR)

8551910 Reedy Point, DE (PORTS) **L28043/L28310** **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:*** 03/15

1. **Unresolved from 2014:** 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/L28311** **Part 3**
PBM: 857 3364 A ***PBM above SD:*** 2.963 m
GPS Bench Mark: 857 3364 E ***MSL above SD:*** 1.294 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 06/15
Dive Inspection Frequency: Every year ***Last Dive:*** 03/15

1. Establish and level one bench mark of stability Class C or higher, designation/stamping as follows: 8573364 F/3364 F 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.

8573927 Chesapeake City, MD (PORTS) **L28196/L28311** **Part 4**
PBM: 857 3927 B ***PBM above SD:*** 2.154 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:*** 03/15

1. Install a conductivity sensor.
2. Inspect and replace, if necessary, the GPS antenna and cable.
3. Establish and level one bench mark of stability Class C or higher, designation/stamping as follows: 8573364 F/3364 F 2016.
4. Take face, setting, and location photos for any newly established marks.
5. Update the bench mark diagram to include any newly established marks.

8573928 Chesapeake City Air Gap, MD (PORTS) **Air Gap Station**

1. **Unresolved from 2014:** Update the XPERT Operating System, XPERT Dark Operating System and Satlink firmware.
2. **Unresolved from 2014:** Check and update the log sizes as per the Engineering Bulletin 09-003.

8574680 Baltimore, MD (PORTS) **L28196/L28311** **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:*** 06/15

1. Establish and level a bench mark of stability Class B or higher, designation/stamping as follows: 857 4680 D/4680 D 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.
4. Include bench mark TIDAL 28 STA 72, 857 4680 TIDAL 29, and FORT MCHENRY in level run.
5. Replace and re-shingle the plywood on the roof.
6. Paint the entire station exterior.

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

1. Provide the barometer sensor height above MSL.
2. Provide digital photos of the sensors as specified in the section 2.9 of the Standing Project Instructions.
3. Take digital photos of the station Met mast.
4. Refer to the task order for additional station specific requirements.

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

1. Measure the Met sensor heights above the MET SRM.
2. Take digital photos of the sensors as specified in the section 2.9 of the Standing Project Instructions.
3. Take digital photos of the station Met mast.
4. Refer to the task order for additional station specific requirements.

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

1. **Unresolved from 2014:** Update the XPERT Operating System, XPERT Dark Operating System and Satlink firmware.
2. **Unresolved from 2014:** Check and update the log sizes as per the Engineering Bulletin 09-003.

8575437 Chesapeake Bay Bridge, MD (PORTS) **Meteorological Station**

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

8575512 Annapolis, MD (PORTS) **L28196/L28311** **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:*** 06/15

1. Contact Michele Morgado before arrival to station @ 410-293-5623,morgado@usna.edu.
2. Establish and level two bench marks of stability Class B or higher marks, designation/stamping as follows: 857 5512 F/5512 F 2016 and 857 5512 G/5512 G 2016.
3. Take face, setting, and location photos for any newly established marks.
4. Update the bench mark diagram to include any newly established marks.

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

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

8577330 Solomons Island, MD (PORTS) **L28196/L28311** **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:*** 04/14
Dive Inspection Frequency: Every year ***Last Dive:*** 06/15

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 (if applicable), and assign the DCP associated with the MWWL sensor as DCP1, if necessary.
2. Include bench mark 857 7330 D in the level run.
3. Update the datum offset in the XPERT DCP to 3.659 m (assuming the leveling point did not exceed the 6 mm tolerance after this year's leveling run).
4. Verify the barometer, AI/O 1 module, DI/O 1 module for DCP 2 serial numbers.

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

1. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions. Measure the wind sensor above MET SRM then calculate and provide the elevation above MSL.
2. Take digital photos of the station Met Mast.
3. Refer to the task order for additional station specific requirements.

8594900 Washington, DC (PORTS) **L28045** **Part 1**
PBM: 859 4900 TIDAL 1 (HV1980) ***PBM above SD:*** 4.115 m
GPS Bench Mark: 859 4900 K ***MSL above SD:*** 1.859 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 06/15
Dive Inspection Frequency: Every year ***Last Dive:*** 06/15

1. Establish and level one bench mark of stability Class B or higher and one bench mark of stability Class C or higher, designation/stamping as follows: 859 4900 P/4900 P 2016 and 859 4900 Q/4900 Q 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.
4. Include bench mark 859 4900 K in the level run.
5. Re-describe bench mark 859 4900 L and update the Windesc file.

8632200 Kiptopeke, VA (PORTS) **L28198/L28313** **Part 2**
PBM: L 418 (FW0303) ***PBM above SD:*** 4.093 m
GPS Bench Mark: 863 2200 B TIDAL (AJ4588) ***MSL above SD:*** 1.539 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 06/14
Dive Inspection Frequency: Every year ***Last Dive:*** 06/15

1. Rebuild the sounding tube. The joints have become loose from re-gluing and repairs.
2. Perform a dive and verify how many clamps are attached to the protective well.
3. Take pictures of the conduit, MET stand, box, and interior of the shelter to document beginning signs of corrosion and aging.
4. Contact the Park Service upon arrival to clear out bench marks L 418 and 863 2200 E if the poison ivy growth is excessive.
5. Include bench mark 863 2022 TIDAL 4 and 863 2200 L in the level run.

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

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

8635750 Lewisetta, VA (PORTS) **L28198/L28313** **Part 4**

PBM: 863 5750 H ***PBM above SD:*** 2.647 m
GPS Bench Mark: 863 5750 J TIDAL (AJ4589) ***MSL above SD:*** 1.685 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 06/13
Dive Inspection Frequency: Every year ***Last Dive:*** 06/15

1. Perform a reconnaissance to relocate the tide house. The pier the station is located on is unstable.
2. Establish and level a bench mark of stability Class B or higher, designation/stamping as follows: 863 5075 N/5750 N 2016.
3. Take face, setting, and location photos for any newly established marks.
4. Update the bench mark diagram to include any newly established marks.
5. Include bench mark 863 5750 TIDAL 3 in the level run and note the condition of the mark in eSite report.

8636580 Windmill Point, VA (PORTS) **L28198/L28313** **Part 5**

PBM: 863 6580 E ***PBM above SD:*** 2.1.219 m
GPS Bench Mark: 863 6580 E ***MSL above SD:*** 0.903 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 6/14
Dive Inspection Frequency: Every year ***Last Dive:*** 06/15

1. **Unresolved from 2014:** Establish and level two bench marks of stability Class C or higher designation/stamping as follows: 863 6580 M/6580 M 2016, and 863 6580 N/6580 N 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.

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

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

8637689 Yorktown, VA (PORTS) **L28198/L28313** **Part 6**

PBM: 863 7689 C ***PBM above SD:*** 10.301 m
GPS Bench Mark: 863 7689 C ***MSL above SD:*** 1.964 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 03/14
Dive Inspection Frequency: Every year ***Last Dive:*** 06/15

1. **Unresolved from 2014:** Referring to the reconnaissance photos from last year station visit, establish and level two bench mark of stability Class B or higher, designation/stamping as follows: designation/stamping: 863 7689 D/7689 D 2016 and 863 7689 E/7689 E 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.

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

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

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

1. Re-install the station; if any structural modifications are required seek engineering support and Field Engineering Review Subcommittee (FERS) approval.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions.
3. Take digital photos of the station Met mast.
4. Refer to the task order for additional station specific requirements.

8638610 Sewells Point, VA (PORTS) **L28198/L28313** **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

5. **Unresolved from 2012:** Verify and document the length of the conductivity sensor well.
6. Replace the weather heads.
7. Replace the dryer bracket.
8. **Unresolved from 2014:** Recover and level bench mark L 308 RESET 1985 to get a geodetic connection.
9. **Unresolved from 2014:** Provide a description and photo of the Met SRM and include the Met SRM in the level run.
10. **Unresolved from 2014:** Measure the elevation of the water temperature sensor above Station Datum.
11. **Unresolved from 2014:** Replace the Druck sensor.

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

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

8638863 Chesapeake Bay Bridge Tunnel, VA (PORTS) **L28198/L28313** **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:*** 06/15

1. Relocate the NWLON station to Island 3 until the long-term construction on Island 1 is complete.
2. Install an approved MWWL sensor; if any structural modifications are required seek engineering support and Field Engineering Review Subcommittee (FERS) approval.
3. **Unresolved from 2014:** Remove the top hat. The top cap needs to be removed and new additional aluminum Well need to be jacked into ocean bottom and secured to building floor with additional access holes. Seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the design of the upgrades to the station.
4. **Unresolved from 2014:** Repair or replace the conductivity sensor.
5. Include bench marks 863 8863 NO 1 TIDAL and 863 8863 A in the level run.
6. Refurbish station interior.

