



# Environmental Newsletter

## King Salmon Air Station, Alaska



If you would like information about environmental restoration activities at KSAS, call the Air Force Community Relations Coordinator toll free at 800-222-4137

### Introduction

This newsletter presents an overview of continued environmental restoration efforts at the King Salmon Air Station (KSAS). The Air Force has been conducting this

work in coordination with the *Alaska Department of Environmental Conservation (ADEC)* and the *King Salmon Restoration Advisory Board (RAB)*, which is made up of interested community members.

**Welcome**  
The Air Force is distributing this newsletter to inform interested residents of continued environmental cleanup actions at the King Salmon Air Station. Technical terms and acronyms in *bold italics* are defined in the glossary on page 6.

### Installation History

KSAS is near the community of King Salmon, located on the Alaska Peninsula about 280 miles southwest of Anchorage.

The installation was established in 1941 by the U.S. military as a supply and support base during the World War II Aleutian Island campaign. During the Cold War, the Air Force used the base as part of a permanent air defense system established across Alaska. In 1994, the Air Force deactivated the installation and placed it on caretaker status.

### Installation Restoration Program

Since 1987, the Air Force has been engaged in cleanup operations at KSAS under the *Installation Restoration Program (IRP)*, the Air Force equivalent of the Environmental Protection Agency's Comprehensive Environmental Response, Compensation, and Liability Act (*CERCLA*) program. The *IRP* provides guidelines and funding to investigate and remediate potentially contaminated sites at Air Force installations.

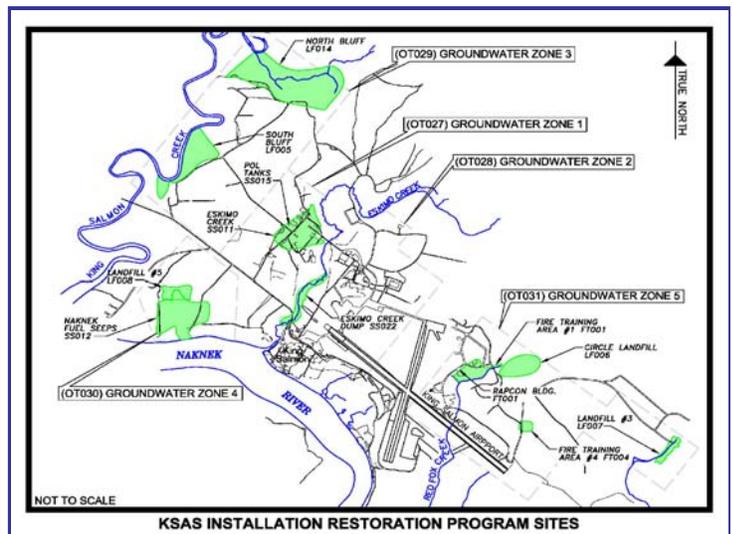
### Groundwater Zones

Groundwater resources at KSAS have been grouped into seven zones, with each zone having similar groundwater characteristics and contaminants of concern. Each Groundwater Zone contains several *IRP* Sites where individual releases of contaminants may have occurred. Groundwater Zones are regulated individually. After sufficient information is gathered on sites within a zone, a *ROD* is established that defines how each sites is to be cleaned up.

### Site Restoration Strategies

Environmental restoration of contaminated sites can be accomplished by one of three general strategies:

- ❖ Physical removal of site contaminants by removing the affected media (e.g. excavation and treatment of contaminated soil).
- ❖ Active remediation within the environment (in situ) using a mechanized system (such as air



blowers) to degrade or remove contaminants (e.g., *bioventing* or *soil vapor extraction*).

- ❖ Naturally occurring processes in the environment that degrade contaminants over time. This option is called *monitored natural attenuation (MNA)* because it is accompanied by *long-term monitoring (LTM)* to assure that remediation goals are being met.

### Record of Decision

A *Record of Decision (ROD)* or *Decision Document* is a formal agreement between the Air Force and State of Alaska environmental regulators that identifies cleanup actions selected for each site where contaminants have been characterized and remedies identified.

