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From: Commander, Navy Installations Command
To: Vice Chief of Naval Operations
Via: Deputy Chief of Naval Operations, Fleet Readiness and Logistics (N4)

Subj: FISCAL YEAR 2020 NAVY SHORE DRINKING WATER QUALITY REPORT

Ref: (a) OPNAV M-5090.1

Encl: (1) Navy Shore Drinking Water Quality Report for Fiscal Year 2020

1. Per reference (a), enclosure (1) is submitted.

2. Commander, Navy Installations Command (CNIC) 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 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. The drinking water provided at Navy installations remains safe for our Sailors, dependents and civilians, and based on data analysis from fiscal year 2019 and 2020 reports, drinking water quality continues to improve. 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. CNIC point of contact is CAPT David McAlister, Director, Facilities and Environmental (N4), (202) 433-4353, david.mcalister2@navy.mil.

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NAVY SHORE DRINKING WATER QUALITY REPORT FOR FISCAL YEAR 2020

February 2021

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

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 FY20, 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 80 drinking water systems that fall under the jurisdiction of the Environmental Protection Agency (EPA) and state laws. The Navy also manages 47 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 47 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 FY20, 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 FY20, installations consulted with local preventive medicine authorities and took appropriate remedial action. Remedial actions were also executed at all installations with LIPA sample exceedances in FY20. To align with the U.S. EPA's revised *3Ts for Reducing Lead in Drinking Water in Schools and Childcare Facilities* and subsequent updated OPNAV policy, CNIC published CNIC Instruction 5090.6, *Navy Sampling and Testing for Lead in Drinking Water in Priority Areas* in FY20. CNIC Instruction 5090.6 provides updated sampling and corrective action requirements, as well as standardization of public notification letter templates.

FY20 also saw the promulgation of policies regarding the testing of Per- and polyfluoroalkyl substances (PFAS) in drinking water. As the sampling was not completed in FY20, the results for this testing will be included in the FY21 annual report.

Navy Compliance

For the 80 systems under the jurisdiction of EPA, 78 systems (98%) met all health-based standards during FY20, the rate increasing from 95 percent in FY19. For the 47 ODW systems, all systems (100%) met all health-based standards in FY20, continuing the 100 percent compliance with health-based standards 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.

FY20 ODW Accomplishments and FY21 ODW Plan of Action and Milestones

In FY20, the Navy continued to advance the ODW program towards full compliance with U.S. water quality standards and ODW procedures and protocols. For the second year in a row, no health-based water quality exceedances were reported within the fiscal year. FY20 was the eighth full year of program implementation and 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 six sanitary surveys scheduled for FY20 were deferred to FY21. In May 2020, CNIC issued CNIC ltr 5090 Ser N4/20U053, *COVID-19 Impacts to Navy Overseas Drinking Water Enforcement and Compliance*, which administratively extended the certificates to operate of all ODW systems with deferred sanitary surveys. In the interim, the Water Quality Oversight Council (WQOC) performed desktop evaluations of submitted sanitary survey Request for Information (RFI) data and continued to provide technical support to the regions and installations as needed. There were no impacts to drinking water quality as a result of COVID-19 restrictions and ODW systems continued to meet compliance with all health-based standards in FY20.

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 described above, NAVSEA LQAO was unable to perform on-site laboratory assessments in FY20. However, NAVSEA LQAO conducted desktop evaluations of the two approved on-site laboratories at NS Rota and NAS Sigonella and continued to assist the other on-site laboratories as they implement corrective actions to achieve official NAVSEA and CNIC approval.

In FY18, CNIC published CNIC Instruction 5090.1A, *Navy Overseas Drinking Water Program Ashore*, implementing the new ODW Program Manual (CNIC Manual 5090.1) and existing CNIC Manuals 5090.2 and 5090.3. In FY20 CNIC, in coordination with, NAVFAC and BUMED; finalized the process of consolidating the three respective manuals into one comprehensive ODW Program Manual (Draft CNIC Manual 5090.1A). This manual updates the ODW laboratory policy and operator requirements and is expected to be published in early FY21. Despite COVID-19 travel restrictions, CNIC, NAVFAC and BUMED continued to conduct ODW training for system operators, prospective Commanding Officers, and Public Works Officers in a virtual environment. BUMED also conducted two in-person drinking water trainings for medical professionals prior to implementation of COVID-19 travel restrictions.

The 2021 ODW Plan of Action and Milestones builds on the 2020 accomplishments, focusing on sustainable program management and developing and updating policy/guidance to improve program implementation across the regions and installations. The FY21 plan also includes action items addressing Navy policy on Legionella, and drinking water compliance at Cooperative Security Locations (CSL), both initiatives recognizing the need to address Navy enterprise-wide drinking water issues. Details of FY20 accomplishments and the FY21 plan are contained in the body of this report.

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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).

