



DEPARTMENT OF THE NAVY
COMMANDER NAVY INSTALLATIONS COMMAND
716 SICARD STREET SE SUITE 100
WASHINGTON NAVY YARD DC 20374-5140

5090
Ser N00/22U028
3 Mar 22

From: Commander, Navy Installations Command
To: Vice Chief of Naval Operations
Via: Deputy Chief of Naval Operations, Fleet Readiness and Logistics

Subj: FISCAL YEAR 2021 NAVY SHORE DRINKING WATER QUALITY REPORT

Ref: (a) OPNAV M-5090.1

Encl: (1) Navy Shore Drinking Water Quality Report for Fiscal Year 2021

1. Per reference (a), enclosure (1) is submitted.
2. Commander, Navy Installations Command is designated as the Navy's Executive Agent for drinking water quality ashore and is tasked by reference (a) to provide an annual report on the status of drinking water quality at Navy Shore installations, worldwide. Enclosure (1) outlines the collaborative efforts and accomplishments of Navy Installations Command, Bureau of Medicine & Surgery and Naval Facilities Engineering Systems Command.
3. Consistent with the fiscal year 2020 report, the drinking water provided at Navy installations in fiscal year 2021 remained safe for our Sailors, dependents, and civilians. In all cases where there were drinking water exceedances that were not resolved or where there was a potential health risk, alternate water was provided to eliminate any potential concerns.
4. Commander, Navy Installations Command's point of contact is CAPT David McAlister, Director, Facilities and Environmental (N4), (202) 433-4353, david.h.mcalister.mil@us.navy.mil.


T. K. BRIDGES
Executive Director

Copy to:
BUMED FALLS CHURCH VA
COMNAVFACSYSCOM WASHINGTON DC

**NAVY SHORE DRINKING WATER QUALITY
REPORT FOR FISCAL YEAR 2021**

February 2022

Prepared by:
Commander, Navy Installations Command
Navy Executive Agent for Drinking Water

This Page Intentionally Left Blank

EXECUTIVE SUMMARY

The Navy is committed to safeguarding the health of its personnel and their families. Ensuring safe drinking water is a top health concern. Commander, Navy Installations Command (CNIC) is the Executive Agent for drinking water quality at all Navy shore facilities and installations worldwide and serves as the single point of contact for matters related to drinking water systems.

This report is provided in accordance with OPNAVINST 5090.1E and is comprised of an inventory of all water systems, an analysis of the exceedances of health-based standards and the identification of unresolved operational and maintenance requirements.

During fiscal year 2021 (FY21), CNIC, working closely with its strategic partners, the Naval Facilities Engineering Systems Command (NAVFAC), the Navy Bureau of Medicine and Surgery (BUMED) and Naval Sea Systems Command (NAVSEA) Laboratory Quality and Accreditation Office (LQAO) continued to provide oversight and improve accountability of the Navy's drinking water program.

Across the U.S. and its territories, the Navy manages 79 drinking water systems that fall under the jurisdiction of the Environmental Protection Agency (EPA) and state laws. The Navy also manages 46 drinking water systems overseas that are not under the jurisdiction of the EPA and, for purposes of this report, are referred to as overseas drinking water (ODW) systems. These 46 ODW systems are under the primary enforcement authority of CNIC.

To maintain visibility of the Navy's commitment to ensuring the health of its personnel and families through prevention of lead in drinking water, this report highlights Navy's Lead and Copper Rule (LCR) and Lead in Priority Areas (LIPA) sampling. In FY21, Navy systems stateside and overseas continued recurring LCR sampling as required by the Safe Drinking Water Act and Department of Defense Instruction 4715.05 respectively. LIPA sampling, per OPNAVINST 5090.1E, continued at all applicable Navy systems worldwide. Per the Office of the Chief of Naval Operations (OPNAV) policy issued in October 2016, for each of the LCR action level exceedances in FY21, installations consulted with local preventive medicine authorities and took appropriate remedial action. Remedial actions were also completed or are underway at all installations with LIPA sample exceedances in FY21.

Per the Office of the Secretary of Defense (OSD) policy issued 2 March 2020, *Per- and Polyfluoroalkyl Substances Sampling of Department of Defense Drinking Water Systems*, the Navy completed sampling of all Navy-owned drinking water systems for Per- and polyfluoroalkyl substances (PFAS) in drinking water in FY21. Only five of 129 Navy-owned systems sampled had PFAS results exceeding the EPA's lifetime health advisory (LHA) level of 70 parts per trillion (ppt). Alternate water is being provided at installations with ongoing LHA exceedances while implementation of a long-term solution is underway.

Navy Compliance

For the 79 systems under the jurisdiction of EPA, 77 systems (97%) met all health-based standards during FY21, the rate slightly less than FY20 (98%). For the 46 ODW systems, all

systems (100%) met all health-based standards in FY21, continuing the 100% compliance with health-based standards beginning in FY19. Where there were exceedances of standards, corrective actions were implemented, and the systems returned to compliance. No exceedances required provision of alternate drinking water.

FY21 ODW Accomplishments and FY22 ODW Plan of Action and Milestones

In FY21, the Navy continued to advance the ODW program towards full compliance with U.S. water quality standards and ODW procedures and protocols. For the third year in a row, no health-based water quality exceedances were reported within the fiscal year. FY21 was the ninth full year of program implementation and the second year of the third cycle of sanitary surveys for ODW systems. The ODW program continues to refine policies and improve processes from lessons learned in the previous cycles of implementation.

Due to COVID-19 travel restrictions, all sanitary surveys scheduled for FY20 were deferred to FY21. The WQOC completed in-depth sanitary survey evaluations for six installations in FY21, covering 16 ODW systems, to identify deficiencies in sanitary conditions, material condition, personnel training and qualifications, safety and compliance with drinking water standards and policies. In response, installations identified corrective actions and developed a Plan of Action and Milestones to address each deficiency. Travel restrictions prevented a full on-site sanitary survey from being completed at Singapore Area Coordinator (SAC) in FY21 as scheduled. The WQOC instead performed an in-depth virtual desktop review of SAC's drinking water system as phase one and plans to conduct the on-site portion as phase two of the sanitary survey in FY22. There continued to be no impacts to drinking water quality as a result of COVID-19 restrictions in FY21 and ODW systems continued to meet compliance with all health-based standards.

NAVSEA LQAO, as part of the WQOC Staff, continued to provide technical assistance and track laboratory compliance progress across the ODW program. Due to the COVID-19 travel restrictions in FY20, NAVSEA LQAO had to defer on-site laboratory assessments scheduled for FY20 to FY21. NAVSEA LQAO performed three on-site laboratory assessments in FY21, two at on-site laboratories operated by the Navy and one at a third party-accredited contract laboratory used by Navy Region Europe Africa Central (EURAFCENT).

In FY21, CNIC published CNIC Instruction 5090.1B, *Navy Overseas Drinking Water Program Ashore*, implementing the new comprehensive ODW Program Manual (CNIC Manual 5090.1A). The new ODW Program Manual consolidated the previous three separate ODW Program manuals, CNIC M-5090.1, CNIC M-5090.2 and CNIC M-5090.3, and updated the ODW laboratory policy and operator requirements. Due to ongoing COVID-19 restrictions, CNIC, NAVFAC and BUMED continued to conduct ODW training for system operators, prospective Commanding Officers, Public Works Officers and medical professionals in a virtual environment.

The 2022 ODW Plan of Action and Milestones builds on the 2021 accomplishments, incorporating lessons learned from the FY21 sanitary surveys to develop new guidance and reporting mechanisms with the goal of improving program implementation across the regions and installations. The FY22 plan also includes enhanced focus on virtual drinking water training

options to increase program understanding in areas that continue to be a compliance challenges at the region and installation level. Details of FY21 accomplishments and the FY22 plan are contained in the body of this report.

This Page Intentionally Left Blank

TABLE OF CONTENTS

Introduction.....	1
Governing Regulations	1
Figure 1. Navy Overseas Drinking Water Program Organization.....	2
Drinking Water Systems Inventory	3
Table 1. Summary of Navy Drinking Water Systems by Region.....	4
Summary of Water Quality and Exceedances	4
Navy Drinking Water Systems under EPA Jurisdiction.....	4
Navy ODW Systems	5
Sampling and Testing for Lead in Priority Areas	5
Lead and Copper Rule Testing	6
Sampling and Testing for Perfluoroalkyl and Polyfluoroalkyl Substances.....	7
Assessment, Operation and Maintenance	9
Navy Drinking Water Systems under EPA Jurisdiction.....	9
Navy ODW Systems.....	9
Figure 2. Certificate to Operate Planning Flowchart (Action Holder indicated in parenthesis).....	11
FY21 Projects and Accomplishments.....	12
FY21 Projects.....	12
FY21 Accomplishments.....	12
FY22 Projects and Planned Actions	14
FY22 Projects.....	14
FY22 Planned Actions	14
Appendix A: Inventory of Drinking Water Systems under EPA Jurisdiction	A-1
Appendix B: Inventory of Exempted Drinking Water Systems (U.S. and Territories).....	B-1
Appendix C: Inventory of Non-Public Water Systems (U.S. and Territories)	C-1
Appendix D: Inventory of Privatized Systems (U.S. and Territories).....	D-1
Appendix E: Inventory of ODW Systems, CTO and Operator Training Requirements	E-1
Appendix F: Drinking Water Systems under EPA Jurisdiction with Exceedances.....	F-1
Appendix G: Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) Sampling Results for Navy-Owned Drinking Water Systems	G-1
U.S. and Territories.....	G-1
Overseas.....	G-4

This Page Intentionally Left Blank

Introduction

The Navy is committed to safeguarding the health of its personnel and families by ensuring their drinking water is safe and meets all health-based standards. This eighth annual report identifies the compliance posture of the Navy's drinking water program and the Navy's efforts taken to deliver safe drinking water. Commander, Navy Installations Command (CNIC), supported by its strategic partners Naval Facilities Engineering Systems Command (NAVFAC), Navy Bureau of Medicine and Surgery (BUMED) and Naval Sea Systems Command (NAVSEA), serves as the Executive Agent for drinking water quality for all Navy shore facilities and installations worldwide and maintains oversight of both U.S. and Overseas Drinking Water (ODW) systems.

Governing Regulations

In the U.S. and its territories, the Environmental Protection Agency (EPA), under the authority of the Safe Drinking Water Act (SDWA), sets health-based standards to ensure drinking water is safe for human consumption. The EPA defines human consumption as drinking, cooking, bathing, dishwashing and maintaining oral hygiene. EPA provides requirements and guidelines, adopted by most states, to implement safe drinking water program management.

Navy public drinking water systems within the U.S. and its territories are required to comply with EPA and state drinking water requirements. In the few locations where EPA is the sole regulator, Navy public drinking water systems are required to comply with EPA requirements alone.

OPNAVINST 5090.1E, *Environmental Readiness Program*, provides implementing requirements for Navy compliance with the SDWA. OPNAVINST 5090.1E incorporated the Chief of Naval Operations, Energy and Environmental Readiness Division (OPNAV N45) policy memorandum, *Navy Policy Requirements for Drinking Water Exceedances*, which requires each installation commanding officers (ICO) to consult with local preventive medicine authority (PMA) in the event of an exceedance of a drinking water maximum contaminant level, action level, health advisory or other drinking water quality standard in the U.S. and overseas.

Overseas, where the EPA does not have jurisdiction, CNIC is the primary enforcement authority for drinking water programs, setting and enforcing Navy health-based standards. Navy shore installations in foreign countries are also required to comply with health-based standards established within country-specific Department of Defense (DoD) Final Governing Standards (FGS), or in the absence of an FGS, the DoD Overseas Environmental Baseline Guidance Document (OEBGD).

As the primary enforcement authority for ODW systems, CNIC maintains an oversight structure to ensure adequate standards are in place and that ODW systems achieve and maintain compliance with standards (Figure 1). The top tier of the management and oversight structure is the Water Quality Oversight Council (WQOC). The WQOC comprises members from CNIC, NAVFAC, BUMED and NAVSEA. Director, Facilities and Environmental (CNIC N4), chairs the WQOC on behalf of the Commander. The second tier consists of the Regional Water Quality Boards (RWQB), chaired by the Region Commander (REGCOM). The third tier consists of the

Installation Water Quality Boards (IWQB), chaired by the respective Installation Commanding Officer (ICO).