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

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

8639348 Money Point, VA (PORTS) **L28198/L28313** **Part 9**
PBM: 863 9348 E ***PBM above SD:*** 10.000 m
GPS Bench Mark: 863 9348 D ***MSL above SD:*** 7.065 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 06/14
Dive Inspection Frequency: Every year ***Last Dive:*** 06/15

1. Recover or establish and level one bench mark of stability Class B or higher and two bench marks of stability Class C or higher, designation/stamping as follows: 863 9348 J /9348 J 2016, 863 9348 K/9348 K 2016, and 863 9348 L/9348 L 2016.
2. Take face, setting, and location photos for any newly established marks.
3. Update the bench mark diagram to include any newly established marks.
4. Include bench mark 9348 A 1997 in the level run.

cb0102 Cape Henry LB 2 CH (PORTS) **Current Meter Station**

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

cb0201 York Spit Channel LBB 22 (PORTS) **Current Meter Station**

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

cb0301 Thimble Shoal Channel LB 18 (PORTS) **Current Meter Station**

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

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

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

cb0601 Newport News Channel LB 18 (PORTS) **Current Meter Station**

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

cb0701 Dominion Terminal (PORTS) **Current Meter Station**

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

cb0801 Rappahannock Shoal Channel LBB 60 (PORTS) **Current Meter Station**

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

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

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

cb1001 Cove Point LNG Pier (PORTS) **Current Meter Station**

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

cb1101 Chesapeake Channel LBB 92 (PORTS) **Current Meter Station**

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

cb1201 Tolchester Front Range (PORTS) **Current Meter Station**

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

cb1301 Chesapeake City (PORTS) **Current Meter Station**

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

tplm2 Thomas Point Light (PORTS) **Meteorological Station**

1. No additional requirements.

1. No additional requirements.

2.15 Woods Hole Group - Task 14-03: Charleston PORTS®

John Stepnowski, Task Manager/Technical Representative (TR)

8665530 Charleston, SC (PORTS) **L28200/L28315** **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:*** 12/14

1. **Unresolved from 2014:** Update the XPERT Operating System, XPERT Dark Operating System, and the Satlink firmware.
2. **Unresolved from 2014:** Check and update the log sizes as per the Engineering Bulletin 09-003.
3. **Unresolved from 2014:** Recover and include bench marks 866 5530 TIDAL 11, 866 5530 TIDAL BASIC 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 level run.
5. Replace old solar panel and raise solar panels on the tower.
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. Provide sensor heights for all MET sensors installed at this station.
7. Paint tide house door as well as interior and exterior deck surfaces.
8. Verify Xpert module serial number.

8664753 Don Holt Bridge, SC (PORTS) **Air Gap Station**

1. Replace the laser sensor.

2.16 Woods Hole Group - Jacksonville PORTS®

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

1. No additional requirements.

8720219 Dames Point, FL (PORTS) **L28198/L28313** **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:*** 02/15

1. Investigate the periodic gaps in the Druck sensor data.

8720226 Southbank Riverwalk, FL (PORTS) **L28198/L28313** **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/L28313** **Part 42**
PBM: 872 0357 A ***PBM above SD:*** 0.663 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:*** 02/15

1. No additional requirements.

8720376 Dames Point Bridge, FL (PORTS) **Air Gap Station**

1. No additional requirements.

8720503 Red Bay Point, FL (PORTS) **L28198/L28313** **Part 43**
PBM: 872 0503 B TIDAL ***PBM above SD:*** 1.279 m
GPS Bench Mark: 872 0503 C ***MSL above SD:*** -0.011 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 6/14
Dive Inspection Frequency: Every year ***Last Dive:*** 01/15

1. No additional requirements.

8720625 Racy Point, FL (PORTS) **L28198/L28313** **Part 44**
PBM: 872 0625 A TIDAL ***PBM above SD:*** 1.7970 m
GPS Bench Mark: 872 0625 C TIDAL ***MSL above SD:*** 0.009 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 12/13
Dive Inspection Frequency: Every year ***Last Dive:*** 1/15

1. No additional requirements.

jx0101 St Johns River LBB 6 **Current Meter Station**

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

jx0201 Mayport Basin PC LBB **Current Meter Station**

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

jx0301 Mile Point LB 24 **Current Meter Station**

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

jx0401 Fulton Cutoff LB 34 **Current Meter Station**

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

jx0501 Dames Point Bridge East Cell **Current Meter Station**

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

jx0601 Trout River Cut LB 64 **Current Meter Station**

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

jx0701 Acosta Bridge **Current Meter Station**

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

2.17 FOD/POB – Hawaii, Pacific Islands, West Coast and Alaska Stations

2.17.1 FOD/POB – Hawaii and the Pacific Island Stations

1611400 Nawiliwili, HI **L28215/L28330** **Part 1**
PBM: 161 1400 TIDAL 14 ***PBM above SD:*** 3.155 m
GPS Bench Mark: 161 1400 TIDAL 5 ***MSL above SD:*** 0.949 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 01/14
Dive Inspection Frequency: Every 2 years ***Last Dive:*** 01/2015

1. Perform V2 upgrades on all DCPs.
2. Replace the GOES antenna and cable at the Met station.
3. Perform a reconnaissance to relocate the solar panels.
4. Replace the upper 6-inch well clamp.
5. Troubleshoot the phone connectivity to the backup DCPs.
6. Provide pictures of the area around 161 1400 B.
7. 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.
8. Remove extra DCP3 Satlink from eSite report.

1612340 Honolulu, HI **L28215/L28330** **Part 2**
PBM: 161 2340 BM 8 (TU0286) ***PBM above SD:*** 3.734 m
GPS Bench Mark: GSL 2340 1987 ***MSL above SD:*** 1.412 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 01/14
Dive Inspection Frequency: Every 2 years ***Last Dive:*** 01/15

1. Perform V2 upgrades.
2. Replace the battery in DCP2.
3. Perform a reconnaissance for a new bench mark in the vicinity of 161 2340 TIDAL 2.
4. Recover or establish and level bench mark of stability Class C or higher, designation/stamping as follows: 161 2340 D/2340 D 2016 and 161 2340 E/2340 E 2016.
5. Take face, setting, and location photos for any newly established marks.
6. Update the bench mark diagram to include any newly established marks.

1612480 Mokuoloe, HI **L28215/L28330** **Part 3**
PBM: 161 2480 NO 1 ***PBM above SD:*** 1.969 m
GPS Bench Mark: 161 2480 TIDAL 2 (AA3575) ***MSL above SD:*** 1.210 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 01/14
Dive Inspection Frequency: Every 2 years ***Last Dive:*** 01/15

1. Perform V2 upgrades.
2. Replace the (12) 1/4" Nylon nuts supporting the Met mast structure, with non-Nylon stainless steel nuts.
3. Replace the air temperature housing.
4. Repair DCP3 IP modem connectivity.
5. Replace DCP2 battery.
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. Recover or establish and level one bench mark of stability Class C or higher, designation/stamping as follows:
   161 2480 M/2480 M 2016.
8. Take face, setting, and location photos for any newly established marks.
9. Update the bench mark diagram to include any newly established marks.
10. Install lower lags on pump power box.
11. Provide photos of area where BM NO 7.

1615680 Kahului, HI **L28215/L28330** **Part 4**
PBM: 161 5680 A (DK4805) ***PBM above SD:*** 3.007 m
GPS Bench Mark: 161 5680 A (DK4805) ***MSL above SD:*** 1.075 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 01/14
Dive Inspection Frequency: Every year ***Last Dive:*** 01/15

1. Perform V2 upgrades.
2. 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.
3. Reposition the Met mast.
4. Verify and/or correct BBAT flag within DCP1 NOSGOESFormat file.
5. Replace copper insert and brass bolts for parallel plates.
6. Install new style pump power box
7. Mount Barometer inside enclosure.

1617433 Kawaihae, HI **L28215/L28330** **Part 5**
PBM: 161 7433 B (DK3434) ***PBM above SD:*** 3.094 m
GPS Bench Mark: 161 7433 B (DK3434) ***MSL above SD:*** 1.134 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 01/14
Dive Inspection Frequency: Every year ***Last Dive:*** 01/15

1. Replace the conduit for the backup bubbler tubing; work with the state of Hawaii for permission to perform this work.
2. Perform V2 upgrades.
3. Repair the top portion of the Met mast.
4. 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.
5. Install goal post and add a redundant wind sensor.
6. Replace GOES cable.
7. Install new style pump power box.
8. Replace the T2 sensor.
9. Repair/Reconnect the phone line and/or install IP modems.
10. Patch bench marks with thorite.
11. Verify and/or correct BBAT flag within DCP1 NOSGOESFormat file.
12. Re-orient Met mast 90 degrees.

1617760 Hilo, HI **L28215/L28330** **Part 6**
PBM: 161 7760 TIDAL 4 (TU0020) ***PBM above SD:*** 4.663 m
GPS Bench Mark: 161 7760 A ***MSL above SD:*** 1.545 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 01/14
Dive Inspection Frequency: Every year ***Last Dive:*** 01/15

1. Remove the 1Hz logging capability.
2. Install new setup files and a standard SDI-12 Aquatrak controller.
3. Perform V2 upgrades.
4. Recover or establish and level one bench mark of stability Class C or higher, designation/stamping as follows: 161 7760 J/7760 J 2016.
5. Replace the four brass bolts on the parallel plates.
6. Verify the barometer serial number and update eSite report if necessary.
7. Enter the DCP 2 pump in the eSite report.
8. Take face, setting, and location photos for any newly established marks.
9. Update the bench mark diagram to include any newly established marks.

