Environmental Restoration News

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RAB Update

The Fort Richardson Restoration Advisory Board (RAB) met at the Russian Jack Chalet on April 24, 2003. Agenda items included updates on the Engineering Evaluation/Cost Analysis (EE/CA) for the Chemical Agent Identification Sets (CAIS), an update on the Rapid Response System, highlights and recommendations about the Operable Units as reported in the CERCLA Five-Year Review, and an update of the work occurring at Operable Unit E. All of these items are summarized in this newsletter.

IN THIS ISSUE

EE/CA for the Treatment and Disposal of Chemical Agent Identification Sets

Chemical Agent Identification Sets (CAIS) are World War II-era training material. The training sets contain chemical agents, such as mustard gas, and industrial agents, such as phosgene. In general, the mustard agents are contained in 3.5-ounce bottles. The sets were used by soldiers for training to identify and decontaminate chemical agents.

Fort Richardson currently has 11 overpacked containers containing CAIS and CAIS-related items. The overpacked containers are stored in Igloo D-15 in a secured, fenced, remote bunker location on Fort Richardson. Eight of the overpacked drums contain "pigs." "Pig" is a common name for a 6-inch-diameter, sealed, stainless steel container. There are small bottles of chemical agent inside each "pig." Of the eight pigs, two contain K941 bottles, which have some mustard agent in them, and six pigs contain debris, such as broken bottles. Two smaller overpacks hold containers of bottles and debris found during excavation activities in 1993 and 1994. The last overpack is empty. There is also one 85-gallon overpacked drum that contains dirty gloves, aprons, and other investigative material.

An Engineering Evaluation/Cost Analysis (EE/CA) was prepared to evaluate alternatives to addressing the stored CAIS. The following four alternatives, presented in the EE/CA, were evaluated with attention to effectiveness, ease of implementation, and cost:

1) Take no action. This alternative is included to evaluate against the others if nothing were to happen with the CAIS material.
2) Treat the CAIS material at Fort Richardson and ship the treated waste off site to an out-of-state treatment, storage, and disposal facility (TSDF).
3) Ship and treat the CAIS material out of state at a commercial TSDF.
4) Ship and treat the CAIS material out of state to a U.S. Department of Defense TSDF.

Summary of the Alternatives

The first alternative, also called the no action alternative, does not eliminate the potential hazard of the chemical agents and is the least expensive option because nothing would be done at this time. An action would, however, have to be done at some point in the future.

Alternative 2, CAIS treatment at Fort Richardson and out-of-state shipping and disposal, eliminates the potential hazard and incurs a one-time cost of approximately $2.5 million. The method of chemical neutralization proposed is effective and has been demonstrated to be effective by the Rapid Response System (RRS) technology. Additionally, the waste generated after treatment does not pose problems for shipping across state lines.

ACRONYMS

RAB
Restoration Advisory Board

EE/CA
Engineering Evaluation/Cost Analysis

CAIS
Chemical Agent Identification Sets

CERCLA
Comprehensive Environmental Response, Compensation, and Liability Act

TSDF
Treatment, storage, and disposal facility

RRS
Rapid Response System

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Alternative 3 is to ship and treat the CAIS at a commercial TSDF. This would be effective in that the CAIS material would be eliminated. There would be a one-time cost of approximately $2.0 million, and incineration would be used. The biggest problem with this alternative is shipping the CAIS materials across state lines.

Alternative 4 is to ship the CAIS material to a TSDF at a U.S. Department of Defense facility. This alternative does eliminate the CAIS materials; however, shipping across state lines would cause problems.

The Preferred Alternative

The preferred alternative is Alternative 2. The schedule indicates that the CAIS materials would be eliminated by September 2003. The RRS equipment was shipped to Fort Richardson in early April and was set up in May. Since the RRS has been designed specifically to eliminate CAIS materials, the issue of transporting chemical agents across state lines is avoided.

The EE/CA was made available for comment during a 30-day public comment period from March 5 through April 5, 2003. No public comment was received during the public comment period.