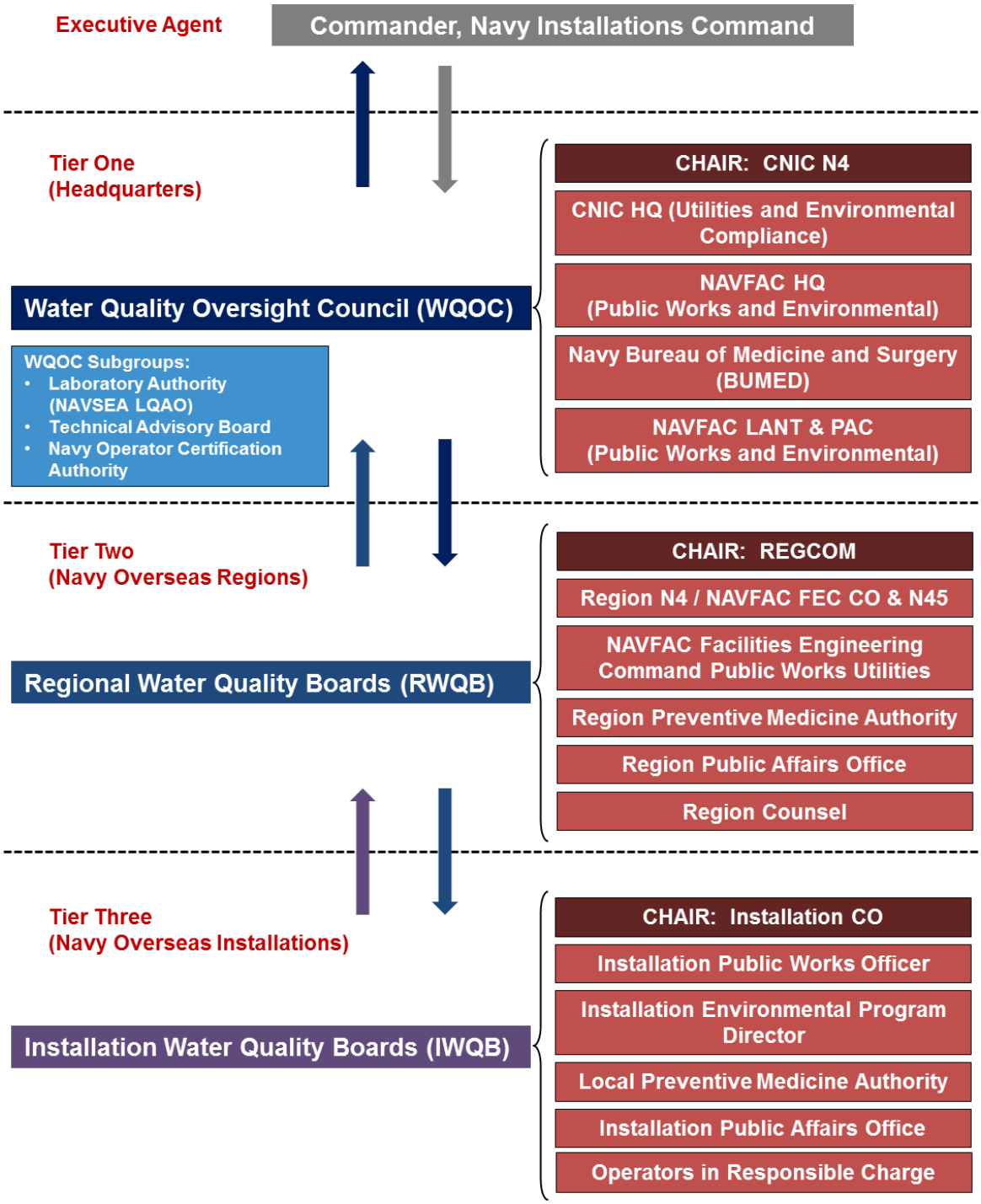

Figure 1. Navy Overseas Drinking Water Program Organization

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 FY20, this inventory was reviewed for any changes to domestic and overseas sources of drinking water (Table 1). The updated FY20 inventory reflects a U.S.-regulated inventory increase from 79 to 80 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 FY20, one system was added in the Region Southeast: NAS Whiting Field Site X, which was the result of a real estate land transfer relinquishing NAS Whiting Field Site 8 (previously "Exempt" system). The Navy's 80 drinking water systems under the jurisdiction of the EPA are distributed among seven Navy Regions. Appendix A provides a complete listing of these 80 drinking water systems.

The Navy's remaining domestic systems not under the direct jurisdiction of the SDWA are listed in Appendices B and C. The remaining systems include both consecutive water systems (water purchased from another PWS) classified as "Exempted" (Appendix B) and privatized systems classified as "Privatized" (Appendix C) 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. "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 47 overseas systems, under the primacy of CNIC, are distributed among four Navy Regions. Appendix D provides a complete listing of the 47 ODW systems. There were no changes to the ODW system inventory for FY20. The ODW system inventory will continue to fluctuate as closures and new systems are identified. FY21 anticipates the addition of one system at NSF Redzikowo, Poland upon construction completion 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 site visit and health assessment with anticipated resolution in FY21.

