



Guardian

America's First Choice for Environmental Restoration

A Publication of the Environmental Restoration Program

Travis Air Force Base, California

January 2011

INSIDE

Viewpoint:

It is not easy to work more than one job. The Travis Remedial Program Manager actually has two jobs, but the second job is located on the east coast. Find out how he is juggling two jobs while saving a bundle on travel costs (and his sanity).....

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Next RAB Meeting:

The next Restoration Advisory Board meeting will be held on April 21, 2011 at 7 p.m. at the Office of the Northern Solano County Association of Realtors. The meeting agenda is forthcoming.....

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Acronyms

AFCEE: The Air Force Center for Engineering and the Environment provides Air Force leaders with the expertise and professional services needed to protect, preserve, restore, develop and sustain the nation's environmental and installation resources.

GSR: Green and Sustainable Remediation selects remedies that minimize adverse impacts to the environment, such as green house gas emissions, yet provide the maximum environmental benefit to the cleanup.

MTBE: Methyl Tertiary Butyl Ether is a gasoline additive that is no longer used in California; it can pollute large amounts of groundwater when gas with MTBE is spilled or leaked at gas stations.



(Photo by Doug Berwick[CH2M HILL])

Straight Burrowing: Field technicians use a horizontal drill rig to install piping between an extraction well and a new treatment system to be built behind one of Travis' gas stations. Horizontal drilling avoids underground utilities, produces fewer soil cuttings, and protects roads and landscaping.

New Tricks for an Old Dog

New Treatment System Faces Challenging Contaminant

By Lonnie Duke

Travis Environmental Project Manager

When the U.S. Environmental Protection Agency first took on the huge task of cleaning up the nation's groundwater resources, it relied on groundwater extraction and treatment technologies, often referred to as "Pump and Treat." P&T was considered a presumptive remedy, which means that it was presumed to work under most environmental conditions.

After decades of groundwater cleanup experience, it is clear that P&T is not the magic bullet that can solve all of our groundwater problems. It can remove

contaminants from the subsurface, but it often is not able to achieve the desired cleanup levels. Also, because P&T systems rely heavily on pumps and other electrical and mechanical infrastructure, they consume a lot of electricity and require a lot of maintenance.

Still, P&T is a tool that environmental professionals should not be afraid to use under the right conditions. Last December, Travis AFB chose this tool to tackle a particularly challenging contaminant.

Methyl Tertiary Butyl Ether, or MTBE, is a fuel oxygenate that was used in California from the 1970's until 2003. Fuel oxygenates increase the available oxy-

See **TRICKS** page 3

Visit our Environmental Restoration Program web site at <http://www.travis.af.mil/enviro>



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<http://www.travis.af.mil/enviro>. Questions and comments about the program may be sent to this address:

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View from the Southeast

Usually, the Viewpoint offers an excellent opportunity to describe some interesting aspect or challenge with the Travis Air Force Base Environmental Restoration Program. As the program manager, I have access to a rewarding portion of the federal government and can often showcase our efforts to improve the performance of our cleanup remedies.

This time, however, I am a little disconnected from base activities, because I am on a three-month temporary assignment to Tyndall Air Force Base in the Florida panhandle. I am acting as Tyndall's Interim Remedial Program Manager until a permanent replacement can be hired.

Thanks to the modern day miracles of electronic messages and teleconferencing, it is easy to stay in touch with my California staff and contractor support personnel. However, my days in Florida are spent with a new group of environmental professionals, and our mission is to create a viable cleanup program that will lead to the investigation, cleanup and closure of 80 to 180 (pending regulatory concurrence) future contaminated sites on Tyndall AFB.

This daunting task was offered up as "an excellent growth opportunity" which in this case is the truth. To be successful, the new "Team Tyndall" will have to rely on years of environmental experience to select the best courses of action, put on contract the most motivated and knowledgeable environmental consultants, apply fair and effective negotiating skills when working with Federal and State of Florida environmental regulatory agencies, and give the local communities a voice in the decision-making process.

