FACT SHEET

March 2005

iSOC™ Demonstration Project

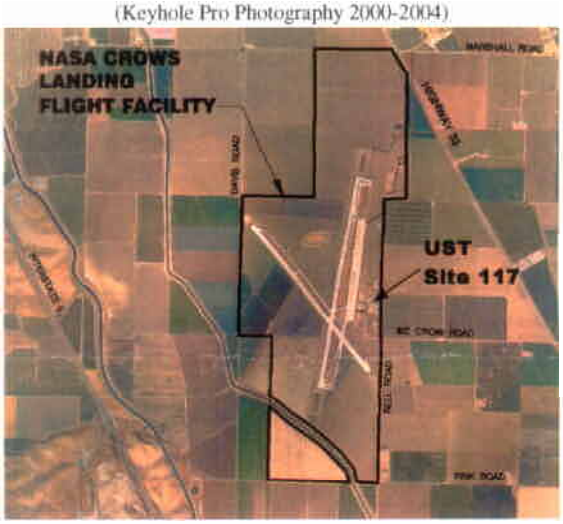
National Aeronautics and Space Administration (NASA) Crows Landing Flight Facility (former Naval Auxiliary Landing Field, Crows Landing)

The purpose of this Fact Sheet is to provide the status of a demonstration project to treat contaminated groundwater in the Administration Area Plume near former Underground Storage Tank (UST) Site 117 at the NASA Crows Landing Flight Facility, formerly known as the Naval Auxiliary Landing Field (NALF), Crows Landing in Stanislaus County, California (Plate 1). The Administration Area Plume, which is managed under Installation Restoration Program (IRP) Site 17, contains both petroleum hydrocarbons and solvents. The demonstration project was implemented in an area of the plume that contains primarily petroleum hydrocarbons, including gasoline, benzene and 1,2-dichloroethane. Low levels of the solvents carbon tetrachloride and chloroform have also been detected.

UST Site 117 was a former gasoline storage tank with a fuel dispenser. UST 117 was installed in the 1940's or 1950's and was removed from the site in 1988. It is suspected that petroleum hydrocarbons leaked from the storage tank into the surrounding soil and groundwater. Previous activities at this site include a soil vapor extraction pilot test and groundwater extraction to address soil and groundwater contamination near the source area.

The current demonstration project is evaluating the effectiveness of *in situ* Submerged Oxygen Curtain (iSOC™) technology at enhancing the biodegradation of petroleum hydrocarbons in groundwater.

Plate 1. UST Site 117 Location
(Keyhole Pro Photography 2000-2004)



Oxygen is injected into the groundwater via the iSOC™ system. Biodegradation is anticipated to occur when naturally occurring bacteria in the subsurface groundwater utilize the oxygen to breakdown the petroleum hydrocarbons.

Oxygen injection wells and monitoring points were installed in August 2003 and oxygen injection began in September 2003 (Plate 2). Groundwater samples are being collected monthly to evaluate any changes in concentration of dissolved oxygen and petroleum hydrocarbons.

Plate 2. UST Site 117 iSOC™ Demonstration Area
(U.S. Navy Photograph 2004)

In general, the monitoring wells downgradient of the oxygen injection wells indicate a relatively steady decrease in benzene concentrations over time. Decreases in benzene concentrations within the test area may be due to the increased dissolved oxygen concentrations or due to the changes in groundwater flowing into the test area.

Additional time may be required for the bacteria to adjust to increased oxygen concentrations in the groundwater before significant changes in petroleum hydrocarbon concentrations will be measured. In addition, bacteria may be using other, more readily available, naturally occurring hydrocarbons in the saturated zone as carbon and energy sources and may not start to degrade the petroleum hydrocarbons until the naturally occurring organics are depleted.

Although the demonstration project was originally scheduled to operate for only 12 months, additional system operation and monitoring will be conducted. Oxygen injection will continue through May 2005 and changes in dissolved oxygen will be monitored to further evaluate the effectiveness of the treatment technology. At the completion of the demonstration project, an evaluation of the results will be presented in a summary report. The summary report will be placed in the repository at the Patterson Library.

Historical Background

The former NALF Crows Landing was commissioned in May 1943 and has served primarily as an auxiliary airfield for operations from Naval Air Station, Moffett Field. The Navy closed the facility in 1994 using the Base Realignment and Closure (BRAC) process and it was transferred to NASA on July 1, 1994. In October 1999, NASA was authorized by legislative act of the 106th Congress of the United States of America to transfer the facility to Stanislaus County.

The Navy is responsible for the restoration of contaminated sites that were the result of historical Navy operations at the facility. The Navy is the lead agency for the implementation of the installation restoration program. The California Department of Toxic Substances Control; the California Regional Water Quality Control Board, Central Valley Region; and the California Integrated Waste Management Board provide regulatory oversight.

Opportunities for Community Involvement

The Navy provides periodic updates to the community through Fact Sheets. The Fact Sheets are available for viewing on the Navy's Environmental web site at the following address: http://www.efdsw.navfac.navy.mil/Environmental/CrowsLanding.htm#facts

Administrative Record

Selected recent Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Administrative Record documents are available at the Information Repository at the Stanislaus County Library, Patterson Branch in Patterson, CA (Telephone Number: (209) 892-6473).

All remedial investigation reports, underground storage tank reports, and other documentation pertaining to the Navy's environmental restoration program are maintained in the CERCLA Administrative Record at Southwest Division, Naval Facilities Engineering Command in San Diego. For assistance with the CERCLA Administrative Record files or requests for copies of documents contained within the CERCLA Administrative Record files, please contact the records manager, Ms. Diane Silva, at (619) 532-3676.

For More Information

For more information pertaining to the Navy's environmental restoration program projects at the Facility, please contact Mr. Michael Bloom or Ms. Michelle Hurst:

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