



Guardian

America's First Choice for Environmental Restoration

A Publication of the Installation Restoration Program

Travis Air Force Base, California

April 2003

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(Photo by Mark Smith)

Phytoremediation at Travis AFB — A long term study near the Building 755 Battery Shop involving over 400 Eucalyptus trees has shown some promising initial results.

Phytoremediation - Does it Work?

An Interim Report Card on an Ongoing Field Study

By Glenn Anderson
Travis AFB Restoration Staff

In the July 1999 newsletter the Travis AFB environmental office described the start of a long-term study to evaluate the use of trees to promote the cleanup of contaminated groundwater. The technology, known as phytoremediation, offers an inexpensive and environmentally-friendly means to either remove contaminated groundwater from the subsurface or to break down the contaminants into harmless compounds.

The study is part of a nationwide effort to test phytoremediation at a number of Air Force bases (Travis AFB, California; Altus AFB, Oklahoma; Ellsworth AFB, South Dakota; Fairchild AFB, Washington; Hill AFB, Utah; and Vandenberg AFB in southern California) with varying geological and climatic conditions. The Travis AFB portion of the study began in October 1998 with the planting of 100

Red Ironbark Eucalyptus trees near the Building 755 Battery Shop (Site DP039). The study was expanded in April 2000 with the planting of 380 additional trees. The Air Force Center for Environmental Excellence has provided both the funding and the project support for the study, and Parsons ES has provided technical support and project oversight at each base.

Early this year Parsons ES issued an interim technical report that presents the cost and performance data collected at each demonstration site to date. Generally, the trees at DP039 are healthy, and the tree planting was a success. Six of the original 100 trees were lost due to freeze damage, and high winds have given several of the trees a significant lean which may correct itself over time.

Based on water balance calculations and measured sap flow, it is clear that water usage is increasing with time as the trees continue to grow. However, changes to the local groundwater

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For more information about the Installation Restoration Program, visit www.travis.af.mil/pages/enviro



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The Guardian is a publication of the 60th Civil Engineer Squadron's Installation Restoration Program (IRP). The newsletter is designed to inform and educate the public about the base's ongoing environmental cleanup program. Contents expressed herein are not necessarily the official views of, or endorsed by, the U.S. Government, the Department of Defense, or the Department of the Air Force.

Additional information about the program can be obtained from the public website at <http://www.travis.af.mil/pages/enviro>.

Questions and comments about the environmental cleanup program should be addressed to:

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Out with the old and in with the NEWIOU




VIEWPOINT

John Lucey
U.S. EPA

The West/Annexes/-Basewide Operable Unit (WABOU) Soil Record of Decision (ROD) has been finalized and now it is time to move on to the North East West Industrial Operable Unit (NEWIOU) Soil, Sediment and Surface Water ROD. The WABOU Soil ROD approval took longer than anticipated, but the final ROD is very well written and will probably be used as a model ROD for other Air Force bases. Many lessons were learned while preparing the WABOU Soil ROD and the NEWIOU ROD will benefit as a result. The NEWIOU contains more sites than the WABOU and it also includes other media (sediment and surface water) associated with Union Creek. Union Creek is a tributary to San Francisco Bay and specific State regulations for surface water contamination will apply. In addition, there is a healthy ecological environment in the creek which must be protected. Other sites

contain wet lands and vernal pools which also require specific regulations. Travis AFB is currently preparing the Soil, Sediment and Surface Water ROD which will describe the selected remedial alternatives for the NEWIOU.

EPA's main responsibility at Travis AFB is to help the Air Force comply with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) (Superfund) regulations. CERCLA provides the framework for investigating and cleaning up contamination. EPA publishes specific cleanup goals for soil, water and air contamination that are based on scientific principles, health risk calculations and considerations of the potential toxic effects of contamination. Although not promulgated as cleanup levels, these goals are used as inputs to the cleanup level selection process. This is an ongoing effort by EPA and cleanup goals are periodically updated to ensure protectiveness.

EPA and the State regulatory agencies will continue to work with the Travis AFB in a cooperative manner and conduct the environmental cleanup in a timely and cost effective manner. 

New Faces at Travis

By Linda Weese


60 AMW Public Affairs

Mr. Mark H. Smith assumed the duties of the Chief of Environmental Restoration for Travis Air Force Base on January 27, 2003. He earned his Bachelor of Science degree in Mechanical Engineering from the University of New Mexico in 1981. Prior to environmental work, he has worked in design, project management, weapons quality evaluation, software development and maintenance engineering.

