



## **INTRODUCTION**

Naval Base (NAVBASE) Kitsap, located in Kitsap County, Washington, is the largest naval installation in the Commander, Navy Region Northwest (COMNAVREG NW) Area of Responsibility, and is the third largest installation Navy wide. Formed in 2004, it includes the former Naval Submarine Base Bangor, Naval Station Bremerton, and Naval Undersea Warfare Center (NUWC) Keyport, as well as Manchester Fuel Depot, Naval Hospital Bremerton (NHB), Jackson Park Housing Complex (JPHC) and satellite properties in Washington and Alaska. NAVBASE Kitsap provides world-class service, programs and facilities to meet the needs of hosted warfighting commands, tenant activities, crews, employees, and service member families.

NAVBASE Kitsap is conceivably the most complex base in the Navy, hosting 70 tenant commands including Strategic Weapons Facility Pacific (SWFPAC), Puget Sound Naval Shipyard and Intermediate Maintenance Facility (PSNS&IMF), NUWC Keyport, Fleet Logistics Center Puget Sound, COMNAVREG NW, and Submarine Group 9. NAVBASE Kitsap provides base operating services to homeported fleet units including eight SSBN, two SSGN, and three SSN class submarines as well as two aircraft carriers (CVN). NAVBASE Kitsap provides critical infrastructure not commonly found elsewhere to support a nuclear-licensed shipyard, Marine Corps Security Force Battalion – Bangor consisting of 1,200 individuals, the largest U.S. Coast Guard Maritime Force Protection Unit in the nation, the largest Navy underground fuel storage facility in the continental U.S., a heavyweight and lightweight torpedo facility, and unmanned underwater vehicle research and testing facilities.

NAVBASE Kitsap has \$10.6B in infrastructure including 24 piers, wharfs, and moorings, 1,591 buildings, and seven dry

docks, including the only CVN capable dry dock on the west coast, and a dry dock certified for loaded SSBNs. Located approximately 20 miles west of Seattle, it includes 9,704 acres, 56% of which is forested. The annual payroll is \$2.3 billion with a local economic impact of \$4.6 billion, which provides approximately 54% of Kitsap County's economy. Nearly 17,000 civil service, 16,200 military personnel, and 9,500 contractors employed at NAVBASE Kitsap. The surrounding community is semi-rural, with 395 square miles of land and over 250 miles of marine shoreline. Facilities at NAVBASE Kitsap date from 1894 (Bremerton), 1912 (Jackson Park), 1914 (Keyport), 1938 (Manchester), 1944 (Bangor), and 1989 (Back Island, AK).

## **BACKGROUND**

NAVBASE Kitsap is proud of our environmental stewardship and we are committed to operating in an environmentally responsible manner where national defense and environmental protection are, and must be, compatible goals.

NAVBASE Kitsap's Environmental Policy drives our Environmental Management System implementation. Our vision is to be recognized as an environmentally friendly neighbor, actively engaged in community outreach, resource conservation and pollution prevention while effectively executing the Navy mission. With integrated support from tenant commands, our policies, and decisions aim to instill a culture of environmental stewardship and continual improvement.

NAVBASE Kitsap has a long history of incorporating sustainable practices in the construction of our facilities and maintaining our structures. Tenant commands are informed through environmental management system communication channels and support environmental stewardship with objectives of reducing the reliance on hazardous materials and minimization of the



generation of both solid and hazardous waste. Incorporation of Pollution Prevention (P2) and the Consolidated Hazardous Material Reutilization and Inventory Management Program (CHRIMP) reduces the amount of hazardous waste and helps achieve Department of Defense (DoD)'s Strategic Sustainability Performance Plan goals. Finally, we are committed in enhancing our national security by reducing our reliance on energy and water resources through the implementation of conservation projects.

## **SUMMARY OF ACCOMPLISHMENTS**

### Environmental Sustainability Programs

NAVBASE Kitsap's Base Operating Support Contractor (BOSC) participates in the reduction of solid and Hazardous Waste generation through innovative P2 programs and the use of green products within many shop repair processes, recycling tires, transmission fluid, antifreeze, grease, batteries and miscellaneous lubricants. The BOSC also participated in a successful used oil recycling program that diverted approximately 6.33 tons of oil, automatic transmission fluid, antifreeze and hydraulic fluid from being treated as a hazardous waste during FY18/19. The program called "Closed Loop", partners with a local vendor to replace used products on a one to one basis. The program diverted over 2,377 gallons of material previously being treated as a hazardous waste with an estimated savings of \$24,320 in FY18/19.

