



Environmental Restoration News

U.S. Army Alaska

Fort Richardson

Volume 9, Number 2

November 2003

RAB Update

The Fort Richardson Restoration Advisory Board (RAB) has met twice since the last publication of the newsletter. RAB members were invited to attend a fieldtrip on post on June 26, 2003. A regular RAB meeting was held on October 16, 2003, at the Russian Jack Chalet.

The focus of the June 2003 RAB fieldtrip was on the Army's deployment of their Rapid Response System (RRS) for the treatment of chemical agent identification sets (CAIS). Several RAB members and approximately 20 community and tribal members participated in the fieldtrip. Attendees first met in a conference room on post where the Army provided a brief overview of the RRS program. The fieldtrip began with a stop at the laboratory trailer located near Building 986. Several small groups were taken into the trailer and were given an explanation of the service the laboratory provided for the RRS operation.

The second stop was at the location of the RRS trailers, located in the secured ammunition storage area on post. The trailers were set up outside the bunker that has acted as the storage facility for the CAIS. The area was completely fenced and secured. Several small groups were escorted into

each trailer and given an explanation of how the equipment operated and what function it served in the demilitarization process.

The RRS began operations in early July, and treatment of the CAIS was completed by early August. All residual wastes generated during treatment of the CAIS have been shipped off-site for disposal at a facility in Texas.

A RAB meeting was conducted on October 16, 2003, at the Russian Jack Chalet. The focus of this RAB meeting was Operable Unit B (OUB), Poleline Road Disposal Area. Updated information about OUB has been included in the Site Updates article below.

The next RAB meeting has been tentatively scheduled for Thursday, January 22, 2004.

ACRONYMS

RAB

Restoration Advisory Board

RRS

Rapid Response System

CAIS

Chemical Agent Identification Sets

OUB

Operable Unit B

CERCLA

Comprehensive Environmental Response, Compensation, and Liability Act



An Army Representative explains some of the features built into the outside of the operations trailer to a RAB member and representatives from local Native Groups.

Site Updates

Three-Party Agreement or CERCLA Operable Unit Sites

Operable Unit B

Poleline Road Disposal Area

This update on OUB includes information that was presented at the October 2003 RAB meeting.

The Poleline Road Disposal Area is located in the northeast portion of Fort Richardson, north of the Anchorage Municipal Landfill. The site is bounded by an active training area. The Poleline Road Disposal Area was historically used to conduct chemi-

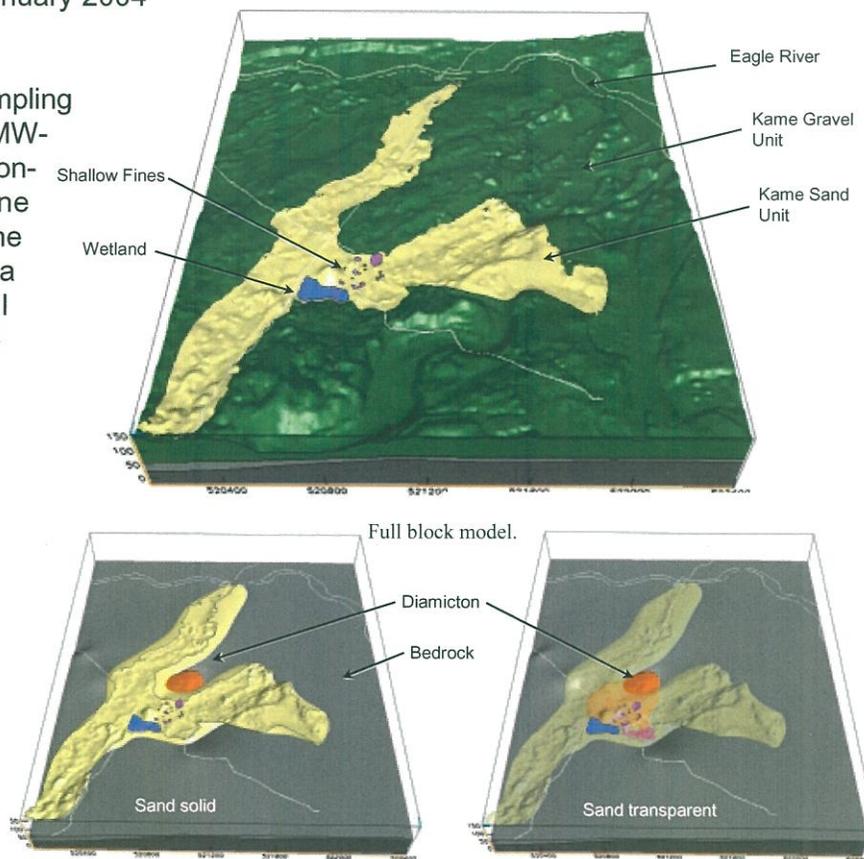
cal demilitarization and disposal of CAIS. The resultant contaminants from the chemical demilitarization process are chlorinated solvents, which have affected soil and groundwater. Several treatability studies (primarily six-phase soil heating) were undertaken at the site that comprised the active phase of remedial action. Active remediation was considered complete in 1999 when the last treatability study was conducted. The six-phase soil heating treatment effectively reduced contaminants in soil to levels less than cleanup standards. The treatment reduced groundwater contaminant levels by 90 percent. Groundwater contamination is still present at the site at levels exceeding cleanup goals. The site has moved into a long-term monitoring phase that has been characterized by continued groundwater sampling, installation of additional groundwater monitoring wells, and hydrogeologic modeling of the entire site. The fall 2003 groundwater sampling event is complete, and the data report is currently being reviewed by the Army and regulatory agencies. Results will be made available to RAB members at the January 2004 RAB meeting.

