2021 Secretary of Defense

Environmental Awards

Sustainability, Individual/Team

Whiteman AFB Environmental Element Sustainability Team

Introduction

Whiteman Air Force Base (AFB) is located approximately 60 miles east of Kansas City, Missouri, and is home to the 509th Bomb Wing and the 442nd Fighter Wing. From 1964 to 1993, Whiteman AFB was the home of the 351st Missile Wing, supporting 150 Minuteman II intercontinental ballistic missiles. A 1991 international arms reduction treaty resulted in the missiles being destroyed with the silos imploded and buried. The Oscar-01 Missile Launch Control Facility served as the command center for 10 Intercontinental Ballistic Missiles and was one of 15 such facilities spread out across west-central Missouri. Oscar-01 was also the only operational site actually located on a base and was left open as a Minuteman II museum**.** In 1990, Whiteman AFB became home to the 509th Bomb Wing and in 1993 welcomed the first operational B-2 Spirit bomber named "The Spirit of Missouri."

Today Whiteman Air Force Base is home to the 509th Bomb Wing, one of only two Air Force units to operate the B-2 stealth bomber. The unit can launch combat sorties directly from Missouri to any spot on the globe, engaging adversaries with large payloads of traditional or precision-guided munitions. Whiteman AFB is also the home of the 131st Bomb Wing, an Air Force National Guard wing working side by

side with the active-duty force flying and maintaining B-2 bombers. Whiteman AFB also hosts the 442nd Fighter Wing, an Air Force Reserve Command wing flying the A-10 "Warthog" airframe, the 1-135th Army Assault Helicopter Battalion, and the 20th Attack Squadron. The installation is composed of more than 8,365 personnel (7,221 military personnel and 1,144 civil servants and contracted personnel) living and working in the installation footprint that is 5,566 acres with one bi-directional runway and 341 facilities, encompassing just under 4 million square feet of space. The total annual estimated economic impact to the region is approximately $770M

Background

The Whiteman AFB Environmental Sustainability Team consists of the Environmental Management Element of the 509th Civil Engineer Squadron. The Element has five permanent civilian members: one Registered Professional Geologist, one Physical Scientist, and three Biological Scientists, all with extensive federal and state environmental experience. This Team is committed to ensuring Whiteman AFB and DoD missions are carried out in a sustainable manner to minimize impacts to the built and natural infrastructure, and was instrumental in the 509th Civil Engineer Squadron winning Air Force Global Strike Command's Best Small Civil Engineer Unit award in 2019 and 2020. At Whiteman AFB, sustainability is one of the highest priorities and is accomplished by protecting the environment, people, and mission through sound environmental stewardship. The Team is dedicated to continual improvement of processes and methodologies that reduce waste, promote pollution prevention, and enhance safety while fulfilling mission requirements to execute Strategic Nuclear Operations, Lethal Global Strike, and Combat Support.

Whiteman Sustainability Team
Whiteman AFB Sustainability Team represent the 509 Civil Engineer Squadron.

The Sustainability Team

Mr. Glenn Golson, Environmental Element Chief
Oversees funds management, Environmental Restoration Program, National Environmental Policy Act

Mr. Robert Bryant, Physical Scientist
Waste Water, Storm Water, Drinking Water, EPCRA, Air Program Manager

Mr. Keith Donaldson, Biological Scientist
Natural Resources Manager, Cultural Resources Manager, Qualified Recycling Program Manager

Mr. James Love, Biological Scientist
Tank Manager, Toxics Manager, Spill Program Manager

Mr. Denver Long, Biological Scientist
Environmental Management System Manager, Hazardous Waste Manager

Summary of Accomplishments

Compliance

The Whiteman Sustainability Team places great emphasis on water sustainability and compliance with state and federal laws.