CNIC Region	Regulated PWS	Exempted	Privatized	ODW System
CNREURAFCENT	0	0	0	19
CNRH	5	0	0	0
CNRJ	0	0	0	24
CNRK	0	0	0	2
CNRMA	26	59	1	0
CNRNDW	13	8	0	0
CNRNW	7	10	0	0
CNRSE	15	63	7	2
CNRSW	12	22	2	0
JRM	2	0	0	0
Total	**80**	**162**	**10**	**47**

Table 1. Summary of Navy Drinking Water Systems by Region

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 FY20 EPA national average for drinking water system compliance with health-based standards was 95 percent, a slight increase from the FY19 EPA national average of 94 percent.

Navy Drinking Water Systems under EPA Jurisdiction

In FY20, 98 percent (78 of 80) of the Navy drinking water systems in the U.S. were compliant with health-based standards. This is an increase from the 95 percent compliance reported in FY19, and still higher than the EPA national average of 95 percent. The following two Navy drinking water systems, under the jurisdiction of EPA, experienced exceedances in FY20.

- NAS Point Mugu (NAVBASE Ventura CO): Total Trihalomethane (TTHM)
- Naval Base Kitsap at Bremerton: 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, 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 E.

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 E.

- Portsmouth Naval Shipyard (NOSC Fort Schuyler): Uncovered reservoir
- NOSC Roanoke VA: Disinfectants and disinfection byproducts

- Aguada Transmission Station, Puerto Rico: Disinfection byproducts
- NOSC Ebensburg. Disinfection byproducts

Navy ODW Systems

During FY20, 100 percent of the 47 ODW systems were compliant with health-based standards, again matching the 100 percent compliance reported in FY19. Annual CCRs were also distributed for each ODW system by July 1, 2020. 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.

Baseline sampling was conducted and reported in the FY14 annual report. Elevated lead levels were observed at outlets in the Rota Spain DoD Education Activity (DoDEA) High School during LIPA FY14 sampling and have not been completely resolved. These deficiencies were attributed to the construction contractor's inadvertent use of lead-containing solder. Plumbing fixtures were replaced to address the latent defect issue. Four laboratory sinks in the school remain out of service in FY20 pending post correction results.

In FY20, the following installations performed recurring sampling per the LIPA policy:

NAS Pensacola	NB Guam
JBPHH Pearl Harbor	NAWS China Lake
NAS Lemoore	NSA Bahrain
NAS Patuxent River	NSA Annapolis
NSA Mechanicsburg	JB Anacostia-Bolling
NAVSTA Newport	NSA Bethesda
NWS Earle	NSF Dahlgren
Pacific Missile Range Facility	NSY Portsmouth

Of these locations, JB Anacostia-Bolling, NAS Patuxent River, NSA Annapolis, NSA Bethesda, NSF Dahlgren, NSF Indian Head, JB Pearl Harbor Hickam, Pacific Missile Range, and NAS Pensacola C required remedial follow-up due to elevated sample results detected in FY20. In FY19, Rota's sampling event at a new school identified elevated lead levels which are attributed to the use of lead solder during construction. This new construction event triggered the second latent defect claim to be assigned to a construction contractor in Rota. All repairs associated

with new construction are complete and laboratory testing confirmed all results are below action thresholds. CFA Sasebo continues remedial follow-up to resolve elevated sample results detected in FY19 sampling. Elevated lead levels are attributed to plumbing fixtures that did not conform to lead-free requirements. Replacement and subsequent resampling efforts are on-going. Per established CNIC guidance, all sample results were shared with the school, child-care staff and parents to directly address any questions or concerns. To date no additional concerns have been raised at any of the installations with elevated sample results.

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 FY19 and FY20 and plan to conduct required sampling in FY21. Only sampling associated with new construction, remodeling and fixture replacement is anticipated in the out-of-cycle years. Results from recurring LIPA sampling will 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 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. EPA is also currently reviewing the LCR to determine if revisions are necessary to better protect the public from lead and copper exposures.

For overseas installations, the OEBGD and 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 FY20. 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.

- **CFA Chinhae (CNFK Busan HQ).** Copper exceedance previously reported in FY16 due to corrosivity of the purchased water. The installation implemented a short-term solution of installing point-of-use filters until a corrosion control system was installed and became operational in November 2017. Adjustments to the corrosion control system chemical feed eliminated the copper exceedances effective August 2018. The temporary

filters were no longer required and removed in June 2019. The monthly Lead and Copper monitoring schedule was changed to quarterly monitoring in FY20. During FY20 LCR monitoring, there were no exceedances of the copper level and the system returned to compliance.

