



# Arctic Engineer

*"Building and Preserving Alaska's Future"*



*Scrutinizing soil*

See Page 8

**Commander**

*Col. Kevin J. Wilson*

**Deputy Commander**

*Lt. Col. James R. "Bobby" Stone*

**Deputy for Programs and Project Management**

*Phillip L. Hunt*

**Chief of Public Affairs**

*Tom Findtner*

907-753-2522

**Media Relations Specialist**

*Pat Richardson*

907-753-2520

**Editor**

*Curt Biberdorf*

907-753-2721

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Questions or comments concerning this publication should be directed to:  
U.S. Army Corps of Engineers-Alaska District  
Public Affairs Office (CEPOA-PA)  
Attn: Editor  
P.O. Box 6898  
Elmendorf Air Force Base, AK  
99506-0898

E-mail inquiries may be sent to:  
[public.affairs3@usace.army.mil](mailto:public.affairs3@usace.army.mil)

Visit the Alaska District Web site at:  
<http://www.poa.usace.army.mil/hm/default.htm>

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**Cover photo**

**Mike Utley (left), a chemist in the Materials Section, pulls out a sample tube while Bob Glascott, an environmental scientist in the Environmental and Special Programs Branch, operates a compact probing unit to take soil samples near an airfield at Elmendorf Air Force Base to check for possible pesticide contamination. (Photo by Curt Biberdorf)**



# District on path from 'good to great'

"Building Strong" is the new slogan for the U.S. Army Corps of Engineers, and it mirrors the "Army Strong" slogan to remind us that we remain an Army organization at our foundation.

We were fortunate to host Lt. Gen. Robert Van Antwerp, Chief of Engineers and commanding general of the U.S. Army Corps of Engineers, during his visit to Alaska in mid-August. On the trip, he shared his vision of the Corps and talked about the new Corps slogan and what it means.

Lt. Gen. Van Antwerp left with a good understanding of the district mission and our integral role within the state. He also gained a better appreciation for the challenges and remoteness of working in Alaska.

The Chief's campaign plan refers to two books, "Good to Great" by Jim Collins, and its predecessor, "Built to Last" by Collins and Jerry I. Porras. I recommend both books because they go to the heart of what we're trying to accomplish in the Corps of Engineers and the Alaska District.

To go from "good to great" at any level requires the right people, the right thought and the right action. The Chief talked about the four ways to know if we're on the path to success.

First, deliver superior performance every time.

In the Alaska District, we do an outstanding job of delivering projects to our customers. Yet, even the best organizations experience setbacks. The difference between a good organization and great organization is how it deals with this adversity.

Great organizations fix the problem but also repair the broader process as well. We've proven we can do that. To echo the Chief's remarks, to win back your reputation, you go the extra mile and do the unexpected one project at a time, every time.

Second, set the standard for the profession whether it's in engineering, program management, contracting, regulatory, resource management or other career fields. According to the Chief, we must set the standard in our professional organizations. If they develop new criteria for the career field, we need to be on the committees setting those professional standards. Just as we ask our contractors to be certified, we have to be certified.

The Chief said an indicator of "greatness" is when people outside the organization ask for our expertise. The Corps sets the standard in dam safety because every time someone has a problem, they go to the Corps for assistance.

In Alaska, we are the technical expert in arctic design capability for the Corps. However, to become the premier source, we need to clearly define the unique services that we can provide to our customers in this area and seek out opportunities to hone these skills.

A third way to go from good to great is to make a unique and positive contribution to our nation and other countries.

We see this in our support of the Global War on Terror and response to natural disasters.

Alaska District has eight employees deployed to Iraq and six employees in Afghanistan, for a total of 132 employees to date. For hurricane and flood relief, 16 are deployed, bringing the total to date to 139 employees.

Our \$550 million construction workload is not only important to Alaska, it's also making a unique contribution to our country.

The military construction program supports America's warfighters who train and deploy to fight the Global War on Terror while also supporting our national military strategy of having a forward presence to defend against potential enemies in the Pacific region.

Meanwhile, the civil works program is providing navigation, coastal protection and small boat harbors to help communities around the state. Furthermore, as the northern sea ice recedes, our Alaska Regional Ports Study will have broader implications across the country and around the world. Regarding environmental cleanup of former military sites, we are interacting with Alaska Native communities and making a positive impact in restoring the

land to an acceptable condition so that the subsistence lifestyle can continue in many of these areas without concerns about contamination.

With a natural gas pipeline approved and the mining industry looking to expand within the state, our Regulatory Division, the second largest in the Corps, will continue to balance environmental sustainability and economic growth.

The final measure of good to great is to build a Corps to last. We need to hire the right people in the right places and build a winning team from entry-level to senior-level positions in each of our functional areas.

Rather than growing the work force through the infusion of people new to the Corps, there's a tendency for districts to hire from other districts. Instead of solving the problem of staffing shortages, we just move people around.

We need to balance upward mobility with expanding the work force. We need to think long-term and "build the bench" for tomorrow vs. thinking only of today's vacancies. In addition, it's time to re-examine recruitment practices, think broader, change our paradigm and not just look inside, but outside of the organization and take advantage of efficiencies that exist in the hiring process.

In December, our senior leaders will meet to discuss the district's strategic goals and how we plan to implement some ideas that will continue to take us on the path from good to great. We've done a lot of things right in the past, and it's just a matter of building upon what we've achieved to reach the pinnacle of our profession.



Col. Kevin Wilson

A handwritten signature in black ink, appearing to read "Kevin Wilson".

# Second chances

## Disabled veterans sought for contract work in district

By Curt Biberdorf  
Editor

A strong and steady construction workload for the U.S. Army Corps of Engineers-Alaska District requires many qualified contractors, including service-disabled veterans who own small businesses.