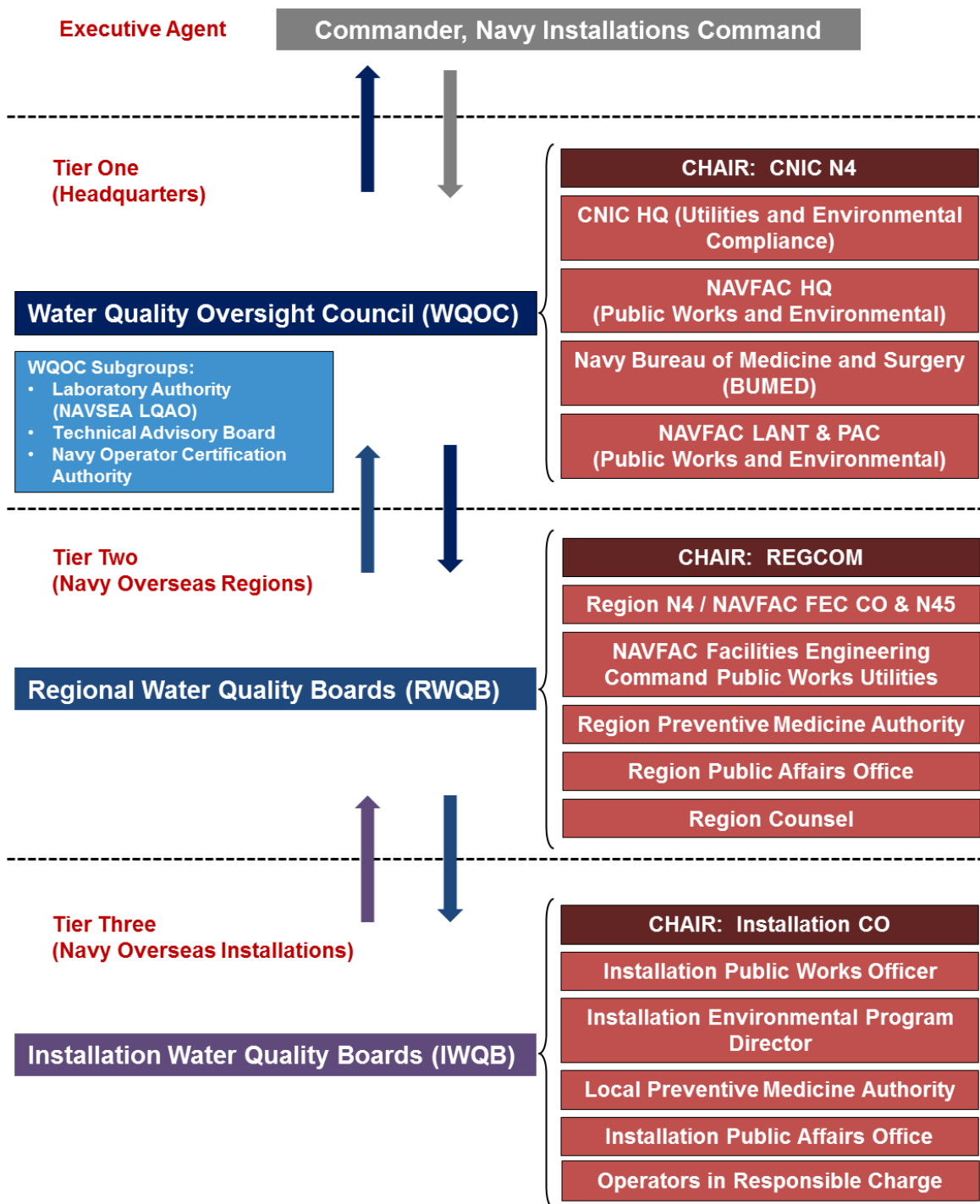


Figure 1. Navy Overseas Drinking Water Program Organization

Drinking Water Systems Inventory

In FY17, NAVFAC Engineering and Expeditionary Warfare Center (EXWC) finalized a comprehensive inventory of Navy drinking water and non-potable water systems on a worldwide basis. In FY21, this inventory was reviewed for any changes to domestic and overseas sources of drinking water (Table 1). The updated FY21 inventory reflects a U.S.-regulated inventory decrease from 80 to 79 drinking water systems to align with the Office of the Secretary of Defense (OSD) definitions of a regulated public water system (PWS). Under the OSD definitions, a regulated PWS in the U.S. must have a unique PWS identification (PWS ID) number. In FY21, one system was removed in Naval District Washington: Joint Base Anacostia Bolling (JBAB) - Anacostia, which was the result of a transfer to the Air Force. The Navy's 79 drinking water systems under the jurisdiction of the EPA are distributed among seven Navy Regions. Appendix A provides a complete listing of these 79 drinking water systems.

The Navy's remaining domestic systems not under the direct jurisdiction of the SDWA are listed in Appendices B, C and D. The remaining systems include consecutive water systems (water purchased from another PWS) classified as "Exempted" (Appendix B), systems serving fewer than 25 individuals classified as "Non-Public" (Appendix C), and privatized systems classified as "Privatized" (Appendix D) in accordance with OSD definitions. While not regulated under the SDWA, "Exempted" systems are still tracked and routinely tested as required under OPNAVINST 5090.1E. "Non-Public" systems serve less than 25 individuals and have less than 15 service connections but may be regulated by a local or state agency. "Privatized" systems' assets have been turned over to a private party and are not required to comply with OPNAVINST 5090.1E and may be regulated by the EPA.

The Navy's 46 overseas systems, under the primacy of CNIC, are distributed among four Navy Regions. Appendix E provides a complete listing of the 46 ODW systems. In FY21, one system was removed from the ODW system inventory in Region Japan: CFA Yokosuka – Nagai, which was the result of re-classifying the system as a Transient Non-Community Water System. Nagai is now only regulated under the Japanese Environmental Governing Standards and the OEBGD but is no longer a Navy ODW system. The ODW system inventory will continue to fluctuate as closures and new systems are identified. FY22 anticipates the addition of one system at NSF Redzikowo, Poland upon turnover of the completed water supply building to the Navy, the removal of one system at NSF Deveselu (Site Activation Area) via connection to the Main Base system and the removal of two systems (BANZ Warehouse and AV Unit) at NSA Bahrain. These two systems will be consolidated into the existing NSA Bahrain NAS II system via hauled water. One location supported by Region Southeast (CSL Comalapa) was recommended by the WQOC for possible inclusion under the program. This location is still under evaluation by Region Southeast and Naval Forces South (NAVSOUTH) pending Navy Marine Corps Public Health Center (NMCPHC) site visit and health assessment which has been delayed due to COVID-19 travel restrictions. Anticipated resolution is now planned for FY23.

Table 1. Summary of Navy Drinking Water Systems by Region

CNIC Region	Regulated PWS	Exempted	Non-PWS	Privatized	ODW System
CNREURAFCENT	0	0	0	0	19
CNRH	5	0	0	0	0
CNRJ	0	0	0	0	23
CNRK	0	0	0	0	2
CNRMA	26	59	4	1	0
CNRNDW	12	9	0	0	0
CNRNW	7	10	0	0	0
CNRSE	15	63	0	7	2
CNRSW	12	21	0	2	0
JRM	2	0	0	0	0
Total	79	162	4	10	46

Summary of Water Quality and Exceedances

A system with any exceedance of a health-based standard, regardless of duration, is reported as being out of compliance for the entire reporting period (i.e., the FY). The FY21 EPA national average for drinking water system compliance with health-based standards was 96%, a slight increase from the FY20 EPA national average of 95%.

Navy Drinking Water Systems under EPA Jurisdiction

In FY20, 97% (77 of 79) of the Navy drinking water systems in the U.S. were compliant with health-based standards. This is slightly less than the 98% compliance reported in FY20, and still higher than the EPA national average of 96%. The following two Navy drinking water systems, under the jurisdiction of EPA, experienced exceedances in FY21.

- NAS Point Mugu (NAVBASE Ventura CO): Total Trihalomethane (TTHM)
- Naval Base Kitsap – Jackson Park Naval Hospital: Insufficient disinfection residual

In all cases, public notifications were issued and will be reported in the respective installations’ annual Consumer Confidence Reports (CCR), which are distributed annually, by the first of July. The CCRs are also posted to the respective region’s website and are provided to consumers. None of the exceedances required boil water notices or provision of alternate drinking water. A detailed discussion of these water system health-based exceedance and corrective action taken follows in Appendix F.

There were also four Navy “Exempted” water systems with health-based exceedances or violations. In these instances, the water purveyor, and not the Navy, was responsible for all corrective actions and notifications, therefore they are not captured in Appendix F.

- Portsmouth Naval Shipyard (NOSC Fort Schuyler): Uncovered reservoir

- SUBASE New London (Nautilus Park Housing): Disinfection byproducts
- SUBASE New London (Main Base): Disinfection byproducts
- NOSC Ebensburg. Disinfection byproducts

Navy ODW Systems

During FY21, 100% of the 46 ODW systems were compliant with health-based standards, again matching the 100% compliance reported in FY19 and FY20. Annual CCRs were also distributed for each ODW system by July 1, 2021. The CCRs are posted to the respective region's website and were provided to consumers in English and the host nation language.

Sampling and Testing for Lead in Priority Areas

Per OPNAVINST 5090.1E, testing for lead is required for all drinking water coolers and other specified outlets in priority areas, such as schools and child development centers. On February 8, 2014, OPNAV N45 issued a policy memorandum, *Sampling and Testing for Lead in Drinking Water in Priority Areas* (LIPA), which outlines testing requirements and clarifies policy in the now updated OPNAVINST 5090.1E. On June 6, 2017, CNIC issued technical guidance to support implementation of the OPNAV policy. In FY20, CNIC Instruction 5090.6 was published to implement CNIC LIPA policy aligning with the updated OPNAV policy and the U.S. EPA's revised 3Ts guidance.

In FY21, the following installations performed recurring sampling per the LIPA policy: NSA Naples – Capadichino, NSA Naples – Support Site, COMFLEACT Sasebo, COMFLEACT Yokosuka and JEB Little Creek-Fort Story.

CFA Yokosuka documented one LIPA exceedance (16 ppb) at a single outlet at the Child Development Center (Building 4477) in October 2020. The outlet was flushed and resampled with a result below 15 ppb. In September 2021, it was discovered that the outlet was replaced after October 2020 and has since been secured until verification of NSF-61 lead free certification and retesting. In June 2021, the installation also completed faucet replacement and retesting (below 15 ppb) for a drinking water fountain with a LIPA exceedance previously identified in 2019 at the Child Development Center (Building 4300) playground. Additionally, NSA Naples Capodichino, NSA Naples Support Site, JEB Little Creek-Fort Story and COMFLEACT Sasebo identified outlets with LIPA exceedances in FY21 which will require remedial follow-up. Affected outlets have been secured and remedial actions will carry over into FY22 for these installations and will be detailed in next year's report.

Resampling is required by LIPA policy every five years, and to avoid a surge in funding requests, it was distributed across FY16-FY19 so that no installation exceeds the five-year standard. Due to funding priorities, NAS Whidbey Island, NAVBASE Kitsap, and NAVSTA Everett were unable to complete LIPA sampling in FY21. Navy Region Northwest has awarded a contract using FY21 funding to address LIPA sampling at these installations that will begin second quarter of FY22. Only sampling associated with new construction, remodeling and fixture replacement is anticipated in the out-of-cycle years. Results from recurring LIPA

sampling will continue to be summarized in annual reports and all results are posted on region or installation webpages.

Lead and Copper Rule Testing

Per the Safe Drinking Water Act, all community water systems and non-transient non-community water systems are required to perform testing under the Lead and Copper Rule (LCR). The LCR established an action level for lead and copper levels in drinking water based on the 90th percentile testing results of water samples for system-wide corrosion potential. An action level (AL) exceedance is not a violation of a health-based standard, but instead triggers other requirements such as additional monitoring, treatment techniques and public education. In 2016, the EPA released a recommended procedure for collecting lead and copper samples in response to issues observed in Flint, Michigan. The EPA has also issued revisions to the LCR, which take effect in FY22, to better protect the public from lead and copper exposures. A key change in the revised LCR is the addition of a lower “trigger level” (TL) in addition to the current AL for lead which triggers additional planning, monitoring and treatment requirements. The revised LCR also requires additional action for exceedances above the AL, including requirements for lead service line replacements.

For overseas installations, the OEBGD and the CNIC Instructions incorporate the same language as the SDWA. In addition, the applicable FGS for any specific country may include more protective requirements of the host nation.

While it is not the intent of this report to summarize all on-going sampling occurring at Navy installations under the LCR (as exceedances of the action level are not considered health-based violations under the current definition), due to the increased visibility of lead in drinking water issues, this report includes updates on exceedances of the action levels for the Regulated PWS and ODW systems. The exceedances listed below were reported to CNIC in FY21. Each exceedance has a unique response due to the nature of the systems and populations affected. In each case, the installation consulted with their local PMA, as required by OPNAV policy and alternate water was issued if recommended.