Implementation of CHRIMP by NAVBASE Kitsap and two of our largest tenants, TRIDENT Refit Facility and SWFPAC is one of the most successful programs in reducing the amount of hazardous waste. The CHRIMP programs reduced the amount of hazardous waste by over 118 tons in FY18.

NAVBASE Kitsap continues to seek ways to reduce the amount of energy and water used across the installation. PSNS&IMF, one of

the largest tenants remained stable after meeting and exceeding the FY15 energy reduction goals of 30% for FY 18 and 19. NAVBASE Kitsap saw a reduction of water consumption by 16% and 19% in FY18/19 compared to the FY2007 baseline.

NAVBASE Kitsap continues to reduce the amount of petroleum-based fuel used in its fleet of non-military vehicles by using alternative fuels and electricity. E-85, an ethanol fuel blend, is the primary fuel dispensed, diverting a total of 152,716 and 155,541 gallons from fossil fuels in FY18 and FY19, respectively. Biodiesel is also used as an alternative fuel, which has substituted a total of 20,115 and 15,943 gallons in FY2018 and FY2019 from fossil fuels, respectively. Additionally, NAVBASE Kitsap's vehicle inventory is comprised of 113 electric vehicles or 11% of the local fleet. This further reduces the installation's reliance upon fossil fuels and the generation of greenhouse gas emissions.

NAVBASE Kitsap maintains a robust program of environmental review, analysis, and consultation to minimize environmental impacts and ensure sustainable practices are incorporated into project design and construction. In FY18/19, over 1,000 construction and repair projects were reviewed for compliance with Air, Stormwater, Waste Water, Drinking Water, Natural, Cultural and Archeological Resources, Oil and Hazardous Substance, Hazardous Waste, National Environmental Policy Act, and Hazardous Materials regulations. All contractors are required to maximize recycling of materials, to minimize the use of hazardous materials, and whenever practical, to use more environmentally friendly materials during project construction.

During project development, older buildings at NAVBASE Kitsap-Bremerton are inspected for the presence of asbestos, and

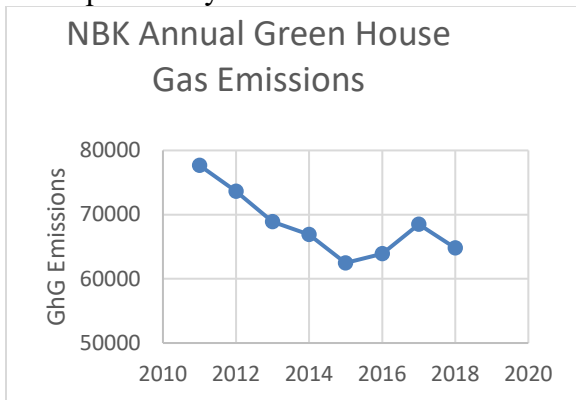


lead based paint. This important service enables projects to budget and schedule for managing these hazardous materials reducing the possibility of encountering delays in completion and staying within budget. Over 167 surveys were completed in FY 18 and 19, which contributed to the removal of 21,500 lbs of asbestos material.



Employee conducting an asbestos inspection of piping planned for removal.

NAVBASE Kitsap has been successful in reducing Greenhouse Gas emissions (GhG). In Calendar Year 2018, NAVBASE Kitsap measured a 5.4% reduction of GhG compared to the previous year.



Teleworking is a practice that has been incorporated in many organizations at NAVBASE Kitsap including Naval Facilities Engineering Command Northwest (NAVFAC NW), which has exceeded DoD's goal of 30% of its eligible employees teleworking at least once biweekly. In FY18/19, 42% of NAVFAC NW eligible employees teleworked regularly.

### Stormwater Management

NAVBASE Kitsap has taken several measures to improve the quality of our stormwater, which can have a significant impact on the waters surrounding the installations including Hood Canal, Liberty Bay, Dyes Inlet, and Sinclair Inlet. New construction and expansion projects in excess of 5,000 square feet are reviewed to ensure low impact development measures are implemented to protect stormwater at the project site and to maintain or restore the hydrologic and ecological functions in the watershed.