RRS Update

The contractor arrived on site at Fort Richardson and has set up the RRS to support the treating of CAIS. There will be some safety evaluation and testing prior to the processing of the chemical agents. The processing is scheduled to begin in early July and will take approximately 3 weeks.

ACRONYMS

CERCLA
Comprehensive Environmental Response, Compensation, and Liability Act

ADEC
Alaska Department of Environmental Conservation

EPA
U.S. Environmental Protection Agency

ROD
Record of Decision

OU
Operable Unit

POL
Petroleum, oil, and lubricants

Highlights of the CERCLA Five-Year Review

The draft Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Five-Year Review for Fort Richardson has been finalized. The Army, Alaska Department of Environmental Conservation (ADEC), and U.S. Environmental Protection Agency (EPA) signed it on February 21, 2003.

The purpose of the Review is to ensure that the remedial actions selected in the Records of Decision (RODs) and implemented are protective of human health and the environment. The goal is to review those actions to make sure they were conducted in accordance with the ROD and to ensure that they are protective.

The status of the remedy was evaluated; variances were identified, if they existed; and the Review made recommendations for reconciling differences noted. The Review can also identify appropriate changes to be made if necessary.

Operable Units (OUs) A through D were covered in the Five-Year Review; OUE is still in the remedial investigation/feasibility study process. The Review concluded that upon completion, the remedies selected are expected to be protective of human health and the environment.

The main objective of the Five-Year Review is to answer the following three questions: 1) Are the remedies functioning as intended by the decision document; 2) Are the closure assumptions, toxicity data, cleanup levels, and remedial action objectives – which were determined at the time of the ROD – still valid; and 3) Is there any other information that has come to light that could call into question the protectiveness of the remedy?

Operable Unit A: OUA consists of Roosevelt Road Transmitter Site Leachfield, Ruff Road Fire Training Area, and the Building 986 POL Dry Well. There is a ROD for OUA. All three sites within OUA were considered No Further Action sites under CERCLA. The ROD indicated that all three sites were transferred to the Two-Party Agreement for petroleum, oil, and lubricants (POL)-contaminated sites for management by the Army and the State of Alaska. The Roosevelt Road and Ruff Road sites have been closed and require No Further Action under CERCLA and the Two-Party Agreement. There is ongoing remedial action at the Building 986 POL Dry Well.

Operable Unit B: OUB consists of the Poleline Road Disposal Area. The remedial action objectives for OUB were to: reduce the contaminant levels in groundwater to comply with drinking water standards; prevent contaminated soil from continuing to act as a source of groundwater contamination; prevent contaminated groundwater from adversely affecting the Eagle River surface water and sediments; and minimize degradation of the State of Alaska's groundwater resources at the site as a result of past disposal practices. The Five-Year Review evaluates those objectives and determines if the goals are being met. Contaminant concentrations have been reduced in soil and groundwater. The first goal of reducing the levels in groundwater to meet drinking water standards has not yet been met; however, levels have decreased. The remedial action objectives for soil have been achieved; the source area has been eliminated. No increases in the extent of the contaminant

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plume have been reported. One of the points brought up in the Review is that the existing wells may not fully characterize the site; therefore, wells, called sentinel wells, were installed around the perimeter of the site to determine if there has been off-site migration.

Another item evaluated in the Review is changes to the standards. No new contaminant sources have been identified at the site; however, three constituents that were not identified as contaminants of concern in the ROD have been detected in groundwater at the site. They are 1,1,2-dichloroethane (DCA), 1,2-dichloroethene (DCE), and vinyl chloride. No changes have been made to the ARARs (Applicable or Relevant and Appropriate Requirements).

ACRONYMS

DCA
Dichloroethane

DCE
Dichloroethene

ARARs
Applicable or Relevant and Appropriate Requirements

UXO
Unexploded ordnance

PCA
Tetrachloroethane

VOC
Volatile organic compounds

GIS
Geographic Information System

The cleanup level for 1,1,2,2-Tetrachlorethane or 1,1,2,2-PCA was identified in the ROD as 0.0052 mg/L; however, the actual risk-based cleanup level is 0.052 mg/L, an apparent transcription error.