- **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 nanoflitration 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 latest sample test results of water at Deep Draft Wharf in August 2020, the system no longer exceeds the required action level (AL) for lead and copper: 90th percentile for copper is 0.1235 mg/L which is less than the required AL of 1.3 mg/L; 90th percentile for lead is 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. Effective October 2020, the system is in compliance with LCR and operational to support visiting vessels.

- **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. This past year Navy has completed corrective action items for 4 locations. Navy has 2 outstanding locations where the drinking water result for lead exceeded the AL of 0.015 mg/L: Building 60152 and 60127. All other locations are now testing below the AL.

- **NAVSTA Newport (Main Base System).** Lead exceedance reported in FY17 is still undergoing investigation. The installation has returned to a routine monitoring schedule, as required under the LCR. Additionally, as a part of the corrective action plan, a corrosion control evaluation and materials survey was submitted to the local regulatory agency in June 2019. On 31 December 2019, the Navy submitted corrective action plans to the regulator and is awaiting their response. Alternate water continues to be provided at the affected locations per installation leadership.

- **COMFLEACT Yokosuka (Nagai Water System).** Nagai is a small Communications Facility with 2 faucets (Kitchen and Restroom). Both outlets have tested above the AL for lead. Due to its low use, it was decided by the IWQB to install point of use filters as the corrective action. The POUs were installed (Kitchen and Restroom) on 9 November 2020. The installation is awaiting results from the subsequent semi-annual monitoring event. The 90th percentile value of samples collected during May and June 2020 was 0.023 mg/L which exceeded the action level of 0.015 mg/L. The lead action level was originally exceeded in the Kitchen in August 2018 and use of the outlet has been limited to hand washing since then. The water fixture has been replaced with an NSF 61 lead-

free certified product, but high lead levels have continued. The use of the outlet will continue to be limited to hand washing until confirmation of lead level below the AL by sampling. There is a water dispenser provided for alternate water supply.

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 will be sampled by 31 December 2020. This involves resampling those DOD owned water systems sampled under previous Navy policies and outlined in the FY16 annual report. Sampling includes all 82 Navy-owned water systems in the U.S. and the 47 ODW systems.

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.

Drinking water systems at three installations (NALF Fentress, NSF Diego Garcia, and NRTF Dixon) identified in the 2016 annual report had PFAS results above the 70 ppt, or 0.070 ppb, Lifetime Health Advisory (LHA) level. The FY18 annual report detailed progress at the three locations and there has been no change for FY20. NALF Fentress and NSF Diego Garcia continue to provide drinking water below the LHA and NRTF Dixon will be on alternate water indefinitely.

The DoD-owned water system sampling results will be compiled in the FY21 annual report as the sampling period is beyond the FY20 reporting period. 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 FY20, 20 sanitary survey inspections were performed by a Federal or state regulator at 16 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 FY20, 13 significant deficiencies identified by the local regulator at seven installations this fiscal year remain unresolved: five at NSA Anderson, one at NAF El Centro, three at NAS Kingsville, one at NAS Lemoore one at NB Guam and two at NSA Washington. A cumulative total of 23 significant deficiencies were identified as "open" from sanitary surveys performed since 2016 at 13 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. FY20 was to be the second year of the third cycle of sanitary surveys. The third cycle benefited from lessons learned from the second cycle, including the analysis of common roadblocks to resolving significant deficiencies, ongoing development of solutions for enterprise data management, and refinement of policies to reflect program maturity.

In FY20 the WQOC did not conduct any of the six scheduled sanitary surveys due to travel restrictions enacted in response to COVID-19. The following installations were scheduled to be evaluated and were deferred to FY21: Camp Lemonnier, CFA Yokosuka, NSA Souda Bay, NSF Diego Garcia, NSA Naples, and Singapore Area Coordinator. Since there were no new inspections, the installations made considerable progress in closing sanitary survey deficiencies previously identified. At the end of FY19, there were 620 open deficiencies (239 significant,

215 moderate, and 166 minor) on record for all ODW systems. This fiscal year saw an approximate 20 percent closure rate of deficiencies and only 492 deficiencies remained unresolved (197 significant, 173 moderate, and 122 minor) at the close of FY20.

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 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.

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 FY20, ODW systems with certified operators fluctuated between 75 percent and 92 percent which is attributable to staffing turnover. Appendix D 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.

As a continuation of the FY19 sanitary survey cycle, conditional CTOs were issued for the four systems at NAS Sigonella, two systems at NSF Deveselu, two systems at CFA Chinhae and one system at AUTEC in FY20. The ODW program remains at 46 conditional CTOs and one full CTO (Singapore Area Coordinator) for the 47 ODW systems. Appendix D provides an inventory of the 47 ODW systems, actual or planned date of the sanitary survey and CTO issuance and level of operator training required.

