

# FY 2011 Secretary of Defense ENVIRONMENTAL AWARDS

673 CES/CEANR • JBER, Alaska / Environmental Restoration Team Award

## INTRODUCTION

Elmendorf Air Force Base and Fort Richardson combined in 2010 to become one installation: Joint Base Elmendorf-Richardson (JBER). This merger of two great installations and two powerful combat missions simply formalized an already close working relationship that the Air Force and Army have shared for many years.

The base is an important national security asset because of its strategic location and complimentary mix of military capabilities to include the F-22 Raptor, the Pacific's only Airborne Brigade, and the C-17 Globemaster that will get them to the fight.

The newly activated 673d Air Base Wing (673 ABW) hosts the headquarters for the Air Force Alaskan Command, 11th Air Force, and 3rd Wing as well as the U.S. Army Alaska 4-25 Airborne Brigade Combat Team and 2nd Engineer Brigade.

The 673 ABW is comprised of four groups, one of which is the 673d Civil Engineer Group (673 CEG). A primary function of the 673 CEG is to maintain the \$11.4B joint base infrastructure. The 673 CEG supports 12,000 Arctic Warriors, 20,000 family members, and 75 associate/tenant units.

JBER covers approximately 75,000 acres of diverse Alaskan lands ranging from tidal wetlands to steep mountainous ridges. The base is essentially a wildlife habitat preserve situated adjacent to Anchorage, Alaska's major metropolitan area. The base supports healthy populations of moose, brown and black bears, bald eagles, wolves, and five species of Pacific salmon. The endangered Cook Inlet beluga whale inhabits the marine waters adjacent to the base. The 673 CEG is tasked with protecting and sustaining this incredible biodiversity.

## BACKGROUND

The Environmental Restoration Team (the Team) is comprised of highly skilled and motivated individuals from JBER, the Air Force Legal Operations Agency (AFLOA), the Air Force Center for Engineering and the Environment (AFCEE), the U.S. Environmental Protection Agency (EPA), and Alaska Department of Environmental Conservation (ADEC).

The Team's cleanup strategy demonstrates a sustained commitment to addressing contamination, while supporting the mission through remediation and reuse of lands. The goal is to balance environmental requirements with military readiness and installation sustainability.

<b>Team Member</b>	<b>Organization, Position</b>	<b>Team Member</b>	<b>Organization, Position</b>
Gary Fink	JBER, Chief, Restoration Section	Jim <u>Klasen</u>	AFLOA, Restoration Attorney
Don Aide	JBER, Project Manager	Kevin Thomas	AFCEE EXE, Program Manager
Donna <u>Baumler</u>	JBER, Project Manager	Rafael Vazquez	AFCEE PMO, Program Manager
Tim <u>Plucinski</u>	JBER, Project Manager	Bill Adams	EPA, Project Manager
Mark <u>Prieksat</u>	JBER, Project Manager	Jacques <u>Gusmano</u>	EPA, Project Manager
Cynthia Tomlinson	JBER, Project Manager	Louis Howard	ADEC, Project Manager
Lt Col Greg Frick	JBER, Bioenvironmental Engineer	Mark <u>Sielaff</u>	ADEC, Project Manager
Renée Wright	JBER, Public Affairs Liaison		

Program management is the responsibility of the Environmental Restoration Section's six personnel who are dedicated to planning and executing the cleanup programs. The Team also includes experts from other areas, including 673 ABW Public Affairs and Staff Judge Advocate. In addition, the Team recognizes the following partners for their contributions to the success of the Restoration Program: U.S. Army Cold Regions Research and Engineering Laboratory; U.S. Army Corps of Engineers - Alaska District; U.S. Bureau of Land Management; U.S. Fish and Wildlife Service; University of Alaska; and private sector contractors.

## **POSITION DESCRIPTION**

More than 70 years of Alaskan military operations have resulted in the release of fuels and industrial chemicals into soil and groundwater. The Team's primary responsibility is cleaning up this historic contamination using innovative, green, and sustainable technologies, as well as minimizing the risk to human health and the environment.