Businesses in this category have historically missed opportunities in contract bidding and awards, and consequently are getting more attention from the district in order to boost participation.

“Our approach or program is one in outreach,” said Col. Kevin Wilson, district commander, at a conference for service-disabled veteran-owned small businesses in Anchorage May 16. “We’re here to give this next generation and current generation of service-disabled veterans a second chance. All they need is a little force, a little help here and there, and they’re ready to take off.”

The primary focus has always been meeting the statutory requirement, which has historically lagged behind other small business categories, but that’s less important than some of the other reasons why the Corps wants to hire service-disabled veterans, said Chris Tew, chief of the Contracting Division. He said he expects the district to exceed its goals this year in the service-disabled veteran category.

“This market has been a little elusive for us, so we want to do things like this (conference) to improve on what we know about the capabilities out there,” Tew said. “Identifying and matching contractor capabilities with our requirements are the biggest challenges.”

### Multiple opportunities

Opportunities for contractors are plentiful in the district.

The district has about \$550 million worth of construction or about 7 percent of all construction in Alaska, according to Wilson. In the next five years, the amount is expected to stay in the \$450 million to \$500 million range as Alaska strengthens and grows as a strategic location for national defense.

The district wants to award at least one military construction project to



Courtesy photo

**A \$3.4 million project to build family housing units for National Weather Service employees in McGrath was awarded to Yellowknife/BAC JV. Construction, here seen with pilings for the foundation, started this spring and will continue into the winter.**

a service-disabled veteran-owned business, according to Tew, although most opportunities will be through subcontracts with large companies or by matching a piece of a larger project with a small business.

“In the future, we’re going to try to break them down to the lowest common denominator for their solicitation and award, and we see that as really important to success,” Wilson said.

The district’s civil works program is expected to have a \$40 million to \$80 million budget in an effort to continue to build Alaska’s economy. The mission includes navigation, coastal protection and small boat harbors.

In environmental cleanup, the Formerly Used Defense Sites program has an annual budget of \$15 million to \$30 million and provides subcontracting opportunities for small businesses.

“It’s a growth area if we do it right,” Wilson said. “That’s why we depend on good working relationships with our contractors. If you’re a district that can execute, it’s easier to bring in additional dollars because you can prove that you can do it.”

Military, civil works and environmental cleanup are good, but it’s the International and Interagency Support (IIS) that Wilson and Tew believe offers better potential for growth of small business opportunities.

IIS works on projects for other federal agencies, such as the Coast Guard and National Weather Service, as well as the Denali Commission, which is a federal and state partnership designed to provide critical utilities, infrastructure and economic support throughout Alaska.

Many of these agencies don’t have a large engineering staff in Alaska. The district wants to set up the IIS program so that small businesses can gain feedback and understanding, and can slowly get involved without being overwhelmed with a demanding military construction project, said Wilson.

IIS is a prime area for small business bids because the projects can drop into the \$100,000 to \$1 million range instead of \$20 million.

“In a lot of ways it’s easier to work with small companies,” Tew said. “They’re nimble. They’re interested in advancing their cause. In some ways small businesses have a huge advantage over large businesses.”

### High expectations

Opportunities exist, but contracts awarded to businesses in special socioeconomic categories are not handouts.

Expectations from all contractors are high. Schedules and budgets are tight. Specifications are large. Quality



is wanted. Furthermore, contractors need to know how to operate with other hurdles in The Last Frontier, such as weather, transportation and logistics.

"We need people who are responsive, and that's tough to do in the state of Alaska," Wilson said. "I can't alienate any contractors out there, but I want performance."

Failure is not an option because memories run long. Project success will not be sacrificed to meet or exceed goals.

"You can never live it down," Tew said. "We're looking at issues from five, six, seven years ago when well-intentioned folks made good risk-based decisions and somehow the project didn't go well, and overcoming that to the clients is incredibly difficult."

### Sell yourself

Still, Wilson has spoken with representatives of large businesses at outreach events who have successfully subcontracted difficult projects in remote parts of the state.

"If you're a small business, if you're a service-disabled vet, toot your horn," Wilson said. "Let these big companies know what you can do. They're looking for you. They need it."

Service-disabled veteran-owned businesses can take steps to increase opportunities, such as signing up with the Central Contract Registration and viewing ads in trade publications. They can get involved in advocacy groups, such as the Alaska Veterans Business Alliance, and meet others who know about business opportunities. They also should consider using high-quality photos to present past projects in bid

submissions.

Tew said that increasing this category requires a combination of outreach, market research and advocacy on the organizations that are representing small business interests, and it includes coordination with the Small Business Administration, a partner on every one of these jobs.

One challenge with every project the Corps sets aside is hiring a business to do it because the perception is that it's impossible, Tew said. The keys are to not overwhelm firms and then grow from those initial successes. Clients will come back and continue to do business that way as long as there is success.

John MacKinnon, executive director of the Associated General Contractors of Alaska, was unhappy when the law was passed mandating a certain

portion of a contract be set aside for disadvantaged businesses, but it turned out well for him.

"As a result of that law, I was searching for one (subcontractor) to help fulfill a goal," MacKinnon said. "I built a relationship with that subcontractor that lasted the rest of my time I was in business. It's all about making connections."

First held in 2006, the district plans to hold an annual outreach event to get acquainted with the current market and even include other categories for a larger event.

"Our overarching intent is that we want to continue to build on what we've done in the past and nurture our program and exceed goals and expectations, and if we continue to do that, we'll all be winners," Tew said.