Before a *ROD* is prepared, the cleanup actions proposed by the Air Force are presented to the public for review and comment in the form of a *Proposed Plan*. Comments received during the 30-day public comment period are considered in the final remedy selection documented in the final *ROD*.

### Remedial Process Optimization Program

To accelerate the progress of restoration efforts at KSAS, the Air Force implemented a *Remedial Process Optimization (RPO)* program in 2001. The *RPO* program enlists a team of third-party experts to evaluate remedial technologies and strategies currently being used at the sites, and to recommend improvements.

Since 2001, the *RPO* team has recommended over 178 improvements to restoration strategies at KSAS sites. The *RPO* team will meet again with Air Force, ADEC, and EPA representatives in August/September 2004 to make additional recommendations to existing efforts as part of the basewide *five-year review* process.

### Recent Site Restoration Progress

Multiple sites and Groundwater Zones at KSAS are actively being cleaned up, and are at various stages of the *IRP* process. The Air Force has made significant progress in restoring sites basewide over the past 17 years. Most of the KSAS *RODs* for individual sites have been formalized, and cleanup is underway.

The following is a brief synopsis of recent accomplishments and planned future actions at individual zones and sites at KSAS.

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### Zone 1 Groundwater Restoration and Site Cleanup

The Interim Zone 1 *ROD* (December, 2000) requires treatment of free petroleum product and *LTM* of *TCE* in Zone 1 groundwater. A remedy for dissolved petroleum hydrocarbons will be documented in a Final *ROD* after product removal or remediation has been sufficiently addressed.

Recent monitoring results indicate that contaminants in Zone 1 groundwater are stable, with *TCE* concentrations decreasing in the most highly-contaminated portions of the groundwater plume.

*Bioventing* is being used in Zone 1 to remediate hydrocarbon contamination in soil. A *bioventing* system has been operational at MOGAS for several years. Near the seeps, a Spring 2004 *pilot study* indicated that *bioventing* is suitable to remove petroleum contaminants in the *smear zone*. Preliminary results reveal that *bioventing* would be most effective when water table elevations are seasonally low. Final *pilot study* results will be published later in 2004.

Another remedial effort in Zone 1 involves the



Sampling Groundwater at Zone 1

operation of the Eskimo Creek Treatment System (ECTS), which captures groundwater before it can seep into Eskimo Creek and treats it with carbon filtration.

### Zone 2 Groundwater Restoration and Site Cleanup

MNA has been identified in a recently signed ROD (November, 2003) as the preferred restoration method for Zone 2 groundwater contaminants. As part of this action, LTM activities will begin in 2004 and will be conducted annually thereafter.

The Eskimo Creek Dump was included in the proposed remedial efforts identified in the Zone 2 ROD. Cleanup activities planned in 2004 at the Eskimo Creek Dump site include:

- ❖ Removal of debris and placement of a soil cover.
- ❖ Revegetation of bare and newly covered areas.
- ❖ Installation of additional well points to evaluate local groundwater conditions.

Another remedial effort in Zone 2 involves the operation of several *bioventing* systems that are helping naturally occurring organisms degrade petroleum hydrocarbon contaminants in the soil.

### Bluffs (Zone 3) Monitoring

In accordance with restoration requirements documented in the Bluffs ROD (June, 2000), the Air Force monitors groundwater and surface water annually. Sediment samples are collected every five years, with the next sampling event planned for 2004.



The 2003 monitoring results for A-Aquifer groundwater were similar to previous years, with

few exceptions. The only B-Aquifer exceedences identified in the *sentry wells* have been for metals.

Residential wells have been replaced by *sentry wells* as monitoring points for B-Aquifer conditions at the Bluffs.

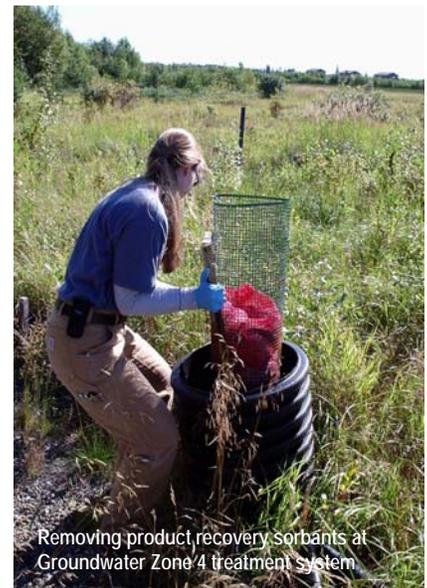
The South Bluff Treatment System (SBTS) continues to capture groundwater before it seeps into King Salmon Creek.