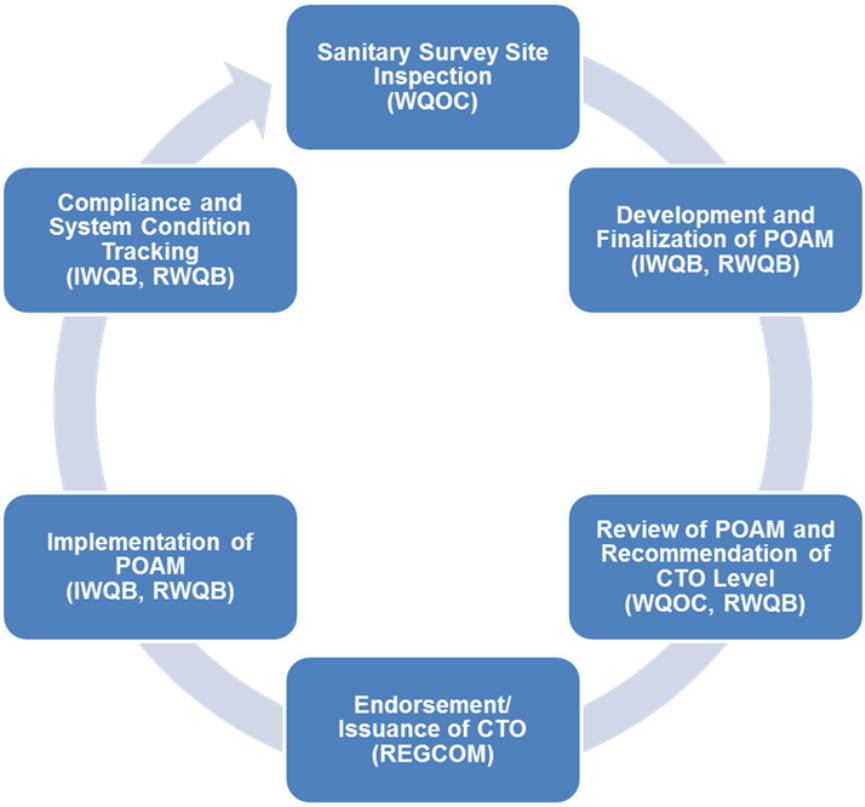

Figure 2. Certificate to Operate Planning Flowchart (Action Holder indicated in parenthesis)

FY20 Projects and Accomplishments

FY20 Projects

The value of executed projects and other investments for FY20 was comparable to the value of executed projects in FY19. Project scopes of work include potable water and water distribution system upgrades, electrical repairs at pump stations, water line replacement and repair, water tower renovations, SCADA system replacement and repairs, water tank repair, reverse osmosis train repairs, repairs to monitoring wells and backflow prevention devices, and other minor repairs.

For the 80 systems under EPA jurisdiction, 14 projects totaling $58.3M were executed.

CNRH	4 projects	$19.1M
CNRMA	2 projects	$7.1M
CNRNDW	2 projects	$25.4M
CNRNW	2 projects	$0.3M
CNRSW	1 projects	$0.4M
CJRM	3 projects	$6.0M
CNRSE	0 projects	$0M

For the 47 ODW systems, nineteen projects totaling $20.6M were executed in FY20.

CNREURAFCENT	2 projects	$16.8M
CNRJ	15 projects	$2.9M
CNRK	1 projects	$0.1M
CNRSE	1 projects	$0.8M

FY20 Accomplishments

- Completed $78.9 of investments to drinking water infrastructure.
- CNIC published the seventh annual Navy Shore Drinking Water Quality Report.
- Installations issued all annual CCRs by July 1, 2020.
- CNIC and NAVFAC trained 67 individuals, including prospective ICOs, on their roles in Navy's drinking water program.
- NAVFAC trained 50 individuals, including operations and capital improvement personnel, on both the Safe Drinking Water Act and Overseas Drinking Water Program via online professional development training modules.
- NAVFAC HQ PW, in coordination with NAVFAC HQ EV and NAVSEA, trained 158 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 48 individuals (6 Environmental Health Officers, 41 Preventive Medicine Technicians, and 1 Civilian Sanitarian) on public health surveillance and

responses to drinking water issues during two Preventive Medicine Authority (PMA) Drinking Water Training Courses.