Photo by Curt Biberdorf

**Ivonne Drake, deputy for Small Business, speaks with Kevin Karella, owner of Alaska's Quality Builders, at an outreach conference in Anchorage May 16 for service-disabled veteran-owned businesses co-sponsored by the Alaska District and Associated General Contractors of Alaska.**

## Project forecast expected to exceed goals

The Alaska District is making a deliberate effort to set aside projects in the service-disabled veteran-owned business category, and there's optimism that it will exceed its goal.

The forecast this year is for more than \$14 million in contracts for these businesses, the highest dollar value and workload ever for the district, according to Chris Tew, chief of the Contracting Division. That's as much as has been awarded in the past five years combined. Next year the goal is \$16 million.

"Most of these projects are getting bigger and bigger, and that makes it more challenging for us and certainly for (small businesses) as well because

obviously there are capability and capacity constraints," he said.

So far in FY2008, the district has set aside three projects.

- The \$8.1 million Railhead Operations Facility was awarded to DV Contracting Services, Inc., to build a railhead and track at Fort Wainwright. This is the company's first contract with the district.

- A \$3.4 million project to build single-family housing units for National Weather Service employees in McGrath was awarded to Yellowknife/BAC JV.

- Also new to the district is IPE, LLC, which was awarded a \$450,000 contract to build head bolt heaters for the Missile Defense Facilities in Fort

Greely.

For FY2009, Tew said a military construction project for vehicle parking will have an estimated value of \$12 million, the district's largest ever set-aside for service-disabled veteran-owned small businesses.

Tew credits the command focus, market research to match contractor capabilities with project requirements and teamwork for the successes.

Besides conferences, outreach efforts include quarterly industry meetings in Anchorage and Fairbanks, speaking engagements and collaboration with other agencies on events, such as the Small Business Administration. —CB

# Land renewal

Program assesses, cleans former defense sites across Alaska

Story by Curt Biberdorf



Courtesy photo

**Abandoned drums are often part of the cleanup at formerly used defense sites.**

In Northeast Cape, empty metal drums cover an old military encampment. On the North Slope, a landfill from a Distant Early Warning Site erodes into the ocean. Farther inland, near an abandoned oil drilling test well, barium contaminates the former Umiat Air Force Base.

Messes from these and other abandoned military sites in Alaska once active during World War II and the Cold War are gradually being picked up and cleaned through the Formerly Used Defense Sites (FUDS) program at the U.S. Army Corps of Engineers-Alaska District.

Alaska was near the frontline during World War II, which brought the first rush to construct temporary military installations in the U.S. territory from the northern coast down to the Aleutian Islands.

“There was a mad dash to get out and protect the border,” said Kenneth Andraschko, FUDS program manager. “In the lend-lease program, the Department of Defense built airfields to cross into Russia, and also at the time, the military was building the (Alaska-Canada Highway). So areas were affected all across the state and along the border.”

During the Cold War, the military used the Distant Early Warning Radar, a system of radar stations to monitor Russian activity. White Alice Communication Systems sent radio information to various repeating stations along the coast. Both became

obsolete with satellite communications and improved radio communications.

Many items at these sites ended up staying when the locations were vacated. Among them are oil drums, fuel storage tanks, electrical transformers, batteries, vehicles and buildings. Deterioration has caused leaks or spills of oils, fuels, PCBs and metals, such as lead. All need cleanup.

“It’s like they got their orders and left,” Andraschko said, who has seen piles of debris at some locations. “We don’t own or control any of these sites. We try to investigate and clean up. We’re there to take care of DoD’s responsibility from what was done in the past. It’s an environmental responsibility to clean up these sites.”

Congress created the Defense Environmental Restoration Program in 1983 and assigned the Corps of Engineers to administer the FUDS program to clean property no longer controlled by the Department of Defense.

The Alaska District was one of the first in the nation to award contracts in this program, according to Andraschko, and ranks among the top five states in the nation in the number of sites.

A site is defined as any leased or owned property that the Department of Defense once used and turned over to a new owner before Oct. 17, 1986. New owners could be government at any level, an Alaska Native Corporation or an individual. After 1986, the service that abandoned the site is responsible for cleanup, and sometimes the Corps is hired to perform the work.

A formerly used site can be as simple as a guard post with a .50-caliber machine gun along what is now a heavily populated city street. In that case, no action is necessary because nothing was discarded or discharged.

Of the original 603 sites that have been researched, about 150 sites actually needed additional investigation and possible cleanup work for hazardous or toxic waste, according to Andraschko. The number of properties that need work is now down to 73.

“How many projects are left can be confusing,” he said. “It could be viewed as 145 projects or 73 properties. As new information is attained, say a map showing a site once had multiple bombing ranges, the number of projects can change, but the property location has not changed.”



Courtesy photo

**A White Alice Communication Systems tower at Northeast Cape on St. Lawrence Island tumbles over during cleanup of the former Air Force site in July 2003.**



Every year the program establishes how much work is left to complete and the cost. Now it's almost \$900 million, which is about evenly split between hazardous and toxic waste removal, and military munitions response, which is tasked with removing ammunition and ordnance.

The goal is to complete cleanup of hazardous and toxic waste sites by 2020. To meet that goal would require now about \$35 million-\$40 million per year. Much depends on increasing fuel and labor expenses.

"Our logistics costs are going through the roof," Andraschko said. "It's always a battle to get enough money. With all of our remote sites, it's costly. To get a barge out to an island and back may cost \$500,000 to \$1 million, and the crew hasn't done anything yet."

The military munitions response cleanup has no timetable in Alaska. FUDS officials want to investigate what is there and prioritize sites for cleanup by January 2009.

The Corps meets with the Environmental Protection Agency and the Alaska Department of Environmental Conservation (DEC) to rank the list. It's a balancing act

between risk level and available funds.