Designed like the ECTS, the SBTS treats the intercepted water with carbon filtration.

### Zone 4 Groundwater Cleanup

MNA with annual LTM was the groundwater restoration method approved in the Zone 4 ROD (June, 1999). Free product recovery is also part of the Zone 4 requirements. The Zone 4 MNA groundwater remediation is part of a National Natural Attenuation Study for the EPA and the Air Force. Preliminary 2003 LTM results show that *natural attenuation* is evident in groundwater, which indicates that MNA can work in cold climates.

Petroleum hydrocarbon contaminants continue to show declining concentrations, and TCE has not been detected above groundwater cleanup levels in four consecutive annual monitoring events (2000 – 2003). These results are encouraging. In the past, residential wells were sampled at Groundwater Zone 4; this sampling will be conducted again in 2004.



### Zone 5 Restoration Activities

The Zone 5 groundwater area encompasses several individual *IRP* Sites, which are in the early stages of the restoration process. Evaluations are still underway to identify the best cleanup options for contaminants identified at these individual sites.

*Bioventing* is being used to degrade petroleum hydrocarbon contaminants within Zone 5. In May 2004, this system was overhauled by adding new *bioventing* wells to increase airflow over the site and promote contaminant degradation and removal.

A copy of the Zone 5 Proposed Plan is available at the following website:  
[http://www.state.ak.us/dec/spar/csp/docs/bristol/kszone5\\_pfinal04.pdf](http://www.state.ak.us/dec/spar/csp/docs/bristol/kszone5_pfinal04.pdf)

A Proposed Plan, presenting remedial recommendations for eight sites within Zone 5, was distributed for public review on March 27, 2004.

A Public Meeting was held on April 27, 2004 to discuss the proposed actions for the Zone 5 sites. These included:

- ❖ Circle Landfill: Perform limited soil source area removal and treatment. Install vegetated soil cover material at landfill as needed.
- ❖ Landfill No. 3: Implement *institutional controls*, and prepare *NFRAP* document for regulatory approval.
- ❖ Fire Training Area No. 1: Perform *MNA* for remaining contaminations, with annual *LTM* of groundwater conditions to monitor progress.
- ❖ RAPCON: Continue operation of the *bioventing* system. Perform *MNA* for remaining contamination outside of *bioventing* area of influence, and monitor progress with annual *LTM*.
- ❖ Fire Training Area No. 2 and 4: Investigate soil and groundwater conditions. If contamination is present, remove and treat. If not, close the site.
- ❖ Fire Training Area No. 3: No action is recommended and the site may be closed.

A *ROD* for Zone 5 will be prepared during 2004 to document the remedies selected for the eight Zone 5 *IRP* sites.

### Rapids Camp Landfill (Zone 6) Monitoring

Following the requirements of the Groundwater Zone 6 *ROD* (April, 2000), annual monitoring is being conducted at the Rapids Camp Landfill. Landfill No. 3 (LF003) is within the former Zone 6 groundwater

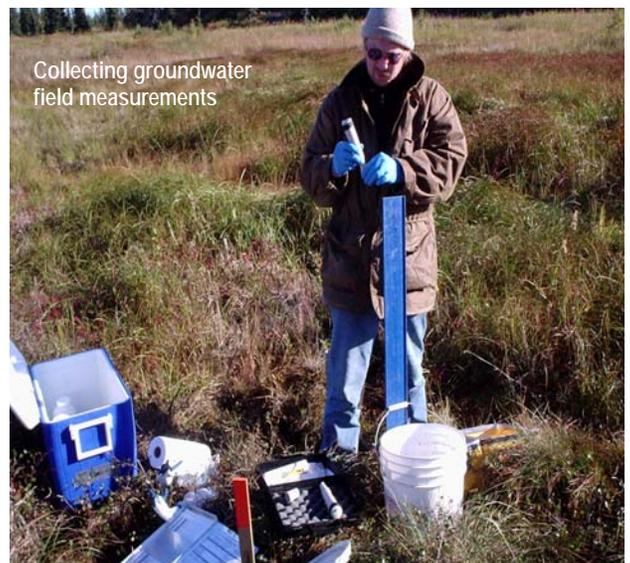
area, which has been *administratively closed* in the *IRP* process.