1619910 Sand Island, Midway Islands **L28215/L28331** **Part 1**
PBM: 161 9910 TIDAL 21 ***PBM above SD:*** 3.243 m
GPS Bench Mark: 161 9910 A ***MSL above SD:*** 1.020 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 12/14
Dive Inspection Frequency: Every year ***Last Dive:*** 11/12

1. Perform 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 V2 upgrades on all DCPs.
3. Repair the Druck sensor.
4. Replace pump for DCP4.
5. Include the DCP2 Paros leveling point in the level run.

1630000 Guam **L28215/L28331** **Part 2**
PBM: 163 0000 TIDAL 6 (TW0043) ***PBM above SD:*** 2.364 m
GPS Bench Mark: 163 0000 TIDAL 6 (TW0043) ***MSL above SD:*** 0.826 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 03/10
Dive Inspection Frequency: Every year ***Last Dive:*** 02/14

1. Include benchmark 161 0000 N in the level run.
2. Repair the DCP4 Druck sensor.
3. Install a canon plug cover on the DCP.
4. Replace DCP4 with a unit with A/C power.
5. Replace DCP3 Xpert module.
6. Replace the DCP3 and DCP3 pump batteries.
7. Take updated station photos of the MET mast, wind birds, and a general view of the station.

1631428 Pago Bay, Guam **L28215/L28331** **Part 3**
PBM: 163 1428 B (DH3105) ***PBM above SD:*** 10.000 m
GPS Bench Mark: 163 1428 1214 (DH2988) ***MSL above SD:*** 7.740 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 04/10
Dive Inspection Frequency: Every year ***Last Dive:*** 09/14

1. **Unresolved 2014:** Establish and level a deep orifice leveling point.
2. Replace the A/C charging unit for DCP 2 pump power.
3. Move the Iridium SBD antenna to the roof with a new cable.
4. Calibrate the barometer.
5. Repair the failed N1 bubbler tubing run.
6. Repair phone line.
7. Reactivate the DCP2 IP modem.

1770000 Pago Pago **L28215/L28331** **Part 4**
PBM: 177 0000 W ***PBM above SD:*** 4.345 m
GPS Bench Mark: 177 0000 S (DE8786) ***MSL above SD:*** 1.194 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 12/09
Dive Inspection Frequency: Every year ***Last Dive:*** 10/14

1. Include bench mark 177 0000 Q in the level run.
2. Take the setting and directional photos of bench mark 177 0000 Q.
3. Re-secure cable conduit using sheetrock anchors.
4. 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.
5. Troubleshoot the phone connectivity to the backup DCPs.
6. Provide a description and photo of the Met SRM.
7. Repair the phone line or install a BGAN system.
8. Replace the surge protectors.
9. Replace the phone switch (if phone line repaired).
10. Replace the DCP1 pump, DCP2, DCP2 pump, DCP4, and DCP4 pump batteries.
11. Enter the DCP3 and DCP4 I/O module version numbers into eSite report.
12. Install new CF card logs on all DCPs.
13. Upgrade DCP1, DCP2, and DCP3 Satlinks to v7.24.

1820000 Kwajalein **L28215/L28331** **Part 5**
PBM: 182 0000 TIDAL 8 (DK7537) ***PBM above SD:*** 2.853 m
GPS Bench Mark: 182 0000 TIDAL 12 ***MSL above SD:*** 1.457 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 03/10
Dive Inspection Frequency: Every year ***Last Dive:*** 2/15

1. Install an approved MWWL sensor; if any structural modifications are required seek engineering support and Field Engineering Review Subcommittee (FERS) approval.
2. Perform a reconnaissance for the installation of IP modems.
3. Establish and level one bench mark of stability Class B or higher, designation/stamping as follows:
   182 0000 U/0000 U 2016.
4. Take face, setting, and location photos for any newly established marks.
5. Update the bench mark diagram to include any newly established marks.
6. Attach 4 stainless steel conduit clamps on the Aquatrak conduit (1 1/2").
7. Install an air temperature sensor and barometer sensor on DCP 1.
8. Re-install the Echo pier water level station after the completion of the construction.
9. Attach 10 small stainless steel conduit clamps on wind bird flex conduit (3/4" or 1").
10. Patch benchmarks with thorite, as needed.
11. Remove old clamps and old ADR well supports around tide house (tripping hazard).
12. Install covers for cannon plug outlets on both DCPs.
13. Install a data noise filter on the phone line.

1890000 Wake Island **L28215/L28331** **Part 6**

PBM: 189 0000 TIDAL 12 (TW0169) ***PBM above SD:*** 4.353 m

GPS Bench Mark: 161 0000 L ***MSL above SD:*** 1.608 m

GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 11/06

Dive Inspection Frequency: Every year ***Last Dive:*** 11/10

1. Replace the DCP1 water temperature sensor.
2. Replace the Aquatrak copper insert.
3. Inspect/Repair the DCP3 water temperature sensor.
4. Repair the DCP4 bubbler tubing run to remove obstruction.
5. Repair the phone line.
6. Replace the DCP2 pump power box and battery.
7. Replace the wind bird sensor.
8. Remove the extra DCP1 Satlink from the eSite report.

2.17.2 FOD/POB – California Stations

9410170 San Diego, CA **L28211/L28326** **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. Perform reconnaissance at Broadway Pier to install an NWLON station, seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the installation design of the new station. Contact the Port of San Diego regarding the timeline of tide house demolition.
2. Replace the water temperature sensor.
3. Verify the latitude and longitude of benchmark 941 0170 V and update the Windesc description if necessary.

9410172 USS MIDWAY South Navy Pier, San Diego, CA **Meteorological Station**

1. No additional requirements.

9410230 La Jolla, CA **L28211/L28326** **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. Include the existing Aquatrak and MWWL sensors in all future leveling and download all data from the DCPs at each site visit to support the long term microwave data comparison.
2. **Unresolved from 2015:** Coordinate with OSTEP and COET to transfer the existing test microwave sensor over to the operational station. Perform an Xpert OS upgrade and install new setup files to standardize the configuration.
3. Resolve the DCP3 GOES transmission issues.
4. **Unresolved from 2014:** Establish and level one bench mark of stability Class B or higher, designation/stamping 941 0230 U/0230 U 2016.
5. Take face, setting, and location photos for any newly established marks.
6. Update the bench mark diagram to include any newly established marks.

9410660 Los Angeles, CA (PORTS) **L28211/L28326** **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. Recover and level benchmark Wilmington D 10-B.
2. Include benchmark 941 0660 Q in all level runs.
3. Take photos of the barometer and an updated set of station photos.
4. Monitor condition of the underwater Uni-Strut brackets holding the bubbler tubing conduit, annually.

9410689 Gerald Desmond Bridge Air Gap, CA (PORTS) **Air Gap Station**

1. Remove the existing Miros sensor and replace with a WaterLog H-3612 and ULS laser.
2. Replace the entire DCP, enclosure and all station components.
3. Replace the DCP and IP modem batteries.

9410840 Santa Monica, CA **L28211/L28326** **Part 4**
PBM: 941 0840 N TIDAL (AH7469) ***PBM above SD:*** 19.838 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:*** 07/15

1. 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:** Replace the 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. Establish and level two bench mark of stability Class B or higher, designation/stamping 941 0840 W/0840 W 2016 and 941 0840 X/0840 X 2016.
4. Take face, setting, and location photos for any newly established marks.
5. Update the bench mark diagram to include any newly established marks.

9411340 Santa Barbara, CA **L28211/L28326** **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:*** 03/15

1. Repair the wooden wall cap that the wind mast is mounted.
2. Install 6-inches of bird spikes on box adjacent to level point underneath the pier deck.
3. Check the DCP3 Satlink serial number and enter it in eSite report.

9411406 Oil Platform Harvest, CA (TOPEX) **L28211/L28326** **Part 19**
PBM: 941 1406 NO STAMPING (+20 LEG 1992) ***PBM above SD:*** 20.150 m
GPS Bench Mark: N/A ***MSL above SD:*** 14.494 m
GPS Observation Frequency: Not required ***Last GPS Observation Performed:*** N/A
Dive Inspection Frequency: Every year ***Last Dive:*** 06/15

1. Connect the MWWL sensors to DCP1 and DCP2, respectively.
2. Replace the bronze sintered vent on the DCP 1 pump.
3. Ground both DCPs.
4. Install a BGAN unit on DCP2.
5. Replace the DCP2 battery.