- WQOC conducted quarterly ODW Stakeholders meetings, both in-person and virtual, to brief ODW progress to CNIC, NAVFAC and BUMED Flag Officer principals
- Achieved the following FY20 WQOC ODW Plan and Objectives:
  - **PMA Drinking Water Training Courses.** Held two PMA drinking water training courses at NSA Pensacola (13-16 January 2020) and NAVBASE San Diego (10-13 February 2020). The remaining courses were deferred to FY21 due to COVID-19 travel restrictions.
  - **PMA Drinking Water Course Modules.** Revised the PMA Drinking Water Course modules and lesson training guides.
  - **Laboratory Visits.** The three laboratory visits planned for FY20 were deferred to FY21 due to COVID-19 travel restrictions.
  - **Cross-Connection Control and Backflow Prevention Program Guidance.** Provided guidance to RWQBs and IWQBs on how to establish "effective" cross-connection control and backflow prevention programs.
  - **Operational Control Guidance**. Provided guidance to IWQBs and RWQBs on how to define operational control of drinking water systems.
  - **Regional Outreach Workshops**. Held one face-to-face workshop in Jacksonville, FL (19-20 February 2020) with 18 attendees. EURAFCENT (17 March 2020) and Far East (12 May 2020) face-to-face workshops were held virtually due to COVID-19 travel restrictions. EURAFCENT had 38 virtual attendees and Far East had 66 virtual attendees.
  - **Database Improvements**. The database improvements are deferred to FY21 due to the need for further coordination with CNIC N6 to move the actively used database to CNIC's server.
  - **Sanitary Survey Request for Information (RFI)**. Provided an organized, easily managed, online folder structure for sanitary survey RFI data and provided training and assistance to installations on the new folder structure.
- 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, a corrosion control study at Camp Lemonnier, Djibouti (CLDJ), Ultraviolet (UV) installation at NSA Souda Bay, UV installation at CLDJ, and Reverse Osmosis (RO) replacements at Isa Air Base.
  - Issued Certificates to Construct (CTC) for an RO addition at NSA Souda Bay and UV design at NSA Naples, Capodichino.
- WQOC Laboratory Authority
  - Continued to provide technical assistance to NS Guantanamo Bay and NSF Diego Garcia to resolve findings identified during previous onsite laboratory assessments.
  - Performed desktop evaluations of laboratory compliance documentation for NS Rota and NAS Sigonella's approved on-site laboratories to ensure continue compliance and confidence in the laboratories' testing capabilities.

- Continued coordination with U.S. Army Public Health Command to resolve drinking water sampling compliance challenges in EURAFCENT.
- Reviewed and validated third-party accredited laboratories as requested.
- Approved two European laboratories for analysis of drinking water parameters to address existing sample shipping and customs difficulties from Region EURAFCENT to the U.S. which COVID-19 travel restrictions further exasperated.

- WQOC Navy Operator Certification Authority Board
  - Updated the Navy Treatment and Distribution training modules and exams in five different languages.
  - Administered Navy operator certification exams to 39 potential drinking water operators.
  - Recommended 40 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.

FY21 Projects and Planned Actions

FY21 Projects

For the projected 80 systems under EPA jurisdiction, 21 projects totaling $67.8M are planned for execution in FY21. Project scopes of work include water line replacement and repair, water treatment plant and distribution improvements, water tank/storage repairs, well upgrades and maintenance, water meter installation, and other minor repairs. These projects will help address existing deficiencies and reduce exceedances.

CNRH	5 projects	$15.7M
CNRMA	7 projects	$12.1M
CNRNDW	1 projects	$18.5M
CNRNW	3 projects	$3.3M
CNRSW	2 projects	$7.4M
CJRM	3 projects	$10.8M
CNRSE	0 projects	$0M

For the projected 47 ODW systems, nine projects totaling $3M are planned for execution in FY21.

CNREURAFCENT	0 projects	$0M
CNRJ	8 projects	$2.6M
CNRK	1 projects	$0.4M
CNRSE	0 projects	$0M

FY21 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 to establish sustainment, with a focus on updating and creating new policy and guidance. The WQOC will progressively and incrementally accomplish goals and objectives. The following are discrete objectives for FY21:

- **PMA Drinking Water Training Course.** Organize and hold four Preventive Medicine Authority (PMA) Drinking Water Training Courses.
- **Laboratory Visits.** Conduct three laboratory visits (deferred from FY20). Two under routine biennial assessments, and over moving through Phase 2 for additional contaminant sampling and analysis.
- **Database Improvements.** Implement database improvements to the ODW Requirements POAM; incorporating new data management functionality and visualization (deferred from FY20).
- **OEBGD Updates.** Review and compare 2020 OEBGD updates, including revised surface water treatment (SWT) requirements, to the current CNICINST 5090.1 and recommend updates to the CNICINST 5090.1 as needed.
- **Sanitary Survey Common Deficiency List.** Review and update the ODW Sanitary Survey Common Deficiency List to reflect lessons learned and new regulatory citations.
- **Out-of-Cycle Full CTO Request**. Develop procedures for ODW systems to request a Full CTO evaluation outside of the standard WQOC sanitary survey cycle.
- **Legionella Guidance**. Draft CNICINST addressing Navy ashore Legionella Prevention and Response.
- **Cooperative Security Locations (CSL) Point Paper.** Develop point paper with recommendations on way ahead for addressing drinking water compliance at CSLs.
- **Onsite Sanitary Surveys.** Due to COVID-19 restrictions, the WQOC is tracking the completion of the planned six sanitary surveys in FY21 for visibility.