There were no contaminants identified at the Rapids Camp Landfill during the 2003 monitoring event. A site inspection found the landfill cap to be in good condition and effective. Future recommendations for the landfill include annual groundwater monitoring and regular inspections of the landfill cap.

### Lake Camp (Zone 7) ROD

The Draft *ROD* for Groundwater Zone 7 is currently in the final stages of regulatory review. Remedies recommended for individual Zone 7 sites include:

- ❖ Former Vehicle Maintenance Area and Former Generator Pad: Excavate contaminated soil and treat in a *biocell*. Perform *MNA* of contaminated groundwater with annual *LTM*.
- ❖ Drum Landfill: Remove extruding drums, install soil cap, and perform *MNA* for groundwater contaminants with annual *LTM*.
- ❖ Former Lodge, Disposal Pit, and Construction Landfill: Prepare *NFRAP* and implement *institutional controls*.
- ❖ Remove surface debris throughout the Lake Camp (Zone 7) area.
- ❖ *Administratively close* Groundwater Zone 7.
- ❖ Close individual sites within Zone 7 where no action is required.



## King Salmon Administrative Record

The *King Salmon Administrative Record (KSAR)* is a legal record of basewide restoration. The official collection of records includes site reports, regulatory correspondence, publications, and regulatory guidance detailing the restoration progress at KSAS.

The *KSAR* database is available for public review on the Internet at the website address provided below. The documents are included in Adobe PDF format. At this time, over 200 documents have been incorporated into the website index. New and historic documents are being added to the website on a regular basis.

The *KSAR* database is located at the following website: <http://www.adminrec.com>.  
The database can be accessed using the following steps:  
Step 1. Under Menu, click on DOD.  
Step 2. Under Commands, click on PACAF.  
Step 3. Select Alaska.  
Step 4. Under Menu, select King Salmon.  
Step 5. Select View King Salmon Index.

Hard copies of *KSAR* documents can be found at the 611<sup>th</sup> CES library located on Elmendorf AFB in Anchorage. If you would like to make an appointment to visit the Elmendorf library contact the Air Force community relations coordinator toll free at 800-222-4137.

The *KSAR Information Repository* is now available at the Reif Snyder Building at the KSAS, and can be viewed Monday through Friday from 8:00am to 5:00pm. The electronic *KSAR* database is also available on the world wide web, at the address noted above.



Sunrise in front of Reif Snyder Building

## Restoration Advisory Board

The King Salmon RAB is interested in community participation. If you are interested about restoration activities at KSAS, contact the Air Force Community Relations Coordinator: Steve Wilhelmi, Toll Free Phone: 800-222-4137. Email: [steven.wilhelmi@elmendorf.af.mil](mailto:steven.wilhelmi@elmendorf.af.mil) or AF Project Manager Dave Hertzog 907 552 7261 or email [dave.hertzog@elemendorf.af.mil](mailto:dave.hertzog@elemendorf.af.mil)

Or contact the ADEC Contaminated Sites Program representative for King Salmon: Gretchen Pikul at Phone: 907-269-3077. Email: [gretchen\\_pikul@dec.state.ak.us](mailto:gretchen_pikul@dec.state.ak.us)

## Community Interest News



*On January 21, 2004, Carrie Wang of Anchorage and Eddie Clark of Naknek were collecting readings at the RAPCON site in Groundwater Zone 5 when they noticed an American Bald Eagle underneath the spruce trees on the edge of the woods. The eagle appeared to be injured, as it didn't attempt to fly away when Carrie and Eddie walked toward it to get a closer look. They contacted U.S. Fish and Wildlife Officer Susan Savage for assistance in capturing the injured eagle. Once captured and placed in a makeshift cage (a dog kennel), the eagle was flown to the Bird Rehabilitation Center on Elmendorf AFB for treatment.*