The restoration section manages the Environmental Restoration Program, Military Munitions Response Program (MMRP), and Compliance Restoration Program. During its tenure, the section has investigated 323 sites. The section successfully achieved response complete at 232 or 72% of these sites, *returning the land to beneficial use for military purposes*. Land use controls (LUCs) have been implemented at 14% of the sites, allowing continued safe use of facilities while significantly reducing cleanup costs.

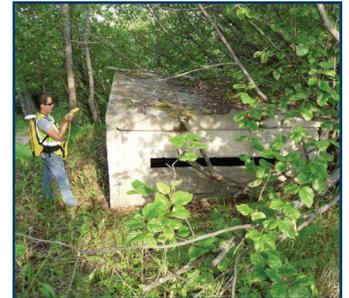
## **AWARDS AND SERVICES**

The Team has a storied history of environmental excellence and has been recognized by the Air Force, Army, and industry-wide for innovation and expertise in the field. Many program innovations, such as our geospatial land use control management information system, have been exported to, or copied by, other installations and agencies. Team members continually strive for excellence, demonstrated by the recognition received during the award period.

<i>Winner</i>	<i>2011 AF Gen Thomas D. White Environmental Restoration Award (Team)</i>
<i>Winner</i>	<i>2011 PACAF Gen Thomas D. White Environmental Restoration Award (Team)</i>
<i>Runner Up</i>	<i>2011 PACAF Gen Thomas D. White Environmental Restoration Award (Installation)</i>
<i>Winner</i>	<i>2011 AF Special Service Award, F-22 Recovery Project</i>
<i>Winner</i>	<i>2010 Commander-in-Chief's Annual Award for Installation Excellence</i>
<i>Runner Up</i>	<i>2010 AF Maj Gen Robert H. Curtin Award (Best CE - Large Unit)</i>
<i>Winner</i>	<i>2010 PACAF Maj Gen Robert H. Curtin Award (Best CE - Large Unit)</i>
<i>Winner</i>	<i>2010 Department of the Army Achievement Medal for Civilian Service</i>

## **ACCOMPLISHMENTS**

The Team was assigned the daunting task of combining two large, previously independent Air Force and Army restoration programs. Early integration of joint program requirements was necessary to ensure adequate program-wide funding in FY11 and future years. The current program consists of 91 active sites with an FY11 budget of \$8.7M. The Team seamlessly integrated all Air Force and Army sites and agreements into one program. The base is meeting all of the responsibilities outlined in the two separate Federal Facility Agreements and is successfully coordinating efforts with two different EPA project managers.



More than ten anti-aircraft artillery firing points have been identified on JBER. These firing points, remnants from WW II Era Base defense activities, were investigated as part of the MMRP. Following the investigations the sites obtained regulatory approval for unrestricted use resulting in the availability of land for training.

## REDUCING RISKS TO HUMAN HEALTH AND THE ENVIRONMENT

The Team implemented several joint base initiatives to manage LUCs. The cornerstone of the LUC process is a Wing Instruction that outlines roles and responsibilities at the direction of the Wing Commander. Construction and maintenance projects are reviewed to ensure protection of human health and the environment, and safety of site workers and nearby personnel. The Work Clearance Permit review process was revamped, reducing the process by two days and decreasing the number of personnel involved. Over 500 Work Clearance Permits were reviewed in 2011.

## GREEN REMEDIATION

The Team embraces green and sustainable remediation as a program management philosophy. An example of this is the conversion of an engineered wetland remediation system from an active to a passive system. The system removes chlorinated solvents by allowing groundwater seeps to passively flow into a wetland system. This green remediation system reduces downtime and maintenance, will save over \$340K in lifecycle costs, and will reduce carbon emissions that would result from operating the active treatment system.

## INNOVATIVE TECHNOLOGIES

Extreme environments and remote sites present challenges to developing effective and innovative cleanup techniques. In particular, the colder than normal year-round temperatures in south-central Alaska present problems for implementing technologies developed for warmer climates.