9412110 Port San Luis, CA **L28211/L28326** **Part 5**
PBM: 941 2110 TIDAL 6 (FV0898) ***PBM above SD:*** 5.691 m
GPS Bench Mark: 941 2110 TIDAL 6 (FV0898) ***MSL above SD:*** 2.149 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 02/11
Dive Inspection Frequency: Every year ***Last Dive:*** 03/15

1. Repair the Druck pressure sensor.

9413450 Monterey, CA **L28211/L28326** **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:*** 03/15

1. Replace the bubbler tubing run.
2. Inspect/Replace the stove pipe as needed.
3. Drop bench mark Tidal L.
4. Establish and level one bench mark of stability Class B or higher, designation/stamping as follows: 941 3450 P/3450 P 2016.
5. Take face, setting, and location photos for any newly established marks.
6. Update the bench mark diagram to include any newly established marks.
7. Install a new padlock on the Met APX enclosure.
8. Remove the old Metercraft gauge.

9414290 San Francisco, CA (PORTS) **L28211/L28326** **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:*** 10/14

1. Perform 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. Establish and level one bench mark of stability Class B or higher, on the SE of the tide station, designation/stamping as follows: 941 4290 P/4290 P 2016.
3. Evaluate and replace the Swagelok fitting for the upper Paros orifice, as needed.
4. Replace the Xpert Dark DCP with a unit with an A/C power supply.
5. Evaluate the condition of the DCP 2 solar panel and replace as needed.
6. Take face, setting, and location photos for any newly established marks.
7. Update the bench mark diagram to include any newly established marks.

9414523 Redwood City, CA (PORTS) **L28211/L28326** **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:*** 10/14
Dive Inspection Frequency: Every year ***Last Dive:*** 10/14

1. Replace the water temperature sensor.
2. **Unresolved from 2013:** Replace the T1 and T2 sensors due to the deteriorating insulation on wires.
3. **Unresolved from 2014:** Replace the Xpert Dark DCP with an A/C power unit.
4. **Unresolved from 2014:** Install a new pump power box.
5. Drop bench mark KAO.
6. Establish and level one bench mark of stability Class C or higher, designation/stamping 941 4523 B /4523 B 2016.
7. Take face, setting, and location photos for any newly established marks.
8. Update the bench mark diagram to include any newly established marks.
9. Record the barometer calibration offset in the comments section of the eSite report.
10. Remove all extra batteries and correct battery dates in the eSite report.
11. Add the DCP 1 phone and IP modems to the eSite report.
12. Remove the extra DCP 2 Analog I/O module from the eSite report.

9414575 Coyote Creek, CA (Resilience) **L28211/L28326** **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. Enter all existing batteries into eSite report.

9414750 Alameda, CA (PORTS) **L28211/L28326** **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:*** 10/14

1. **Unresolved from 2014:** Replace Xpert Dark DCP with an A/C power unit.
2. **Unresolved from 2014:** Install a new solar panel for the pump power box.
3. Install a new style pump power box.
4. Replace the DCP2 pump battery.

9414863 Richmond, CA (PORTS) **L28211/L28326** **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:*** 10/14
Dive Inspection Frequency: Every year ***Last Dive:*** 10/14

1. Evaluate and replace the Swagelok fitting for Druck orifice, as needed.
2. **Unresolved from 2014:** Replace the Xpert Dark DCP with an A/C power unit.
3. Replace the broken DCP2 solar panel.
4. Replace the DCP1 and DCP2 pump batteries.
5. Replace the DCP2 pump power box.

9414958 Bolinas Lagoon, CA (Resilience) **L28211/L28326** **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:*** 11/14
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.

9415020 Point Reyes, CA **L28211/L28326** **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:*** 10/14

1. **Unresolved from 2014:** Remove the derelict ADR and ETG wells.
2. Replace the water temperature sensor.
3. **Unresolved from 2013:** Include the Met SRM in the leveling run.
4. Add the DCP2 Satlink to the eSite report.
5. Add the DCP1 Aquatrak controller to the eSite report.
6. Add the DCP2 Digital and Analog I/O modules to the eSite report.
7. Record the DCP1 Analog I/O module #2 firmware version in the eSite report.
8. Record the barometer calibration offset in the comments section of the eSite report.

9415102 Martinez Amorco Pier, CA (PORTS) **L28211/L28326** **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. Replace the IP modem battery.
2. Add the DCP2 and DCP2 pump batteries to the eSite report.

9415144 Port Chicago, CA (PORTS) **L28211/L28326** **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. Install an approved MWWL sensor; if any structural modifications are required seek engineering support and Field Engineering Review Subcommittee (FERS) approval.
2. Remove silt below the well annually.
3. Install whip antennas for the DCP1 and DCP2 IP modems.
4. Replace the GOES antenna.

9416841 Arena Cove, CA **L28211/L28326** **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:*** 11/14
Dive Inspection Frequency: Every year ***Last Dive:*** 11/14

1. Record the DCP1 Digital I/O module firmware version in the eSite report.
2. Drop bench marks 941 6841 P and 941 6841 Q.
3. Perform reconnaissance for two additional surface marks.

9418767 North Spit, CA (PORTS) **L28211/L28326** **Part 14**
PBM: V 1403 (LV0637) ***PBM above SD:*** 8.937 m
GPS Bench Mark: 941 8767 B TIDAL (LV0632) ***MSL above SD:*** 5.562 m
GPS Observation Frequency: Every year ***Last GPS Observation Performed:*** 11/14
Dive Inspection Frequency: Every year ***Last Dive:*** 12/11

1. Replace the water temperature sensor.
2. Replace the DCP2, DCP2 pump, DCP3, and DCP3 IP batteries.
3. Verify the latitude and longitude of marks TIDAL 9 and V in WinDesc file and correct as needed.
4. Drop bench marks 941 8767 TIDAL 11 and 941 8767 TIDAL 12.
5. Perform reconnaissance for two additional surface marks.

9419750 Crescent City, CA **L28211/L28326** **Part 15**
PBM: 941 9750 V TIDAL (LV0563) ***PBM above SD:*** 5.712 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
Note: The MWWL reconnaissance for this station was completed in FY15 in preparation for the FY17 installation. Contact DDET for the station design.

1. **Unresolved from 2013:** Re-install the parallel plates on the Aquatrak well.
2. Replace the DCP2 and DCP2 pump batteries.
3. **Unresolved from 2013:** Install a new logo cap lid for bench mark 941 9750 V TIDAL.
4. Establish and level one bench mark of stability Class C or higher, designation/stamping 941 9750 Y/9750 Y 2015.
5. Take face, setting, and location photos for any newly established marks.
6. Update the bench mark diagram to include any newly established marks.

2.17.3 FOD/POB – Oregon Stations

9431647 Port Orford, OR **L28212/L28327** **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. Perform 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. Work with Hallmark Fisheries to restore AC power to the station.
3. Replace the wind mast base plate.
4. Replace the brackets holding 20W solar panels to uni-strut.
5. Replace the DCP1 pump and DCP2 batteries.
6. Replace both pump power boxes with new style units.

9432780 Charleston, OR **L28212/L28327** **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. **Unresolved from 2014:** Install an air temperature sensor at the water level station.
2. Establish a new Met SRM for air temperature sensor.
3. Replace the kick block for 943 2780 A TIDAL, PVC is too small for Invar rod.

9435380 South Beach, OR **L28212/L28327** **Part 3**
PBM: C 590 (QE1114) ***PBM above SD:*** 6.194 m
GPS Bench Mark: 943 5380 M ***MSL above SD:*** 2.806 m
GPS Observation Frequency: Every year ***Last GPS Observation Performed:*** 04/15
Dive Inspection Frequency: Every year ***Last Dive:*** 04/14

1. Replace the DCP 2 pump battery.
2. Include bench mark 943 5380 L in all future leveling.
3. Establish a new PBM following the subsidence data correction.

9437540 Garibaldi, OR **L28212/L28327** **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. Re-install the remote Met station after watchtower renovations are complete. Seek engineering support and FERS review as needed.
2. Replace the clamps holding bubbler tubing to wooden pilings with smaller size clamps as needed.
3. Replace the water temperature sensor.
4. Replace the DCP1 battery.
5. Replace the pump power box with a new style unit.

9439040 Astoria, OR (PORTS) **L28212/L28327** **Part 4**
PBM: 943 9040 TIDAL 11 ***PBM above SD:*** 5.934 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. Install an IP modem.
2. Replace the DCP 1 battery.
3. Replace the pump power box.

9439099 Wauna, OR (PORTS) **L28212/L28327** **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. **Unresolved from 2014:** Replace the Xpert Dark DCP with a new unit with AC power supply.
2. **Unresolved from 2014:** Replace the DCP1, DCP1 pump, and DCP2 batteries.
3. **Unresolved from 2014:** Reconfigure the DCP2 pump to pull power from the DCP2 battery.
4. Install a new style pump power box.

9439201 St. Helens, OR (PORTS) **L28212/L28327** **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. Replace the DCP1 GOES antenna and cable.
2. Install a new style pump power box.

2.17.4 FOD/POB – Washington Stations

9440083 Vancouver, WA (PORTS) **L28213/L28328** **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:** Replace the DCP1 and DCP1 pump solar panels.
2. Evaluate the DCP2 Paros and replace as needed.
3. Install a new style pump power box.
4. Repair the phone line.
5. Plug the weather head leading into the tide house.
6. **Unresolved from 2014:** Verify the latitude and longitude of bench mark 944 0083 A and update Windesc if needed.