- **NSF Diego Garcia (Deep Draft Wharf).** The system was secured in April 2017 when test results showed levels of lead in its distribution system exceeded the action level (AL). An assessment of the distribution system in April 2018 concluded that the lead exceedance was due to the corrosive water produced from the nanofiltration plant (since it has no capability to control pH) and non-lead-free backflow prevention devices and accessories in the service lines at the Bravo Wharf. The BOS Contractor completed the replacement of the backflow preventers in wharf service lines in June 2020. Based on the sample test results of water at Deep Draft Wharf in August 2020, the system was no longer exceeding the required action level (AL) for lead and copper: 90th percentile for copper was 0.1235 mg/L which is less than the required AL of 1.3 mg/L; 90th percentile for lead was 0.0093 mg/L which is less than the required AL of 0.015 mg/L. The system was secured from April 2017 to September 2020. While the system was planned to return to full compliance in October 2020 and support visiting vessels, the installation performed an additional series of testing as a precaution before declaring the system fully

operational. One of three service lines exceeded the lead action level again during this testing: 0.0204 mg/L in January 2021 and 0.0298 mg/L in June 2021. The installation is consulting with Preventive Medicine to obtain a recommendation to use the two connections that reported lead levels below 0.0015 mg/L. A new task order for a Material Evaluation Survey, to be conducted by NAVFAC Pacific, is in progress to further investigate the remaining lead exceedance from the one impacted service line.

- **NAB Coronado (NALF San Clemente Island System).** Navy has been actively implementing a “find and replace” monitoring program for San Clemente Island to find lead sources through drinking water testing for lead and copper. Due to an FY17 lead exceedance, the installation accelerated the regulatory mandated five-year lead and copper sampling schedule at high-risk locations on the base. 81 samples were taken in 2018, initially identifying locations requiring corrective actions. Two were resolved and reported in the FY18 annual report. One was resolved in FY19. In FY20, the Navy completed corrective action items for another 4 locations. In FY21, all locations tested below the AL and the system is now in compliance with LCR.
- **NAVSTA Newport (Main Base System).** The installation has returned to a triennial LCR sampling schedule after two rounds of semi-annual sampling and three rounds of annual sampling demonstrated the 90th percentile for lead was below the 0.0015 mg/L action level. Corrective actions are currently underway or being developed for the remaining installation locations that continue to be affected by lead exceedances originally reported in FY17. Alternate water continues to be provided at the affected locations per installation leadership.
- **NAS Pensacola (Saufley Field).** Lead exceedance reported in FY21 at 2 of 10 sampling locations: Building 839 (0.025 mg/L) and Building 809 (0.020 mg/L). The investigation into the exceedances concluded that water sat in the pipes for a longer than normal period, likely due to increased telework and reduced water use, resulting in higher-than-normal concentrations. The water is not used for human consumption at either location that exceeded the lead action level of 0.0015 mg/L. A Tier 3 public notice was published 23 September 2021. The corrective action plan with recommendation for optimal corrosion control treatment will be submitted by 31 December 2021. For future sampling events, the sample locations will be flushed before they are secured for the required six hours prior to testing to reduce issues caused by low water use. LCR monitoring will be completed every six months starting in January 2022.

Sampling and Testing for Perfluoroalkyl and Polyfluoroalkyl Substances

Per the OSD policy issued 2 March 2020, *Per- and Polyfluoroalkyl Substances Sampling of Department of Defense Drinking Water Systems*, all DOD owned drinking water systems were sampled by 31 December 2020. This involved resampling those DOD owned water systems sampled under previous Navy policies and outlined in the FY16 annual report. Sampling included 81 Navy owned water systems in the U.S. and 46 ODW systems. PFAS sampling was also conducted at NSF Redzikowo, Poland even though it was not yet an official ODW system

under the operational control of the Navy in FY21. All PFAS sampling results are detailed in Appendix G.

Drinking water systems at five installations (NAVBASE Guam, NSY BOS Portsmouth – NCTAMSLANT Det Cutler, NAS Whidbey Island, NAS Whiting Field, and NRTF Dixon) sampled under the March 2020 OSD policy had PFAS results above the 70 ppt, or 0.070 ppb, Lifetime Health Advisory (LHA) level.

- **NAVBASE Guam.** PFOS results for Naval Base Guam’s (NBG) well supplies initially exceeded the LHA in July 2020 (73 ppt). As a corrective measure, NBG shut down and removed the affected wells from drinking water production and the distribution system. The affected customers in the Naval Hospital area (which serves about 2,000 people) now receive potable water from Fena Reservoir which is a surface water source that also includes several springs that are combined at the Navy Water Treatment Plant in Santa Rita, Guam. The finished water is pumped to most of Naval Base Guam and is now routed to the Naval Hospital area via a pump house on Nimitz Hill. NBG is currently investigating other options and possible projects to treat wells with elevated PFAS issues.
- **NSY BOS Portsmouth - NCTAMSLANT Det Cutler.** PFOS results for Building 503 initially exceeded the LHA in August 2020 (71 ppt). Occupants of Building 503 were provided bottled water at that time and continue to receive bottled water for consumption. A PFAS filtration system was installed in October 2021 and sampling conducted in November 2021 documented success of the filtration system, with laboratory results reporting non-detectable levels of PFAS immediately following treatment. NAVFAC Mid-Atlantic and the installation public works department are currently in correspondence with NMCPHC to determine a path forward for ending the current bottled water supply.
- **NAS Whidbey Island.** PFOS results at the NAS Whidbey Island Coupeville facility initially exceeded the LHA in July 2020 (250 ppt). Signage was immediately posted at the location informing staff to not drink the water, and bottled water is being provided by the Navy for their use. This location is also part of an ongoing Installation Restoration (ERN) project, and the ERN program is currently conducting a remedial investigation to determine future actions at this site. The facility is manned by a limited number of staff.
- **NAS Whiting Field.** PFOS and PFOA results at NAS Whiting Field initially exceeded the LHA in November 2020 (74 ppt and 640 ppt, respectively). Bottled water was provided to these base occupants upon receipt of these initial results until September 2021. During that timeframe, the base upgraded its Granular Activated Carbon (GAC) filtration process at the Navy-operated water treatment plant so it is now treated with lead and lag filtration units. Subsequent results since the upgrade have shown non-detects for all PFAS analytes in the treated water. The “do not drink” order was lifted, and bottled water delivery was ceased in September 2021 after the GAC updates were installed and operational.
- **NRTF Dixon.** PFOA has tested higher than the LHA at Naval Support Activity Monterey Naval Radio Transmitter Facility Dixon since 2016, with PFOA detected at

230 ppt during the November 2020 sampling event. The Navy continues to provide bottled water for drinking and monitors the system quarterly.

In addition to the five systems with results above the LHA, another ten drinking water systems at eight installations in the U.S. and four ODW systems at three installations overseas had PFAS results above the U.S. EPA method reporting limit (MRL) and are performing one year of quarterly sampling for PFAS as required by OSD policy. These systems are then required to perform sampling once every two years until results are reported below the MRL.

Per the OSD policy issued 23 July 2020, *Monitoring of Per- and Polyfluoroalkyl Substances Sampling for Installations with Non-Department of Defense Drinking Water System*, the Navy is required to obtain PFAS drinking water sampling results for all locations where the Navy purchases water by 23 January 2022. This policy covers 218 Navy locations where we purchase drinking water. The non-DOD owned water system results will be consolidated in the FY22 annual report to address the OSD policy deadline.

Additional off-installation PFAS testing of private drinking water wells is occurring as part of the Navy's Environmental Restoration and Base Realignment and Closure (BRAC) programs. As the systems being tested are privately owned, and are not Navy drinking water systems, results are not captured in this report.

Assessment, Operation and Maintenance

Compliance monitoring gives a clear picture of the current water quality and associated impacts. However, to fully assess both current and future risks to water quality, compliance monitoring is supplemented with sanitary surveys.

Navy Drinking Water Systems under EPA Jurisdiction

The U.S. EPA and states conduct sanitary surveys of public water systems, including Navy systems, every three years for surface water systems and every five years for ground water systems. In FY21, 15 sanitary survey inspections were performed by a Federal or state regulator at 11 Navy installations. Upon completion of an inspection, a report is issued to the installation noting all findings. Where deficiencies are noted that may affect water quality, immediate corrective action is initiated by the installation. At the end of FY21, 12 significant deficiencies identified by local regulator at two installations this fiscal year remain unresolved: ten at NAS Kingsville and two at NAS JRB Fort Worth. A cumulative total of 27 significant deficiencies were identified as "open" from sanitary surveys performed since 2019 at 12 water systems located at 11 installations. The U.S. EPA, or the state delegated primacy agency, may issue a Notice of Violation or an Administrative Order for any identified water quality deficiencies.

Navy ODW Systems

For ODW systems, the WQOC conducts sanitary surveys every three years, regardless of water source, to ensure high quality water systems are operating across the enterprise. Sanitary surveys can include visiting foreign water treatment plants servicing Navy installations for observation. The WQOC conducts surveys aligning with the eight EPA survey elements: water source; treatment; distribution; storage; pumps, pump facilities, controls; monitoring,

sampling and reporting; management and operations; and operator training and certification. A WQOC sanitary survey report is published within 90 days of the site visit. Upon receipt, the installation prepares a plan of action and milestones (POAM) addressing each deficiency and identifies corrective actions in a real-time online tracking database, known as the ODW Requirements POAM. The Requirements POAM is reviewed by the RWQB and WQOC on a quarterly basis to ensure continuous planning, programming and execution of corrective actions. Installations and regions update the ODW Requirements POAM quarterly to report on progress of deficiency corrections. FY21 is the second year of the third cycle of sanitary surveys, previously delayed from FY20. The second year of the third cycle benefitted from lessons learned from the second cycle, including updates to the ODW Sanitary Survey Common Deficiency List and increased focus on repeat deficiencies, ongoing development of solutions for enterprise data management, and continued refinement of policies to reflect program maturity.

In FY21 the WQOC conducted six sanitary surveys at the following installations: NSA Naples, Singapore Area Coordinator, NSA Souda Bay, CFA Yokosuka, NAF Atsugi, and Camp Lemonier, Djibouti. Due to ongoing COVID-19 travel restrictions, the Singapore Area Coordinator (SAC) sanitary survey will be conducted in two phases. The first phase, a virtual full desktop review of the system, was completed in FY21. The second phase is the on-site assessment of the SAC system planned for FY22. A total of 16 ODW systems were evaluated, identifying 205 deficiencies (of which 47 carried over from prior sanitary surveys): 94 significant, 81 moderate, and 30 minor. All 205 deficiencies identified in FY21 are programmed for corrective action across the Future Years Defense Program.

A significant deficiency may be a contaminant exceedance or operational deficiency. A contaminant exceedance has the potential to affect human health, and therefore requires public notification. An operational deficiency is a defect in design, operation or maintenance; or a failure or malfunction of the source, treatment, storage or distribution system that has the potential to cause the introduction of contamination into the water. A significant operational deficiency, if left unaddressed, could cause a health-based exceedance and loss of confidence in the drinking water by the fleet, fighter and family. The most commonly identified deficiencies in WQOC sanitary surveys include water treatment, finished water storage, water system management and operations and monitoring/reporting data validation. The highest percentage of significant deficiencies documented are attributed to treatment, and management and operations including cross-connection control and backflow prevention deficiencies.

The ODW program requires all ODW system operators in responsible charge (ORC) and assistant operators in responsible charge (AORC) to meet specific criteria for education qualifications, training, examination and continuing education. In FY21, ODW systems with certified operators fluctuated between 69% and 92% which is attributable to staffing turnover. Appendix E contains a listing of each ODW system and its corresponding operator training requirements.

All ODW systems are required by CNIC Instruction to obtain a Certificate to Operate (CTO). The CTO is based on the overall health and readiness of the system, which must be renewed every three years. As shown in the CTO Planning Flowchart below (Figure 2), the RWQB and WQOC evaluate the latest sanitary survey report and ODW Requirements POAM progress before making recommendations for a conditional, full or no CTO. The

REGCOM, upon review of all aspects of a system’s performance (e.g., training, certifications, and system checks), and a recommendation from the WQOC, will issue the CTO.

In FY21, one full CTO was issued to the CNRK Busan system after it closed all remaining significant deficiencies. The ODW program remains at 44 conditional CTOs and two full CTOs (Singapore Area Coordinator and CNRK Busan) for the 46 ODW systems. Appendix E provides an inventory of the 46 ODW systems, actual or planned date of the sanitary survey and CTO issuance and level of operator training required.