In cooperation with faculty and students from the University of Alaska and private sector contractors, the Team initiated studies to compare the efficacy of a traditional compacted clay liner (CCL) landfill cover with an alternative evapotranspiration (ET) cover system. The study began with installation of two experimental drainage lysimeters to measure surface runoff and subsurface drainage. One lysimeter was constructed using a CCL cover design and the second lysimeter was constructed with an ET cover. The ET cover design utilized minimally-compacted, organic-rich soil with native tree species. The cover was identical to the ET cap installed on a closed JBER landfill.

The results of the lysimeter study conducted through 2010 indicate that the ET cap design is a practical and cost-effective alternative to more expensive traditional cover systems for sub-arctic environments. Over a five-year period, the ET cover was an average of about 17% more effective at reducing infiltration and percolation than the CCL cover system. The effectiveness will increase as the vegetative cover matures. The results from the ET cover study were presented to the Solid Waste Association of North America – Alaska Chapter. A peer-reviewed scientific paper was submitted by the University of Alaska for publication in *Cold Regions Science and Technology*.

Remediation of chlorinated solvents does not occur rapidly in cold climates where biotic processes are limiting and may not effectively reduce solvents to non-hazardous components. JBER was selected by several Department of Defense research and development programs as a demonstration location for innovative cleanup technologies to treat chlorinated solvents in sub-Arctic environments. The DP98 Demonstration Project was conducted to investigate biogeochemical transformation and in-situ chemical reduction techniques to treat chlorinated solvents in groundwater at a former vehicle maintenance facility. Project results show that engineered biogeochemical transformation is a potential technology for cleanup at sites where biotic dechlorination stalls at a more toxic compound like vinyl chloride. The applicability, costs, and performance results will be distributed through the AFCEE technology transfer program.



When environmental contamination is discovered at construction sites, rapid assessment and implementation of site cleanup is necessary to prevent project delays and significant cost increases. Accelerated cleanup actions allowed the team to conduct removal actions at multiple construction sites. These actions kept the projects on schedule and within budget.



Contractor collects a sample at the effluent of seeps into an Engineered Wetland Remediation System. These seeps emerge from a bluff on the southern boundary of JBER and passively flow into the wetland system. This location is sampled quarterly for chlorinated solvents and petroleum hydrocarbons.

## ACCELERATED ENVIRONMENTAL CLEANUP

To meet the Air Force's new goal of accelerated site completion, the Team is in the acquisition process for a JBER-wide Performance Based Remediation (PBR) contract. The PBR will include a Remedial Optimization Program that will focus on closing or optimizing activities at sites, exceeding the 2018 Air Force response complete goal. The PBR will also encourage innovation and allow flexibility.

Military training in the Alaskan environment means operation of tactical equipment in remote areas. In November 2010, an F-22 Raptor crashed in the Talkeetna Mountains about 22 miles from the nearest road and close to the crest of a mountain pass with extreme weather conditions. JBER leadership decided to combine crash recovery and environmental activities with the goals of cost savings and preventing spread of contamination in a pristine sub-arctic environment.

Effective and rapid planning allowed a winter-time mobilization of equipment and supplies to the site with cost savings of over \$1M. A remote camp was established near the crash site to conduct recovery and cleanup operations.

The Team leveraged the availability of Airmen trained in aircraft crash recovery procedures to collect the aircraft parts and aid in cleanup efforts. Not only was this a real-world training opportunity, but Airmen were instrumental in minimizing the spread of contamination at the site. Aircraft recovery and site cleanup were completed within a 4-month time period.

The Team successfully fast-tracked projects, returning lands to usable condition. Fast-tracking is critical due to the short field seasons in Alaska. In support of mission efforts to reuse former training areas, the Team obtained regulatory approval for no-further-action at 28 military munitions response sites resulting in the availability of about 4,000 acres for training.

When environmental contamination is discovered at construction sites, timely decisions and actions are required to prevent project delays and significant cost increases. Contamination was detected during geotechnical investigations for construction of an F-22 Weapons Maintenance Facility. The Team rapidly assessed the site, identifying fuel and solvent contamination. The presence of these contaminants in an operational area posed an unacceptable risk to workers and the environment.