Significant upgrades to the aging sewer system at NAVBASE Kitsap-Bremerton has increased the quality of our stormwater system. The 50-year sewer piping was in poor condition containing cracks and misalignments that provided a pathway for sewage to migrate outside of the pipe and find routes of entry into the stormwater system resulting in discharge to the receiving water of Sinclair Inlet. In FY19, a \$5.6M project was awarded to replace 18,000 feet of gravity main and laterals sewage lines at NAVBASE Kitsap-Bremerton. This represents 31% of the gravity main system. Additionally, the entire force sewage main is in the final stage of being replaced; the project began in 2008 and construction for the final phase is planned for completion in early 2020. All of these upgrades will greatly reduce the possibility of sewage released to the environment.

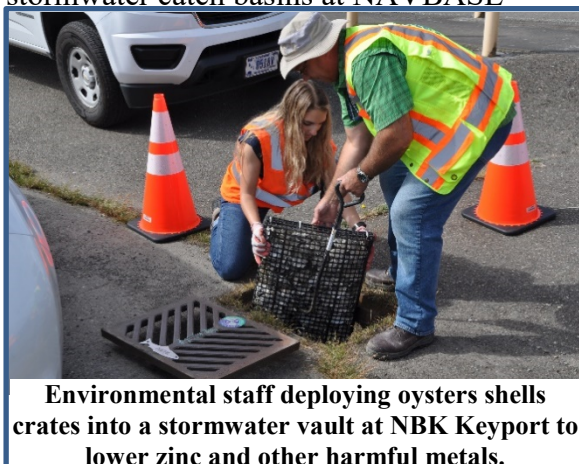


Workers replacing a 50-year sewer line along NBK Bremerton's waterfront.



New blasting and painting procedures were successfully implemented to prevent waste from entering the stormwater system. Blast media, paint chips and dust which include high levels of copper, lead, and zinc are typically generated during these operations. These contaminants have a detrimental impact on endangered aquatic species including Southern resident Killer Whales, humpback whales, Puget Sound steelhead, and Hood Canal summer-run chum salmon. New policies were developed that help prevent these harmful materials from entering the stormwater systems. Simple proactive measures such as cleaning blasting and painting equipment before they are removed from the operation area and better housekeeping measures in handling blasting media helps prevent zinc and copper from entering the stormwater system.

A pilot program using oyster shells to reduce elevated levels of zinc in Keyport's stormwater was implemented in FY19. Local municipalities struggling to meet water quality standards for zinc have reported success in using oyster shells as an inexpensive alternative to more expensive treatment methods. Oyster shell material directly adsorbs single-constituent metal ion solutions such as Zinc and other harmful metals in stormwater. Oyster shells, an abundant and inexpensive commodity in the Pacific Northwest, were placed in mesh crates and the crates were installed in 12 stormwater catch basins at NAVBASE



**Environmental staff deploying oysters shells crates into a stormwater vault at NBK Keyport to lower zinc and other harmful metals.**

Kitsap-Keyport. Preliminary analytical results are encouraging, yielding a 75% reduction of zinc concentrations.

NAVBASE Kitsap's 48-mile railroad was constructed in 1944. Over the years, several culverts along have become blocked, which prevents access to upstream habitat for many aquatic species including endangered salmon. In July 2019, a large culvert was cleared of a beaver dam and associated debris, which provided access to 5.5 acres of upstream habitat. Additionally, a 'beaver deceiver' structure was installed upstream of the culvert to prevent the mammal from rebuilding the dam and blocking access. Beavers are drawn to the sound of running water and build their dams based on that sound. The 'beaver deceiver' structure creates a fence around the upstream side of the culvert, preventing the beaver from constructing a dam in a manner that prevents water flow.



**Wildlife biologist inspecting a culvert recently cleared of a beaver dam and debris.**

Preventing accidental spills from NAVBASE Kitsap's sewage system is a challenging undertaking due to the sheer volume of underground piping used to convey the waste and advanced age of the piping. NAVBASE Kitsap-Bremerton is particularly susceptible to accidental releases due to the complexity and age of the utility piping supporting a 208-acre industrial facility conducting traditional naval shipyard activities. The Environmental and Utilities Departments



implemented an aggressive program to identify and prevent sewage from contaminating the local waterways by collecting monthly fecal coliform samples along the shoreline, inspecting the stormwater system for unusual flow, and aggressively investigating suspected sources by injecting dye and deploying video cameras through the piping. In FY18/19, thirteen deficient conditions were identified and corrected including a discharge line accommodating several temporary trailers that was incorrectly connected to the storm water system, damaged sewer lines, and two sinks in a large bachelors' quarters that were installed approximately 10 years ago.