"In the active management plan, with consultation among the DEC and various stakeholders, everybody wants to be first on the list, but we have \$15 million-\$30 million annually to treat a \$900 million wound," Andraschko said.

Restoration begins with seeing what's on and under the ground using a scanning tool and then conducting a feasibility study that looks at the potential solutions—even the chance that remediation could make matters worse—before proceeding to do all, some or none of the remediation.

"Sometimes an option is to leave it alone," Andraschko said. "We have to determine the risk level and who or what might be in danger. The more remote and less risky, the longer it takes to get to the site and determine what to do with it. Some sites around the road system are the easiest to get to and are most risky because the population that exists there."

Site cleanup for hazardous and toxic materials is contracted and starts with a containerized waste project to remove intact drums, transformers and anything else holding hazardous

materials. The next type of project is removal of hazardous and toxic waste contamination from leaks, drips and spills into the soil and water. A rare project is to demolish buildings and remove debris.

"It's under very special circumstances and criteria that we (demolish and remove buildings.) This is about the only time when we remove lead-based paint and asbestos," Andraschko said.

A combined effort at the district is involved from the 10-person FUDS team to Environmental Engineering, Environmental Resources, Geotechnical Center, Regulatory, Real Estate and Contracting to get the job done, and there's a record of success.

In the past decade, the program has received several national-level awards. The Annette Island Project Delivery Team received the Secretary of the Army Environmental Award for environmental restoration, and the Fort Tidball FUDS team won the Secretary of the Army Environmental Award for cultural resources management. The Buskin Beach Tar in Freshwater Area FUDS team received a National Pollution Prevention Roundtable Most Valuable Pollution Prevention Award.



The Cape Chiniak Tracking Station on Kodiak Island, which was contaminated with PCBs and petroleum products is shown above during remediation and below after the site was restored. (Courtesy photos)







Photo by Marilyn Aber

(Left to right) Art Gelvin and Stephanie Saari, both engineering technicians at the Cold Regions Research and Engineering Laboratory Fairbanks, Alaska, office, and Tommie Hall, electronic technician at the Hanover, N.H., office, install control and power cables to a 3,000 gallon per minute floating pump before hooking up a discharge hose at Eagle River Flats.

# Marsh cleanup finishes well ahead of schedule

**By Rachel Walls**  
Public Affairs Office

In the early 1980s, an abnormal amount of waterfowl carcasses were mysteriously appearing at Eagle River Flats, an estuarine saltwater marsh located on Fort Richardson. An estimated 1,000 waterfowl were dying annually during the migration season for unclear reasons.

Through a joint effort of the U.S. Army Corps of Engineers-Alaska District and the Cold Regions Research and Engineering Laboratory (CRREL), the cause was found and now remediation is nearly finished in less than half of the original 20-year schedule.

After several years of research and ruling out other causes, scientists determined in 1990 that the waterfowl, mostly swans and ducks, were ingesting particles of white phosphorus, a chemical used in artillery smoke rounds.

Since the late 1940s, Eagle River Flats has been used as the Army's primary munitions impact area on

Fort Richardson. However, white phosphorus was an unexpected munitions contaminant. Under normal conditions, the white phosphorus in smoke rounds oxidizes in the air and leaves little trace behind.

However, the wet environment at Eagle River Flats allowed a significant amount of white phosphorus to be deposited into the saturated bottom sediments in the ponds and was consequently consumed by waterfowl.

By 1994, the Environmental Protection Agency (EPA) determined that Eagle River Flats was subject to the requirements of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), which called for long-term remediation to reduce or eliminate the hazardous substances. It was the first site in the nation under CERCLA where the environmental risk rather than the human risk drove the cleanup, according to the EPA.

Over the next few years, the team conducted studies to determine the best method of remediation. After initially dredging and draining, pond pumping

proved to be the more effective and least disruptive means of removing the white phosphorus, so CRREL established a six-pump system. Pumping the ponds allows the white phosphorus to dry and oxidize, eliminating the threat to waterfowl. Pumping alone successfully remediated 90 percent of the ponds.

"We did five years of active remediation, and then we scaled back to focused remediation using three pumps to concentrate our efforts in specific areas that were still considered contaminated," said JoAnn Walls, project manager with the Alaska District.

The remediation was extremely successful because of cooperation among multiple agencies, according to Charles Collins, CRREL project manager.

"I think (the multi-agency cooperation) was very beneficial to getting the project done since it was such a complex project," said Collins. "Understanding the saltwater marsh environment is very complex. I think it was a great working relationship."

The project was a team effort with





Courtesy photo

**Assisted by Company C, 84th Engineer Combat Battalion (Heavy), CRREL workers place gravel to cap small ponds at Eagle River Flats. These caps prevent waterfowl from feeding in areas that are contaminated with white phosphorus but containing water amounts too small to pump.**

numerous agencies involved. CRREL became involved because of its expertise in munitions analysis, and provided the primary project engineers directing the cleanup.

Alaska District provided contractual support to CRREL, which included securing helicopters to assist with remediation and unexploded ordnance (UXO) technicians who cleared the area for workers by disposing of all known UXO that builds up during the winter when the grounds are used as an impact area.

Meanwhile, engineer soldiers from the active Army and Reserves, working under the CRREL Fairbanks office, created sumps and drainage ditches used by the pump systems.

The Directorate of Public Works at Fort Richardson, the primary customer and landowner, was responsible for overseeing remediation and ensuring that cleanup occurred, while the EPA and Alaska Department of Environmental Conservation regulated the project. They ensured that cleanup met the objective of protecting human health and the environment.

