

FY 2009 Secretary of Defense Environmental Awards

# USACE, Alaska District, Tanaga Island and Ogliuga Island Formerly Used Defense Site Environmental Restoration, Team

## INTRODUCTION

The Defense Environmental Restoration Program (DERP) Formerly Used Defense Sites (FUDS) program is responsible for the cleanup of environmental contamination released during the operation of historic military facilities. The U.S. Army Corps of Engineers (USACE) Alaska District is responsible for addressing more than 526 FUDS properties located within the state of Alaska. Alaskan FUDS projects present unique challenges due to both their complex site conditions and difficult logistics. In order to successfully investigate and remediate these extremely remote sites, the people at the Alaska District are continually searching for better ways to execute project investigations and cleanups.



On this page: Will Mangano (left) and Jacob Sweet (right), USACE-AK, operate the Ultra-Violet Optical Screening Tool (UVOST®) and Geoprobe™ drill rig on Tanaga Island. (USACE photo)

## JUDGING CRITERIA



Program Management



Orientation to Mission



Technical Merit



Transferability



Stakeholder Interaction

SUSTAINING THE ENVIRONMENT FOR A SECURE FUTURE

## BACKGROUND

Tanaga and Ogiuga Islands are both uninhabited and located in the Aleutian Islands Chain of western Alaska, approximately 65 miles southwest of Adak and 1,350 miles southwest of Anchorage. Tanaga and Ogiuga Islands are part of the Alaska Maritime National Wildlife Refuge administered by the U.S. Fish and Wildlife Service (USFWS). The nearest community to the islands is Adak, a former Naval installation, with a population of 178. Portions of both islands are designated as wilderness areas. Both islands are characterized by a maritime climate with frequent fog, high winds and rain. Features on Tanaga Island include waist-high grass and brush covered rolling hills, rugged coastlines and the very prominent Tanaga Volcano (which last erupted in 1914). The Tanaga project had 13 different investigation areas; Ogiuga had three areas of concern. The focus of the remedial project was to identify the presence of environmental contaminants, unexploded ordnance and buried munitions dating back to World War II.

Tanaga Island, approximately 128,000 acres, was established in July 1943 as a U.S. Navy auxiliary station to the Adak Naval Operating Base and operated until 1945. Facilities constructed by Navy Seabees included a 200 x 5,000-foot steel-mat runway, living quarters for 720 people, a pier, mooring area, hardstands, office and storage buildings, airway radio communications, galley and mess facilities, a dispensary, gravel roads and utilities. Ogiuga Island, approximately 2,300 acres, was the location of an Army emergency landing field from 1943 to 1945. The facilities were constructed by the Navy Seabees and consisted of a 100 x 3,000-foot steel-mat runway, an aircraft parking area and Quonset huts for living quarters. Additional facilities included Aircraft Warning Service radar and radio communications.

The USACE Alaska District executed three concurrent remedial investigations at FUDS on Tanaga Island and Ogiuga Island, Alaska. Travel from Anchorage to Adak involves a four hour commercial flight; travel from Adak to the Islands is another hour by helicopter or up to 12 hours by boat, and travel between the islands takes approximately 40 minutes by helicopter.

| Team Member                             | Title/Position                                 |
|---|--|
| <b>USACE, Alaska District</b>           |  |
| Kenneth Andraschko                      | Alaska FUDS Program Manager                    |
| Richard Ragle                           | Project Manager                                |
| Neil Folcik                             | Project Engineer                               |
| Will Mangano                            | Project Engineer                               |
| Scott Kendall                           | Project Engineer                               |
| Jacob Sweet                             | Project Chemist                                |
| Sean Benjamin                           | Project Chemist                                |
| Michael MacMillan                       | Department of the Army Intern                  |
| Robert Glascott                         | Geologist                                      |
| Aaron Wilson                            | Archaeologist                                  |
| Christopher Floyd                       | Biologist                                      |
| Lisa Geist                              | Environmental Scientist                        |
| Michael Boese                           | Chemist  |
| Kelly Davis                             | Program Analyst                                |
| Nancy Patterson                         | Program and Reports Specialist                 |
| Greg Vanagel                            | Assistant District Counsel                     |
| Anita Dale                              | Contracting Officer                            |
| Ernie Woods                             | Contracting Specialist                         |
| Mary Abbott                             | Contracting Officer                            |
| Brad Leavitt                            | Purchasing Agent                               |
| Sheri DellaSilva                        | Contracting Specialist                         |
| Lisa Cunningham                         | Real Estate Specialist                         |
| <b>USACE - Huntsville Design Center</b> |  |
| Dorothy Richards                        | MMRP Project Manager                           |
| Debra Edwards                           | Geophysicist                                   |
| Mike D'Auben                            | MMRP Chemist                                   |
| John Zimmer                             | Ordnance & Explosive Safety Specialist         |
| Michael Gooding                         | Civil Engineer                                 |
| <b>AECOM, Inc.</b>                      |  |
| Mike Jones                              | Task Order Manager / HTRW Project Manager      |
| Bjorn Bjorkman                          | Field Manager / Lead HTRW Technical Specialist |
| Rick Swahn                              | MMRP Project Manager                           |
| <b>Other Major Contractors</b>          |  |
| Steve Adamak                            | Dakota Technologies, UVOST Co-Developer        |
| Justin Rucker                           | Hammer Environmental – Driller                 |