#### Green Practices

NAVBASE Kitsap operates aggressive waste reduction programs resulting in significant cost savings, reduction in toxicity of wastes and support of mission readiness.

NAVBASE Kitsap developed the cleaning solvent "High Sol-X" which safely cleans epoxy coating. The High Sol-X is a unique solvent blend formulated to rapidly remove high solids paint from delivery and application equipment. The solvent meets all regulatory Hazardous Air Pollutant (HAP) regulations, and is designated as an approved substitute to ozone-depleting materials within the Environmental Protection Agency's Significantly New Alternatives Program (SNAP). The material is superior to similar products in terms of a lower material costs, reduced amount needed to clean surfaces, biodegradable, rapid evaporation, and compatible with most submarine surfaces.

Induction heating, a superior method in removing marine coatings and sound dampening tiles from Trident submarines and other military components than conventional methods, was initiated in FY19 and will be fully operational by early 2020. Induction heating uses a rapidly oscillating magnetic field that causes paint and tiles to fall off in

large chips. This eliminates the need for abrasive blasting, needle-gunning, chiseling, and grinding, and reduces the wastes and particulates generated by. The process is anticipated to be ten times faster than existing removal methods, and is anticipated to replace 50-80% of existing processes and reducing existing wastes by a similar amount.

A solvent parts washer with solvent life extension filtration was relocated from Naval Magazine (NAVMAG) Indian Island to NAVBASE Kitsap's Navy Exchange Autoshop in FY18. This innovative parts washer uses Hazardous Air Pollutant free and Volatile Organic Compound compliant ecofriendly solvent blends. The parts washer's filters extend the solvent life from months to years.

A Ship-to-Shore Hazardous Material Management Program continues to be a success and significantly reduces the generation of hazardous waste from naval vessels. Hazardous Material lockers are installed along the piers, which afford the reuse of material between ship and shore. This program yielded significant savings in the reduction of acquisition and disposal costs estimated to be \$1,701,057 for FY18/19.

#### Energy and Water Efficiencies

NAVBASE Kitsap initiated several energy and water conservations projects that have reduced reliance on natural resources and increased energy security.

In FY19, NAVBASE Kitsap-Bangor and Bremerton awarded a contract to improve street and parking lighting by installing 5,495 high efficiency Light-Emitting Diode (LED) lightbulbs. This lighting provides improved efficiency and durability which reduces energy consumption and replacement cost. Over 1,495 lightbulbs have been replaced to date and work will be complete in FY20.



Annual savings in energy and associated replacement costs are estimated to be 5,588,528 kilowatts and \$336,931.

NAVBASE Kitsap-Bremerton replaced four inefficient steam powered hot water systems with high efficiency electrical units. Estimated savings in the reduction of energy is 3,803 MBtu per year.

The ventilation control systems at Bangor's Theater and Keyport's Undersea Museum were upgraded to a Direct Digital Control System that provides improved energy efficiency and greater comfort to the individuals within the building. The new system collects data from sensors deployed throughout the building which enables the central control unit to make adjustments to achieve the desired temperature settings. The systems are estimated to provide annual energy savings of 304 Kilowatts and \$23,645.

NAVBASE Kitsap-Bremerton installed two fast roll up cargo doors designed to reduce the loss of heat leaving a Transportation Building and an Equipment Maintenance Shop.

At NAVBASE Kitsap-Keyport, 100% of the main potable water supply lines were replaced in FY19, reducing water loss through distribution system. The 100-year old system was in dire need of replacement. The new system will resolve issues of suspected leaks, mismatched components and materials, and flow restrictions.

#### Construction Sustainability

NAVBASE Kitsap has a strong commitment to implementing sustainable practices in the design and construction of our facilities. NAVBASE Kitsap has seven Military Construction projects in various stages of construction pending Green Building Principle Compliance Certification including P401 Regional Maintenance Facility at

Bangor, P400 Submarine Refit Maintenance Facility Bangor, and P438 Nuclear Repair Facility Bremerton.