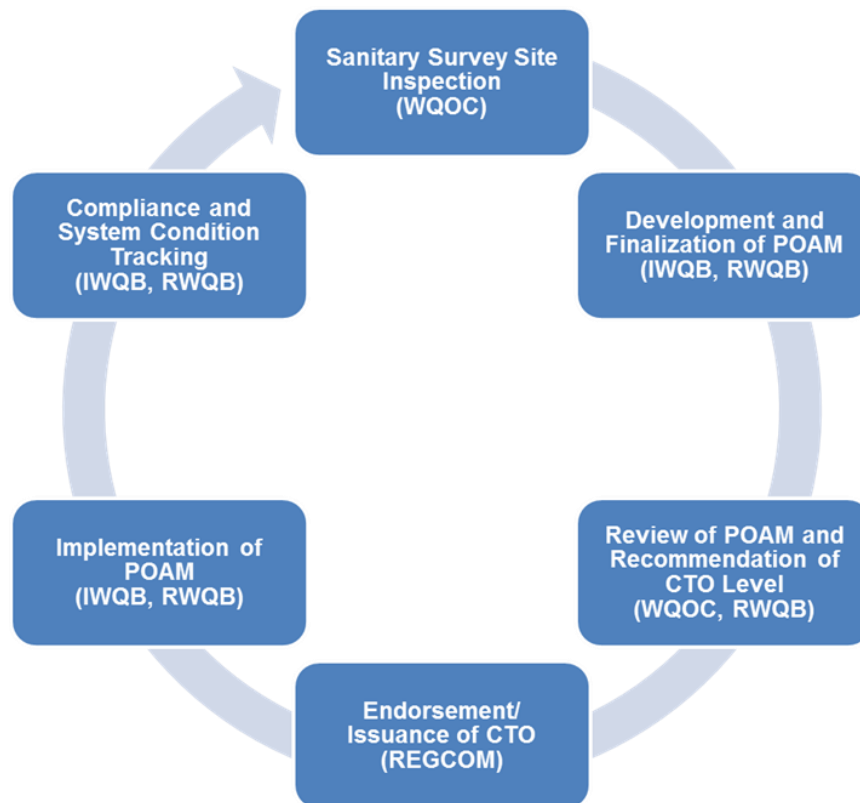


Figure 2. Certificate to Operate Planning Flowchart (Action Holder indicated in parenthesis)

FY21 Projects and Accomplishments

FY21 Projects

The value of executed projects and other investments for FY21 was comparable to the value of executed projects in FY20. Project scopes of work include utility services, potable water and water distribution system upgrades, well repairs, water tank and pumping station improvements, water line and piping replacement and repair, SCADA system replacement and other minor repairs.

For the 79 systems under EPA jurisdiction, 23 projects totaling \$72.4M were executed in FY21.

CNRH	5 projects.....	\$15.7M
CNRMA.....	1 project.....	\$4.7M
CNRNDW.....	1 project.....	\$17.8M
CNRNW.....	2 projects.....	\$4.4M
CNRSW	5 projects.....	\$13.4M
CJRM	6 projects.....	\$14.3M
CNRSE.....	3 projects.....	\$2.1M

For the 46 ODW systems, nine projects totaling \$79.1M were executed in FY21.

CNREURAFCENT.....	1 project.....	\$68.3M
CNRJ.....	3 projects.....	\$0.8M
CNRK	2 projects.....	\$0.1M
CNRSE.....	3 projects.....	\$9.9M

FY21 Accomplishments

- Completed \$151.5M of investments to drinking water infrastructure.
- CNIC published the eighth annual Navy Shore Drinking Water Quality Report.
- Installations issued all annual CCRs by July 1, 2021.
- CNIC and NAVFAC trained 66 individuals, including prospective ICOs, on their roles in Navy's drinking water program.
- NAVFAC HQ PW, in coordination with NAVFAC HQ EV and NAVSEA, trained 110 individuals, including drinking water operators, Public Works, and Environmental personnel, on both the ODW Sanitary Survey Program and the Navy's Level 1 Drinking Water Operator Treatment and Distribution Certification modules via instructor-led virtual training through Microsoft Teams.
- BUMED trained 155 individuals (17 Officers, 28 Enlisted, 29 Preventive Medicine Technicians and 81 Civilians) on public health surveillance and responses to drinking water issues during six virtual Basic Preventive Medicine Authority (PMA) Drinking Water Program Responsibilities Training Courses.
- WQOC conducted virtual quarterly ODW Stakeholders meetings to brief ODW progress to CNIC, NAVFAC and BUMED Flag Officer principals.
- Achieved the following FY21 WQOC ODW Plan and Objectives:

- **PMA Drinking Water Training Courses.** Held six virtual Basic Preventive Medicine Authority (PMA) Drinking Water Responsibilities Trainings.
- **Laboratory Visits.** Conducted three laboratory visits: two Navy on-site laboratories at NAS Sigonella (26-30 July 2021) and NS Rota (16-20 August 2021) and one at a contract laboratory, Water of Paris (27 September 2021), conducting cryptosporidium analysis for EURAFCENT's compliance with Surface Water Treatment (SWT) requirements.
- **Database Improvements.** The database improvements have been revised and deferred to FY22 after coordination with N6 determined that the ODW Requirements POAM database could not be transferred completely from the existing Access database to the CNIC G2 server. FY22 database improvements will focus on expanding functionality of the existing database to enhance regions and installation usability.
- **OEBGD Updates.** Drafted recommended updates to SWT requirements for CNICINST 5090.1 based on review of the 2020 OEBGD updates and lessons learned from current ODW system progress in implementing SWT requirements. These revisions will be incorporated into the next update of CNICINST 5090.1.
- **Sanitary Survey Common Deficiency List.** Updated the ODW Sanitary Survey Common Deficiency List to reflect lessons learned from the FY21 sanitary surveys and new regulatory citations.
- **Out-of-Cycle Full CTO Request.** Developed procedures for ODW systems to request a Full CTO evaluation outside of the standard WQOC sanitary survey cycle.
- **Legionella Guidance.** Drafting of Legionella guidance/policy has been deferred to FY22 as it requires further coordination within CNIC and Navy Medical.
- **Cooperative Security Locations (CSL) Point Paper.** Developed point paper with recommendations on way ahead for addressing drinking water compliance at CSLs.
- **Onsite Sanitary Surveys.** Completed six sanitary surveys in FY21. An in-depth virtual desktop review was conducted for Singapore Area Coordinator with the on-site portion of the system's sanitary survey planned for FY22.
- **WQOC Technical Advisory Board**
 - Performed engineering regulatory review of drinking water design, construction and process-change projects for meeting drinking water quality standards.
 - Developed TAB reports providing recommendations and technical guidance for several installation projects to include; the interconnection of systems at NSF Diego Garcia, the water treatment plant relocation at CFA Chinhae, a corrosion control study and new well construction at Camp Lemonnier, Djibouti (CLDJ) and a new Water Hammer Arrestor at NSA Bahrain.
 - Issued Certificates to Construct (CTC) for an alternate sea water intake at NAVSTA Guantanamo Bay, Reverse Osmosis addition at NSA Bahrain, Reverse Osmosis system at NSF Deveselu, Greensand Filtration at NSF Redzikowo and Ultraviolet (UV) installation at NSA Souda Bay.
- **WQOC Laboratory Authority**
 - Continued to provide technical assistance to NS Guantanamo Bay, NSF Diego Garcia, and CLDJ to resolve findings identified during previous onsite laboratory assessments.

- Performed onsite laboratory assessments at NAS Sigonella (26-30 July 2021), NS Rota (16-20 August 2021) and the Water of Paris contract laboratory (27 September 2021) to ensure continued compliance and confidence in the laboratories' testing capabilities.
- Continued coordination with EURAFCENT to resolve drinking water sampling compliance challenges, including issuing new approvals and expanding on existing approvals for laboratories within the region.
- Reviewed and validated 24 third-party accredited laboratories both in the U.S. and overseas for use by ODW systems for drinking water compliance analysis.
- WQOC Navy Operator Certification Authority Board
 - Administered 152 Navy operator certification exams to drinking water personnel (note that some personnel tested multiple times). An additional 23 operator certification exams were administered to Marine Corps drinking water operators.
 - Recommended 81 drinking water operators for Navy certification, including to personnel who tested through the Navy and personnel who received reciprocity for their State or Association of Boards of Certification (ABC) drinking water licenses.

FY22 Projects and Planned Actions

FY22 Projects

For the projected 79 systems under EPA jurisdiction, 23 projects totaling \$42.7M are planned for execution in FY22. Project scopes of work include water tank repairs, erosion control at reservoirs, well repairs, waterline replacement and repair, backflow repairs and other minor repairs. These projects will help address existing deficiencies and reduce exceedances.

CNRH	2 projects.....	\$1.8M
CNRMA.....	2 projects.....	\$6.1M
CNRNDW.....	0 projects.....	\$0M
CNRNW.....	4 projects.....	\$2.9M
CNRSW	6 projects.....	\$17.4M
CJRM	2 projects.....	\$9.0M
CNRSE.....	7 projects.....	\$5.5M

For the projected 46 ODW systems, ten projects totaling \$16.1M are planned for execution in FY22.

CNREURAFCENT.....	0 projects.....	\$0M
CNRJ.....	6 projects.....	\$1.8M
CNRK	0 projects.....	\$0M
CNRSE.....	4 projects.....	\$14.3M

FY22 Planned Actions

Building on the previous year's accomplishments, the ODW program continues its momentum towards program sustainability. The program will continue to increase program management

capacity, with a focus on enhanced reporting mechanisms and new training offerings tailored to ongoing compliance challenge areas. Addressing the entire Navy drinking water program, CNIC will continue to provide updated policy and guidance applicable to all U.S. and overseas drinking water systems and will implement lessons learned from the recent Red Hill water supply contamination event at Joint Base Pearl Harbor-Hickam. The WQOC will progressively and incrementally accomplish goals and objectives. The following are discrete objectives for FY22:

- **PMA Drinking Water Training Course.** Organize and hold four Preventive Medicine Authority (PMA) Drinking Water Trainings.
- **Laboratory Visits.** Conduct three laboratory visits. Two under routine biennial assessments, and one moving through Phase 2 for additional contaminant sampling and analysis.
- **Virtual Drinking Water Training.** Organize and hold six virtual trainings on requested drinking water topics for Region and Installation drinking water staff.
- **Sanitary Survey RFI Reporting.** Update the current Sanitary Survey Request for Information (RFI) Data Reporting Guidance for the ODW Data Repository to include guidance on bulk upload and download of documents.
- **RWQB Reporting Template Updates.** Develop a reporting template for RWQBs to provide updates on sanitary survey RFI data upload progress to the ODW Data Repository in their quarterly WQOC briefs. NAVFAC Atlantic and NAVFAC Pacific will perform quarterly checks to confirm data upload progress.
- **Drinking Water Operator Training.** Organize and hold two virtual Drinking Water Operator Trainings consisting of Treatment Level 1 and Distribution Level 1.
- **NAVFAC Professional Development Training.** Organize and hold four NAVFAC professional development trainings (PDT) Module 1 drinking water trainings for NAVFAC Public Works Officers (PWOs), Deputy Public Works Officers (DPWOs), and Installation Environmental Program Directors (IEPDs).
- **Legionella Guidance.** Draft a CNIC policy addressing Navy ashore Legionella Prevention and Response (deferred from FY21).
- **Database Improvements.** Implement database improvements to the ODW Requirements POAM. Revise and update POAM fields for streamlined reporting and data management (deferred and revised from FY21).
- **Onsite Sanitary Surveys.** Due to continued COVID-19 restrictions, the WQOC is tracking the completion of the planned seven sanitary surveys in FY22 for visibility.

Appendix A: Inventory of Drinking Water Systems under EPA Jurisdiction

<i>Installation Name</i>	<i>Water System</i>	<i>Source Type¹</i>	<i>Population Served</i>
NAVY REGION HAWAII			
JOINT BASE PEARL HARBOR-HICKAM HI	Camp Stover Water System	Consecutive	595
JOINT BASE PEARL HARBOR-HICKAM HI	NAVMAG PH (Lualualei) Water System	Primary Groundwater	114
JOINT BASE PEARL HARBOR-HICKAM HI	NCTAMS PACIFIC Water System	Primary Groundwater	6,470
JOINT BASE PEARL HARBOR-HICKAM HI	Joint Base Pearl Harbor Hickam Water System	Primary Groundwater	65,230
PACIFIC MISSILE RANGE FACILITY BARKING SANDS HI	Pacific Missile Range Facility Barking Sands Water System	Primary Groundwater	1,200
NAVY REGION MID-ATLANTIC			
ABL ROCKET CENTER WV	NIROP Allegany Ballistics Laboratory	Groundwater Under Direct Influence of Surface Water	1,600
JEB LITTLE CREEK-FORT STORY VA	JEB Little Creek Fort Story VA (Little Creek)	Consecutive	9,782
NAS OCEANA VA	Dam Neck	Consecutive	3,000
NAS OCEANA VA	NAS Oceana Fentress VA (OLF Fentress)	Primary Groundwater	40
NAS OCEANA VA	NAS Oceana (COMNAV MIDLANT)	Consecutive	7,300
NAVSTA GREAT LAKES IL	NTC Great Lakes IL NAVSTA Great Lakes	Primary Surface Water	23,000
NAVSTA NEWPORT RI	NAVSTA Newport – RI (Fort Adams)	Consecutive	318
NAVSTA NEWPORT RI	NAVSTA Newport – RI (Main Base)	Consecutive	7,871
NAVSTA NORFOLK VA	DFSC Craney Island	Consecutive	100
NAVSTA NORFOLK VA	Naval Station Norfolk	Consecutive	48,826
NSS NORFOLK NAVAL SHIPYARD VA	NSA Norfolk Naval Shipyard	Consecutive	17,000
NSS NORFOLK NAVAL SHIPYARD VA	St. Juliens Creek Annex Drinking Water (East and West)	Consecutive	1,500
NSA CRANE IN	NSA Crane	Primary Surface Water	5,437
NSA HAMPTON ROADS VA	NMC Portsmouth (NSA Hampton Roads) VA Consecutive Water System	Consecutive	6,262
NSA HAMPTON ROADS VA	NSA Northwest (NSA Northwest Annex)	Primary Groundwater	2,397
NSY BOS PORTSMOUTH NH	NSY Portsmouth ME (Great Pond Cabins 1-5)	Primary Groundwater	30
NSY BOS PORTSMOUTH NH	NSY Portsmouth NH (Great Pond Campground)	Primary Groundwater	45
NSY BOS PORTSMOUTH NH	NSY Portsmouth ME (Great Pond REC Hall)	Primary Groundwater	25