## POSITION DESCRIPTION

The project team included a broad range of cross-functional and technical experts including an archaeologist; a biologist; chemists; environmental engineers and scientists; a geophysicist; civil engineers; contract officers and specialists; an ordnance/explosive safety specialist; Hazardous, Toxic and Radioactive Waste (HTRW) specialist and many others. More than 20 personnel were involved from the Alaska District, and five team members from the Huntsville Design Center supported Military Munitions Response Program (MMRP) activities. One large business was contracted to provide overall management, planning, logistics and investigation support. Two major companies were also contracted to provide technology and drilling services, and more than a dozen subcontractors and vendors provided on-site field support including communications, waste and wastewater systems, heavy equipment, and ground, air, tug and barge transportation. Fourteen of these contractors were small businesses.

The Alaska District worked closely with the contractor team to develop comprehensive plans which guided the complex field efforts. These plans addressed the challenges of working at a site with no local services such as roads, emergency response, lodging and food. Resources were mobilized to the site using a helicopter, an Adak-based crab boat, and a tug and barge. Transporting more than 1 million pounds of equipment and supplies and 101,500 gallons of



“The Alaska District FUDS Team is to be commended for an extremely efficient use of resources and organization in the successful and concurrent accomplishment of two hazardous substances and one munitions response project on the Tanaga and Ogliuga Islands off the Aleutian Islands in Alaska in 2009. This team effort was able to overcome significant logistical challenges, use innovative technology for contamination screening and save the Army over \$5 million in mobilization costs with an effective restoration product that will be directly transferable to other environmental restoration efforts in Alaska.”

- Ray Fatz, President and CEO, Plexus Scientific Corp.

fuel 1,350 miles and maintaining a 40-person field camp for approximately five weeks required immense coordination between all persons involved. Adjusting travel and work schedules to deal with the adverse weather conditions during July and August 2009 was a constant challenge and required continual changes in contracting, especially for transport vendors.



*A remote field camp set up in Lash Bay, Tanaga Island, supported concurrent investigations. All needed project equipment came in on a tug and barge.*

## AWARDS AND SERVICES

The Project team received the following awards and special recognitions over the past year:

- The Project Engineer, Neil Folcik, was selected as the Alaska District's 3rd Quarter Outstanding Engineer/Scientist, GS-12 through GS-15.
- The entire Tanaga Island FUDS Team was selected as the Alaska District's 4th Quarter Outstanding Team.

The primary contractor on the project won the 2009 Alaska District Celebrate Safety Award for Contractor of the Year. This competition recognizes those contractors who demonstrate the highest standards of safety and accident prevention while executing their contract work supporting the Alaska District's mission of approximately \$500 million dollars of work annually. This was the first time that an environmental remedial investigation project was selected for this award.

## ACCOMPLISHMENTS

### Accelerated Environmental Cleanup

The Project Team was tasked with the mission of implementing the FUDS program for Tanaga and Ogliuga Islands. The DERP goals were to reduce risk to human health and the environment through implementation of effective, legally compliant and cost-effective response actions. The FUDS program requires projects to progress to various stages by specific dates (i.e., milestones).

To achieve these DERP goals and FUDS requirements, the Tanaga and Ogliuga Islands Team managed and implemented three separate projects simultaneously:

- HTRW project on Tanaga Island
- HTRW project on Ogliuga Island
- MMRP project on Tanaga Island to identify and investigate areas with potential munitions and explosives of concern (MEC) or munitions constituents (MC)

The team designed a complete remedial investigation (RI) and feasibility study focused on delineating the presence of environmental contaminants, unexploded ordnance and buried munitions dating back to World War II. The planning stage involved preparation of detailed, comprehensive plans to

implement a logically complex field effort on these two remote uninhabited islands; ensure site safety; perform soil, water and sediment sampling and testing; assess site risks; and evaluate cleanup alternatives. A concurrent effort used geophysics to evaluate and delineate potential munitions areas over difficult and obstructed terrain, resulting in the collection of 81 miles of transect data.



