uardiar America's First Choice for Environmental Restoration

Publication of the Environmental Restoration Program

Travis Air Force Base, California

July 2003

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The Base Mission:

Ultimately, the purpose of an Environmental Restoration Program is to support the base mission. However, the interface between the two can be quite challenging 2

Next RAB Meeting:

The agenda and location are set for the next Restoration Advisory Board meeting, scheduled for July 24, 2003 at the Office of the North Solano County Association of





Passive Groundwater Treatment - Four years after iron filings were injected into a plume of contaminated groundwater, the base reports on the results of this study.

Does the Reactive Wall Work? Base Looks At Viability of New Water Treatment Technology

By Glenn Anderson Travis AFB Restoration Staff

The July 1999 edition of the Travis AFB environmental newsletter described an innovative technology for the treatment of solvent-contaminated groundwater. Known as a Permeable Reactive Treatment (PeRT) wall, the technology involved the placement of iron filings into a zone of contaminated groundwater. The iron is a reactive material that breaks the contaminants down into safe compounds, allowing the cleaned water to flow out of the zone.

Building 755, the base battery shop (site DP039), was selected as the test site for the PeRT wall. At one time, the base used an

acid neutralization pit to dispose of battery acid and chlorinated solvents, such as Trichloroethene (TCE). This discontinued practice created a concentrated plume of TCE-contaminated groundwater.

With funding and project support from the Air Force Center for Environmental Excellence and technical support from a number of environmental firms, over 80 tons of iron were injected into a highly concentrated portion of the DP039 plume in July 1999. Once the field work was complete, a two-year period of field measurements and groundwater sample analysis to evaluate the wall's performance was initiated.



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The Guardian is a publication of the 60th Civil Engineer Squadron's Environmental Restoration Program (ERP). 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 https://www.travis.af.mil/ pages/enviro. Questions and comments about the environmental cleanup program should be addressed to:

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As the New Guardian...



VIEWPOINT

Mark Smith Travis AFB

By the time the July edition of the Guardian goes to print, I'll be in my sixth month with the Restoration Branch of the Environmental Flight. Let me tell you just how much fun I am having...

... imagine yourself as a new program manager, coming into a well organized program (thanks in large part to Al Brickeen, my predecessor) that is run by a conscientious and knowledgeable staff of project managers, where the Wing Commander takes an interest in your program, where you learn something new every day...it's the type of job one can really enjoy.

Travis Air Force base has one of the more mature restoration programs among the 12 Air Mobility Command bases. We've identified and characterized 42 contamination sites, 8 of which are closed out, and none of which pose an immediate risk to human health or the environment. The 34 remaining sites pose potential risks from long-term exposure, but we're working on that.

This summer, we'll conduct several important soil cleanup actions. The

Construction and the Environment

By Mark Smith Travis AFB Remedial Program Manager

As an integral part of the 60th Civil Engineering Squadron (CES), it is the responsibility of the Restoration Branch of the Travis AFB Environmental Management Office to protect human health and the environment from contaminants found at Environmental Restoration Program (ERP) sites. Even though these sites do not present any immediate risks, our charter is to reduce to safe levels the potential risks posed to base personnel and the local ecosystem that flourishes on base property. Equally

excavation of soil and debris at the pesticide landfill (LF008) and contaminated soil at the base entomology shop (SS041) are already underway, as is a soil removal action at the former solvent spill area (SS015) that supports the construction of a new refueling vehicle maintenance facility. Once we resolve a few funding hurdles, the cleanup of lead-contaminated soil at the former small arms range (SD045) can also begin this summer.

I missed out, however, on all of the planning associated with these cleanup efforts. Those of you who have been involved with the program for a while will recall the West/Annexes/Basewide Operable Unit (WABOU) Soil Record of Decision (ROD) that took over four years to complete. Well, all of that planning and preparation have come to fruition, and the actual fieldwork is proceeding quickly. As with most endeavors in life, it's all of the hard work up front that makes the end result all the more enjoyable.