Preliminary results of the fall 2003 sampling event surprisingly revealed that well MW-14, which previously had been dry, contained free-phase tetrachloroethene (PCE) and trichloroethene (TCE). The Army intends to investigate the area around MW-14 by installing four soil borings around the well to determine whether there is residual contamination in the soil surrounding the well. The results of the borings will determine whether continued monitoring is all that is warranted or whether additional remedial action is necessary.

The Army is proceeding to install a fence at the site to limit access to critical institutional control areas where Japanese cluster bombs were reportedly buried. Currently, the site is designated as limited access; however, installation of a fence will ensure that people do not have direct access to critical areas. An electromagnetic (EM) was used to delineate the boundary of

the area that requires fencing; however, EM results indicate that the entire area contains buried metallic items. Because of the buried metallic debris, the Army is reconsidering the boundaries of the fence installation. The fence was scheduled to be installed during fall 2003; however, it will not be installed until late spring 2004.

Cold Regions Research and Engineering Laboratory (CRREL) has developed a geologic model (Earth Vision Model) that shows a three-dimensional (3-D) representation of the geology, hydrogeology, and contaminant distribution at the Poleline Road Disposal Area. CRREL has been investigating the geology of the Poleline Road Disposal Area for several years. The objective of their investigation was to develop a 3-D model of the subsurface features to show groundwater flow and contaminant flow. The model extends from the edge of the landfill (upgradient of the site) to Eagle River (downgradient of the site).



Example of Earth Vision Model 3-D Image for Poleline Road Disposal Area.

CRREL performed a series of geologic surveys in 2001 and 2002 to profile the subsurface. Ground-penetrating radar technology was ground-truthed with soil boring observations in 2002. The results indicate that there are several different unconsolidated materials at the Poleline Road site consisting primarily of gravels and a confining layer comprised primarily of silt. The confining layer is not extensive, but where present it serves as a confining unit, separating the shallow unconfined and deeper semi-confined aquifers. The investigation determined that the unconfined shallow aquifer merges with the deeper aquifer in a mixing zone (area where the confining unit is not present) located at the edge of the wetlands. Weathered bedrock overlays competent bedrock beneath the sand and gravel deposits. Isolated bodies of silt were found in low points in weathered bedrock. Peat was also located in the low points.

The groundwater model shows two aquifers. A shallow unconfined aquifer that tends to flow to the north-northeast and a deeper semi-confined aquifer that follows the trend of the sloping bedrock flowing to the northeast. Additionally, small perched aquifers are likely to exist in localized areas where low permeability lenses are interspersed in the strata. The overall vertical hydraulic gradient is in the downward direction. This is important because the confining layer is not continuous and is suspected not to be 100 percent impermeable.

The model shows that MW-14 (area of recent concern as noted previously) is installed in a sand and gravel channel found between silt bodies. It is critical to note that the confining unit located beneath MW-14 slopes downward towards the mixing zone in a direction opposed to the groundwater flow direction. Ultimately this area is of concern because free-phase dense non-aqueous phase liquids (DNAPLs), such as TCE or PCE recently detected in MW-14, could migrate vertically to the confining unit and flow back towards the mixing zone, serving as a source of contamination in both aquifers. This hypothesis is supported by the finding that the highest level of contaminants have been measured at the junction of channels near the edge of the wetland.