*Many collapsed historical structures remain on Tanaga Island. The building remnants allowed the field teams to verify identified contaminant sources.*

The team worked diligently to implement cost-saving measures and project efficiencies during development of the collaborative field investigation. This effort included:

- Upfront and proactive identification of potential logistical problems and planning appropriate contingency actions to overcome challenges posed by the remote sites.
- Compliance with regulations and stringent special use permit (SUP) requirements using innovative approaches to project challenges.
- Scheduling the three projects so only one mobilization was required and building a unified team to implement the three projects, including multiple contractors, common work plans, sharing of resources, and sequencing field work to maximize data gathered, minimize risk and avoid any remobilization to recollect data.
- Use of real-time field screening techniques to identify and fully delineate petroleum contamination during the field effort.

As a result, achieving multiple project goals in one field season and fully characterizing the sites during the first RI trip to the islands accelerated the project time to completion. The HTRW projects were executed three to five years ahead of plan, and the MMRP project was executed more than 10 years ahead of plan. Future liabilities and costs have been reduced, because areas with no contaminants or unacceptable risks were identified. Reducing the number of locations requiring further action allowed the FUDS program to plan a well-defined site remedial action. Additionally, the cost savings and other efficiencies accelerated progress to site remediation.

### Innovative Technology Demonstration/Validation and Implementation

Several innovative technologies, including the Ultra-Violet Optical Screening Tool (UVOST®), portable X-Ray Fluorescence (XRF) analysis and Dart System were employed at Tanaga. The challenge of using these technologies was amplified by the remoteness of the site. Due to the remoteness of Tanaga's location, the team evaluated how all field work would be completed without any outside support. This was a challenge because all previously investigated sites with the UVOST® technology have been located on a road system or had nearby towns with regularly scheduled flights.

The Alaska District uses UVOST® to delineate petroleum contamination across the state. UVOST® uses laser-induced fluorescence to identify the presence of petroleum, displaying real-time results on a computer screen. These results provided an accurate view of the location of petroleum in the subsurface, allowing for optimal placement of soil borings and monitoring wells. Additionally, by using UVOST®, the FUDS team was able to investigate 250 percent of the anticipated daily sites, significantly reducing costs for transportation and fuel and greatly reducing the time needed for the investigations. The portable XRF system allowed on-site screening for metal (i.e., lead) contamination associated with batteries and other sources. The XRF sample results were then used to guide collection of samples sent for off-site laboratory analysis. The Dart System quickly screened for polycyclic aromatic hydrocarbons and polychlorinated biphenyls, and was deployed in



Will Mangano, USACE, operating the UVOST® innovative technology. Laser-induced fluorescence is detected by the oscilloscope, which then displays the results on a nearby computer screen in real-time.

sediments, soft soils and beaches where UVOST®, traditional borings and other sampling techniques were difficult to conduct or not allowed by the SUP.

### Partnerships Addressing Environmental Restoration Issues Between DoD and Other Entities

Early in the planning process, the USACE Alaska District realized the multiple phases of the project mandated a unique approach. The lessons learned and changes initiated from combining these projects have been developed into a program management model which will be followed on other remote Aleutian Island projects facing similar coordination and logistical challenges. This approach allows more data to be collected during a field season and saves money by making the most of the mobilization expense, which accounts for a significant portion of the project cost.



The Alaska District FUDS Program has more than 20 other Aleutian Island sites to address in future years. Because of the extremely high site mobilization costs, initial investigations must be as efficient and maximized as possible to limit future cost growths

and achieve program objectives in a reasonable timeframe. The relationships established with the USFWS, the Alaska Department of Environmental Conservation and State Historic Preservation Office are critical to future success in implementing investigations and cleanups in the Aleutians. The trust earned by the team in achieving anticipated outcomes ensures expectations can be met and understood when working at new and sensitive remote locations.

The team solved logistical challenges directly applicable to future work in the Aleutians. Site access required obtaining a SUP from the landowner, USFWS. Operations were restricted based on land use, critical habitat for threatened/endangered species (i.e., seals, otters and Steller's eiders), archeological sites and designated wilderness areas. The field team ensured compliance with the SUP through daily safety briefings, a greatly minimized camp footprint, the restricted use of heavy equipment and use of tracked utility vehicles to protect the fragile tundra environment. The operation of motorized equipment required significant coordination and evaluation by the USFWS. Motorized vehicles were not authorized for use in the wilderness areas of Oqliuga Island, which required field teams to travel by foot from the beach to each sampling location. Due to bird nesting, the field work could start no earlier than 15 July.

**“The logistics for accomplishing these activities are quite extraordinary considering that the cleanups were conducted in a very sensitive and fragile natural environment at geographically remote sites.”**

**- Dennis Druck, U.S. Army Center for Health Promotion and Preventive Medicine**

The Tanaga Island FUDS project investigation approach was also very unique in that a portion of the HTRW remedial investigation was conducted using in-house USACE resources (two USACE-owned and -operated UVOST® units) in conjunction with the contractor. USACE personnel shared the UVOST® results with the prime contractor daily, allowing them to target additional sample



collection and installation of monitoring wells at sites with identified fuel contamination. This interaction between the government and the contractor permitted more efficient use of resources on site and resulted in complete investigations of each area.