Finally, the project depended on the cooperation of the U.S. Fish and Wildlife Service to track the cleanup success by taking an aerial count of ducks every summer and fall.

When the record of decision was signed in October of 1998, which marked the beginning of remediation, the 20-year goal was to reduce the waterfowl mortality rate to 1 percent. That goal was met in the 2006 season, 12 years ahead of schedule, and has

since been maintained. In 2007, the U.S. Army Corps of Engineers reported 35 waterfowl fatalities, or 0.7 percent of the total fall population, based on mortality monitoring using radio-collared wild mallards.

“In one sense it seems like we’ve been doing this forever, but we’re certainly reaching the remedial goal much sooner than we expected,” said Collins. “I think it’s pretty amazing, considering the extent of the remediation. I think we’re all pretty amazed that we’ve been able to get as far as we have.”

Because of the discoveries and efforts of the Alaska District and CRREL, the rest of the nation as well as many other countries have stopped firing white phosphorus into wetlands.

There are still small pools that are large enough for ducks to feed in but too small to feasibly pump. In these cases, trucks dump gravel over the entire surface to cap these areas during the winter, when the marsh is frozen and can support the vehicles’ weight. During the summer, CRREL personnel test those capped areas to ensure that no hazardous areas are exposed.

“The major remediation is complete,” said Collins. “The capping of the last remaining hot spots is almost complete, and we’ll finish that up next winter. We’re now in the long-term monitoring phase of the project.”

That monitoring includes continued white phosphorus sampling of the marsh, which is scheduled to continue through 2012.

“We’re using just one pump to lower the water level to make it safer and easier to do the sampling work,” said Walls.

A ground-based waterfowl mortality study on transect paths will also continue annually through 2012 and then at five-year intervals.

“There may be a time in the future where we go back and do more remediation based on long-term monitoring, but for all intents and purposes remediation is complete,” said Collins.



Courtesy photo

**CRREL chemists sample the perimeter of the gravel caps for traces of white phosphorus. These caps are placed in winter with gravel secured by the Alaska District.**

# Regional Geotechnical Center

Soil exam serves as starting block in construction, environmental restoration

Story and photos by Curt Biberdorf



Sean Benjamin (left), a chemist in the Materials Section, pulls a plastic sleeve from a sample tube held by Bob Glascott, an environmental scientist in the Environmental and Special Programs Branch, during a soil sample investigation at Elmendorf Air Force Base to identify potential pesticides on a construction site.

Since May 2007, the U.S. Army Corps of Engineers-Alaska District has operated and maintained the Pacific Ocean Division's (POD) Regional Geotechnical Center (RGC). The center serves the Alaska District and supplements existing geotechnical capabilities of headquarters and all districts under the POD when requested.

"The goal is to enhance the geotechnical services provided to POD partners and customers throughout the Pacific area, not to take work from the sister districts," said Jim Pekar, chief of the RGC.

Operating within the Engineering Services Branch headed by Laura Walker, the types of projects the RGC is capable of supporting are as diverse as the region, whether they're new family housing, a runway or a small boat harbor breakwater.

The center maintains a full staff of geotechnical engineers with broad experience in geotechnical investigations, foundation design and related construction. It provides independent technical reviews and other technical consultation services to POD districts on a reimbursable basis.

## 'Dirty' Job

Composed of the Soils and Geology Section and Materials Section, the

center's work ultimately leads to recommendations on how to proceed on a foundation design for a proposed construction site or restore contaminated military sites.

At stake is the health and welfare of people involved in the construction and use of a structure, the surrounding environment and the integrity of the structure itself.

The team wants to know the conditions below the ground to qualify

construction that takes place above it.

"If you don't know what's there, you have no basis for the design," said Chuck Wilson, chief of the Soils and Geology Section. "If you can't design a good foundation, you're not going to have a good structure."

In Alaska, permafrost, high water tables and seismic instability are three conditions frequently encountered that can create problems.

"We classify the soils on site for engineering purposes while working closely with the Materials Section as they determine the chemical characteristics of the on-site soils," Wilson said.

Engineers in the Soils and Geology Section first research previous land use and conditions, often using historic aerial photos, and then drill for soil samples in the area to be developed.

The Soils and Geology Section owns and operates two drill rigs that enable the Geotechnical Center to obtain soil samples, install monitoring wells and check the soil's ability to withstand forces imposed by structures and seismic activity.

The rigs have the capability to drill up to 200 feet and are mounted on tracked carriers enabling them to travel over just about any type of terrain. For environmental projects that don't



Sean Benjamin, a chemist in the Materials Section, records a soil sample during a site investigation at Elmendorf Air Force Base.



require structural analysis, a compact probing unit is available from the district's Environmental Engineering Branch. For harbor projects, samples are obtained with a drill mounted on a barge.

With a separate portable heater, the crew and equipment can extend their work schedule into the winter although operations are shut down at about minus 30 degrees.

When the workload is more than the staff can handle, the work can also be contracted.

### Multi-purpose

The Materials Section was once an in-house laboratory for testing concrete, asphalt, steel and other construction materials until the Corps outsourced all laboratory work in the 1980s, according to Thomas Oh, chief of the Materials Section.

Airfield runway, taxiway and apron pavement design, inspection and material specifications remain a specialty in the Alaska District because of a different set of standards that need to be met in an arctic environment where cracks and frost heaves are commonplace.

A large part of the Materials Section's work is to identify natural and manmade contaminants in the soil. The most common contaminant is petroleum products, according to Oh, but others are PCBs, solvents, pesticides, herbicides and metals.

The Materials Section has a key role in cleaning former defense sites. Chemists research records of the site and then assess its condition. An Electronic Data Mapping System linked into a Geographical Information System provides a history of an area.