<i>Installation Name</i>	<i>Water System</i>	<i>Source Type¹</i>	<i>Population Served</i>
NSY BOS PORTSMOUTH NH	NSY Portsmouth ME Rangely Multipurpose (wells #1 and #2)	Primary Groundwater	33
NSY BOS PORTSMOUTH NH	NSY Portsmouth ME Rangely Training Lab	Primary Groundwater	33
WPNSTA EARLE COLTS NECK NJ	WPNSTA EARLE COLTS NECK – MSC Fire School	Primary Groundwater	25
WPNSTA EARLE COLTS NECK NJ	WPNSTA EARLE COLTS NECK – NJ Consecutive System Main Base	Consecutive	1,200
WPNSTA YORKTOWN VA	COMNAVREG MIDLANT (NWS Yorktown)	Consecutive	2,100
WPNSTA YORKTOWN VA	Cheatham Annex Water System	Consecutive	800
WPNSTA YORKTOWN VA	NWS Yorktown Pistol Range	Groundwater	50
WPNSTA YORKTOWN VA	NWS Yorktown Rifle Range	Groundwater	98
NAVAL DISTRICT WASHINGTON			
NAS PATUXENT RIVER MD	NAS Patuxent River	Groundwater	23,000
NAS PATUXENT RIVER MD	NAS Patuxent River, Solomons	Groundwater	1,200
NAS PATUXENT RIVER MD	NAS Patuxent River, Webster Field	Groundwater	1,200
NSA ANNAPOLIS MD	NRL Chesapeake Beach Detachment	Primary Groundwater	60
NSA ANNAPOLIS MD	USNA Annapolis (NSA Annapolis)	Primary Groundwater	8,700
NSA SOUTH POTOMAC MD	NSF Indian Head (NSA South Potomac)	Primary Groundwater	3,321
NSA SOUTH POTOMAC MD	NSF Indian Head (NSA South Potomac) Stump Neck Annex	Primary Groundwater	495
NSA SOUTH POTOMAC MD	NSWC Dahlgren Mainside (NSA South Potomac)	Primary Groundwater	11,020
NSA SOUTH POTOMAC MD	NSWC Dahlgren Pumpkin Neck (NSA South Potomac)	Primary Groundwater	25
NSA WASHINGTON DC	NSA Washington – Washington Navy Yard	Consecutive	15,700
NSA WASHINGTON DC	NRL – Blossom Point	Primary Groundwater	125
NSA WASHINGTON DC	U.S. Naval Observatory	Consecutive	250
NAVY REGION NORTHWEST			
NAS WHIDBEY ISLAND WA	Naval Air Station/Whidbey Island	Consecutive	16,595
NAVBASE KITSAP BREMERTON WA	Jackson Park Naval Hospital	Consecutive	2,277
NAVBASE KITSAP BREMERTON WA	Naval Base Kitsap at Bangor	Primary Groundwater	16,828
NAVBASE KITSAP BREMERTON WA	Naval Base Kitsap at Bremerton	Consecutive	12,078
NAVBASE KITSAP BREMERTON WA	Naval Base Kitsap at Keyport	Primary Groundwater	1,540
NAVMAG INDIAN ISLAND	Naval Magazine Indian Island	Consecutive	180
NAVSTA EVERETT WA	US Naval Radio Station (T) Jim Creek	Primary Groundwater	200

<i>Installation Name</i>	<i>Water System</i>	<i>Source Type¹</i>	<i>Population Served</i>
NAVY REGION SOUTHEAST			
NAS CORPUS CHRISTI TX	NAS Corpus Christi	Consecutive	7,650
NAS JACKSONVILLE FL	NAS Jacksonville Water System	Primary Groundwater	22,000
NAS JRB FORT WORTH TX	NAS JRB Fort Worth Water System	Consecutive	10,000
NAS KINGSVILLE TX	NAS Kingsville	Consecutive	1,520
NAS KINGSVILLE TX	NALF Orange Grove	Primary Groundwater	30
NAS MERIDIAN MS	NAS Meridian Water System	Primary Groundwater	2,800
NAS PENSACOLA FL	Pensacola - NTTCC Corry/NAS Pensacola	Primary Groundwater	22,600
NAS PENSACOLA FL	Saufley Field	Consecutive	1,728
NAS WHITING FIELD FL	NAS Whiting Field	Primary Groundwater	3,081
NAS WHITING FIELD FL	NOLF Choctaw	Primary Groundwater	25
NAVSTA MAYPORT FL	Mayport Water System	Primary Groundwater	20,500
NCBC GULFPORT MS	NCBC Gulfport Water System	Primary Groundwater	3,353
NSA MID-SOUTH TN	NSA Mid-South	Primary Groundwater	7000
SUBASE KINGS BAY GA	SUBASE Kings Bay	Primary Groundwater	9,730
NAS WHITING FIELD FL	Site X	Primary Groundwater	25
NAVY REGION SOUTHWEST			
NAVBASE CORONADO CA	NALF San Clemente Island	Consecutive	670
NAVBASE CORONADO CA	NAS North Island and NAB Coronado	Consecutive	36,000
NAVBASE CORONADO CA	SERE Camp (Warner Springs RTS)	Primary Groundwater	52
NAF EL CENTRO CA	NAF El Centro	Primary Surface Water	972
NAS FALLON NV	NAS Fallon	Primary Groundwater	3,000
NAS FALLON NV	NAS Fallon Centroid	Primary Groundwater	80
NAS LEMOORE CA	NAS Lemoore	Primary Surface Water	14,000
NAVBASE VENTURA CA	NAS Point Mugu (NAVBASE Ventura CO)	Consecutive	1,566
NAVBASE VENTURA CA	NCBC Port Hueneme (NAVBASE Ventura CO)	Consecutive	3,221
NAVBASE VENTURA CA	San Nicolas Island	Primary Surface Water	187
NAWS CHINA LAKE CA	NAWS China Lake Water System (North Range FKA Harvey Field Area)	Primary Groundwater	5,000
NAWS CHINA LAKE CA	South Range (NAWS China Lake FKA Randsburg Wash Area)	Primary Groundwater	150

<i>Installation Name</i>	<i>Water System</i>	<i>Source Type</i> ¹	<i>Population Served</i>
JOINT REGION MARIANAS			
NAVBASE GUAM GU	Navy Water System, Guam	Primary Surface Water	10,000
NSA ANDERSEN GU	Andersen Water System	Primary Groundwater	7,700

1 SOURCE TYPE DEFINITIONS

Groundwater: Groundwater wells isolated from surface water sources

Surface Water: Rivers, lakes, streams

Groundwater Under Direct Influence: Shallow groundwater wells connected with surface water sources

Primary: Navy produced water

Consecutive: Navy purchased water

Appendix B: Inventory of Exempted Drinking Water Systems (U.S. and Territories)

<i>Installation Name</i>	<i>Water System</i>	<i>Source Type¹</i>	<i>Population Served²</i>
NAVY REGION MID-ATLANTIC			
JOINT EXPEDITIONARY BASE LITTLE CREEK FORT STORY VA	JEBLCFS Housing South of Shore Drive (Wellings Ct, Sandpiper Crescent, Port Lyautey)	Consecutive	1,380
JOINT EXPEDITIONARY BASE LITTLE CREEK FORT STORY VA	JEBLCFS Atlantic Beach	Consecutive	120
NAS OCEANA VA	Midway Manor	Consecutive	1,480
NAS OCEANA VA	NEXCOM Headquarters	Consecutive	850
NAS OCEANA VA	NOSC Baltimore MD	Consecutive	950
NAS OCEANA VA	NOSC Greensboro NC	Consecutive	50
NAS OCEANA VA	NOSC MCRC Charlotte NC	Consecutive	50
NAS OCEANA VA	NOSC Raleigh NC	Consecutive	50
NAS OCEANA VA	NOSC Richmond VA	Consecutive	50
NAS OCEANA VA	NOSC Roanoke VA	Consecutive	20
NAS OCEANA VA	Oceana Booth Moore	Consecutive	500
NSA OCEANA VA	Owls Creek	Consecutive	20
NAVSTA GREAT LAKES IL	Akron Canton AFRC	Consecutive	345
NAVSTA GREAT LAKES IL	Ft Sheridan PPV Housing Area	Consecutive	886
NAVSTA GREAT LAKES IL	Glenview PPV Housing Area	Consecutive	364
NAVSTA GREAT LAKES IL	NOSC Cincinnati	Consecutive	248
NAVSTA GREAT LAKES IL	NOSC Columbus OH	Consecutive	594
NAVSTA GREAT LAKES IL	NOSC Decatur IL	Consecutive	83
NAVSTA GREAT LAKES IL	NOSC Green Bay WI	Consecutive	143
NAVSTA GREAT LAKES IL	NOSC Louisville KY	Consecutive	320
NAVSTA GREAT LAKES IL	NOSC Milwaukee	Consecutive	148
NAVSTA GREAT LAKES IL	NOSC Peoria IL	Consecutive	85
NAVSTA GREAT LAKES IL	NOSC Saginaw MI	Consecutive	103
NAVSTA GREAT LAKES IL	NOSC Toledo OH	Consecutive	94

<i>Installation Name</i>	<i>Water System</i>	<i>Source Type¹</i>	<i>Population Served²</i>
NAVSTA NEWPORT – RI	NUWC Dodge Pond Field	Consecutive	10
NAVSTA NEWPORT – RI	NUWC Fishers Island NY	Consecutive	20
NAVY MEDICINE EAST	TRICARE Outpatient Clinic Chesapeake, VA	Consecutive	25
NAVY MEDICINE EAST	TRICARE Outpatient Clinic Virginia Beach, VA	Consecutive	25
NORFOLK NAVAIL SHIPYARD VA	NNSY St. Helena	Consecutive	0
NORFOLK NAVAL SHIPYARD VA	NNSY New Gosport	Consecutive	25
NORFOLK NAVAL SHIPYARD VA	Stanley Ct	Consecutive	279
NSA MECHANICSBURG PA	Naval Support Activity, Mechanicsburg	Consecutive	4,200
NSA MECHANICSBURG PA	Naval Support Activity Philadelphia	Consecutive	6,000
NSA MECHANICSBURG PA	Philadelphia Navy Yard Annex	Consecutive	3,000
NSA MECHANICSBURG PA	NOSC Avoca PA	Consecutive	12
NSA MECHANICSBURG PA	NOSC Ebensburg	Consecutive	25
NSA MECHANICSBURG PA	NOSC Erie PA	Consecutive	25
NSA MECHANICSBURG PA	NOSC Lehigh Valley PA	Consecutive	25
PORTSMOUTH NAVAL SHIPYARD NH	NOSC Buffalo NY	Consecutive	72
PORTSMOUTH NAVAL SHIPYARD NH	NOSC Fort Schuyler NY	Consecutive	85
PORTSMOUTH NAVAL SHIPYARD NH	NOSC Plainville CT	Consecutive	51
PORTSMOUTH NAVAL SHIPYARD NH	NOSC Quincy MA	Consecutive	92
PORTSMOUTH NAVAL SHIPYARD NH	NOSC Rochester NY	Consecutive	26
PORTSMOUTH NAVAL SHIPYARD NH	NOSC Schenectady	Consecutive	70
PORTSMOUTH NAVAL SHIPYARD NH	NOSC Syracuse NY	Consecutive	33
PORTSMOUTH NAVAL SHIPYARD NH	NOSC White River VT	Consecutive	26
PORTSMOUTH NAVAL SHIPYARD NH	NSY Portsmouth ME (Main Base)	Consecutive	6,000
PORTSMOUTH NAVAL SHIPYARD NH	USS Constitution	Consecutive	26
SUBASE NEW LONDON CT	Mitchel Field NY	Consecutive	30
SUBASE NEW LONDON CT	Mitchel Manor 1 NY	Consecutive	500
SUBASE NEW LONDON CT	Saratoga Springs	Consecutive	35
SUBASE NEW LONDON CT	SUBASE NEW LONDON - CT Conning Towers Housing	Consecutive	425