I expect to complete all of our soil cleanup actions by 2006 and place our contaminated groundwater sites in longterm operation by 2008 after our basewide groundwater ROD is signed. There is still plenty of planning to do for the next five to ten years, and I hope you'll continue to be an active participant in the Restoration program during that time. I plan to be here and look forward to contributing in Travis' cleanup efforts.

important are the actions we take to protect our neighbors when these contaminants move beyond base boundaries.

Ultimately we would like to reduce all risk from these ERP sites to zero by cleaning up the local soil or groundwater to at least residential standards, but this is not always possible. For example, solvents and other Dense Non-Aqueous Phase Liquids (DNAPL) can remain in the subsurface for decades, slowly dissolving into the groundwater and creating what seems like a permanent problem that is almost impossible to fix.

See CONSTRUCTION page 3

CONSTRUCTION

From page 2

Today's standard pump-and-treat approach for cleaning up contaminated groundwater can only do so much, which is why we are constantly exploring new methods to solve old problems. In past Guardian articles, we've described the reactive wall and phytoremediation studies at ERP site DP039 and the vegetable oil study at ERP site SS015. "Not only do these new technologies offer the potential for treating difficult groundwater contaminants, but the Air Force has come up with ways to test these technologies under real world conditions", says Mr. Glenn Anderson, Project Manager for the West/Annexes/Basewide Operable Unit.

The Air Force Center for Environmental Excellence (AFCEE) evaluates innovative ways to clean up contaminated sites. So far, we have been successful in bringing several AFCEE demonstration projects onto Travis in the hope that these new technologies from private companies will offer better solutions to our contamination problems. Mr. Anderson continues, "It's a win-win situation; the environmental firms demonstrate the effectiveness of their new cleanup technologies, and we collect the data needed to support the permanent use of the successful technologies in our cleanup efforts."

WALL

From page 1

MacTec, Inc., the primary contractor for the technology evaluation, completed the field work and submitted a report on the performance of the PeRT wall in June 2002. So, was the wall successful in removing the solvents from groundwater?

Generally, the results of the study were mixed. From a chemistry point of view, a series of groundwater monitoring wells within and outside of the wall showed that the iron filings significantly lowered the solvent concentrations without producing any dangerous byproducts. However, the water level measurements from the wells also showed that water did not readily flow through the wall. What happened?

Part of the answer lies with the way that the wall was placed in the ground. Usu-

This sounds great, but we still need to support new construction activities that support the base mission, even if they impact ERP sites. How do we coordinate cleanup work with military construction projects that are important to the Air Force global mission? "I'm glad you asked", replied Mr. Wilford Day of the Restoration staff. "There isn't a base project, large or small, that doesn't start with a Form 813 for my review. I check it; and if the project potentially impacts our sites, reclaimed water lines, or monitoring/extraction wells, I point out the the impacted areas to the construction project manager."

The Air Force uses the Standard Form 813 to start the Environmental Impact Analysis Process (EIAP). The intent of this process is to take the necessary steps to carry out the proposed construction work and still allow the base to complete its legally mandated environmental cleanup work.

"The sooner that this analysis takes place, the better" says Mr. Day. "The best time to identify all environmental impacts of a construction project is during the conceptual design phase. We identify the impacts and required actions, and the construction project manager determines if the project needs to be relocated or modified to meet all legal requirements."

Mr. Day explains, "Let's say that there is contaminated groundwater beneath the

ally, the wall is built by digging a trench below the water table and filling it with reactive material. To avoid underground utilities and reach greater depths, we tested a jet grouting method for pumping iron filings into the subsurface. This method relied on a sugar-based liquid, known as guar gum, that could suspend the filings long enough to place them into the soil and then break down naturally. It is likely that a combination of the disturbed subsurface soil layers from the jet grouting process and excess guar have reduced the ability of water to flow through the wall. So, what do we do with the wall now?