Protecting Water Resources

Lime sludge, flowing down a creek after it was illegally dumped by a vendor. Whiteman, in cooperation with MDNR, avoided a Notice of Violation by utilizing swift action to terminate the vendor and execute an alternate plan for disposal. (Photo courtesy of MDNR)

Whiteman AFB has a drinking water processing plant that produces a waste byproduct of lime sludge. The installation's drinking water permit with Missouri Department of Natural Resources (MDNR) requires specific sludge disposal practices to minimize impacts to the environment. To ensure compliance with our permit, team members had been monitoring the vendor's performance and witnessed the vendor dumping the lime sludge in an open field. The vendor failed to construct holding ponds for storage of the sludge during inclement weather, required by the MDNR permit. Facing possible enforcement actions from MDNR related to a contractor's improper disposal of lime sludge, the Sustainability Team partnered with 509th Contracting Squadron to terminate the disposal contract immediately. Knowing that securing a new contractor who met the requirements of the permit would take months, the Sustainability Team partnered with state regulators and 509th Civil Engineer Squadron team members to utilize existing equipment and labor to spread the lime sludge on vacant installation property, meeting permit requirements. Additionally, the Team secured a new MDNR permit to store the sludge in an unused pit on the installation, when spreading it isn't possible, ensuring future installation compliance.

The Sustainability Team, in conjunction with Environmental Protection Agency (EPA) Region VII and MDNR, continues to manage the oversight of 164 decommissioned Minuteman II missile silos and launch control facilities. The sites are scattered over a 10,000 square mile area in west-central Missouri and were decommissioned by the 1991 Strategic Arms Reduction Treaty (START). The Air Force demolished the sites in the early 1990s and signed a Long Term Stewardship Agreement with EPA and MDNR in order to monitor site environmental conditions. While the properties were sold to private landowners, the Air Force retains liability for any associated contamination remaining on the sites and the deeds contain restrictions on digging more than two feet deep without first obtaining permission from EPA and MDNR. Annually, half of the sites are flown over by Civil Air Patrol and photographed to determine if any disturbance has taken place. MDNR then contacts landowners, in person, to inspect the sites and re-emphasize the deed restrictions. The annual report, published by MDNR, is intended to monitor residual material remaining on the sites, with the Sustainability Team as the responsible party for the Air Force. The Long Term Stewardship Agreement has no expiration and, therefore, must be sustained in perpetuity.

Natural Resources Sustainability

In full compliance with the installation's Integrated Natural Resources Management Plan (INRMP), Whiteman's Sustainability Team utilized sustainable agricultural practices by modifying 200 acres for grazing, also

enhancing the Bird/Wildlife Aircraft Strike Hazard (BASH) program. Row crops were replaced with grass pastures reducing the BASH threat to Whiteman's flying mission and putting a halt to the erosion that resulted from former row crop activities. Building fences between pastures ensures that grazing can take place year round and installing additional watering tanks ensures the cattle have water when they are rotated between different pastures. Encroaching stands of trees were removed, also reducing the bird strike hazard to the installation aircraft and flying mission. The Team secured $110K to execute these projects, thereby eliminating an annual $30K mowing cost on approximately 15% of the unused land of the base. First ever grazing leases for 805 acres are enabling adjacent landowners to use the land for grazing, providing better land management usage and reduced government expenses. The Team continues to manage large stands of trees and native prairie grasses, sustaining the diverse wildlife habitat for native species. Periodic, approved controlled burns are executed by the installation Fire Department and the trained, qualified installation Natural Resources Manager to eliminate invasive plant species and maintain and enhance the original tallgrass prairie. The Team is responsible for ensuring the quality of the installation stormwater runoff given the fact that the installation is bordered on the west by Knob Noster State Park and effluent from Whiteman flows directly into a park lake. The Team, in cooperation with the 509th Civil Engineer Operations team, manages five spill control lakes that not only capture spills but are also for recreational fishing by installation personnel. In cooperation with Missouri Department of Conservation, lakes are electro-shocked every two years to inventory fish populations, and fish are restocked at no cost from the US Fish and Wildlife Service.