9440422 Longview, WA (PORTS) **L28213/L28328** **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. Contact Norm Krehbiel regarding availability of funds for future relocation of tide house.
2. Install an approved MWWL sensor; if any structural modifications are required seek engineering support and Field Engineering Review Subcommittee (FERS) approval.
3. Replace the DCP1 pump battery.

9440569 Skamokawa, WA (PORTS) **L28213/L28328** **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. Coordinate with the Design and Development Engineering Team (DDET) to plan for overhaul of the tide house when partner funding becomes available.
2. **Unresolved from 2014:** Separate the solar panels to eliminate shading.
3. **Unresolved from 2014:** Replace the GOES antenna and cable.
4. Replace the DCP1, DCP2 and DCP1 pump batteries.
5. Repair the phone line.
6. Install a new style pump power box.
7. Plug the weather head leading into the tide house.
8. Replace the two padlocks on the tide house door.
9. Add DCP2 Xpert Dark module to eSite report.

9440581 Cape Disappointment, WA (PORTS) **L28213/L28328** **Part 14**
PBM: 944 0581 C ***PBM above SD:*** 20.000 m
GPS Bench Mark: 944 0581 C ***MSL above SD:*** Undetermined
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 07/15
Dive Inspection Frequency: N/A ***Last Dive:*** N/A

1. Perform six-month check levels after installation, per User's Guide to Declaring a Newly Installed Water Level Station Operational.
2. Bring a fuse kit to leave in gauge enclosure.

9440910 Toke Point, WA **L28213/L28328** **Part 1**
PBM: 944 0910 P ***PBM above SD:*** 5.408 m
GPS Bench Mark: FLAG (SC0916) ***MSL above SD:*** 2.836 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 03/11
Dive Inspection Frequency: Every year ***Last Dive:*** 02/15

1. Install an approved MWWL sensor; if any structural modifications are required seek engineering support and Field Engineering Review Subcommittee (FERS) approval.
2. Replace the tide house.
3. Install a dual pump power box.

9441102 Westport, WA **L28213/L28328** **Part 2**
PBM: 944 1102 K ***PBM above SD:*** 5.604 m
GPS Bench Mark: 944 1102 K ***MSL above SD:*** 2.383 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 06/11
Dive Inspection Frequency: Every year ***Last Dive:*** 07/14

1. Replace both DCP3 wind sensor cables.
2. Replace the water temperature sensor.
3. Enter the DCP2 pump and DCP3 IP modem batteries into eSite report.

9442396 La Push, WA **L28213/L28328** **Part 3**
PBM: 944 2396 F ***PBM above SD:*** 5.378 m
GPS Bench Mark: 944 2396 G ***MSL above SD:*** 2.984 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 06/11
Dive Inspection Frequency: Every year ***Last Dive:*** 06/15

1. Resolve the time phase problem with data from the MWWL sensor.
2. Verify the MWWL and Paroscientific data comparison analysis is complete and accepted by the MWWL TOP Committee. If complete, remove the Paroscientific sensor and the associated DCP (if applicable), and assign the DCP associated with the MWWL sensor as DCP1, if necessary.
3. Replace the water temperature sensor.
4. Establish and level one bench mark of stability Class C or higher, designation/stamping 944 2396 K/2396 K 2016.
5. Take face, setting, and location photos for any newly established marks.
6. Update the bench mark diagram to include any newly established marks.

9443090 Neah Bay, WA **L28213/L28328** **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 the air temperature and wind sensors.
2. Establish three new bench marks of stability Class B or higher, designation/stamping 944 3090 J/3090 J 2016, 944 3090 K/3090 K 2016, and 944 3090 L/3090 L 2016.
3. Take face, setting, and location photos for any newly established marks.
4. Update the bench mark diagram to include any newly established marks.

9444090 Port Angeles, WA **L28213/L28328** **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. **Unresolved from 2014:** Replace the DCP 2 pump battery.
2. Replace the DCP1, DCP2 and DCP3 batteries.
3. Upgrade the DCP3 Xpert OS version to v2.10.0.4, if needed.
4. Verify the battery dates and remove the extra DCP2 battery from the eSite report.
5. Record the battery voltages and capacities for the DCP2 and DCP2 pump batteries in the eSite report.
6. Add the DCP1 Aquatrak controller to the eSite report.
7. Add the DCP1 Xpert module to the eSite report.
8. Add the DCP3 9210 module and Satlink module to the eSite report.
9. Add the DCP1, DCP2 & DCP3 Analog and Digital I/O firmware versions to the comments section of the eSite report.
10. Add the DCP 1 Xpert OS version to the comments section of the eSite report.

9444900 Port Townsend, WA **L28213/L28328** **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. Verify the MWWL and Aquatrak data comparison analysis is complete and accepted by the MWWL TOP Committee. If complete, remove the Aquatrak, associated DCP (if applicable), and assign the DCP associated with the MWWL sensor as DCP1, if necessary.
2. Replace the DCP1, DCP2, DCP2 pump, and DCP3 batteries.
3. Take photographs of the MWWL sensor.
4. Record the DCP1, DCP2, and DCP3 I/O module firmware versions in the eSite report.
5. Record the battery dates in eSite report.
6. Add the DCP1 Aquatrak controller to the eSite report.

9446482 Tacoma Met, WA (PORTS) **Meteorological Station**

1. Replace the wind bird sensors.
2. Take photos of the wind bird sensors.
3. Replace the triangular key locks on APX box with either square ones or screwdriver key.

9446484 Tacoma, WA (PORTS) **L28213/L28328** **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; if any structural modifications are required seek engineering support and Field Engineering Review Subcommittee (FERS) approval.
2. **Unresolved from 2014:** Repair or replace the Druck sensor.
3. Replace the water temperature sensor.
4. Replace the DCP1, DCP2 and DCP2 pump batteries.
5. Establish and level one bench mark of stability Class B or higher, designation/stamping 944 6484 F/6484 F 2016.
6. Take face, setting, and location photos for any newly established marks.
7. Update the bench mark diagram to include any newly established marks.
8. Install dust caps on cannon plugs on the Xpert and Xpert Dark DCP.
9. Add the DCP2 Digital I/O module to the eSite report.
10. Add the DCP1 IP modem to the eSite report.

9447130 Seattle, WA **L28213/L28328** **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:*** 05/15

1. Replace the Druck orifice.
2. Install a new style pump power box.

9449419 Cherry Point South Dock Met, WA (PORTS) **Meteorological Station**

1. No additional comments.

9449424 Cherry Point, WA (PORTS) **L28213/L28328** **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. Replace the DCP3 modem.
2. Replace the water temperature sensor.
3. Repair the phone line to DCP1 and DCP2 or install IP Modems.

9449880 Friday Harbor, WA **L28213/L28328** **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 and re-orient the 40W solar panel for DCP2 for full exposure.
2. Replace the bronze bolts and rebuild the Aquatrak well.
3. Replace the desiccant in the Met station.
4. Add the DCP1 Aquatrak controller to the eSite report.
5. Add the DCP3 Satlink module to the eSite report.
6. Record the barometer calibration offset in the eSite report.
7. Record the DCP3 Analog and Digital I/O module firmware versions in the eSite report.

cp0101 Cherry Point (PORTS) **Current Meter Station**

1. No additional requirements.

2.17.5 FOD/POB – Alaska Stations

9450460 Ketchikan, AK **L28214/L28329** **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. Verify the MWWL and Paroscientific data comparison analysis is complete and accepted by the MWWL TOP Committee. If complete, remove the Paroscientific, associated DCP (if applicable), and assign the DCP associated with the MWWL sensor as DCP1, if necessary.
2. Install a metal witness post marking bench mark 945 0460 E.
3. Re-measure the elevation of the wind sensor above the Met SRM.
4. Install 2" non-threaded dust cap for met mast.
5. Establish and level two bench marks of stability Class B or higher, designation/stamping as follows: 945 0460 H/0460 H 2016 and 945 0460 J/0460 J 2016.
6. Take face, setting, and location photos for any newly established marks.
7. Update the bench mark diagram to include any newly established marks.

9451054 Port Alexander, AK **L28214/L28329** **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:*** 05/15

1. Enter the DCP1 Satlink into eSite report.

9451600 Sitka, AK **L28214/L28329** **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.

9452210 Juneau, AK **L28214/L28329** **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:*** 06/15
Dive Inspection Frequency: Every year ***Last Dive:*** 06/15

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 orifice leveling point and the orifice zero on an annual basis.
3. Continue to trouble shoot DCP1 for slow leak- replace fitting next year and bring spare orifice..
4. Establish and level a bench mark of stability Class B or higher, designation/stamping: 945 2210 M/2210 M 2016. (per 2015 recon)
5. Take face, setting, and location photos for any newly established marks.
6. Update the bench mark diagram to include any newly established marks.