The Poleline Road Disposal Area is constrained by a bedrock divide. The bedrock divide constrains all surficial material, including the confining layer at

Poleline Road. Anything on top of the confining layer that flows into the deeper aquifer would be constrained if it were a DNAPL. In other words, it would be constrained within the flow divide to the south, west, and to the north. Any pollutants that perhaps flow outside the bedrock divide would flow toward Eagle River. However, geophysical, ground-truth, and analytical well data indicate that this is not happening.

As mentioned previously, the investigation identified a mixing zone located near the wetland. The mixing zone is important because it is a significant exchange area for groundwater and pollutants between the shallow and deep aquifers. A bedrock high exists beneath the wetland and is comprised of competent bedrock. The model was also used to illustrate the two PCE contaminant plumes beneath the Poleline Road Disposal Area site. The deep PCE contaminant plume is localized near the north side of the wetland and has exhibited seasonal variations in PCE concentrations. The shallow PCE plume is a larger plume extending about 200 meters north-northeast from the base of the wetland. The shallow aquifer contains the higher concentrations of PCE relative to the deep aquifer, and the highest concentrations are detected in an area immediately downgradient from the mixing zone. No off-site migration has been observed in either plume.

ACRONYMS

PCE

Tetrachloroethene

TCE

Trichloroethene

EM

Electromagnetometer

CRREL

Cold Regions Research and Engineering Laboratory

3-D

Three-dimensional

DNAPL

Dense, non-aqueous phase liquid

Operable Unit C

The fifth year of remedial action was completed with removal of the field equipment in September 2003. The short-term remedial action objective (RAO) stipulated in the Record of Decision (ROD) has been met, and the Army is evaluating data from the 2003 field season to determine if further action is warranted to ensure achievement of the long-term RAO. The short-term objective was to reduce mortality of dabbling ducks due to white phosphorus to less than 50 percent of the mortality recorded in 1996, or about 500 ducks. The long-term RAO was to reduce dabbling duck mortality attributable to white phosphorus to less than 1 percent of the annual fall population of dabbling ducks (mortality rate of about 50 ducks). Mortality data suggest that less than 100 dabbling ducks died due to exposure to white phosphorus during 2003. The Interim Remedial Action Report for Operable Unit C (OUC) has been finalized. The Army has been working on a long-term mortality monitoring plan and exit strategy. Those plans are currently being developed and the Army is exploring innovative methods for monitoring bird mortality that do not involve the use of a helicopter to capture ducks. Procurement of helicopter services to perform the duck capture has been expensive and, at times, unreliable.

Future work at OUC will be characterized by continued, but periodic, sampling for white phosphorus, duck mortality monitoring and, if necessary, treatment of white phosphorus-contaminated areas identified during sampling.

Operable Unit E

Installation and sampling of additional wells within the Armored Vehicle Maintenance Area (AVMA) groundwater plume has been completed. The data from the additional work is currently being evaluated for inclusion in the Remedial Investigation/Feasibility Study (RI/FS), Proposed Plan, and ROD. The draft RI/FS is scheduled to be complete in early December 2003. A treatability study at the polychlorinated biphenyl (PCB) site is expected to begin in spring 2004. The treatability study will evaluate the effectiveness and accuracy of differing field screen methods for detection of PCBs. A preliminary draft of the treatability study work plan has been developed and is currently under review.

Two-Party Agreement Sites

Building 762: This site is actually comprised of two distinct but related sites. The Building 762 site, located near the corner of 5th and D Streets, is a former gas station site that has most recently been used for drivers' training. The Building 786 site, located near the corner of 6th and D Streets, was also most recently used as a drivers' training area. The Army has been conducting monitoring at the Building 762 site for some time, due to persistent fuel and benzene contamination in groundwater. Five additional groundwater wells were installed at the site in 2000 to further delineate the groundwater plume. During installation of one of the additional five wells, substantial diesel fuel contamination was discovered in soil and groundwater. Subsequently, the Building 786 site was incorporated with the Building 762 site and has undergone substantial investigation. Most recently, in 2003, additional soil borings and wells have been installed to fully characterize the 786 site.

Upgradient and downgradient sentinel wells are currently being installed, and sampling is expected to occur in December 2003. Additionally, excavation in an upgradient area uncovered buried debris and soil containing high levels of diesel fuel contamination. This area appears to be a disposal area and is suspected to be the source of the fuel contamination. The activities contributing to the fuel release are unknown, but the site may simply be a disposal area for Quonset huts and other materials once located on the site.