If they learned that fuel tanks were once buried at an old site, an investigation would be necessary to determine if the tanks were safely removed without affecting the ground.

Wells drilled on the affected site are used to check chemical composition of groundwater to monitor the contamination level. Ideally, contamination decreases to the point where the site is declared clean, Oh said.

"That's how you can have a publicly-defensible site," he said. "If you're getting any kind of contamination, you can't close. It can take dozens of years depending on how good the remedial technology is."

Natural attenuation is another option. After looking at the risk, nothing may be done if there is minimal impact in



**A jack-up barge shipped to Alaska rests in Cook Inlet north of the Port of Anchorage in September 2007. The barge enabled geotechnical engineers to collect soil samples on a stable platform to prepare for dredging for the port's future expansion. Tidal fluctuations in the inlet can approach 38 feet.**

a remote area. It depends on what the goals and objectives are going into the project.

Once construction, demolition or both are approved for a project, industrial hygienists define chemical and physical hazards and recommend how to guard the health and safety of workers and future occupants.

They research and write a document to ensure contractors properly remove and dispose of the substances. Lead and asbestos are the most common hazards.

"This is more proactive than reactive. We're trying to build without any risks and avoid having to replace buildings," Oh said.

They also support the Alaska District's Safety and Occupational Health Office with medical surveillance and monitoring of employees to ensure the government is doing its job of providing a safe working environment.

### Examination

Soil samples are sent to contracted laboratories for analysis. They are classified based on particle size, plasticity, natural water contents, and also examined for the presence and concentration of contaminants. In some cases, sophisticated testing for strength and consolidation characteristics is necessary.

"It's especially important with breakwater projects to evaluate the stability, where failure would mean 40-50 feet of rock sliding out into the ocean." Wilson said.

For site remediation, the Materials

Section sends water and air samples along with soil to a laboratory to provide the data to determine the appropriate action.

When physical and chemical lab testing is done, chemists and geotechnical engineers write separate reports. The geotechnical report can be an engineering analysis and foundation recommendations for the structural designer or a report of the conditions found at the site.

The engineer can recommend adjusting foundation requirements, improving the site to eliminate the conditions, modifying the project and even finding a new site, in which case the process starts again. The chemical data report documents the chemical properties of the on-site soils.

Geotechnical investigation reduces the risk of structural damage, chances of design changes during construction and probability of legal claims. Chemical results are used to define the risk to people and the environment, and provide information on what to do about it.

"There could be no contamination or definite contamination," Oh said. "The primary concern is to have legally-defensible laboratory data. We're making sure of what's out there, that lab samples have appropriate quality control and that the data is usable."

Ultimately, how a building or cleanup project proceeds is in the hands of the customer. "We make recommendations," said Oh. "The client determines what to do."

# Engineer excels in water projects

Story and photo by Curt Biberdorf

Two Fortune 500 companies wanted to hire Ken Eisses after he earned a bachelor's degree in civil engineering from the University of Washington in 1981. Instead, he took a different path.

The chief of the Hydraulics and Hydrology Section had seen a classified ad in a local newspaper for engineering positions at the U.S. Army Corps of Engineers-Alaska District and his sense of adventure took over.

"It sounded like something exciting. The other job offers were good and offered more money, but I thought this would be a better opportunity," Eisses said, a native of Poulsbo, Wash., who started in July 1981 and thought he would stay for only three years.

Twenty-seven years later and still satisfied with his work, it's safe to say he made the right decision.

"It's been a lot of fun. They pay me to go out and build harbors in the water," Eisses said. "It's fun also seeing the coastal sites in the state. There's always something to learn and find out and push the envelope of knowledge of coastal engineering. It's never routine or the same here."

He started in the Engineer-in-Training program that allowed him to rotate through and experience the district's different functional areas until he landed a permanent spot in the Hydraulics and Hydrology Section.

Early in his career, he worked on the Snettisham Hydroelectric Project and Chena River Lakes Flood Control Project. Later on, his focus became creating plans and specifications for harbors and coastal revetments.

When Eisses attends conferences, he senses that engineers in other districts envy his workload after learning about the interesting projects he works on in Alaska.

One memorable project outside of Alaska was in 1998 when he traveled to Korea as part of a team sent to determine what changes were necessary to prevent flooding that had occurred at three Army posts.

A highlight for him was attending a course in the Corps of Engineers Coastal Engineering Education Program from 1990-1991. Through the training he earned a master's degree in ocean engineering from Texas A&M University.

He was promoted to section chief in 1995 where he mentors eight other engineers and "helps them get smarter than myself," he said.

Another achievement that surprised him was the Army's highest civilian award, the Decoration for Exceptional Civilian Service, which he received April 15 at a Pentagon ceremony. The award cited his leadership in designing and help in constructing harbors and coastal projects as well as in conducting physical modeling on the Port of Anchorage expansion project.

"It was awe-inspiring being around the other people who received the award at the ceremony," Eisses said.

Eisses credited the people he works with at the district and at the coastal and hydraulics laboratory at Vicksburg, Miss., for the success.

"It's nice to see harbors get built. They are well-received and needed in the state of Alaska," he said.