9452400 Skagway, AK **L28214/L28329** **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. Include benchmarks 945 2400 G and 945 2400 J in all future level runs.
3. Verify the elevation difference between the orifice leveling point and the orifice zero on an annual basis.
4. Replace the DCP2 pump power box.
5. Replace water temp sensor.
6. Take station photos of the primary sensor and wind sensors.
7. Verify the date of the DCP2 pump battery and update the eSite report.
8. Verify the DCP2 digital I/O and analog I/O module and pic versions and update the eSite report.

9452634 Elfin Cove, AK **L28214/L28329** **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:*** 06/14
Dive Inspection Frequency: Every year ***Last Dive:*** 06/15

1. Verify the elevation difference between the orifice leveling point and the orifice zero on an annual basis.
2. Remove the barometer.
3. Replace the DCP1 battery.
4. Establish and level two bench marks of stability Class B or higher, designation/stamping as follows: 945 2634 K/2634 K 2016 and 945 2634 L/2634 L 2016.
5. Take face, setting, and location photos for any newly established marks.
6. Update the bench mark diagram to include any newly established marks.
7. Verify/redescribe all bench mark descriptions.

9453220 Yakutat, AK **L28214/L28329** **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:*** 05/14
Dive Inspection Frequency: Every year ***Last Dive:*** 05/11

1. Repair the phone line or install IP modems.
2. Replace the phone modem.
3. Replace Aquatrak protective well copper tube.
4. Verify the DCP1 and DCP2 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.
5. Update the handheld GPS positions of all bench marks in the WinDesc file as needed.

9454050 Cordova, AK **L28214/L28329** **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. No additional requirements.

9454240 Valdez, AK **L28214/L28329** **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. No additional requirements.

9455090 Seward, AK **L28214/L28329** **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 the water temperature sensor.
2. Verify the DCP1 and DCP2 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/L28329** **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. Perform reconnaissance to install a suite of meteorological sensors, seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the installation design.
2. Replace the DCP1 solar panel.

9455760 Nikiski, AK (PORTS) **L28214/L28329** **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. Perform reconnaissance to relocate the Paros orifices, 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 orifice leveling point and the orifice zero on an annual basis. (Not feasible with Catwalk being permanently condemn.)
3. Perform reconnaissance to re install or relocate the Met tower, seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the installation design of the new station.
4. Replace the water temperature sensor.
5. Replace pump power box.
6. Replace air temp sensor. Bring ladder and fall protection to access sensor housing.

9455920 Anchorage, AK (PORTS) **L28214/L28329** **Part 13**
PBM: 945 5920 TIDAL 15 1966 (TT0711) ***PBM above SD:*** 13.231 m
GPS Bench Mark: 945 5920 TIDAL 16 (TT0713) ***MSL above SD:*** 6.931 m
GPS Observation Frequency: Every year ***Last GPS Observation Performed:*** 07/15
Dive Inspection Frequency: No dive requirement

1. Replace DCP2, DCP1 pump and DCP2 pump batteries.
2. Measure the elevation of the water temperature sensor above station datum. (Diving not permitted)
3. Take station photos of the primary sensor, Met mast and wind sensors.
4. Perform a reconnaissance for a new bench mark (with class B or higher stability) on the eastern side of the port facility.
5. Verify the DCP2 serial number and pic version, Analog I/O 1 and 2 and take pictures to verify, and the DCP2 pump power box serial number and update the eSite report.

9457292 Kodiak, AK **L28214/L28329** **Part 14**
PBM: 945 7292 B ***PBM above SD:*** 14.124 m
GPS Bench Mark: 945 7292 TIDAL 16 ***MSL above SD:*** 9.160 m
GPS Observation Frequency: Every year ***Last GPS Observation Performed:*** 08/14
Dive Inspection Frequency: Every 2 years ***Last Dive:*** 08/14

1. Replace the DCP1, DCP2, and DCP2 pump batteries.
2. Verify the DCP1 and DCP2 pic versions, the DCP1 phone modem serial number, and the DCP2 pump power box serial number and update the eSite report.
3. Remove the PCBs on the Parts tab of the eSite report.
4. Enter the firmware versions of the DCP1 Analog and Digital I/O modules in eSite report.

9457804 Alitak, AK **L28214/L28329** **Part 15**
PBM: 945 7804 TIDAL 6 ***PBM above SD:*** 7.521 m
GPS Bench Mark: 945 7804 B ***MSL above SD:*** 3.574 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 08/14
Dive Inspection Frequency: Every year ***Last Dive:*** 08/14

1. Verify the elevation difference between the orifice leveling point and the orifice zero on an annual basis.
2. Replace the water temperature sensor.
3. Replace the DCP1, DCP1 pump, DCP2 batteries.
4. Take station photos of the general tide house location, tide house structure, and primary sensor.
5. Verify the DCP1 serial numbers of the phone modem, Satlink, and Analog I/O module.
6. Verify the DCP1 barometer offset.
7. Verify the DCP2 Analog I/O module.
8. Verify the serial numbers of the wind bird sensors, the redundant Paros and update the eSite report.
9. Add the redundant pump power box battery in eSite report.

9497645 Prudhoe Bay, AK **L28214/L28329** **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. Verify the MWWL and primary sensor data comparison analysis is complete and accepted by the MWWL TOP Committee. If complete, remove the Aquatrak, associated DCP (if applicable), and assign the DCP associated with the MWWL sensor as DCP 1, if necessary.
2. Establish the Met SRM at the base of the building housing the DCPs and include the Met SRM in the level run.
3. Replace the DCP1 Digital I/O module.
4. Enter Paros vent values in the eSite report.

2.18 JOA - Task 14-04: Western Alaska Stations

David Sinson, Task Manager/Technical Representative (TR)

9459450 Sand Point, AK **L28214/L28329** **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:*** 06/15
Dive Inspection Frequency: Every 2 years ***Last Dive:*** 07/14

1. Install a cellular modem.
2. Replace DCP2 batteries and D8 batteries.
3. Enter the Aquatrak controller in eSite report.

9459881 King Cove, AK **L28214/L28329** **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 DCP1 and DCP2 batteries.
3. Enter the batteries, Xpert module, DCP2 pump in the eSite report.
4. Enter the serial numbers for the 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/L28329** **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:*** 09/14

1. Verify the MWWL and Paroscientific data comparison analysis is complete and accepted by the MWWL TOP Committee. If complete, remove the Paroscientific, associated DCP (if applicable), and assign the DCP associated with the MWWL sensor as DCP1, if necessary.
2. Modify retractable orifice mounts; seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the design.
3. Install larger batteries and solar panels to support unreliable A/C power source.
4. Take station photos of the primary sensor.
5. Update all DCP and parts information on the eSite report.

9461710 Atka, Nazan Bay, AK **L28214/L28329** **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:*** 04/15
Dive Inspection Frequency: Every year ***Last Dive:*** 04/15

1. Verify the elevation difference between the orifice leveling point and the orifice zero on an annual basis.

9462450 Nikolski, Mueller Cove, AK **L28214/L28329** **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:*** 05/15

1. Verify the elevation difference between the orifice leveling point and the orifice zero on an annual basis.

9462620 Unalaska, AK **L28214/L28329** **Part 21**
PBM: 946 2620 M ***PBM above SD:*** 4.137 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:*** 5/15

1. Replace DCP2 battery.

9463502 Port Moller, AK **L28214/L28329** **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 reconnaissance to install a diverless orifice assembly, seek engineering support and Field Engineering Review Subcommittee (FERS) approval of the installation design.
2. Perform a reconnaissance to install a remote Met station.
3. Replace the water temperature sensor.
4. Replace the DCP2 pump.
5. Replace the DCP1 and DCP2 batteries.
6. Enter the DCP1 digital and analog I/O modules firmware version in eSite report.

9464212 Village Cove, AK **L28214/L28329** **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 orifice leveling point and the 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, both DCP1 pumps, 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/L28329** **Part 24**
PBM: 946 8756 H ***PBM above SD:*** 4.846 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 orifice leveling point and the orifice zero on an annual basis.
2. Enter the DCP1 and DCP2 analog and digital I/O module version numbers into eSite report.
3. Enter the pump batteries onto the eSite report.
4. Enter the vent values for both the DCP1 and DCP2 Paros sensor in the eSite sensor notes.
5. Provide photos of the primary sensor.

9491094 Red Dog, AK **L28214/L28329** **Part 25**
PBM: 949 1094 A TIDAL ***PBM above SD:*** 4.696 m
GPS Bench Mark: 949 1094 B ***MSL above SD:*** 1.719 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** 10/11
Dive Inspection Frequency: Every year ***Last Dive:*** 07/14

1. Verify the elevation difference between the digibub leveling point and the digibub orifice zero on an annual basis.
2. Repair the DCP1 GOES transmission system..
3. Replace the water temperature sensor.
4. Replace the DCP1 and DCP2 pump power boxes.
5. Replace the batteries in the DCP1 power box and DCP2 batteries.
6. Measure the elevations of the water temperature sensor above station datum.
7. Enter the DCP2 digital and analog I/O modules onto eSite report.
8. Enter the vent values for both the DCP1 and DCP2 Paros sensor in the eSite sensor comments field.