NAVBASE Kitsap completed the sixth year of monitoring for a project to restore 13.7 acres of intertidal, freshwater forest/shrub, riparian, and upland habitat, and 2,800 feet of reestablished stream channel. In FY18 a second stream channel was constructed to increase the rate of estuary development. Planting of 300 native willows is showing to be a successful deterrent in the growth of invasive species. Surveys of the former lake bed is providing habitat to many bird species, coyotes, beavers, deer, bears, otter, fish, and amphibians, providing evidence of progress towards habitat improvement goals.

NAVBASE Kitsap completed construction of a pier at Port Angeles Washington for moorage of USCG vessels that provide security escort of Navy submarines. The pier became fully operational in FY18. The project reduced transit time, and provides an estimated annual savings of \$95,000 in fuel and commercial berthing costs. This project significantly improved the ability of the USCG to execute their security mission.

NAVBASE Kitsap led the development of Project Environmental Impact Statement (EIS) Review Team (PERT) for the anticipated reconstruction of dry docks at PSNS&IMF. The PERT is providing preplanning for the expected \$2B in construction projects. The PERT has developed a historic mitigation strategy, dredge material disposal overview, compensatory mitigation overview, and an Army Corps of Engineers engagement overview. The PERT is led by NAVBASE Kitsap with Naval Sea Systems Command (NAVSEA) and PSNS&IMF as co-action proponents.



### Natural Infrastructure Management

As NAVBASE Kitsap develops previously undeveloped properties, considerable efforts are expended to avoid, minimize, and, if necessary, mitigate to ensure project impacts are less than significant.

NAVBASE Kitsap's piers, wharfs, quay walls and marine piled-support structures are exposed to a harsh environment and suffer damage due to impacts by waterborne vessels. Repairs are necessary to maintain structural integrity of the facilities. Programmatic consultations and an Environment Assessment were completed to address upcoming maintenance requirements. As part of this scope of work, over 830 creosote-treated wooden piles are planned to be removed and replaced with a steel or concrete piles. Removing the toxic creosote piles from the marine environment will improve water quality of the surrounding areas of Hood Canal and Sinclair Inlet.

### Outreach and Parenting Program

NAVBASE Kitsap maintains a robust Government-to-Government (GtG) relationship with local tribes and during FY18/19, successfully completed GtG consultations and signed Memorandums of Agreement with three Tribes to mitigate impacts to treaty-protected resources resulting from the construction of the Land Water Interface (LWI) project and the Service Pier Extension (SPE) project.

The LWI project crosses tidelands where the tribes harvest shellfish. Consultation on the project began in 2008, and the mitigation provides \$3.4 million dollars in funding for beach seeding, and the restoration of Kilisut Harbor. The Kilisut Harbor Project consisted of removing a causeway that limits salmon migration, and replacing the causeway with a bridge allowing access for the salmon. Tribal consultation on the SPE project began in 2012, and the mitigation provides \$3.7 in funding to remove a culvert that blocks fish

passage. Completing these consultations were major milestones and critical to the execution of the \$140M in security and mission support projects.

NAVBASE Kitsap is proud to be a member of the local community and invests in volunteer opportunities to enhance our relationship with the general public. Dozens of sailors and marines stationed at NAVBASE Kitsap volunteered their time to support the *Tribal Journeys*, an annual event for northwest tribes who paddle large wooden canoes across the northwest to a different location every night. Navy sailors and marines brought the canoes ashore for the tired canoers at the Jamestown S'Klallam and Suquamish Tribal Reservations.



**Sailors and marines stationed at NBK volunteering in the annual Tribal Journeys, carrying the large wooden canoes ashore.**

In 2018 and 2019, NAVBASE Kitsap conducted several activities to celebrate Earth Day including the removal of over 25,000 pounds of trash by volunteers from our tenant commands. Sailors from the USS NIMITZ (CVN 68) and USS CARL VINSON (CVN 70) refurbished the Cottoman Trails, by adding gravel to the 2,000 square foot area, which reduced sediment entering the stormwater system and provided a safer walking surface for workers commuting to work. Finally, they removed 20 cubic yards of the invasive plant species, scotch broom.