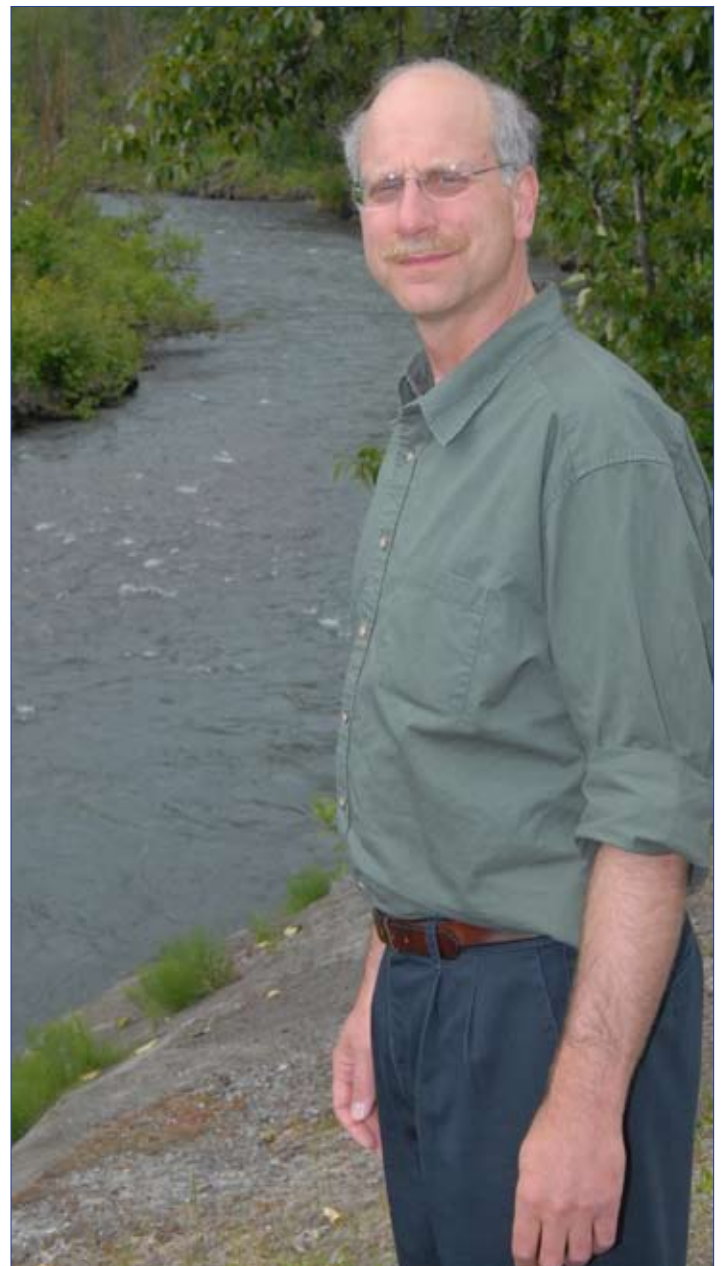
"I enjoy working with Vicksburg and the things we've learned with their assistance. We're starting to understand the wave climate on the Bering Sea. That's important for

constructing projects."

Away from water projects at work, he enjoys being on the water boating and fishing during summers in Alaska. He tries to travel every three years to Southeast with his boat to load up on Dungeness crab. He's also a regular player in the lunchtime basketball league on base.

He and his wife, Betsy, a math teacher at Wendler Middle School in Anchorage, have two daughters, Kate, 22 and Amy, 20 and a son, Jake, 15. It may be too soon to know where his children will settle, but his plan is to remain in Alaska after retiring.

"There's no better place to do the kind of rewarding outdoor activities my wife and I like to do," he said.



Ken Eisses, chief of Hydraulics and Hydrology Section, stands next to Ship Creek on Elmendorf Air Force Base.



# ACTIVE IN ALASKA



Miguel Herrera, electrical engineer in the Engineering Division, plays horseshoes at the district picnic at Otter Lake.



Mike Macmillan, Department of the Army intern, displays a steelhead trout caught from the Situk River during a trip to Yakutat.



Leanna Dagley, accountant in Resource Management, walks down the dock after paddleboating on Otter Lake with her grandson, Dylan, 3, and Morgan Sailor, 8, daughter of Scott Sailor, accountant in Resource Management, at the district picnic June 19.



Peter Lam, structural engineer in the Engineering Division, holds a king salmon caught at Ship Creek in Anchorage.



Tom Gordon, Equal Employment Opportunity officer, stops at a point of interest during a motorcycle tour of Alaska.





Photo by Curt Biberdorf

Mike Suprenant, contracting specialist in the Contracting Division, guides his team to the finish line of the ceremonial start of the 2008 Iditarod Sled Dog Race. The ceremonial portion begins in downtown Anchorage and ends at the Bureau of Land Management Campbell Creek Airstrip. Dogs and racers then prepare for the official start the next day in Willow March 1.

# Mush rush

## *Sled dog racing passion leads to employee's first Iditarod*

By Curt Biberdorf  
Editor

Pressing on through stretches of nasty terrain and weather, occasional disorientation and a damaged sled that lost its sense of straight ahead, Mike Suprenant was on track to finish his first running of the “Last Great Race” until he experienced unfixable “engine” trouble.

Twelve days into the race and with fewer than 90 miles left in the 1,112-mile journey to Nome, the rookie musher and contracting specialist at the U.S. Army Corps of Engineers-Alaska District withdrew from the 2008 Iditarod Sled Dog Race when he noticed his lead dog had frostbite. With his starting team of 16 dogs already trimmed to nine, the race for him was over.

“Even with all the protection of a coat and boots (on the dogs), these things happen,” said Suprenant, disappointed at the turn of events. “I think it was really bad luck.”

### Freight haulers

The Iditarod is Alaska’s most famous race. It reconstructs the freight route from Seward to Nome and commemorates the role sled dogs played in the settlement of Alaska. Iditarod mushers travel from checkpoint to checkpoint beginning in Willow just north of Anchorage to

Nome in the northwest part of the state similar to what freight mushers did before airplanes largely took over the job of transporting cargo in the 1920s.