2.19 JOA - Task 15-03: Unalakleet

Mark Bailey, Task Manager/Technical Representative (TR)

9468333 Unalakleet, AK **L28214/L28329** **Part 50**

PBM: Undetermined ***PBM above SD:*** Undetermined
GPS Bench Mark: Undetermined ***MSL above SD:*** Undetermined
GPS Observation Frequency: Undetermined ***Last GPS Observation Performed:*** Undetermined
Dive Inspection Frequency: Undetermined ***Last Dive:*** Undetermined

1. Install the approved observing system. Refer to the task order for station specific requirements.

2.20 Texas Coastal Oceanographic Observing Network (TCOON)

Grace Gray, Task Manager/Technical Representative (TR)

8770475 Port Arthur, TX **L28206/L28321** **Part 60**
PBM: 877 0475 B ***PBM above SD:*** 3.7720 m
GPS Bench Mark: Unknown ***MSL above SD:*** 1.601 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Perform a site visit to assess the station infrastructure and provide information.
2. Include all bench marks in the level run.

8770520 Rainbow Bridge, TX **L28206/L28321** **Part 61**
PBM: 877 0520 B ***PBM above SD:*** 2.526 m
GPS Bench Mark: Unknown ***MSL above SD:*** 1.366 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Perform a site visit to assess the station infrastructure and provide information.
2. Include all bench marks in the level run.

8770733 Lynchburg Landing, TX **L28206/L28321** **Part 62**
PBM: 877 0733 C ***PBM above SD:*** 3.587 m
GPS Bench Mark: Unknown ***MSL above SD:*** 1.657 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Perform a site visit to assess the station infrastructure and provide information.
2. Include all bench marks in the level run.

8770777 Manchester, TX **L28206/L28321** **Part 63**
PBM: 877 0777 A ***PBM above SD:*** 7.746 m
GPS Bench Mark: Unknown ***MSL above SD:*** 1.986 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Perform a site visit to assess of the station infrastructure and provide information.
2. Include all bench marks in the level run.

8770808 High Island, TX **L28206/L28321** **Part 64**
PBM: 877 0808 B ***PBM above SD:*** 5.000 m
GPS Bench Mark: Unknown ***MSL above SD:*** 4.351 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Perform a site visit to assess the station infrastructure and provide information.
2. Include all bench marks in the level run.

8770822 Texas Point, TX **L28206/L28321** **Part 48**
PBM: 877 0822 B ***PBM above SD:*** 1.567 m
GPS Bench Mark: TXPT01 ***MSL above SD:*** 4.363 m
GPS Observation Frequency: Every year ***Last GPS Observation Performed:*** 08/13
Dive Inspection Frequency: Every year ***Last Dive:*** unknown

1. Perform a site visit to assess the integrity of the station infrastructure and provide information.
2. **Unresolved From 2015:** 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. **Unresolved From 2015:** Measure the height of the barometer on station datum.
4. Include all bench marks in the level run.

8770971 Rollover Pass, TX **L28206/L28321** **Part 65**
PBM: 877 0971 A TIDAL ***PBM above SD:*** 2.484 m
GPS Bench Mark: Unknown ***MSL above SD:*** 1.321 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Perform a site visit to assess the integrity of the station infrastructure and provide information.
2. Include all bench marks in the level run.

8771486 Galveston Railroad Bridge, TX **L28206/L28321** **Part 66**
PBM: L305 ***PBM above SD:*** 10.0 m
GPS Bench Mark: Unknown ***MSL above SD:*** 6.179 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Perform a site visit to assess the integrity of the station infrastructure and provide information.
2. Include all bench marks in the level run.

8771972 San Luis Pass, TX **L28206/L28321** **Part 68**
PBM: 877 1972 M ***PBM above SD:*** 2.2140 m
GPS Bench Mark: Unknown ***MSL above SD:*** 1.515 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Perform a site visit to assess the integrity of the station infrastructure and provide information.
2. Include all bench marks in the level run.

8772985 Sargent, TX **L28206/L28321** **Part 69**
PBM: Unknown ***PBM above SD:*** Unknown
GPS Bench Mark: Unknown ***MSL above SD:*** Unknown
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Perform a site visit to assess the integrity of the station infrastructure and provide information.
2. Include all bench marks in the level run.

8773037 Seadrift, TX **L28206/L28321** **Part 70**
PBM: 877 3037 A ***PBM above SD:*** 1.1250 m
GPS Bench Mark: Unknown ***MSL above SD:*** 0.466 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Perform a site visit to assess the integrity of the station infrastructure and provide information.
2. Include all bench marks in the level run.

8773146 Matagorda City, TX **L28206/L28321** **Part 71**
PBM: 877 3146 B ***PBM above SD:*** 10.000 m
GPS Bench Mark: Unknown ***MSL above SD:*** 9.506 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Perform a site visit to assess the integrity of the station infrastructure and provide information.
2. Include all bench marks in the level run.

8773259 Port Lavaca, TX **L28206/L28321** **Part 72**
PBM: 877 3259 BM 1 ***PBM above SD:*** 1.902
GPS Bench Mark: Unknown ***MSL above SD:*** 1.081
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Perform a site visit to assess the integrity of the station infrastructure and provide information.
2. Include all bench marks in the level run.

8773701 Port O'Connor, TX **L28206/L28321** **Part 73**
PBM: 877 3701 K ***PBM above SD:*** 4.5030 m
GPS Bench Mark: Unknown ***MSL above SD:*** 3.620 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Perform a site visit to assess the integrity of the station infrastructure and provide information.
2. Include all bench marks in the level run.

8774230 Arkansas Wildlife Refuge, TX **L28206/L28321** **Part 74**
PBM: 877 4230 B ***PBM above SD:*** 10.000 m
GPS Bench Mark: Unknown ***MSL above SD:*** 8.907 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Perform a site visit to assess the integrity of the station infrastructure and provide information.
2. Include all bench marks in the level run.

8774513 Copano Bay, TX **L28206/L28321** **Part 75**
PBM: 877 4513 C ***PBM above SD:*** 2.6120 m
GPS Bench Mark: Unknown ***MSL above SD:*** 1.664 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Perform a site visit to assess the integrity of the station infrastructure and provide information.
2. Include all bench marks in the level run.

8775237 Port Aransas, TX **L28206/L28321** **Part 76**
PBM: 877 5237 D ***PBM above SD:*** 3.5240 m
GPS Bench Mark: Unknown ***MSL above SD:*** 1.639 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Perform a site visit to assess the integrity of the station infrastructure and provide information.
2. Include all bench marks in the level run.

8775244 Nueces Bay, TX **L28206/L28321** **Part 77**
PBM: 877 5244 A ***PBM above SD:*** 10.000 m
GPS Bench Mark: Unknown ***MSL above SD:*** 7.535 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Perform a site visit to assess the integrity of the station infrastructure and provide information.
2. Include all bench marks in the level run.

8775283 Ingleside, TX **L28206/L28321** **Part 78**
PBM: 877 5283 B ***PBM above SD:*** 3.661 m
GPS Bench Mark: Unknown ***MSL above SD:*** 0.957 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Perform a site visit to assess the integrity of the station infrastructure and provide information.
2. Include all bench marks in the level run.

8775296 USS Lexington, TX **L28206/L28321** **Part 79**
PBM: 877 5296 A ***PBM above SD:*** 2.8680 m
GPS Bench Mark: Unknown ***MSL above SD:*** 1.539 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Perform a site visit to assess the integrity of the station infrastructure and provide information.
2. Include all bench marks in the level run.

8**775792 Packery Channel, TX** **L28206/L28321** **Part 80**
PBM: 877 5792 A ***PBM above SD:*** 1.5880 m
GPS Bench Mark: Unknown ***MSL above SD:*** 0.965 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Perform a site visit to assess the integrity of the station infrastructure and provide information.
2. Include all bench marks in the level run.

8776139 S. Bird Island, TX **L28206/L28321** **Part 81**
PBM: 877 6139 A ***PBM above SD:*** 0.9750 m
GPS Bench Mark: Unknown ***MSL above SD:*** 0.595 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Perform a site visit to assess the integrity of the station infrastructure and provide information.
2. Include all bench marks in the level run.

8776604 Baffin Bay, TX **L28206/L28321** **Part 82**
PBM: 877 6604 A ***PBM above SD:*** 5.000 m
GPS Bench Mark: Unknown ***MSL above SD:*** 4.094 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Perform a site visit to assess the integrity of the station infrastructure and provide information.
2. Include all bench marks in the level run.

8777812 Rincon Del San Jose, TX **L28206/L28321** **Part 83**
PBM: 877 7812 B ***PBM above SD:*** 2.786 m
GPS Bench Mark: Unknown ***MSL above SD:*** 1.116 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Perform a site visit to assess the integrity of the station infrastructure and provide information.
2. Include all bench marks in the level run.

8778490 Port Mansfield, TX **L28206/L28321** **Part 84**
PBM: 877 8490 TIDAL 1 ***PBM above SD:*** 2.3960 m
GPS Bench Mark: Unknown ***MSL above SD:*** 0.715 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Perform a site visit to assess the integrity of the station infrastructure and provide information.
2. Include all bench marks in the level run.