Natural Resource Sustainability in Whiteman Spill Control Lakes

Keith Donaldson, left, a natural resource manager assigned to the 509th Civil Engineer Squadron, and Ty Cravens, right, a resource assistant with the Missouri Department of Conservation, collect fish from Ike Skelton Lake at Whiteman Air Force Base, Mo. From the data they collected, the team determined which fish needed to be added to the lake to balance out the ecosystem. (U.S. Air Force photo by Senior Airman Danielle Quilla.)

Sustainability Restoration of Installations

The Sustainability Team is not only responsible for managing environmental and sustainability issues on Whiteman AFB, but also for the Defense Fuel Supply Point (DFSP) Newington installation, located 4 miles northwest of Portsmouth, New Hampshire, and 2 miles northeast of Newington, New Hampshire. The property was historically used as a fuel transfer and storage facility from its construction in 1961 until its closure in February 1990. The 14-acre site and its 1.25-mile-long pipeline were used for the storage and distribution of aviation gasoline and Grade 4 jet propulsion fuel. DFSP Newington supported local facilities, including the former Pease Air Force Base and other Department of Defense (DoD) installations in the Northeast. The site houses two 80,000-barrel and four 50,000-barrel semi-buried bulk fuel storage tanks in addition to piping runs with land fueling racks. The third parcel in the east corner of the facility includes a docking pier and fuel pipelines on the Piscataqua River. Defense Logistics Agency (DLA)–Energy and the Department of the Air Force have

determined the site is no longer needed, and site assets should be demolished and excessed. Under Air Force ownership, DFSP Newington is still on the Whiteman AFB property records, so the Sustainability Team, led by the Element Chief, is a key team member in the design and planning of the fifteen million dollar demolition and cleanup effort, partnering with DLA-Energy, New Hampshire Department of Environmental Services, New Hampshire Department of Transportation, US Army Corp of Engineers, the surrounding communities and Air Force Civil Engineer Center. The ongoing deconstruction design involves complete removal of all onsite structures and removal of

Sustainability Restoration at Newington, N.H.
Decrepit docking pier at Newington DFSP in the Piscataqua River. Demolition of this structure will maintain the quality of the river as well as provide for continued navigation. (Photo courtesy of Mr. Glenn Golson, GS-13)

the pipeline as well as the off-loading piers in the river. The decisions the Team is making are to ensure that property previously owned and utilized by the Air Force is free from excessive contamination that might cause problems in the future. Groundwater migration runs toward the river and will eventually carry contaminants into the river if not removed.

The Team partnered with MDNR in conducting a vapor intrusion study for Environmental Restoration Program (ERP) Site SS030, an Army and Air Force Exchange Service (AAFES) facility on Whiteman that was suspected of having a vapor intrusion problem originating from volatile organic chemicals in the groundwater below. The contamination is believed to be from disposal of bulk chemicals used in the legacy Civil Engineering building as far back as the 1950s before there were strict environmental laws. Contaminants of concern are carbon tetrachloride, dichloromethane (methylene chloride), trichloroethylene, and chloroform, all of which are known or suspected carcinogens. The Team installed indoor automatic air sampling equipment to detect any harmful vapors in the AAFES facility. Through a hole drilled in the floor, the samplers pulled air from below the slab into a container that was sent to the lab for analysis. Completing in 2019, the air sampling has shown no known hazards detected, ensuring the health of each of the 4,000 patrons that visit the facility annually.

Cutting Edge Technology

In September 2019, the Sustainability Team responded after a defective valve on a firefighting tanker truck resulted in the accidental release of 30 gallons of Aqueous Film-Forming Foam (AFFF) concentrate inside a fuel maintenance bay. The Team's timely action of turning off the lift station prevented the AFFF from entering the base water stream; however, by the time the bays were washed out, the 30 gallons of concentrate had become 10,000 gallons of an AFFF/water mixture. While the Team began exploring options to properly dispose of the water, the underground storage tanks were unknowingly infiltrated by additional runoff water, which heightened the need for swift action. Liquid waste containing AFFF cannot be discharged until an approved treatment method achieves concentrations less than those established in state standards or in the EPA's lifetime Health Advisory (HA) levels of 70 parts per trillion (ppt) for perfluorooctane