There are several options available to the base. It is possible to build an underground 'funnel' system to try to force water through the wall, but the construction costs would be high and construction area where excavation takes place. In this case, we provide instructions on what to do if contact with the groundwater takes place during construction. We also provide guidance on soil and groundwater disposal from construction sites."

According to regulation, the proponent of the construction project is responsible for starting the EIAP, but we take a proactive approach by working closely with base personnel to identify potential problems early in the design process. For example, planning documents and maps show the location of ERP sites and the controls associated with them. At our last public meeting, Mr. Anderson explained how land use controls (LUC) work and their importance. "If there is any residual contamination at a site", Mr. Anderson stated, "then the site receives a LUC." By keeping construction project managers informed of the presence of property restrictions on base, they can make better construction management decisions.

Once again, our responsibility is to clean up ERP sites and to protect human health and the environment from contamination at these sites. The base mission is to move supplies and personnel where they are needed in the world. Although not easy, the Restoration Branch is proud to play an important part in support of that mission.

there would be no guarantee that this approach would succeed. An extraction well on the downgradient side of the wall might also achieve the same results, although this would reduce the wall's ability to break down contaminants. A more passive option would be to monitor the water levels and solvent concentrations across the wall to see if the natural breakdown of the guar gum improves the flow rates through the reactive material. Even if the wall is not considered a part of the overall groundwater treatment strategy at the battery shop, it will not get in the way of future groundwater cleanup efforts.

Currently, the base is undergoing a fiveyear review of its groundwater sites with federal and state regulatory agencies. Discussions concerning groundwater treatment, including the future of the wall, are taking place this summer.

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The open forum allows RAB and community members to discuss ongoing Travis AFB restoration program activities with the Travis AFB environmental staff on a one-to-one basis.		Advisory Board Meeting	Northern Solano County Association of Realtors	Paradise Valley Golf Course
7:00 - 9:00 p.m. RAB General Meeting				A
I.	Welcome and Introduction	July 24, 2003	\backslash	Manuel Campos PKy
II.	Approval of Minutes	7 p.m.		Dickson Hill D
111.	Additional Agenda Items and Questions	Northern Solano County	Haborn Rd	
IV.	 Discussion Topics Risk at Travis AFB Sites Break 	3690 Hilborn Rd Fairfield, CA	to Fairfield 🚩 🧧	ži i
V.	Cleanup Program Status Reactive Wall Study Construction Projects 	Location of Information Repositories		
VI.	• NEWIOU Soil ROD Regulatory Agency Reports	Vacaville Public Library 1020 Ulatis Drive	Fairfield-Suisun Com. Library 1150 Kentucky Street	Mitchell Memorial Library 510 Travis Boulevard
VII.	Focus Group Reports	Vacaville, CA 95688	Fairfield, CA 94533	Travis AFB, CA 94535
VIII. IX.	RAB/Public Questions Set Time and Place for Next RAB	(707) 449-6290	(707) 421-6500	(707) 424-3279
Х.	Meeting Set Focus Group Meeting Times	Monday-Thursday: 10 a.m. - 9 p.m.	Monday-Thursday: 10 a.m 9 p.m.	Monday-Thursday: 10 a.m. - 9 p.m.
XI.	RAB Meeting Debrief Topics for Next Meeting	Friday-Saturday: 10 a.m 5 p.m. Sunday: 1 p.m 5 p.m.	Friday-Saturday: 10 a.m 5 p.m. Sunday: 1 p.m 5 p.m.	Friday: 10 a.m 6 p.m. Saturday: Closed Sunday: 12 p.m 6 p.m.
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- Additional

Meeting Agenda

The open forum allows RAB and community members

6:30 - 7:00 p.m. Open Forum:

- Break
- V.
- - Cleanup P

- - Reactive W

 - Construction
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- VI.
- Regulator
- VII. Focus Gro
- VIII. RAB/Publi
- Set Time a
- IX.
- Meeting
- - Set Focus

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