<i>Installation Name</i>	<i>Water System</i>	<i>Source Type¹</i>	<i>Population Served²</i>
SUBASE NEW LONDON CT	SUBASE NEW LONDON - CT Nautilus Park 1, 2, and 3 South Housing	Consecutive	3,000
SUBASE NEW LONDON CT	SUBASE NEW LONDON - CT Polaris Park Housing	Consecutive	200
SUBASE NEW LONDON CT	SUBASENLON Main Base	Consecutive	9,800
SUBASE NEW LONDON CT	SUBASENLON Trident Park Housing	Consecutive	700
SUBASE NEW LONDON CT	Magnetic Silencing Facility, New London, CT	Consecutive	5
WPNSTA EARLE COLTS NECK NJ	WPNSTA Earle Colts Neck - NJ Waterfront - Admin Area	Consecutive	47
WPNSTA EARLE COLTS NECK NJ	WPNSTA Earle Colts Neck - NJ Waterfront - Industrial Area	Consecutive	80
NAVAL DISTRICT WASHINGTON			
NSA ANNAPOLIS MD	NSA Annapolis North Severn Water System	Consecutive	2,600
NSA BETHESDA MD	NSA Bethesda	Consecutive	12,056
NSA WASHINGTON DC	Arlington Service Center	Consecutive	250
NSA WASHINGTON DC	Midway Research Center	Consecutive	45
NSA WASHINGTON DC	Naval Maritime Intelligence Center	Consecutive	3500
NSA WASHINGTON DC	Nebraska Ave Complex	Consecutive	5
NSA WASHINGTON DC	NSWCCD Carderock Site	Consecutive	2,184
NSA WASHINGTON DC	Olney Special Area	Consecutive	8
NSA WASHINGTON DC	Washington DC – NRL Main Site Water System	Consecutive	4,144
NAVY REGION NORTHWEST			
NAVAL BASE KITSAP BANGOR WA	Camp McKean	Consecutive	8
NAVAL BASE KITSAP BANGOR WA	Manchester WA	Consecutive	37
NAVAL STATION EVERETT WA	Bayview ID	Consecutive	94
NAVAL STATION EVERETT WA	NAVSTA Everett	Consecutive	4,000
NAVAL STATION EVERETT WA	NOSC Des Moines	Consecutive	11
NAVAL STATION EVERETT WA	NOSC Minneapolis	Consecutive	65
NAVAL STATION EVERETT WA	NOSC Portland	Consecutive	22
NAVAL STATION EVERETT WA	NOSC Spokane	Consecutive	23
NAVAL STATION EVERETT WA	Pacific Beach	Consecutive	35
NAVAL STATION EVERETT WA	Smokey Point (Family Service Center) Marysville	Consecutive	500

<i>Installation Name</i>	<i>Water System</i>	<i>Source Type</i> ¹	<i>Population Served</i> ²
NAVY REGION SOUTHEAST			
CBC GULFPORT MS	Lakeside Housing	Consecutive	300
CBC GULFPORT MS	Woolmarket (De Soto)	Consecutive	100
NAS CORPUS CHRISTI TX	ALF Cabaniss	Consecutive	20
NAS CORPUS CHRISTI TX	ALF Waldron	Consecutive	20
NAS CORPUS CHRISTI TX	NOSC Harlingen	Consecutive	149
NAS CORPUS CHRISTI TX	NOSC Houston	Consecutive	1,052
NAS CORPUS CHRISTI TX	NOSC San Antonio	Consecutive	710
NAS JACKSONVILLE FL	Aguada	Consecutive	10
NAS JACKSONVILLE FL	DLA-DRMS	Consecutive	25
NAS JRB FORT WORTH TX	NOSC Amarillo	Consecutive	97
NAS JRB FORT WORTH TX	NOSC Austin	Consecutive	269
NAS JRB FORT WORTH TX	NOSC El Paso	Consecutive	269
NAS JRB FORT WORTH TX	NOSC Oklahoma City OK	Consecutive	319
NAS JRB FORT WORTH TX	NOSC Tulsa	Consecutive	182
NAS JRB FORT WORTH TX	NOSC Waco	Consecutive	102
NAS JRB FORT WORTH TX	NOSC Wichita	Consecutive	119
NAS PENSACOLA FL	Blue Angels Recreation Area (Bronson Field)	Consecutive	50
NAS JRB NEW ORLEANS LA	NOSC MCRC Shreveport	Consecutive	200
NAS JRB NEW ORLEANS LA	SPAWAR New Orleans, LA	Consecutive	300
NAS JRB NEW ORLEANS LA	NAS JRB New Orleans Plaquemines Parish Govt	Consecutive	9,500
NAS KEY WEST FL	NOSC Miami FL	Consecutive	40
NAS KEY WEST FL	NOSC W Palm Beach	Consecutive	40
NAS KEY WEST FL	NUWC Autec	Consecutive	155
NAS KEY WEST FL	Fleming Key Magazine	Consecutive	54
NAS MERIDIAN MS	NOSC MCRC Bessemer	Consecutive	33
NAS MERIDIAN MS	NOSC MRCR Bessemer 1	Consecutive	33
NAS MERIDIAN MS	OLF Bravo	Consecutive	25

<i>Installation Name</i>	<i>Water System</i>	<i>Source Type¹</i>	<i>Population Served²</i>
NAVSTA MAYPORT FL	Commissary Site Mayport	Consecutive	500
NAVSTA MAYPORT FL	MAYPORT FISC Jacksonville (Fuel Depot)	Consecutive	25
NAVSTA MAYPORT FL	Mayport Off-Base Housing	Consecutive	2,000
NAVSUPPACT MID-SOUTH TN	NOSC Chattanooga	Consecutive	310
NAVSUPPACT MID-SOUTH TN	NOSC Kansas City MO	Consecutive	307
NAVSUPPACT MID-SOUTH TN	NOSC Knoxville	Consecutive	374
NAVSUPPACT MID-SOUTH TN	NOSC Little Rock	Consecutive	161
NAVSUPPACT MID-SOUTH TN	NOSC Nashville (Smyrna)	Consecutive	285
NAVSUPPACT MID-SOUTH TN	NOSC Springfield	Consecutive	201
NAVSUPPACT MID-SOUTH TN	NOSC St. Louis	Consecutive	201
NAVSUPPACT MID-SOUTH TN	NSWC Carderock DIV	Consecutive	12
NAVSUPPACT MID-SOUTH TN	Weldon Spring Training Area	Consecutive	125
NAVSUPPACT PANAMA CITY FL	NOSC NMRC Tallahassee	Consecutive	108
NAVSUPPACT PANAMA CITY FL	NSA Panama City - Consecutive System	Consecutive	4,189
NAWCTSD ORLANDO FL	NOSC Orlando FL	Consecutive	95
NAWCTSD ORLANDO FL	NOSC Tampa FL	Consecutive	180
NAWCTSD ORLANDO FL	NSA Orlando	Consecutive	1,300
SUBASE KINGS BAY GA	Lake Allatoona Area	Consecutive	40
SUBASE KINGS BAY GA	Navy/NOSC Ft Jackson Columbia SC	Consecutive	20
SUBASE KINGS BAY GA	NOSC – MCRC Greenville SC	Consecutive	21
SUBASE KINGS BAY GA	NOSC Augusta GA	Consecutive	20
SUBASE KINGS BAY GA	NOSC Columbus GA	Consecutive	19
SUBASE KINGS BAY GA	NOSC – MCRC Atlanta	Consecutive	244
NAS WHITING FIELD FL	NOLF Brewton	Consecutive	25
NAS WHITING FIELD FL	NOLF Evergreen	Consecutive	25
NAS WHITING FIELD FL	NOLF Harold	Consecutive	25
NAS WHITING FIELD FL	NOLF Holley	Consecutive	25
NAS WHITING FIELD FL	NOLF Pace	Consecutive	25

<i>Installation Name</i>	<i>Water System</i>	<i>Source Type¹</i>	<i>Population Served²</i>
NAS WHITING FIELD FL	NOLF Santa Rosa	Consecutive	25
NAS WHITING FIELD FL	NOLF Silverhill	Consecutive	25
NAS WHITING FIELD FL	NOLF Spencer	Consecutive	25
NAS WHITING FIELD FL	NOLF Wolf	Consecutive	25
NAS WHITING FIELD FL	OLF Barin	Consecutive	25
NAS WHITING FIELD FL	Whiting Park	Consecutive	25
NAS WHITING FIELD FL	Whiting Pines	Consecutive	25
SPAWAR CHARLESTON SC	SPAWARSYSCEN Atlantic: North Charleston, SC		1,750
NAVY REGION SOUTHWEST			
NAS FALLON NV	NOSC Reno	Consecutive	125
NAS LEMOORE CA	NOSC Alameda	Consecutive	227
NAS LEMOORE CA	NOSC Sacramento	Consecutive	117
NAS LEMOORE CA	NOSC San Jose	Consecutive	87
NAVBASE CORONADO CA	Camp Morena	Consecutive	200
NAVBASE CORONADO CA	Imperial Beach OLF	Consecutive	1,415
NAVBASE POINT LOMA CA	Balboa Ave	Consecutive	50
NAVBASE POINT LOMA CA	Cabrillo National	Consecutive	20
NAVBASE POINT LOMA CA	Lindberg Field	Consecutive	200
NAVBASE POINT LOMA CA	SUBASE San Diego (NAVBASE Point Loma)	Consecutive	14,000
NAVBASE SAN DIEGO CA	1220 Pacific Hwy	Consecutive	513
NAVBASE SAN DIEGO CA	Balboa Hospital	Consecutive	2,981
NAVBASE SAN DIEGO CA	Bayview Hills Housing	Consecutive	2,203
NAVBASE SAN DIEGO CA	Broadway Complex	Consecutive	1,400
NAVBASE SAN DIEGO CA	Mission Gorge Rec Area	Consecutive	98
NAVBASE SAN DIEGO CA	NAVBASE San Diego	Consecutive	50,000
NAVWPNSTA SEAL BEACH CA	NWPNSTA Seal Beach – CA	Consecutive	750
NAVWPNSTA SEAL BEACH CA	NWPNSTA Seal Beach Der Norco – CA	Consecutive	2,000
NAVWPNSTA SEAL BEACH CA	NWPNSTA Seal Beach Det Fallbrook – CA	Consecutive	250

<i>Installation Name</i>	<i>Water System</i>	<i>Source Type</i> ¹	<i>Population Served</i> ²
NAVWPNSTA SEAL BEACH CA	San Pedro Fuel Depot	Consecutive	10
NAVBASE VENTURA CA	Laguna Peak	Consecutive	2

1 SOURCE TYPE DEFINITIONS. All exempted drinking water systems are consecutive systems. Consecutive systems are those where water is purchased from a regulated PWS and distributed through the installation

This Page Intentionally Left Blank

Appendix C: Inventory of Non-Public Water Systems (U.S. and Territories)

<i>Installation Name</i>	<i>Water System</i>	<i>Source Type¹</i>	<i>Population Served²</i>
NAVY REGION MID-ATLANTIC			
NSA CRANE IN	Bloomington Gate	Consecutive	20
NSA CRANE IN	Lake Glendora Test Facility	Consecutive	4
NAVSTA NORFOLK VA	DFSC Craney Island	Consecutive	9
WPNSTA YORKTOWN VA	DFSP Yorktown	Consecutive	2

1 SOURCE TYPE DEFINITIONS. All non-public water systems are consecutive systems. Consecutive systems are those where water is purchased from a regulated PWS and distributed through the installation

This Page Intentionally Left Blank

Appendix D: Inventory of Privatized Systems (U.S. and Territories)

<i>Installation Name</i>	<i>Water System</i>	<i>Source Type¹</i>	<i>Population Served²</i>
NAVY REGION MID-ATLANTIC			
JEB LITTLE CREEK-FORT STORY VA	Fort Story	Consecutive	2,642
NAVY REGION SOUTHEAST			
NAS KEY WEST FL	Dredgers Key - Sigsbee	Consecutive	71
NAS KEY WEST FL	NAS Key West	Consecutive	3,500
NAS KEY WEST FL	Truman Annex	Consecutive	84
NAS KEY WEST FL	Trumbo Point Annex	Consecutive	37
NAS KEY WEST FL	BRMCL (Branch Health Clinic Key West)	Consecutive	83
NAS KEY WEST FL	NRTF Saddlebunch	Consecutive	2
NSF BEAUFORT FL	NH Beaufort SC	Consecutive	200
NAVY REGION SOUTHWEST			
NAVSUPPACT MONTEREY CA	Navy School Annex	Consecutive	400
NAVSUPPACT MONTEREY CA	NSA Monterey	Consecutive	3,100

1 SOURCE TYPE DEFINITIONS. All privatized drinking water systems are consecutive systems. Consecutive systems are those where water is purchased from a regulated PWS and distributed through the installation