Potential issues indicate that remedial action objectives have not been achieved at the "hot spot" area. The Army will continue to monitor groundwater at the site to determine if the plume is stable. Another potential issue is the need for hydrogeologic data north of the source area. Throughout the process there has been limited information about the hydrogeology. In an attempt to gain more information, 11 groundwater wells were installed. A groundwater model is being developed to allow better understanding of down- and cross-gradient trends. Another issue at OUB is that the institutional controls for the site do not address unexploded ordnance (UXO) hazard in Area A-1. This is an area that is suspected to contain buried Japanese cluster bombs. It is not known for certain that they are there, but those interviewed did indicate that they recall burying them at this site. A geophysics study did show that there are buried metallic objects at the site.

The Five-Year Review's recommendations for OUB are: 1) continue to monitor groundwater contaminant reduction and perform groundwater modeling for a trend analysis; 2) continue analyzing groundwater samples for volatile organic compounds (VOCs) using methods that include the compounds not addressed in the ROD; 3) include new wells, installed in 2002, in the long-term groundwater monitoring program; and 4) identify an institutional control specific to UXO buried in areas A-1 and A-2. The institutional control will be included in the master plan and real estate documents, range maps, the Environmental Geographic Information System (GIS) database, and the institutional control policy.

Operable Unit C: OUC consists of Eagle River Flats. The remedial action objectives identified in the ROD are: 1) within 5 years of the ROD being signed, reduce the dabbling duck mortality rate attributable to white phosphorous to 50 percent of the 1996 mortality rate (the 1996 mortality rate was 1,000; therefore the reduction goal is to 500); 2) within 20 years of the ROD being signed, reduce the mortality attributable to white phosphorous to no more than 1% of the total annual fall population of dabbling Eagle River Flats ducks. The current population stated in the ROD was 5,000, so 1% is 50 ducks. At the end of last season, the duck mortality rate was lower than the short-term remedial action objective. The rate was 12% in 2002, which was approximately 200 birds.

The potential issues associated with the remedial action are that the mortality data may be skewed by active remedial actions. The recommendation is to evaluate duck population numbers after completion of the remedial action.

Operable Unit D: OUD consists of 12 potential source areas: Building 35-752 (High Frequency Transmitter Site); Building 45-590 (Auto Hobby Shop); Building 726 (Laundry Facility); Building 796 (Battery Shop); Storm Water Outfall to Ship Creek; Dust Palliative locations (four separate areas); Landfill Fire Training Area; Grease Pits; Circle Road Drum Site; Building 700/718; Building 704; and Building 955.

The ROD recommended No Further Action for Building 726 (Laundry Facility), the Storm Water Outfall to Ship Creek, Dust Palliative Locations, Landfill Fire Training Area, Grease Pits, Building 45-590 (Auto Hobby Shop), and the Circle Road Drum Site. They were selected for No Further Action based on sampling and analysis conducted at these sites and additional site work. Three sites were transferred to the Two-Party Agreement: Building 700/718; Building 704; and Building 955 petroleum-contaminated soils. All three of these sites have been closed subsequent to their transfer.

The ROD required sampling at two sites: Building 796 (Battery Shop) and Building 955 (DDT-contaminated soils). At the time of ROD signature, there was a question about whether a contaminant plume existed at the sites. Also at Building 955, DDT-contaminated soils were discovered.

There were two source areas transferred to OUE: Building 35-752 and the Armored Vehicle Maintenance Area, which was created in response to finding contaminant upgradient of the Building 45-590 site. The Building 45-590 site was closed.

The Five-Year Review recommendations and follow-up actions for OUD include that the Building 796 site should be closed in the OUE ROD. Additional groundwater sampling was conducted and contaminants were not detected above cleanup levels. Soil sampling was conducted at the Building 955 site for DDT. The cleanup goals have been met; therefore, the Review also recommends closing this site.

Conclusion

There are two active remediation efforts going on at Fort Richardson. There is a potential for additional remedial actions for OUE, but, at this time, it is unknown. For OUB, the remedy is expected to be protective of human health and the environment upon completion. For OUC the Review indicates that the remedy is expected to be protective of human health and the environment upon completion. Exposure pathways that could result in unacceptable risks are being restricted with institutional controls. At the time Eagle River Flats is closed, the human health risk from exposure to UXO will be addressed using the ARARs that are in place at that time.