8779280 Realitos Peninsula, TX **L28206/L28321** **Part 85**
PBM: 877 9280 A ***PBM above SD:*** 6.892 m
GPS Bench Mark: Unknown ***MSL above SD:*** 4.854 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Perform a site visit to assess the integrity of the station infrastructure and provide information.
2. Include all bench marks in the level run.

8779748 South Padre Island, TX **L28206/L28321** **Part 86**
PBM: 877 9748 USCG ***PBM above SD:*** 2.6110 m
GPS Bench Mark: Unknown ***MSL above SD:*** 1.351 m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Perform a site visit to assess the integrity of the station infrastructure and provide information.
2. Include all bench marks in the level run.

877xxxx Matagorda Pass, Pass Cavolo, TX **L28206/L28321** **Part 87**
PBM: Unknown ***PBM above SD:*** x.xxx m
GPS Bench Mark: Unknown ***MSL above SD:*** x.xxx m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Perform an inspection of the station infrastructure, equipment, and bench mark network and report deficiencies from NWLON standards.
2. Include all bench marks in the level run.

877xxxx Aransas, Aransas Pass Channel, TX **L28206/L28321** **Part 88**
PBM: Unknown ***PBM above SD:*** x.xxx m
GPS Bench Mark: Unknown ***MSL above SD:*** x.xxx m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Perform an inspection of the station infrastructure, equipment, and bench mark network and report deficiencies from NWLON standards.
2. Include all bench marks in the level run.

877xxxx Freeport, TX **L28206/L28321** **Part 89**
PBM: Unknown ***PBM above SD:*** x.xxx m
GPS Bench Mark: Unknown ***MSL above SD:*** x.xxx m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Perform an inspection of the station infrastructure, equipment, and bench mark network and report deficiencies from NWLON standards.
2. Include all bench marks in the level run.

877xxxx SPI Brazos Santiago, TX **L28206/L28321** **Part 90**
PBM: 2 USE ***PBM above SD:*** 2.1950 m
GPS Bench Mark: Unknown ***MSL above SD:*** 0.846m
GPS Observation Frequency: Every 5 years ***Last GPS Observation Performed:*** Unknown
Dive Inspection Frequency: Every year ***Last Dive:*** Unknown

1. Perform an inspection of the station infrastructure, equipment, and bench mark network and report deficiencies from NWLON standards.
2. Include all bench marks in the level run.

2.21 Jacobsen Pilots/Port of Los Angeles - Los Angeles/Long Beach PORTS

9410647 Angels Gate, CA **Meteorological Station**

1. Provide measurements of all sensors above the Met SRM.
2. Provide full set of station photos.

9410665 Los Angeles Pier J, CA **Meteorological Station**

1. Provide measurements of all sensors above the Met SRM.
2. Provide full set of station photos.

9410666 Los Angeles Pier 400, CA **Meteorological Station**

1. Provide measurements of all sensors above the Met SRM.
2. Provide full set of station photos.

9410670 Los Angeles Pier F, CA **Meteorological Station**

1. Provide measurements of all sensors above the Met SRM.
2. Provide full set of station photos.

9410690 Los Angeles Berth 161, CA **Meteorological Station**

1. Provide measurements of all sensors above the Met SRM.
2. Provide full set of station photos.

9410691 Los Angeles Badgers Avenue Bridge, CA **Meteorological Station**

3. Provide measurements of all sensors above the Met SRM.
4. Provide full set of station photos.

9410692 Los Angeles Pier S, CA **Meteorological Station**

1. Provide measurements of all sensors above the Met SRM.
2. Provide full set of station photos.

wv46222 San Pedro (PORTS) **Wave Sensor Station**

1. No additional requirements.

2.22 San Francisco Marine Exchange (SFMX) - San Francisco Bay PORTS

9414304 Oakland Bay Bridge, D-E Span, CA **Air Gap Station**

1. No additional requirements.

9414311 Pier 1, CA **Meteorological Station**

1. Provide measurements of all sensors above the Met SRM.
2. Provide photos of the Met SRM.

9414763 Oakland Berth 67 **Meteorological Station**

1. No additional requirements.

9414769 Oakland Middle Harbor MET, CA **Meteorological Station**

1. Provide measurements of all sensors above the Met SRM.
2. Provide full set of station photos.

9414776 Oakland Berth 34, CA **Meteorological Station**

1. Provide measurements of all sensors above the Met SRM.
2. Provide full set of station photos.

9414797 Oakland Berth 38, CA **Meteorological Station**

1. Provide measurements of all sensors above the Met SRM.
2. Provide full set of station photos.

9414847 Point Potrero Richmond MET, CA **Meteorological Station**

1. Provide measurements of all sensors above the Met SRM.
2. Provide full set of station photos.

9415115 Pittsburg, CA **Meteorological Station**

1. Provide measurements of all sensors above the Met SRM.

9415118 Union Pacific RR Bridge, CA **Meteorological Station**

1. Provide full set of station photos.

9415141 Davis Point, CA **Meteorological Station**

1. Provide measurements of all sensors above the Met SRM.

s06010 Martinez-Amorco Pier (PORTS) **Current Meter Station**

1. No additional requirements.

s08010 Southampton Shoal Channel LB 6 (PORTS) **Current Meter Station**

1. No additional requirements.

s09010 Oakland Outer Harbor LB 3 (PORTS) **Current Meter Station**

1. No additional requirements.

wv46237 San Francisco Bar (PORTS) **Wave Sensor Station**

1. No additional requirements.

2.23 Humboldt University - Humboldt Bay PORTS

hb0101 Humboldt Bay Bar Channel LBB 2 (PORTS) **Current Meter Station**

1. System slated for repair June 2015.

hb0201 Humboldt Bay Entrance Channel LB 9 (PORTS) **Current Meter Station**

1. System slated for repair June 2015.

hb0301 Hookton Channel Day Marker 5 (PORTS) **Current Meter Station**

1. Sensor must be swapped to address failed pressure sensor.

hb0401 Chevron Pier (PORTS) **Current Meter Station**

1. No additional requirements.

2.24 Puerto Rican Seismic Network (PRSN)

9752619 Vieques/Isabel Segunda, PR **L28207/L28322** **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. Provide all of the MET sensor heights and the Met SRM.
2. Measure the height of the barometer on station datum.
3. Include all bench marks in the level run.
4. Update the bench mark sketch to include all bench marks.
5. Update the WinDesc bench mark files to include every bench mark description in a single file. Please refer to the guide to writing bench mark descriptions.

9753216 Fajardo, PR **L28207/L28322** **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. Provide all of the MET sensor heights and the Met SRM.
2. Measure the height of the barometer on station datum.
3. Include all bench marks in the level run.
4. Update the bench mark sketch with all bench marks.
5. Update the WinDesc bench mark files to include every bench mark description in a single file. Please refer to the guide to writing bench mark descriptions.

9754228 Yabucoa, PR **L28207/L28322** **Part 52**
PBM: 975 4228 NO 4 ***PBM above SD:*** 8.080 m
GPS Bench Mark: 975 4228 F ***MSL above SD:*** 3.454 m
GPS Observation Frequency: Unknown ***Last GPS Observation Performed:*** 05/09
Dive Inspection Frequency: Unknown ***Last Dive:*** Unknown

1. Provide all of the MET sensor heights and the Met SRM.
2. Measure the height of the barometer on station datum.
3. Include all bench marks in the level run.
4. Update the bench mark sketch with all bench marks.
5. Update the WinDesc bench mark files to include every bench mark description in a single file. Please refer to the guide to writing bench mark descriptions.

9757112 Caja de Muerto, PR **L28207/L28322** **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. Measure the height of the barometer on station datum.
2. Include all bench marks in the level run.
3. Update the WinDesc bench mark files to include every bench mark description in a single file. Please refer to the guide to writing bench mark descriptions.
4. Provide all of the MET sensor heights and the Met SRM.

9757809 Arecibo, PR **L28207/L28322** **Part 54**
PBM: 975 7809 B ***PBM above SD:*** 8.752 m
GPS Bench Mark: 975 7809 B ***MSL above SD:*** 6.990 m
GPS Observation Frequency: Unknown ***Last GPS Observation Performed:*** 12/08
Dive Inspection Frequency: Unknown ***Last Dive:*** Unknown

1. Provide all of the MET sensor heights and the Met SRM.
2. Measure the height of the barometer on station datum.
3. Include all bench marks in the level run.
4. Update the bench mark sketch with all bench marks.
5. Update the WinDesc bench mark files to include every bench mark description in a single file. Please refer to the guide to writing bench mark descriptions.

9759412 Aguadilla, PR **L28207/L28322** **Part 55**
PBM: 975 9412 NO 3 ***PBM above SD:*** 10.000 m
GPS Bench Mark: 975 9412 E ***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. Include all bench marks in the level run.
2. Update the WinDesc bench mark files to include every bench mark description in a single file. Please refer to the guide to writing bench mark descriptions.