Eamon Moriarty is an Environmental Safety Engineer at Universal Propulsion Company (UPCO) located across Highway 12 from Travis, and replaces Kurt Urquhart representing UPCO on the RAB. He has lived with his wife and two children in Fairfield since the Spring of 2001, and enjoys the bounty of local outdoor recreational opportunities as a hunter and fisherman. Before coming to Fairfield, Eamon worked on groundwater and site remediation projects



Two New Members — From left to right, Mark Smith assumes the duties of the Chief of Environmental Restoration, and Eamon Moriarty brings his expertise to the RAB.

throughout California for 11 years as an environmental health and safety consultant. Eamon joined the RAB to both foster a cooperative working relationship regarding restoration issues at the Potrero Hills Annex where UPCO maintains operations, and to help protect the environment and quality of life for our neighbors and families. 

Land Use Controls

Uncle Sam's Version of the County Deed Restriction

By Glenn Anderson

Travis AFB Restoration Staff

Last year, we heard a lot about land use controls (LUCs), particularly since they were the subject of an official dispute between the Air Force and the Environmental Protection Agency while the base was trying to wrap up its first soil Record of Decision (ROD). Now that the ROD is signed, it is worthwhile to revisit LUCs and see how a military installation enforces them.

First, let's review the basics. A LUC is a physical or administrative action that restricts access to a particular piece of property. A fence is an example of a physical LUC, and a county deed restriction is an example of an administrative LUC. In the environmental world, the purpose of a LUC is to restrict the use of property that contains soil or groundwater contaminants above agreed-upon levels, usually residential cleanup values. For example, a former solvent spill area might be cleaned up to prepare for the future construction of a vehicle maintenance yard, but it would not be suitable for a school playground.

Several sites described in the first Travis AFB soil ROD received LUCs as their remedies to address soil contaminants. Since these controls are promulgated in a ROD which is a legal document, failure to maintain them could lead to administrative notices or fines or even the selection of a revised, more active and more expensive remedy. To ensure that the controls are

enforced, the base uses a multi-layered approach to prevent inappropriate soil or groundwater exposure. The key components of the approach are described below.

1. Travis AFB General Plan – this is a planning document similar to a city general plan. It provides the framework for selecting the locations for and building the facilities needed to carry out the base mission. This plan gives the personnel in leadership and support positions the information and guidelines for creating an efficient and safe environment to work and live on-base. A portion of the General Plan summarizes the LUCs at restoration sites and is revised when the LUCs at a site changes.


2. Air Force Form 813 (Request for Environmental Impact Analysis) – this form is submitted to the base environmental office early in the project planning process. The building location is checked against maps and other reference material to determine the potential impact of the project on the environment. If needed, a more detailed environmental analysis is conducted. When the location overlaps all or part of a restoration site, another building location is selected or the base works with the regulatory agencies to ensure that the building activities protect site workers and do not interfere with future site cleanup plans.

3. Air Force Form 332 (Base Civil Engineer Work Request) – this form is submitted to the base civil engineer office prior to the start of a project. It is mainly a work coordination form, but from an environmental perspective it allows the base environmental office to review the details of the project and to identify the tasks that the contractor will follow to protect the health of site workers and the local environment. Any necessary

changes to the building plans or coordination steps with the regulatory agencies are also identified through the review of this form.

4. 60 AMW Form 55 (Excavation Permit) – this form is submitted to the base civil engineer office at least two weeks prior to the start of a project that involves soil excavation greater than three inches in depth. The environmental office uses the permit to enforce land use controls at a site, ensuring that procedures to protect the health of site workers and the local environment will be in place. It also is used to show the contractor the locations of all environmental utilities, such as monitoring wells and piping for contaminated water, that are near the proposed digging area.

"We have been effectively using these procedures for years," stated Mark Smith, restoration branch chief. "By remaining involved with construction projects from planning through execution, we ensure that all soil work on Travis AFB is performed safely and in accordance with federal and state law."

In addition to these administrative procedures, each LUC site is inspected on an annual basis to confirm that the controls are working. A report with the results of the inspection is provided to both federal and state regulatory agencies for their review. "Our unofficial site visits probably average about once a month rather than once a year," said Glenn Anderson, project manager. "However, we need to verify that all site LUCs are adequate and properly managed, particularly during the summer construction season. The annual inspection upholds the integrity of the administrative process." 

