

Alaska District, lab partner on cold regions work

Subzero temperatures and limited daylight shorten the work season in northern regions. Add permafrost soil that is part of a fragile environment and remote sites, and the challenges in working in cold regions can be daunting.

Formed in 2008, the Cold Regions Directory of Expertise (CRDX) strives to meet customer and partner needs by effectively integrating the unique research and development expertise of the Cold Regions Research and Engineering Laboratory (CRREL), and the strong practical technical knowledge and experience of the Alaska District to provide applied research and innovative solutions in engineering, construction and operations in cold regions.

The partnership between CRREL and the Alaska District is based upon a team approach with free and open exchange of information and technology, with emphasis on technical excellence and a strong customer orientation.

Alaska District maintains state-of-the-art technical expertise for site investigation and analysis, and design and construction of projects that are affected by the special demands of the cold regions environment. CRREL maintains the latest technical expertise for research, science and engineering knowledge and technologies that apply to cold regions.

CRREL is based in New Hampshire but has offices in Anchorage and Fairbanks. CRREL and Alaska District have a long history of working together to solve cold regions engineering and environmental problems, with projects such as the radar site at Clear Air Station, military hospitals, coastal village shore protection and environmental compliance.

In the Missile Defense Agency's Alaskan missile program, CRREL and Alaska District successfully worked with Huntsville Engineering and Support Center in Huntsville, Ala., to support the missile program facility and siting integrated product team for design and construction of an operational missile field in Alaska.

At Eagle River Flats Firing Range at Fort Richardson, CRREL was the technical lead for the U.S. Army-Alaska for a white phosphorous analysis and remediation project while Alaska District provided logistical support for operations in the geographic area.

The CRDX is available to serve U.S. Army Corps of Engineers districts, Department of Defense agencies and other federal agencies, state agencies, local government, tribes, industry, academia, non-government organizations and the international community.

Several recent and ongoing activities are wetland delineation and environmental support, the Kenai River Boat Wake Erosion Study, and personnel exchanges with an engineer intern working at the CRREL-Anchorage office and research engineer detail serving at the Alaska District.

In Barrow, the northernmost town in the United States, the CRDX is working to protect the town from shoreline erosion and flooding from storms that sweep in from the north and west.

An emerging opportunity exists with the Permafrost Center in Fox. One goal is to enhance CRREL's permafrost tunnel facility, which is a test bed for development of new geophysical permafrost mapping techniques and is a resource for enhanced basic research on permafrost-related topics of national significance.

Another emerging opportunity is creating infrastructure in an increasingly accessible Arctic passage because of climate change. The goal is to develop more sustainable military and public infrastructure with Coast Guard and Navy bases north of Nome, ports of refuge for ships, and supporting state and industry infrastructure.

Alaska District's geographic mission area provides many opportunities for enhanced execution through application of cold regions technologies developed at CRREL. The CRDX partnership

focuses on development of major programs that have broad impact on the Corps of Engineers and support to Corps field-operating activities and other agencies requiring cold regions science and engineering expertise.

The board of directors, composed of the director of CRREL, and the Alaska District commander, designated representatives or both, consults annually to determine and validate the effectiveness of continuing the CRDX partnership.

#### Cold Regions Directory of Expertise capabilities

1. Design and construction of facilities and utilities, roads and airfields
3. Flood control
4. Navigation
5. Snow, ice and permafrost engineering
6. Environmental issues and services
7. Contaminated site assessment and remediation
8. Offshore and coastal engineering
9. Polar research, engineering and logistics
10. Infrastructure operation and maintenance
11. Water supply, wastewater treatment and solid waste management
12. Remote sensing and geographical information systems
13. Northern latitude habitability, rural sanitation and regional studies
14. Engineering and materials performance and fabrication
15. Geotechnical and geophysical engineering
16. Information resources and services