*The eagle was treated for dehydration and frostbite at the center. One talon was amputated (due to severe frost-bite). The eagle recovered quickly and has subsequently been released into the wild. Officials at the Bird Rehabilitation Center expected that the eagle would fly back to King Salmon and estimated that the trip would take approximately 2-4 weeks.*

## Glossary of Terms

**ADEC – Alaska Department of Environmental Conservation** - The state's lead environmental regulatory agency.

**Administrative closure** – Elimination of site in USAF and ADEC records. For example, Groundwater Zone 7 will be administratively closed, and contaminated groundwater within the former Zone 7 will be remedied along with its associated IRP site.

**Administrative Record** – Official library of documents and other papers prepared as a part of environmental restoration activities at this site.

**Biocell** – A lined containment cell used to treat petroleum-contaminated soils. Naturally occurring microbes in the soil that degrade fuel products into carbon dioxide and water.

**Bioventing** – The injection of air into subsurface soils to help naturally occurring bacteria break down fuel contaminants into carbon dioxide and water.

**CERCLA** – Comprehensive Environmental Response, Compensation, and Liability Act of 1980, also known as Superfund.

**Decision Document** - (Same as ROD definition, but not an official CERCLA step).

**Five-year review** – A regulatory review process for cleanup actions performed after five years of implementation and monitoring. This review evaluates the effectiveness of remedial alternatives and identifies if the accepted restoration schedule will be met, or if another option is necessary in order to protect human health and the environment.

**IRP - Installation Restoration Program** – The Air Force CERCLA program for environmental restoration of federal installations from historical contaminant sources (prior to 1980).

**Institutional Controls** – Any type of physical, legal, or administrative mechanism to restrict the use of, or limit access to, real property to prevent exposure to contaminants above permissible levels.

**KSAR** – see *Administrative Record*.

**LTM – long term monitoring** – An accepted schedule of sampling, usually annual, where environmental media is sampled to monitor levels of potential contaminants over time.

**MNA – Monitored natural attenuation** – An environmental cleanup strategy involving monitoring of naturally occurring processes (such as biological

degradation) that breakdown contaminants or reduce contaminant concentrations in the environment.

**NFRAP – No Further Response Action Planned** – Document that identifies that further action is not recommended with institutional controls and land use restrictions and controls, and the site does not pose a risk to human health or the environment.

**Natural attenuation** – Natural processes in the environment that break down contaminants over time.

**Pilot study** – A field test to prove-out a specific technology on a smaller scale, prior to implementing that technology at full scale.

**PCB – Polychlorinated biphenyls** - A group of persistent chemicals used in transformers and capacitors for insulating purposes, and in gas pipeline systems as a lubricant.

**Proposed Plan** – A document distributed to the public for review that encourages comment on preferred cleanup alternatives to be considered for a ROD.

**ROD - Record of Decision** – The ROD documents the rationale for selection of a particular remedial alternative and establishes performance goals for meeting site cleanup objectives. A required step for CERCLA sites in the CERCLA process.

**RAB - Restoration Advisory Board** – An advisory body with diverse community representation designed to act as a focal point for the exchange of information between the Air Force, regulatory bodies, and interested stakeholders.

**RI/FS - Remedial Investigation/Feasibility Study** – An evaluation of site conditions (RI) and potentially applicable remedial actions (FS).

**RPO - Remedial Process Optimization** – An Air Force program designed to improve remedial operations and accelerate environmental restoration schedules at Air Force installations.

**Remediation** – Efforts to eliminate, reduce, or control potential environmental hazards posed by a contaminated site.

**Smear zone** – A horizontal layer of subsurface soils through which a fluctuating water table has smeared contaminants.

**Soil Vapor Extraction** – A soil cleanup technology in which a vacuum is applied to a series of extraction points installed in the soil.

**TCE – Trichlorethylene** – A common solvent used in automotive maintenance operations to clean grease from parts.