sulfonate (PFOS) and perfluorooctanoic acid (PFOA) individually or combined. In the absence of any state or EPA promulgated standards, Whiteman chose an innovative treatment method that would lower the contaminant value to less than 70 ppt, the EPA lifetime HAs. With the assistance of the 509th Civil Engineer Operations team members, the PFOS/PFOA impacted water was relocated to dead-end catch tanks as a temporary response action. After research, the Team chose treatment as the most cost-effective method for disposal. The treatment process involved pumping the water through a series of tanks, which contain a proprietary filtering media that removes any traces of PFOS/PFOA in the water via an ion exchange. Water is pumped at a slow rate through the filter tanks, maximizing the residence time and allowing for increased surface area contact between the filtering media and water. The entire treatment process lasted for five days and reduced PFOS/PFOA concentrations to non-detect. This was Whiteman AFB's first time using this type of PFOS/PFOA treatment method and treatment costs were $56K compared to $200K for incineration. Whiteman's lesson learned was shared throughout the CE community so that other installations can benefit from the experience.

Waste Reduction Efforts

Whiteman's Sustainability Team specializes in a sustainable recycling program; their primary goal is to reduce the amount of waste that the installation is sending to the landfills. The Whiteman Qualified Recycling program avoided $35K in disposal costs by diverting over 330 tons of cardboard, 64 tons of mixed paper, and 46 tons of newsprint from the landfill, Additionally, the program has collected and marketed approximately 24,000 gallons of used oil and anti-freeze, saving the base about $1.5 million in disposal costs. They also collected and separated 421 tons of scrap metal, saving $150K for use on other projects.

Treating AFFF at Whiteman AFB

A pump filters water from an underground tank at Whiteman Air Force Base, Missouri. Whiteman Air Force Base contractors proactively tested and treated water for contamination to ensure environmental protection and safety. (U.S. Air Force photo by Senior Airman Thomas Johns.)

The program has recently converted the recycling operation to a service contract, cutting the operation's overhead by $200K while retaining a 50% share of the profit.

Education, Outreach, and Partnering

The Sustainability Team focuses on connecting with the neighboring communities. Annually, the Natural Resources Manager directs Arbor Day activities at the installation elementary school, providing 400 tree seedlings and educating students on the benefits of conserving and enhancing natural resources. The Team voluntarily partnered with Missouri Department of Health in sampling wastewater for COVID-19 indicators. The installation was one of 86 sampling locations chosen by the State in which the research will be used for tracking and documentation of indicators of the disease. The Team also partnered with U.S.

Fish and Wildlife Services and MDNR in updating the INRMP. The INRMP is reviewed annually to ensure the accuracy of the data and is signed by the three agencies every five years. It details how the installation's natural resources will be managed while ensuring the installation's ability to support the military mission. Additionally, every other year, Whiteman opens the base to the general public hosting an air show, providing the public the opportunity to view many current and past airframes, including the B-2 Spirit Bomber. In 2019, the Team orchestrated the recycling and trash management services, distributing and retrieving recycling containers around the flight line, promoting waste recycling efforts, and reducing air show waste transported to and disposed in the local landfill. The two-day event brought in more than 100,000 spectators from across the states of Missouri and Kansas.

For the Whiteman Sustainability Team, protecting the environment, people, and mission through sound environmental stewardship is the highest priority. The Team is dedicated to reduce waste, promote pollution prevention, and enhancing safety by continuing to partner with our communities and researching and implementing new and innovative environmental technologies. The Team contributes to the Whiteman mission with sustainable practices, collaboration, and natural resource conservation activities.

Education, Outreach, and Partnering during 2019 Whiteman AFB Airshow

Spectators gather for a flying display of the main act of Wings over Whiteman Air & Space Show 2019, the F-22 Demonstration Team, at Whiteman Air Force Base, Missouri. Over the course of two days, more than 100,000 visitors attended flying and static displays of aircraft and military equipment. (U.S. Air Force photo by Tech. Sgt. Alexander W. Riedel)