The Team compared remediation options and quickly implemented the treatment alternative. Two soil vapor extraction (SVE) systems were installed to remove contaminants. Contaminated soil within the construction footprint was excavated and transported to an off-site SVE treatment cell. On-site contamination is being treated using an SVE system that will not interfere with the construction project. This solution averted \$4.5M in costs and reduced the carbon footprint when compared with excavation of the contaminated soil and transportation out of Alaska for disposal.

## PARTNERSHIPS AND COMMUNICATIONS

An exemplary program is marked by its ability to export successes and share lessons learned with other organizations. With this program goal in mind, the Team engaged in Defense State Memorandum of Agreement meetings and other partnering sessions to discuss topics ranging from LUCs to new technologies. Additionally, emerging and innovative technology information is presented at the annual AFCEE Technology Transfer Symposium and on their website. Notable successes include EPA adopting practices outlined in the issue paper *Site Characterization for Munitions Constituents*, developed from the Eagle River Flats remediation project; and Team members publishing papers in the *Journal of Hazardous Materials*, *Chemosphere*, and the *Journal of Environmental Toxicology and Chemistry*. ADEC recommended that other installation use JBER as a model when developing or improving their LUCs.

As indicated previously, the Team developed a very innovative and successful LUC program that is a model for other installations and agencies. ADEC recognized the JBER program for this significant achievement. The Team actively supports the Alaska Forum on the Environment and serves as planning committee members. Environmental



In November 2010 an F-22 fighter jet crashed in the Talkeetna Mountains 22 miles from the road system. The crash site was located near the top of a mountain pass with limited access and extreme weather conditions. A remote camp (background) was established near the crash site (foreground) to conduct aircraft recovery and environmental cleanup operations.

restoration projects were presented at the annual forum, a scientific and educational event that provides an opportunity for the exchange of information and experiences among federal and state agencies, federally-recognized tribes, environmental groups and the public.

Successful partnering with the Port of Anchorage (POA) is a “win-win” for both the POA and JBER. Debris from an inactive landfill, located on a bluff overlooking the POA, had historically sloughed down the bluff due to extreme tidal erosion. As part of POA expansion, beach and tidelands at the base of the bluff were filled with clean soil provided by JBER. Bluff stabilization reduced the amount of landfill debris removed during the past three years by 99% and will save \$1.1M in removal and disposal costs over the next 18 years.

Results from two enhanced bioremediation treatability studies were presented at the Seventh International Conference on Remediation of Chlorinated and Recalcitrant Compounds held in Monterey, CA in 2010. A paper co-authored by a Team member appears in the conference proceedings.

The Team strives to involve our valued stakeholders from the surrounding and JBER communities. Information sharing is an integral part of our Restoration Program and is necessary to demonstrate our dedication to addressing stakeholder concerns, and to cleaning up contamination resulting from past practices.

To expand outreach, the Team designed an environmental restoration webpage that allows interested parties to download and review documents, access our information repository, and to view a calendar of JBER-related environmental events.

JBER hosts semi-annual Community Environmental Board (CEB) meetings to interact with stakeholders. Our CEB is an expanded version of a Restoration Advisory Board and covers environmental compliance and conservation, in addition to restoration activities. The open format offers the community opportunities to provide input concerning environmental programs and activities at JBER.

A joint base community involvement survey was conducted to ensure the Team is meeting the needs of our stakeholders. The survey indicates a vast majority of the respondents believe JBER officials are credible and committed to cleanup. The Team incorporated results of this survey into a new JBER Community Involvement Plan.

The Team incorporated all JBER data (sites, extent of contamination, borings and monitoring wells, sampling locations, and land use controls) into an all encompassing *Restoration Program Atlas*, providing a “big picture” for engineers and planners. The Atlas is a valuable tool which is used in every step of construction planning, from site selection to final construction.



Replacement of monitoring wells at a contaminated site on JBER. Using innovative, green, and sustainable technologies to clean up historical contamination is very challenging in the operational environment. The Team works to minimize impacts to base activities and the risk to human health and the environment.



The Team works to open communication with stakeholders by facilitating Community Environmental Board meetings to discuss restoration and other environmental topics. The base also conducts tours of environmental restoration sites. Here a Team member presents site-specific restoration information to a community group.