The last major shipping feat along the Iditarod trail was in 1925 when 20 mushers organized their dog teams and raced to deliver a diphtheria serum from Nenana to Nome that arrived in time to prevent an epidemic. The mushers covered almost 700 miles in about six days.

Dog teams continued to be popular for local transportation and daily work, particularly in Alaska Native villages, until the 1960s when the “iron dog” or snowmobile—snowmachine as it’s known in Alaska—made working dog teams nearly obsolete across the state. At Denali National Park, sled dogs are still used during the winter to patrol the inner 2 million acres of designated wilderness where mechanized vehicles are prohibited.

The era of practicality has mostly transformed into recreation. Sled dog rides are a tourist attraction, sled dog pull competitions are held at winter festivals and sled dog teams are trained to compete in races.

The first Iditarod Trail Sled Dog Race to Nome was held in 1973, and a dozen other major races are held across the state every winter.

For Suprenant, 44, his fascination

with sled dog racing began after he moved to Alaska while in the Air Force. He started as a volunteer assistant for the Iditarod when he was stationed at Elmendorf Air Force Base and became engrossed in the sport.

He shuttled dogs to the race start and handled dogs flown back to Anchorage. He then worked along the trail at checkpoints in Nulato, Unalakleet, Galena, McGrath and different points along the way in communications, where he recorded and relayed times of the teams to race officials.

“I learned a lot and could see how front-runners were doing,” he said.

Now Suprenant benefits from volunteers, including Becky Breeding in the Engineering Division and Capt. Matt Johnson in the Southern Area Office, who handled dogs for him at this year’s event. Periodically, district employees also help by donating old salmon lingering in their freezers to help feed his pack of 22 Alaska huskies at his home in Chugiak.

### Team building

After a 20-year career, he retired from the Air Force and initially worked in contracting at Fort Richardson before joining the district in 2005.

Suprenant started casually running a few dogs with an old sled, and they eventually grew into a team that could



compete. He purchased a dog carrier truck that wears the license plate "FSTDOG", and he started a Web site, [www.suprekennels.com](http://www.suprekennels.com). He finished his first two races, the 2005 Sheep Mountain 150 and 2006 Knik 200, and then took sixth place in the 2007 Yukon Quest 300, which qualified him for the Iditarod. Preparing for the Iditarod was the hardest.

"It's tough to train for this race and still work full time," he said.

Training started in September and didn't end until the official race began March 2. Finding a nearby place to run the dog team was also difficult. Fort Richardson had been closed because of ice and then because of wolves. Better training areas are farther away in Trapper Creek or Willow. Instead, most of the time was spent on a 5-mile track near his home, which was congested with other teams also training.

After the racing season, he lets his team loose in his fenced yard during the summer where they become like house dogs.

### True grit

Although Suprenant had seen some of the course during his time as a volunteer, his first Iditarod was still an adventure full of mystery.

Once under way, much of his progress was made at night. His team demanded constant attention and scheduled breaks every few hours to feed the dogs a diet of meat treats or wet dog food.

"You have to pump as many calories into the dogs as you can," he said. "It's almost scary how skinny the dogs get. It takes awhile until they reach a turning point and start eating."

His progress was slowed when half of his dogs suffered intestinal trouble in Ruby. Then the other half got sick in Nulato. He waited until they recovered and regained their appetites before continuing to race.

His average race speed no more than 8 mph, he watched his dogs "disappear" as he passed though snow ruts up to his head at Finger Lake and applied the brake constantly descending the jagged steps from Rainy Pass into Rohn. He learned the trail is rough and that bridges are in poor condition.

"You can't go by mile markers on a map," Suprenant said. "You go up some hills, not super high, but it just keeps going uphill past Cripple. It's difficult to know where you are, but the dogs are pretty good at following others' tracks."

The race was smooth from Nulato to Elim. His most intense stretch was

on the way to Golovin. The dogs were tired. They were climbing to about 1,200 feet in whiteout conditions. At Golovin, he decided to scratch for the welfare of his dogs after he noticed frostbite on his leader, Tim.

Tim didn't have the only damage. At Rohn, Suprenant's sled slammed into a tree stump hidden in the snow and became stuck. His sled was destroyed. His snowsuit had 26 tears. He chipped a tooth biting into a frozen candy bar. Yet, he persevered.

"I had to stand on the sled in such a way to make it ride straight," Suprenant said. "A couple of times I thought I was

going to fall off the sled because it was so tiring. My back was killing me, but I wasn't going to stop because of a bad sled."

Despite the costs in time, money and pain, the desire to finish the Iditarod remains. He's registered for next year's race.

"My main goal was to have a good time. It's pretty fun," he said. "Next year, the team will be more mature, and I can probably push a lot harder. Everything had gone so well only to have everything pulled out from under us. We gave it all we had. It's all we could do is to try our best."



Photo by Becky Breeding

**Rookie musher Mike Suprenant, Bib No. 46, pets a member of his dog team before the official start of the 2008 Iditarod Sled Dog Race.**



U.S. Army Corps of Engineers file photo

## ***District flashback***

**Twin geodesic-domed structures at four Minimally Attended Radar (MAR) sites received a Department of Defense engineering and industrial design award in 1986. Alaska District awarded the \$36.3 million project in 1982 to build support facilities at Indian Mountain, Tatalina, Sparrevohn and Cape Romanzof. The project designed permanent, self-contained shelter for a new generation of radar equipment, vehicles, supplies and living space for personnel. Technological advances had automated radar equipment and reduced crews at the remote stations from almost 100 to about 15 technicians at each site.**

**U.S. Army Engineer District-Alaska**

**Attn: CEPDA-PA**

**P.O. Box 6898**

**Elmendorf Air Force Base AK 99506-0898**