This Page Intentionally Left Blank

Appendix E: Inventory of ODW Systems, CTO and Operator Training Requirements

Installation Name	Water System	Source Type ¹	Population Served	CTO Actual / Planned Dates		Operator Training Requirement ³
				Most Recent Cert. to Operate ²	WQOC Sanitary Survey Site Visit	
NAVY REGION EUROPE AFRICA CENTRAL						
NSA NAPLES ITALY	NSA Naples Capodichino	Consecutive	3,000	Jan-18	Jul-21	T3, D2
NSA NAPLES ITALY	NSA Naples Support Site	Consecutive	4,000	Jan-18	Jul-21	D1
NSA NAPLES ITALY	NSA Naples Olde Mill Inn Gaeta	Consecutive	200	Jan-18	Jul-21	T1, D1
NSA NAPLES ITALY	NSA Naples Carney Park	Consecutive	200	Jan-18	Jul-21	T1, D1
NSA NAPLES ITALY	NAS Naples Lago Patria SATCOM	Consecutive	25	Jan-18	Jul-21	T1, D1
NAVSTA ROTA SPAIN	NAVSTA ROTA	Consecutive	6,500	Dec-18	Jun-22	T2, D3
NAS SIGONELLA ITALY	NAS Sigonella - NAS I	Groundwater	900	Jan-20	FY23	T3, D1
NAS SIGONELLA ITALY	NAS Sigonella - NAS II	Groundwater	2,750	Jan-20	FY23	T3, D1
NAS SIGONELLA ITALY	NAS Sigonella - Marinai Housing	Groundwater	2,000	Jan-20	FY23	T3, D1
NAS SIGONELLA ITALY	NAS Sigonella - NRTF Niscemi	Consecutive	40	Jan-20	FY23	D2
NSA SOUDA BAY GREECE	NSA Souda Bay	Consecutive	1,050	Dec-21	May-21	T1, D1
NSA BAHRAIN BAHRAIN	NSA – Bahrain (NSA I)	Consecutive	4,000	Mar-19	Feb-22	T3, D2
NSA BAHRAIN BAHRAIN	NSA – Bahrain (NSA II)	Consecutive	2,000	Mar-19	Feb-22	T3, D1
NSA BAHRAIN BAHRAIN	NSA – Bahrain (BANZ)	Consecutive	300	Mar-19	Feb-22	D1
NSA BAHRAIN BAHRAIN	NSA – Bahrain (AV Unit)	Consecutive	300	Mar-19	Feb-22	D1
SHAIKH ISA AIR BASE (NSA BAHRAIN) BAHRAIN	ISA Air Base	Consecutive	1,700	Mar-19	Feb-22	T3, D3
CAMP LEMONNIER DJIBOUTI	Camp Lemonnier, Djibouti	Groundwater	4,496	Apr-18	Sep-21	T3, D2
NSF DEVESELU, ROMANIA	Deveselu, Activation Camp	Groundwater	50	May-20	FY23	T1, D1
NSF DEVESELU, ROMANIA	Deveselu, Main Site	Groundwater	20	May-20	FY23	T3, D1
NAVY REGION KOREA						
CFA CHINHAЕ KOREA	COMFLEACT Chinhae	Groundwater	583	Feb-20	FY23	T2, D1
CFA CHINHAЕ KOREA	CNFK HQ Busan	Consecutive	85	Dec-20	FY23	T1, D1

Installation Name	Water System	Source Type ¹	Population Served	CTO Actual / Planned Dates		Operator Training Requirement ³
				Most Recent Cert. to Operate ²	WQOC Sanitary Survey Site Visit	
NAVY REGION JAPAN						
NSF DIEGO GARCIA BRITISH INDIAN OCEAN TERRITORY (BIOT)	Main Water System	Groundwater Under Direct Influence	3,000	Feb-18	Aug-22	T3, D3
NSF DIEGO GARCIA BIOT	Nanofiltration Hauled Water	Groundwater Under Direct Influence	1,200	Feb-18	Aug-22	T3, D1
NSF DIEGO GARCIA BIOT	Deep Draft Wharf	Groundwater Under Direct Influence	100	Feb-18	Aug-22	T3, D1
CFA YOKOSUKA JAPAN	Fleet Mail Center Water System	Consecutive	40	Oct-17	Aug-21	D1
CFA YOKOSUKA JAPAN	Azuma/Hakozaki Fuel Terminal	Consecutive	180	Oct-17	Aug-21	D1
CFA YOKOSUKA JAPAN	Ikego Housing	Consecutive	3,100	Oct-17	Aug-21	T1, D1
CFA YOKOSUKA JAPAN	Tsurumi OU1/OU2 Fuel Terminal	Consecutive	80	Oct-17	Aug-21	D1
CFA YOKOSUKA JAPAN	Urago Ordinance Munitions	Consecutive	100	Oct-17	Aug-21	D1
CFA YOKOSUKA JAPAN	Yokosuka Base Water System	Consecutive	23,000	Oct-17	Aug-21	T1, D3
CFA OKINAWA JAPAN	Camp Shields Facility Water System	Consecutive	613	Dec-18	Apr-22	D1
CFA OKINAWA JAPAN	White Beach Facility Water System	Consecutive	644	Dec-18	Apr-22	D1
CFA OKINAWA JAPAN	Awase Water System	Consecutive	10	Dec-18	Apr-22	D1
CFA OKINAWA JAPAN	Tengan Pier	Consecutive	0	Dec-18	Apr-22	D1
NAF ATSUGI JAPAN	NAF Atsugi	Groundwater	6,000	Oct-18	Sep-21	T2, D2
NAF MISAWA JAPAN	FLC Yokosuka, Hachinohe Fuel Terminal	Consecutive	35	Dec-19	FY23	D1
CFA SASEBO JAPAN	Main Base	Consecutive	6,224	May-19	Mar-22	D3
CFA SASEBO JAPAN	Akasaki	Consecutive	114	May-19	Mar-22	D1
CFA SASEBO JAPAN	Iorizaki POL	Consecutive	14	May-19	Mar-22	D1
CFA SASEBO JAPAN	Yokose	Consecutive	218	May-19	Mar-22	T1, D1
CFA SASEBO JAPAN	Hario Village	Consecutive	1,552	May-19	Mar-22	D1
CFA SASEBO JAPAN	Hario Shima	Consecutive	37	May-19	Mar-22	D1
CFA SASEBO JAPAN	Maebata	Consecutive	105	May-19	Mar-22	D1

Installation Name	Water System	Source Type ¹	Population Served	CTO Actual / Planned Dates		Operator Training Requirement ³
				Most Recent Cert. to Operate ²	WQOC Sanitary Survey Site Visit	
SINGAPORE AREA COORDINATOR SINGAPORE	Sembawang Water System	Consecutive	995	Feb-18	Aug-22*	D1
NAVY REGION SOUTHEAST						
NAVSTA GUANTANAMO BAY CUBA	Desalination Plant	Surface Water	5,500	Jun-19	Jul-22	T3, D3
AUTEC ANDROS ISLAND BAHAMAS	NUWCDETAUTEC	Groundwater Under Direct Influence	646	Oct-19	Dec-22	T3, D1

* Virtual desktop review was completed June 2021 due to COVID-19 travel restrictions. Onsite portion of the sanitary survey is scheduled for August 2022.

1 SOURCE TYPE DEFINITIONS.

Groundwater: Groundwater wells isolated from surface water sources

Surface Water: Rivers, lakes, streams

Groundwater Under Direct Influence: Shallow groundwater wells connected with surface water sources

Consecutive: Navy purchased water

2 CERTIFICATE TO OPERATE STATUS. Bolded date indicates full certificate to operate. All other dates indicate conditional certificate to operate.

3 OPERATOR REQUIREMENT DEFINITIONS. Each system has a letter indicating system type and a number indicating complexity, requiring varying degrees of training.

D: Drinking water Distribution system as defined by RWQB inventory.

T: Drinking water Treatment system as defined by RWQB inventory.

1: Low system complexity.

2: Medium system complexity.

3: High system complexity.

This Page Intentionally Left Blank

Appendix F: Drinking Water Systems under EPA Jurisdiction with Exceedances

Exceedance #1

Installation (System): NAS Point Mugu (NAVBASE Ventura CO)

Exceedance: Total Trihalomethane (TTHM)

Notice of Violation Date: 28 July 2020

Duration: 90 days (9 days in FY21)

Population Served: 300

Description of Exceedance: State Water Board Division of Drinking Water (DDW) issued a Citation for Noncompliance for elevated Disinfection Byproducts (DBPs) in the NBVC Point Mugu Drinking Water System. During the 12-month Local Running Annual Average (LRAA) period, the monthly analysis at sample site PM6-31 (Beach Road) exceeded the MCL of 80 ppb for five of the 12-months. The LRAA TTHM MCL exceedance (83 ppb) occurred in the Second Quarter of 2020. PM6-31 is at the most southern point of Point Mugu. Point Mugu returned to compliance on 9 October 2020 when the TTHM LRAA at Site 6-31 dropped below the MCL.

Plan of Action and Milestones: Detailed Corrective Action Plan was provided to DDW. NBVC Environmental and Utilities prepared the plan and implemented corrective actions during FY20 and FY21. Corrective flushing actions in July, August, and September 2020 reduced TTHM below the MCL. Utility upgrades are also planned (will be FY24 POM submit) as a long-term corrective action.

Contingency Plans to Provide Alternate Water Supplies: Contingency plans were not applicable.

Exceedance #2

Installation (System): Naval Base Kitsap – Jackson Park Naval Hospital

Exceedance: Insufficient disinfection residual.

Notice of Violation Date: 30 September 2021

Duration: 31 days

Population Served: 2,277

Description of Exceedance: The Jackson Park/Naval Hospital drinking water system failed to maintain chloride disinfection levels at or above 0.2 mg/l from 95% of the collected samples (22 out of 36) during the month of July 2021. Problem attributed to the purveyor, the City of Bremerton, providing water that contained lower than normal concentration of chlorine to the Navy's distribution system. Navy water operators were not performing chlorination monitoring as required and therefore did not immediately recognize the need to increase chlorine concentrations.

Plan of Action and Milestones: Operators were briefed on the importance of performing all drinking water monitoring, even during periods of high workload and resumed chlorination monitoring at Jackson Park Naval Hospital. Submitted completed chlorination monitoring report for September 2021 to Washington DOH demonstrating compliance with sufficient chlorine residual.

Contingency Plans to Provide Alternate Water Supplies: Contingency plans were not applicable.

This Page Intentionally Left Blank

Appendix G: Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) Sampling Results for Navy-Owned Drinking Water Systems

U.S. and Territories

<i>Installation Name</i>	<i>Water System</i>	<i>PFOS (ppt)</i>	<i>PFOA (ppt)</i>
JOINT REGION MARIANAS			
NAVBASE GUAM	NAVY WATER SYSTEM, GUAM	73	2.8
NSA ANDERSON	ANDERSON WATER SYSTEMS ¹	<2.0	<2.0
JOINT BASE PEARL HARBOR HICKAM	JOINT BASE PEARL HARBOR HICKAM WATER SYSTEM	5.5	3.2
JOINT BASE PEARL HARBOR HICKAM	NAVMAG PH (LUALUALEI) WATER SYSTEM	<2.0	<2.0
JOINT BASE PEARL HARBOR HICKAM	NCTAMS PACIFIC WATER SYSTEM	<2.0	<2.0
PACIFIC MISSILE RANGE FACILITY	PACIFIC MISSILE RANGE FACILITY WATER SYSTEM (BARKING SANDS)	<2.0	<2.0
NAVY REGION MID-ATLANTIC			
NAS OCEANA	NAS Oceana Fentress VA (OLF Fentress)	<2.0	<2.0
NAVSEA - NIROP	NIROP Allegany Ballistics Lab	<1.8	<1.8
NAVSTA GREAT LAKES	NTC Great Lakes IL NAVSTA Great Lakes	2.4	2.3
NSA CRANE	NSA Crane	<1.8	<1.8
NSA CRANE	NSA Crane (3405 - Former 2797 - OTA)	<1.8	<1.8
NSA CRANE	NSA Crane (3544 - Former 2908 - ABG)	<1.7	<1.7
NSA HAMPTON ROADS	NSA Northwest (NSA Northwest Annex)²	<2.0	<2.0
NSY BOS PORTSMOUTH NH	Great Pond (Bigelow)	<1.9	<1.9
NSY BOS PORTSMOUTH NH	Great Pond (Cabins 6-7)	<1.9	<1.9
NSY BOS PORTSMOUTH NH	Great Pond (Tumbledown)	<1.9	<1.9
NSY BOS PORTSMOUTH NH	NAVSATOPSCEN ME (Gull Cottage [49])	<1.9	<1.9
NSY BOS PORTSMOUTH NH	NAVSATOPSCEN ME (Main Well [110])	<1.8	<1.8
NSY BOS PORTSMOUTH NH	NAVSATOPSCEN ME (Ops [101], Admin [112])	<1.8	<1.8
NSY BOS PORTSMOUTH NH	NCTAMSLANT Det Cutler (503 Fire Station)	71	55

G-1

Enclosure (1)

Please note: Bolded, black values indicate exceedances above the U.S. EPA Method Reporting Limit (MRL). Bolded, red values indicate exceedances above the Lifetime Health Advisory (HA) of 70.0 ppt.