The next Fort Richardson 5-Year Review will be conducted in 2008, which is 5 years from the signing of this Review.

ACRONYMS

PCB
Polychlorinated biphenyl

TCE
Trichloroethene

AVMA
Armored Vehicle Maintenance Area

CRREL
Cold Regions Research and Engineering Laboratory

PAH
Polynuclear aromatic hydrocarbon

PCE
Perchloroethylene

Update on Operable Unit E

The two sites in OUE are Building 35-752 and the Armored Vehicle Maintenance Area.

Building 35-752 is located in the southwest corner of Fort Richardson. It is a former transmitter site. There were different subsites included in the investigation: a burn pit; a peripheral road; soil stockpile; and a transformer mounting area. There was a lot of sampling that took place at this site. Most of the samples were analyzed for polychlorinated biphenyls (PCB), dioxin, and petroleum hydrocarbon compounds. The collected date were compared to EPA risk-based screening levels. This comparison is a preliminary step that is used to determine if a problem exists. For chemical concentrations that are below the risk-based levels, no further consideration is required.

The investigation at the burn pit involved drilling eight 10-foot borings and collecting three samples from each boring. Only seven samples had exceedances for trichloroethene (TCE). The main focus at the burn pit was on PCB and dioxins. PCB and dioxins were not detected.

The investigation at the peripheral road yielded seven PCB exceedances. The investigation at the soil stockpile resulted in one sample that exceeded PCB levels.

The transformer mounting area was the area that had the greatest concern. There were a number of exceedances there. The highest concentrations of PCB were detected in this area; the highest concentration detected was 100 mg/kg.

The other investigative task at Building 35-752 was to sample groundwater. There were seven wells sampled at the site. The concentrations of metals that were detected exceeded EPA Region 3 cleanup levels; however, the detected metals appear to be similar to background levels. This will be further evaluated in the RI report. Petroleum compounds, PCB, TCE, methane, and chloride were also detected in groundwater.

The Armored Vehicle Maintenance Area (AVMA) investigation involved digging trenches, drilling and installing monitoring wells, and groundwater well sampling. The location of the trenches was based on information gathered by the Cold Regions Research and Engineering Laboratory (CRREL). CRREL conducted geophysical surveys, which identified anomalies or irregularities below ground surface. Trenches were dug in areas where anomalies were noted. The trenching occurred from July through August 2002. Of all the analytical data that were collected, very little contamination was detected, and what was detected was at fairly low levels. There were slight exceedances for polynuclear aromatic hydrocarbon (PAH) and arsenic detected in the trenches. There was no obvious sign of gross contamination. There were 9 trenches dug to 20 feet deep and 50 feet long, the width of the back hoe bucket. During excavation, some construction debris was uncovered.

Five new monitoring wells were drilled and installed at the AVMA. The wells were drilled down to 100 to 120 feet. Of all the samples collected from these wells, arsenic was detected in soil, which is typical for the soils in the area, and perchloroethylene (PCE) was detected in two samples.

Groundwater samples were analyzed from 14 existing groundwater monitoring wells and 5 new wells. There were some exceedances of PAH, TCE, PCE, and chloromethane. Some metals exceedances were detected at levels similar to naturally occurring levels in the area.

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Additional fieldwork was identified in the AVMA. That work will occur in the coming weeks. The data collected will be incorporated into the remedial investigation report. The ecological and human health risk assessments will also be written. These reports are scheduled to be completed by early 2004.

Site Updates

TWO-PARTY AGREEMENT SITES

Building 762: The 762/786 site, at 6th and D Streets, is a former gas station site that has most recently been used for drivers' training. An on-site investigation discovered diesel range organic (DRO) contamination. An additional geophysical investigation using ground-penetrating radar (GPR) conducted by CRREL may have found evidence of the source of the DRO, potentially a concrete pipeline leading to a dry well. Groundwater monitoring wells in the area contain diesel product.