Appendix A: Inventory of Drinking Water Systems under EPA Jurisdiction

Installation Name	*Water System*	*Source Type*[1]	*Population Served*
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	48,300
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	6,350
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

Installation Name	*Water System*	*Source Type*[1]	*Population Served*
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			
JB ANACOSTIA-BOLLING DC	JBAB - Anacostia	Consecutive	16,559
NAS PATUXENT RIVER MD	NAS Patuxent River	Groundwater	23,000
NAS PATUXENT RIVER MD	NAS Patuxent River, Solomons	Groundwater	600
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

Installation Name	*Water System*	*Source Type*[1]	*Population Served*
NAVSTA EVERETT WA	US Naval Radio Station (T) Jim Creek	Primary Groundwater	200
NAVY REGION SOUTHEAST			
NAS CORPUS CHRISTI TX	NAS Corpus Christi	Consecutive	8,656
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	36
NAS MERIDIAN MS	NAS Meridian Water System	Primary Groundwater	2,800
NAS PENSACOLA FL	Pensacola - NTTC Corry/NAS Pensacola	Primary Groundwater	22,600
NAS PENSACOLA FL	Saufley Field	Consecutive	1,728
NAS WHITING FIELD FL	NAS Whiting Field	Primary Groundwater	3,209
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	3,553
NSA MID-SOUTH TN	NSA Mid-South	Primary Groundwater	6,300
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	1,022
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	12,000
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	250
NAWS CHINA LAKE CA	NAWS China Lake Water System (North Range FKA Harvey Field Area)	Primary Groundwater	5,000

Installation Name	*Water System*	*Source Type*[1]	*Population Served*
NAWS CHINA LAKE CA	South Range (NAWS China Lake FKA Randsburg Wash Area)	Primary Groundwater	150
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)

Installation Name	*Water System*	*Source Type*[1]	*Population Served*[2]
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	50
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

Installation Name	*Water System*	*Source Type*[1]	*Population Served*[2]
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	25
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	23
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	20
PORTSMOUTH NAVAL SHIPYARD NH	NSY Portsmouth ME (Main Base)	Consecutive	6,000
PORTSMOUTH NAVAL SHIPYARD NH	USS Constitution	Consecutive	25
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

Installation Name	*Water System*	*Source Type*[1]	*Population Served*[2]
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	20
NSA WASHINGTON DC	Naval Maritime Intelligence Center	Consecutive	25
NSA WASHINGTON DC	Nebraska Ave Complex	Consecutive	5
NSA WASHINGTON DC	NSWCCD Carderock Site	Consecutive	2,184
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

Installation Name	*Water System*	*Source Type*[1]	*Population Served*[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 CORPUS CHRISTI TX	Peary Place Trans Site	Consecutive	25
NAS JACKSONVILLE FL	Aguada	Consecutive	10
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

Installation Name	*Water System*	*Source Type*[1]	*Population Served*[2]
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	112
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

Installation Name	*Water System*	*Source Type*[1]	*Population Served*[2]
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	167
NAVWPNSTA SEAL BEACH CA	NWPNSTA Seal Beach Der Norco – CA	Consecutive	1,305
NAVWPNSTA SEAL BEACH CA	NWPNSTA Seal Beach Det Fallbrook – CA	Consecutive	350

Installation Name	*Water System*	*Source Type*[1]	*Population Served*[2]
NAVWPNSTA SEAL BEACH CA	San Pedro Fuel Depot	Consecutive	50
NAVWPNSTA SEAL BEACH CA	San Pedro Fuel Depot	Consecutive	50
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

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

Installation Name	*Water System*	*Source Type*[1]	*Population Served*[2]
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