Proactive planning, active regulatory agency and landowner involvement, and acceptance of fresh ideas have consistently enhanced the performance of the team. For a team to perform two HTRW and one MMRP RI in a single field season on two remote islands in the Aleutian Chain is an incredible effort. Implementing these projects simultaneously saved the FUDS program more than \$5.2 million in mobilization/demobilization costs alone. Additional future cost savings and avoidances of \$5 – \$15 million can now be realized with an opportunity to combine the remedial action phases of these sites. The accurate and real-time data that the UVOST® provided minimizes subsurface surprises and data gaps.

### **Restoration Advisory Boards (RAB)**

Because the Tanaga and Oqliuga Islands are uninhabited, there is no standing RAB. The nearest community at Adak is 65 miles away, and there has been no public interest expressed in forming a RAB. However, the FUDS project team has engaged the public in their Technical Project Planning Meetings. Public notices were sent to the local communities and the Aleutian Pribilof Islands Association during the public review period of the environmental assessment and finding of no significant impact.



### **Opportunities for Small and Small Disadvantaged Businesses in Environmental Restoration**

Fourteen of the 17 contractors used on the FUDS project were small businesses, including:

- North Wind, Inc. – HTRW Tech Support
- Brice Marine LLC – Barge Transport
- Air Logistics – Helicopter Services
- Alaska Mariner – Marine Transport
- Taiga Ventures – Field Camp
- Tester Drilling – Auger/Direct Push Drilling
- Beacon Occupational – Field Medic
- Bristol Environmental – Explosives Management
- Aleut Corporation – Vessel/Fuel/Lodging
- Dakota Technologies – UVOST® support



- Hammer Environmental – Direct Push Drilling
- Inlet Petroleum – Fuel
- Surveyors Exchange – Sat. phones and Internet
- TTT Environmental Instruments – Sampling supplies and equipment

## Reducing Risk to Human Health and the Environment

All of the known containerized wastes were removed from the site during 2007. The 2009 field effort was undertaken to define the nature and extent of prior releases, it also resulted in locating several batteries and a transformer that had been missed previously. In addition, a mercury switch was removed during the 2009 field season.

Reduction of risk to human health and the environment was realized by scheduling three projects to be performed during a single mobilization. Round trip travel by barge took approximately 20 days, and round trip travel by helicopter, when weather permitted, took six days. Field staff exposure due to travel was also significantly reduced by having a single mobilization. The combined project data will be thoroughly evaluated and risks can be mitigated during a future single removal action.

The USFWS SUP contained environmental mitigation measures the FUDS team followed while executing the project. These measures included:

- No harassment of marine mammals or birds
- Avoiding dozens of archaeological sites located within the project areas which predate Western contact, early Russian contact and later eras
- Helicopters and tracked/wheeled utility vehicles were permitted in the wilderness area on Tanaga



*Field operations were significantly impacted by collapsed bridges, adverse weather and large amounts of scattered debris, requiring a helicopter to sling-load vehicles several miles.*

- No use of motorized equipment in the wilderness area on Ogluga
- Vessels were required to be rat-free. Tanaga and Ogluga islands are rat-free, and once rats are established, they decimate the bird populations
- Avoiding sea lions, which are of grave concern to National Marine Fisheries Service
- Vessel and helicopter operations were forbidden when marine mammals were present

## Green Remediation

During the course of these FUDS projects, the FUDS team's unique approach to their mission resulted in several benefits for green remediation on the project sites. Executing three projects concurrently saved two additional mobilizations and more than 400,000 gallons of diesel fuel and shows the potential of further savings in future remedial actions. MMRP used towed geophysical instruments instead of human-carried rigs, allowing for three to four times the area to be covered by the same number of staff and reducing the field time by several weeks.

The team's hope is once the project site is remediated, the area can be rejoined with the rest of the island which is currently classified as part of the wilderness area of the refuge and subsistence food-gathering activities can continue without risk.

Also, the USFWS SUP did not allow the clearing of vegetation. During prove out of the geophysical approach, it was quickly discovered the tussocks and high grasses made use of magnetometers difficult. After changes in approach, the operators overcame these difficulties and found 100 percent of the test rounds while remaining compliant with USFWS environmental guidelines.



## CONCLUSION

As evidenced by their many accomplishments and achievements, the USACE FUDS Team has demonstrated their excellence in environmental restoration with their use of innovative technologies and inventive cost-saving practices. In the future, other environmental restoration teams will surely be able to employ these same methods in their projects, ensuring no resources are wasted and productivity and safety are maximized thanks to the pioneering efforts of the USACE Alaska District FUDS Team.