The Army has awarded a contract to perform additional site investigation and to install upgradient and downgradient sentinel wells based on geophysical data. The work was scheduled to begin in May 2003. The goal of the investigation is to find a source area that can then be cleaned up. If results of the site investigation, which includes excavation of potential source areas, does not identify a source area, the Army will develop an exit strategy to include long-term monitoring of contaminants in groundwater at the site.

Building 986: This site was the POL laboratory. The site has a soil vapor extraction (SVE) treatment system in operation. The Army has completed the fourth round of respirometry testing, which shows that treatment is occurring. The Army plans to continue system operation through the July 2003 field season and then collect confirmation soil samples in Fall 2003. The Army is currently developing an exit strategy for this site.

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. Preliminary results from the groundwater samples that were collected in October 2002 indicate no contamination exists in groundwater. The Army is developing a remedial action plan or exit strategy based on site evaluation and discussions with ADEC.

Building 28008: This is the site of 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 groundwater monitoring report has been received and is final. The Army is scoping for remedial work and further sampling at this site.

Building 35610/35620 Site: These buildings are pump houses used to operate backup water supply wells on Fort Richardson. The Winter 2002 biannual groundwater sampling event was conducted and results indicate that petroleum contaminants continue to be detected below clean-up levels. The Army is developing a report for site closure.

ACRONYMS

DRO
Diesel range organics

GPR
Ground-penetrating radar

SVE
Soil vapor extraction

UST
Underground storage tank

Building 47220 Site: This is the site of a former underground storage tank (UST) at the Old Boat Yard near Bryant Army Air Field. The Army has conducted a limited source removal at the site to remove contaminants located in the area around the former UST. Minimal petroleum contamination was detected during excavation, and a leachability assessment demonstrated that there would be no breakthrough of contaminants to groundwater. The Army is developing a report for site closure, which will include institutional controls for soil.

Building 45070 Site: Building 45070 is located on Circle Drive, west of Loop Road. Soil and groundwater have been impacted by petroleum-related compounds, possibly released from a 1,000-gallon heating oil UST, which was installed on the west side of the building. Recent sample results have shown no detectable levels of contaminants at the site. Samples collected in Spring 2003 confirmed that there are no detectable levels of contaminants on site. The Army is seeking site closure status from ADEC.

Building 59000 Site: This site is at the Small Arms Range and was formerly a self-contained operations bunker. A contract has been awarded to install upgradient and downgradient sentinel wells. The diesel contamination originated from two 10,000-gallon fuel tanks 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.

THREE PARTY AGREEMENT OR CERCLA OPERABLE UNIT SITES

Operable Unit B – Poleline Road Disposal Area: The final Interim Remedial Action Report has been completed for this site. Additional groundwater wells have been installed and sampled. CRREL is working on an expanded geologic and groundwater contaminant model for this site and expects to be complete by Summer 2003. The Army continues to sample groundwater from the site on a biannual basis. The groundwater contaminant plume appears to be stable, and levels have not re-

bounded after remediation efforts. The Army will develop a long-term groundwater monitoring plan and exit strategy that is consistent with the requirements of the ROD. Upon completion and validation of the exit strategy program, the Army will cooperatively develop an exit strategy with EPA and ADEC.

Operable Unit C – Eagle River Flats: Installation of the bread truck pond was completed during Winter 2003. This year (2003) is the last of 5 years of active pumping as required by the OUC ROD. The Final Interim Remedial Action Report has been completed. With its completion, the Army has achieved construction complete status at the site, which indicates that the remedy is in place and operational.

Operable Unit E: A remedial investigation has been under way since Spring 2002. Preliminary results indicate that neither of the OUE sites pose a significant risk to human health and the environment. Additional field activities will begin this Spring 2003. The Feasibility Study, Proposed Plan, and ROD have begun; however, these may be delayed until completion of the remedial investigation fieldwork. See more details about OUE in the related article in this newsletter, beginning on page 4.

NEXT RAB MEETING

The next Fort Richardson RAB meeting is scheduled for Fall 2003. The date, time, and location of the meeting will be publicized later this summer.

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