Appendix D: 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	FY22	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, D2
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	1,200	Apr-18	May-21	T1, D1
NSA BAHRAIN BAHRAIN	NSA – Bahrain (NSA I)	Consecutive	4,000	Mar-19	FY22	T3, D2
NSA BAHRAIN BAHRAIN	NSA – Bahrain (NSA II)	Consecutive	2,000	Mar-19	FY22	T3, D1
NSA BAHRAIN BAHRAIN	NSA – Bahrain (BANZ)	Consecutive	300	Mar-19	FY22	D1
NSA BAHRAIN BAHRAIN	NSA – Bahrain (AV Unit)	Consecutive	300	Mar-19	FY22	D1
SHAIKH ISA AIR BASE (NSA BAHRAIN) BAHRAIN	ISA Air Base	Consecutive	1,700	Mar-19	FY22	T3, D3
CAMP LEMONNIER DJIBOUTI	Camp Lemonnier, Djibouti	Groundwater	4,496	Apr-18	Mar-21	T3, D2
NSF DEVESELU, ROMANIA	Deveselu, Activation Camp	Groundwater	50	May-20	FY23	T1, D1
NSF DEVESELU, ROMANIA	Deveselu, Main Site	Groundwater	300	May-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 KOREA						
CFA CHINHAE KOREA	COMFLEACT Chinhae	Groundwater	583	Feb-20	FY23	T2, D1
CFA CHINHAE KOREA	CNFK HQ Busan	Consecutive	85	Feb-20	FY23	T1, D1
NAVY REGION JAPAN						
NSF DIEGO GARCIA BRITISH INDIAN OCEAN TERRITORY (BIOT)	Main Water System	Groundwater Under Direct Influence	3,000	Feb-18	Jun-21	T3, D3
NSF DIEGO GARCIA BIOT	Nanofiltration Hauled Water	Groundwater Under Direct Influence	3,000	Feb-18	Jun-21	T3, D2
NSF DIEGO GARCIA BIOT	Deep Draft Wharf	Groundwater Under Direct Influence	100	Feb-18	Jun-21	T3, D1
CFA YOKOSUKA JAPAN	Fleet Mail Center Water System	Consecutive	40	Oct-17	Apr-21	D1
CFA YOKOSUKA JAPAN	Azuma/Hakozaki Fuel Terminal	Consecutive	180	Oct-17	Apr-21	D1
CFA YOKOSUKA JAPAN	Ikego Housing	Consecutive	3,100	Oct-17	Apr-21	T1, D1
CFA YOKOSUKA JAPAN	Nagai Communication Facility	Consecutive	1	Oct-17	Apr-21	D1
CFA YOKOSUKA JAPAN	Tsurumi OU1/OU2 Fuel Terminal	Consecutive	80	Oct-17	Apr-21	D1
CFA YOKOSUKA JAPAN	Urago Ordinance Munitions	Consecutive	100	Oct-17	Apr-21	D1
CFA YOKOSUKA JAPAN	Yokosuka Base Water System	Consecutive	23,000	Oct-17	Apr-21	T1, D3
CFA OKINAWA JAPAN	Camp Shields Facility Water System	Consecutive	613	Dec-18	FY22	D1
CFA OKINAWA JAPAN	White Beach Facility Water System	Consecutive	644	Dec-18	FY22	D1
CFA OKINAWA JAPAN	Awase Water System	Consecutive	15	Dec-18	FY22	D1
CFA OKINAWA JAPAN	Tengan Pier	Consecutive	0	Dec-18	FY22	D1
NAF ATSUGI JAPAN	NAF Atsugi	Groundwater	6,000	Oct-18	FY22	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	FY22	D3
CFA SASEBO JAPAN	Akasaki	Consecutive	114	May-19	FY22	D1
CFA SASEBO JAPAN	Iorizaki POL	Consecutive	14	May-19	FY22	D1
CFA SASEBO JAPAN	Yokose	Consecutive	218	May-19	FY22	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*	
CFA SASEBO JAPAN	Hario Village	Consecutive	1,552	May-19	FY22	D1
CFA SASEBO JAPAN	Hario Shima	Consecutive	37	May-19	FY22	D1
CFA SASEBO JAPAN	Maebata	Consecutive	105	May-19	FY22	D1
SINGAPORE AREA COORDINATOR SINGAPORE	Sembawang Water System	Consecutive	1,200	Feb-18	Aug-21	D1
NAVY REGION SOUTHEAST						
NAVSTA GUANTANAMO BAY CUBA	Desalination Plant	Surface Water	6,200	Jun-19	FY21	T3, D3
AUTEC ANDROS ISLAND BAHAMAS	NUWCDETAUTEC	Groundwater Under Direct Influence	646	Oct-19	FY23	T3, D1

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.

Appendix E: 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
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.
Plan of Action and Milestones: Detailed Corrective Action Plan was provided to DDW. NBVC Environmental and Utilities prepared the plan and will implement corrective actions during FY20 and FY21. A combination of operational changes (flushing) and utility upgrades (will be FY24 POM submit) are needed to correct the TTHM exceedance. Navy must provide DDW quarterly updates on actions taken to correct the TTHM MCL exceedance and demonstrate compliance within the schedule of the Corrective Action Plan.
Contingency Plans to Provide Alternate Water Supplies: Contingency plans were not applicable.

Exceedance #2
Installation (System): Naval Base Kitsap at Bremerton
Exceedance: Insufficient disinfection residual.
Notice of Violation Date: 28 October 2020
Duration: 30 days
Population Served: 12,078
Description of Exceedance: COVID/HPCON contributed to issue. Failed to maintain chloride disinfection levels at or above 0.2 mg/l from 95 percent of the collected samples (28 out of 210) during the month of August 2020. Problem attributed to lower demand due to the departure of two CVNs and a high percentage of civilian workers teleworking resulting in a longer turnover from the primary storage tank thus lowering chlorine concentrations.
Plan of Action and Milestones: Daily flushing of the storage tank began in late August resulting in increased chlorine concentrations throughout the installation and bringing the system back into compliance as of September 2020. Flushing continues to prevent reoccurrence.
Contingency Plans to Provide Alternate Water Supplies: Contingency plans were not applicable.