Building 986: This site is the location of the petroleum, oil, and lubricants (POL) laboratory. In the past, fuel and other related materials were disposed of into a drain system that was connected to a dry well on the south side of the building. The dry well has been removed and waste fuel is now disposed into an aboveground waste fuel tank located outside the building. A soil vapor extraction (SVE) system was installed at the site in 1998 and has been operated since installation. The SVE system was effective at treating near-surface contamination at the site. However, recent analysis of the treatment system operation indicated that the system was no longer effectively removing contaminants from the site. Additionally, confirmation soil sampling conducted in 2001 indicated that contaminant levels at the site were very close to

ACRONYMS

ROD

Record of Decision

RAO

Remedial Action Objective

OUC

Operable Unit C

AVMA

Armored Vehicle Maintenance Area

RI/FS

Remedial Investigation/
Feasibility Study

PCB

Polychlorinated biphenyl

POL

Petroleum, oil, and lubricants

SVE

Soil vapor extraction

cleanup levels and that the site could possibly be closed with institutional controls. The Army conducted additional confirmation sampling in October 2003 and is awaiting results. Pending the results of the confirmation sampling, the Army will develop an exit strategy to close this site.

Building 28008: This site is the water treatment facility on Fort Richardson, located off Arctic Valley Road east of the Moose Run Golf Course. Biannual groundwater sampling has been conducted at the site. The fall 2003 groundwater sampling event occurred in October 2003. The Army has also contracted for a utility evaluation in order to evaluate the potential installation of a remedial system. Due to site complexities, several different treatment options are currently being considered at this site. The Army is currently evaluating innovative technologies for use at diesel-contaminated sites in cold weather climates.

Building 59000 Site: This site is located at the Small Arms Range and was formerly a self-contained operations bunker. Upgradient and downgradient sentinel wells have been installed at the site, and the Army is awaiting a final report on installation and sampling activities. Diesel contamination at the site originated from two 10,000-gallon fuel tanks formerly located at the site. Previous investigations have not detected high levels of soil contamination at the site, but groundwater is contaminated and one monitoring well contains free product. A free-phase product collection system has been installed in well AP-3875. The Army plans to develop a long-term monitoring plan and exit strategy for this site. Long-term monitoring is expected to continue until the Army can show that the plume is stable and contaminant concentrations are decreasing.

Building 987: This building was the pump house at a former POL storage facility. Two new downgradient wells have been installed to evaluate groundwater conditions at the site. Both wells were sampled in October 2003. Preliminary results from the groundwater samples indicate no contamination exists in groundwater. The Army is developing a site profile and closure evaluation to determine the feasibility for site closure. This site is one of many that will be evaluated using the Army's new closure strategy that will be highlighted in the next newsletter. Essentially, the closure strategy is an effort to evaluate all site data to determine cost-effective means for reaching site closure.



IAP Workshop

The Installation Action Plan (IAP) for Fort Richardson was updated at a U.S. Army Environmental Center (USAEC) facilitated workshop in August 2003. The IAP is updated annually and outlines the total multi-year integrated, coordinated approach to achieving an installation's restoration goals. The plan is used by USAEC, major commands (MACOMs)/major subordinate commands (MSCs); and installations to monitor requirements, schedules, and budgets. For each site the IAP documents Installation Restoration Program requirements, the rationale for the technical approach, and the corresponding financial requirements. Participants included the Army, U.S. Environmental Protection Agency (EPA), Alaska Department of Environmental Conservation (ADEC), USAEC, and the U.S. Army Corps of Engineers-Alaska District (USACE).

There are eight active sites listed for Fort Richardson: Building 986, Eagle River Flats, Poleline Road Disposal Area, PCB Site 35-752, Nike Site Summit, Building 762, Building 45-070, and the Armored Vehicle Wash/Disposal Area. Each site was reviewed, discussed, and updated in an open forum with the participants to ensure the accuracy and usability of the document. The Fort Richardson IAP is currently in draft status and is expected to be finalized by March 2004. Copies of the updated IAP will be available at the administrative record repositories.



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ACRONYMS

IAP

Installation Action Plan

USAEC

U.S. Army Environmental Center

MACOM

Major command

MSC

Major subordinate command

EPA

U.S. Environmental Protection Agency

ADEC

Alaska Department of Environmental Conservation

USACE

U.S. Army Corps of Engineers-Alaska District