<i>Installation Name</i>	<i>Water System</i>	<i>PFOS (ppt)</i>	<i>PFOA (ppt)</i>
NSY BOS PORTSMOUTH NH	NCTAMSLANT Det Cutler (Admin 100)	11.4	12.4
NSY BOS PORTSMOUTH NH	NCTAMSLANT Det Cutler (Power Plant 103)	< 1.82	< 1.82
NSY BOS PORTSMOUTH NH	NCTAMSLANT Det Cutler (PW 130, 132, 134)	< 1.77	< 1.77
NSY BOS PORTSMOUTH NH	NSY Portsmouth ME (Great Pond Cabins 1-5)	<1.9	<1.9
NSY BOS PORTSMOUTH NH	NSY Portsmouth ME (Great Pond Cabins 8-12)	<1.9	<1.9
NSY BOS PORTSMOUTH NH	NSY Portsmouth ME (Great Pond Campground)	2.0	2.5
NSY BOS PORTSMOUTH NH	NSY Portsmouth ME (Great Pond REC Hall)	2.4	3
NSY BOS PORTSMOUTH NH	NSY Portsmouth ME Rangely Multipurpose (wells #1 and #2)	<1.8	<1.8
NSY BOS PORTSMOUTH NH	NSY Portsmouth ME Rangely Training Lab	<1.8	<1.8
NSY BOS PORTSMOUTH NH	REDINGTON TOWNSHIP (Rangely Moose Pit)	<1.8	<1.8
SUBASE NEW LONDON	ADM Fife Recreation Area Well	<1.9	<1.9
WPNSTA EARLE COLTS NECK NJ	WPNSTA EARLE COLTS NECK - MSC Fire School	<1.9	<1.9
WPNSTA YORKTOWN VA	NWS Yorktown Pistol Range	<2.0	<2.0
WPNSTA YORKTOWN VA	NWS Yorktown Rifle Range	<2.0	<2.0
WPNSTA YORKTOWN VA	NWS Yorktown, Gate 13 Admin Building	<2.0	<2.0
WPNSTA YORKTOWN VA	NWS Yorktown, New Kent Transmitter Site	<2.0	<2.0
NAVAL DISTRICT WASHINGTON			
NAS PATUXENT RIVER	NAS PAX River	<0.4	<0.4
NAS PATUXENT RIVER	NAS PAX River, Solomons	<0.4	<0.4
NAS PATUXENT RIVER	NAS PAX River, Webster Field	<0.4	<0.4
NSA ANNAPOLIS	NRL Chesapeake Beach Detachment	<0.4	<0.4
NSA ANNAPOLIS	USNA Annapolis (NSA Annapolis)	<0.8	<0.8
NSA SOUTH POTOMAC	NSF Indian Head (NSA South Potomac)	<0.4	<0.4
NSA SOUTH POTOMAC	NSF Indian Head (NSA South Potomac) Stump Neck Annex	<0.4	<0.4
NSA SOUTH POTOMAC	NSWC Dahlgren Mainside (NSA South Potomac)	<2.2	<2.2
NSA SOUTH POTOMAC	NSWC Dahlgren Pumpkin Neck (NSA South Potomac)	<0.4	<0.4
NSA WASHINGTON	NRL Blossom Point	<0.4	<0.4
NSA WASHINGTON	Pommonkey NRL	<0.4	<0.4

Please note: Bolded, black values indicate exceedances above the U.S. EPA Method Reporting Limit (MRL). Bolded, red values indicate exceedances above the Lifetime Health Advisory (HA) of 70.0 ppt.

<i>Installation Name</i>	<i>Water System</i>	<i>PFOS (ppt)</i>	<i>PFOA (ppt)</i>
NAVY REGION NORTHWEST			
NAS WHIDBEY ISLAND	NAS Whidbey, Coupeville Trainer (B2807)	<2.0	250
NAS WHIDBEY ISLAND	NAS Whidbey, Coupeville OLF (B11)	<2.0	<2.0
NAVSTA EVERETT	US Naval Radio Station (T) Jim Creek	<2.0	<2.0
NAVBASE KITSAP	Back Island AK	<0.8	<0.8
NAVBASE KITSAP	Naval Base Kitsap at Bangor	<2.0	<2.0
NAVBASE KITSAP	Naval Base Kitsap at Keyport	<2.0	<2.0
NAVBASE KITSAP	Zelatched Point	<2.0	<2.0
NAVY REGION SOUTHEAST			
CBC GULFPORT	NCBC Gulfport Water System	<1.3	<0.9
NAS CORPUS CHRISTI	NALF Goliad	<1.2	<0.9
NAS JACKSONVILLE	NAS Jacksonville Centroid System (aka Pine Castle Bombing Range)	<1.2	<0.9
NAS JACKSONVILLE	NAS Jacksonville Water System	<1.1	<0.9
NAS JACKSONVILLE	OLF Whitehouse Water System	<1.2	<0.9
NAS JACKSONVILLE - PR Sites	VIEQUES WEST	16	2.9
NAS KINGSVILLE	NALF Orange Grove	<1.2	<0.8
NAS MERIDIAN	NAS Meridian Water System	<1.2	<0.8
NAS PENSACOLA	Pensacola - NTTC Corry/NAS Pensacola	<1.1	<0.7
NAS WHITING FIELD	NAS Whiting Field	74	640
NAS WHITING FIELD	NOLF Choctaw	<1.1	<0.8
NAS WHITING FIELD	NOLF Summerdale	<1.1	<0.8
NAS WHITING FIELD	NOLF Site X	<1.1	<0.8
NAVSTA MAYPORT	Mayport Water System	<1.2	<0.9
NSA MID SOUTH	NSA Mid-South	<1.2	<0.9
NSA ORLANDO	OKAHUMPKA aka Bugg Spring	2.1	<1.8
SUBASE KINGS BAY	SUBASE Kings Bay	<1.2	<0.8

Please note: Bolded, black values indicate exceedances above the U.S. EPA Method Reporting Limit (MRL). Bolded, red values indicate exceedances above the Lifetime Health Advisory (HA) of 70.0 ppt.

<i>Installation Name</i>	<i>Water System</i>	<i>PFOS (ppt)</i>	<i>PFOA (ppt)</i>
NAVY REGION SOUTHWEST			
NAB CORONADO	Camp Michael Monsoor	<2.0	<2.0
NAB CORONADO	Sere Camp (Warner Springs RTS)	5.9	12
NAF EL CENTRO	NAF El Centro	<2.0	<2.0
NAS FALLON	NAS Fallon	<2.0	<2.0
NAS FALLON	NAS Fallon Centroid	<2.0	<2.0
NAS LEMOORE	NAS Lemoore	<2.0	<2.0
NAVBASE VENTURA	San Nicolas Island	<2.0	<2.0
NAWS CHINA LAKE	NAWS China Lake Water System (North Range FKA Harvey Field Area)	<2.0	<2.0
NAWS CHINA LAKE	South Range (NAWS China Lake FKA Randsburg Wash Area)	<2.0	<2.0
NSA MONTEREY	Dixon Transmitter Fac (NRTF Dixon) (NSA Monterey)	<2.0	230

1 Anderson Water Systems had an MRL exceedance for PFHxS, not PFOS or PFOA.

2 NSA Northwest (NSA Northwest Annex) had MRL exceedances for PFBS and PFHxS, not PFOS or PFOA.

Overseas

<i>Installation Name</i>	<i>Water System</i>	<i>PFOS (ppt)</i>	<i>PFOA (ppt)</i>
NAVY REGION KOREA			
CNFK HQ Busan	CNFK HQ Busan	3.1*	15*
COMFLEACT Chinhae	COMFLEACT Chinhae	4.0	6.8
NAVY REGION EUROPE AFRICA CENTRAL			
CAMP LEMONNIER DJIBOUTI	CLDJ	<1.9	<1.9
NAS SIGONELLA ITALY	Marinai Housing, NASSIG	<1.8	<1.8
NAS SIGONELLA ITALY	NAS I	<1.8	<1.8
NAS SIGONELLA ITALY	NAS II	<1.9	<1.9
NAS SIGONELLA ITALY	Niscemi Support Site Water System	<1.7	<1.7
NAVSTA ROTA SPAIN	NAVSTA Rota	<1.8	<1.8
NSF REDZIKOWO POLAND	Naval Support Facility Redzikowo, Poland	<1.8	<1.8

<i>Installation Name</i>	<i>Water System</i>	<i>PFOS (ppt)</i>	<i>PFOA (ppt)</i>
NSA BAHRAIN BAHRAIN	AV Unit (NSA III)	<1.8	<1.8
NSA BAHRAIN BAHRAIN	BANZ	<1.8	<1.8
NSA BAHRAIN BAHRAIN	NSA I	<1.8	<1.8
NSA BAHRAIN BAHRAIN	NSA II	<1.7	<1.7
SHAIKH ISA AIR BASE (NSA BAHRAIN) BAHRAIN	Isa Air Base	<4.9	<4.9
NSA NAPLES ITALY	Capodichino	<2.0	<2.0
NSA NAPLES ITALY	Carney Park	<2.0	<2.0
NSA NAPLES ITALY	Lago SATCOM	<1.8	<1.8
NSA NAPLES ITALY	OMI	<1.9	<1.9
NSA NAPLES ITALY	Support Site	<1.9	<1.9
NSA SOUDA BAY GREECE	NAS Souda Bay	<2.0	<2.0
NSF DEVESELU ROMANIA	Deveselu Activation Site, Romania	<1.8	<1.8
NSF DEVESELU ROMANIA	Main Base Water Treatment Plant	<1.7	<1.7
NAVY REGION JAPAN			
CFA OKINAWA JAPAN	Awase Communications Facility Water System	<1.8	<1.8
CFA OKINAWA JAPAN	Camp Shields Facility Water System	17*	5.3*
CFA OKINAWA JAPAN	Tegan Pier Facility Water System	<1.8	<1.8
CFA OKINAWA JAPAN	White Beach Facility Water System	<1.8	<1.8
CFA SASEBO JAPAN	CFAS Akasaki	<1.8	<1.8
CFA SASEBO JAPAN	CFAS Hario Shima	<1.8	<1.8
CFA SASEBO JAPAN	CFAS Hario Village	<1.8	3.2*
CFA SASEBO JAPAN	CFAS Iorizaki POL	<1.8	<1.8
CFA SASEBO JAPAN	CFAS Maebata	<1.8	3.5*
CFA SASEBO JAPAN	CFAS Main Base	<1.8	2.5*
CFA SASEBO JAPAN	CFAS Yokose	<1.8	2.0*
CFA YOKOSUKA JAPAN	Azuma/Hakozaki Water System	2.7*	1.7*
CFA YOKOSUKA JAPAN	Fleet Mail Center Water System	<1.8	<1.8

Please note: Bolded, black values indicate exceedances above the U.S. EPA Method Reporting Limit (MRL). Bolded, red values indicate exceedances above the Lifetime Health Advisory (HA) of 70.0 ppt.

<i>Installation Name</i>	<i>Water System</i>	<i>PFOA (ppt)</i>	<i>PFOA (ppt)</i>
CFA YOKOSUKA JAPAN	Ikego Housing Water System	2.6*	1.9*
CFA YOKOSUKA JAPAN	Tsurumi (OU1 and OU2) Fuel Terminal Water System	1.9*	<1.8
CFA YOKOSUKA JAPAN	Uruga Ordnance/Munitions Water System	2.1*	<1.8
CFA YOKOSUKA JAPAN	Yokosuka Main Base Water System	2.8*	<1.7
NAF ATSUGI JAPAN	NAF Atsugi Main Base Water System	18	5.7
NAF MISAWA JAPAN	NAVCOMM Det Misawa Hachinohe	<1.7	<1.7
NSF DIEGO GARCIA BIOT	Deep Draft Wharf (Formerly Sub Site)	4.1	<1.8
NSF DIEGO GARCIA BIOT	Nanofiltration Hauled Water	4.0	<1.8
NSF DIEGO GARCIA BIOT	Diego Garcia Main WTP	<1.8	<1.8
SINGAPORE AREA COORDINATOR SINGAPORE	SAC - Sembawang	<1.7	<1.7
NAVY REGION SOUTHEAST			
AUTEC ANDROS ISLAND BAHAMAS	Site 1 (AUTEC Main Base)	<1.1	<0.8
NAVSTA GUANTANAMO BAY CUBA	NAVSTA Guantanamo Bay, CUBA	<1.2	<0.9

* Represents exceedances above the MRL at overseas drinking water systems where the Navy is not required to perform quarterly sampling per OSD policy because the water is purchased from the host nation and the Navy does not own the groundwater system.