REPORT

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levels or contaminant concentrations that could be attributed to the trees were not seen.


So, does phytoremediation work on Travis AFB? "It is too early to tell", stated Glenn Anderson, remediation project manager who has been involved with the study from the start. "The trees have only begun to make their presence felt in the subsurface."

Last December, Parsons ES returned to the study area to collect more information. Along with the installation of additional monitoring wells around the study area, the

field team took core samples from several trees. Subsequent laboratory analysis of the samples identified low contaminant concentrations within the tree cells, demonstrating the ability of the roots to absorb the contaminants along with the groundwater. Later on this year, the field team will sample the vapor surrounding the branches to determine whether the tree leaves are releasing contaminants as part of its normal transpiration processes.

Although these initial results are promising, it will take more time to accurately answer this question. Even if the trees grow to the point where they can process signifi-

cant amounts of contaminated groundwater, they will not become a part of the overall treatment strategy unless they can be shown to stop the movement of the solvent plume that flows downstream from the battery shop.

"These trees have a lot to prove!" stated Mark Smith, Travis' new Restoration Program Manager. "However, their roots can penetrate tight clay layers and potentially clean up contaminants that cannot easily be accessed by standard pump-and-treat methods. Since the trees are inexpensive to plant and maintain, they deserve a shot at solving this environmental problem." 

Meeting Agenda

6:30 - 7:00 p.m. Poster Session:

The poster session allows RAB and community members to view posterboards about ongoing Travis AFB restoration program activities. It also allows the public the opportunity to discuss the program with the Travis AFB environmental restoration staff on a one-to-one basis.

7:00 - 9:00 p.m. RAB General Meeting

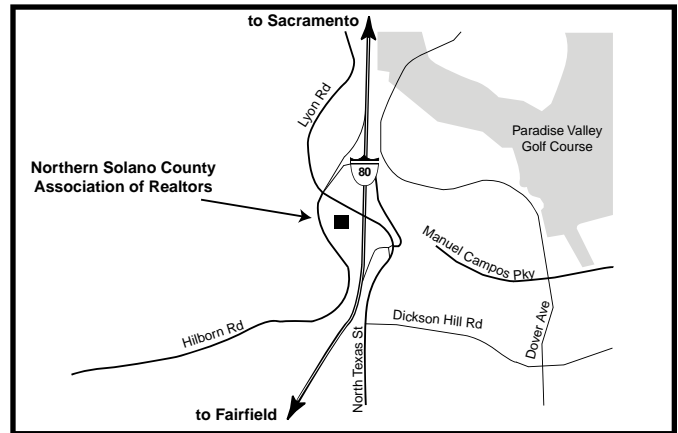
- I. **Welcome and Introductions**
- II. **Approval of Minutes**
- III. **Additional Agenda Items and Questions**
- IV. **Discussion Topics**
 - Introduction to new RPM
 - EPA Orientation
- Break**
- V. **Cleanup Program Status**
 - Phytoremediation
 - Land Use Controls
 - NEWIOU Summary
- VI. **Regulatory Agency Reports**
- VII. **Focus Group Reports**
- VIII. **RAB/Public Questions**
- IX. **Set Time and Place for Next RAB Meeting**
- X. **Set Focus Group Meeting Times**
- XI. **RAB Meeting Debrief Topics for Next Meeting**

Adjourn

Travis AFB Restoration Advisory Board Meeting

April 24, 2003
7 p.m.

Northern Solano County
Association of Realtors
3690 Hilborn Rd
Fairfield, CA



LOCATION OF INFORMATION REPOSITORIES

Vacaville Public Library

1020 Ulatis Drive
Vacaville, CA 95688

(707) 449-6290

Monday-Thursday: 10 a.m. - 9 p.m.

Friday-Saturday: 10 a.m. - 5 p.m.

Sunday: 1 p.m. - 5 p.m.

Fairfield-Suisun Com. Library

1150 Kentucky Street
Fairfield, CA 94533

(707) 421-6500

Monday-Thursday: 10 a.m. - 9 p.m.

Friday-Saturday: 10 a.m. - 5 p.m.

Sunday: 1 p.m. - 5 p.m.

Mitchell Memorial Library

510 Travis Boulevard
Travis AFB, CA 94535

(707) 424-3279

Monday-Thursday: 10 a.m. - 9 p.m.

Friday: 10 a.m. - 6 p.m.

Saturday: Closed

Sunday: 12 p.m. - 6 p.m.

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