I took on this assignment for several reasons. First, I wanted to see if the tools and strategies and mindset that



VIEWPOINT

Mark H. Smith
Travis AFB Remedial
Program Manager

have worked so well on Travis AFB can be applied to another base with different environmental and contaminant conditions. Second, any progress that I help the Tyndall ERP Staff make towards cleanup and the skills I learn after being faced with the challenges Tyndall has to address, will be very rewarding. Finally, I figured Florida would be a warm place to work in the winter, however, we've had several nights of freezing temperatures in the first two weeks of December.

As you read this Viewpoint, my time at Tyndall AFB is rapidly coming to a close. My team has made a lot of progress over the last ten weeks, and I will leave behind a well-conceived roadmap for the new manager to follow. I have also made a number of excellent business contacts and quite a few friends, both on base and in the environmental consulting world. These professional relationships (and the less expensive and readily available seafood – 10% of the Nation's Oysters come from 25 miles to the East of me) will be missed the most when I return to California.

It will be great to return home and reconnect with family and friends. Plus, I return to a restoration program that has been humming along in my absence (thanks to two of the best Project Managers anywhere!) and making progress toward the Air Force's goal of getting remedies finalized and in place by 2012. I'm grateful for the opportunity to view this line of work from a different perspective, from a southeastern base but I'm keeping my sites on Travis AFB!

Tricks

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gen in fuel, allowing it to burn more efficiently and creating fewer carbon monoxide and ozone emissions. The result is cleaner air, which led to the decision to increase the use of MTBE in our gasoline formulations to improve air quality.



Rays Array: Two large solar panel arrays provide the electricity for two of three groundwater extraction wells at the Travis gas stations. The three carbon canisters that treat the MTBE-contaminated groundwater can be seen in the background. (Photo by Glenn Anderson)

However, gasoline creates environmental problems when spilled onto the ground or leaked from an underground tank. When it reaches the water table, gasoline floats on top of the water, clings to soil particles, and is eventually eaten by soil microbes.

In contrast, MTBE mixes readily with water, does not adhere well to soil particles, and is not a food source for microbes. So, MTBE is difficult and expensive to clean up, and a small amount of MTBE can contaminate a lot of drinking water. This is why a 1998 University of California study advised stopping the use of MTBE due to concerns over the potential contamination of drinking water.

Travis AFB has two gas stations that store fuel in underground tanks. Today, these stations have the most modern gasoline tank and dispensing systems available, but in the early

1990's their tanks, like so many others across the country, leaked gasoline with MTBE. The end result was a small area of gasoline-contaminated soil and a much larger plume of MTBE-contaminated ground water.

Once the extent of the MTBE contamination was identified through a groundwater analysis program, Travis

AFB and an environmental contractor realized the importance of capturing the MTBE plume before it migrated any further. At the same time, the Travis Team wanted to apply Green and Sustainable Remediation (GSR) techniques to the cleanup so that it did not trade one environmental challenge for another one. So, the contractor designed a P&T system that could clean up the contaminated groundwater in an environmental- and budget-friendly manner.

"Traditionally, pump and treat systems are not green or sustainable," said Mr. Mark Smith, Travis AFB Remedial Program Manager. "However, we designed and built the extraction system with energy conservation and environmental protection in mind."

The design called for three extraction wells to capture the MTBE plume, and the pumps in all three wells are

solar powered. To operate the system even at night, each pump is connected to a solar panel-battery assembly. The panel charges a panel of gel-pack batteries that powers the pump, allowing for 24-hour pumping without electricity from the Travis power grid. This greatly reduces the carbon footprint of this system, since base power is only used to operate a booster pump to push the extracted water through the treatment system.

"The treatment system consists of three 2,000-pound granular activated carbon canisters that were sitting idle at the Central Ground Water Treatment Plant," said Mr. Mike Wray, project manager for CH2M HILL, the environmental contractor that designed and built the treatment system. "We moved them over to the gas stations and put them to good use, along with a well vault and lid from a discontinued cleanup project. The equipment reuse resulted in a nice cost savings."

MTBE is a difficult chemical to remove from groundwater, but activated carbon made from coconut shells has proved to be effective in lowering MTBE concentrations to undetectable levels. It is also good at capturing other chemicals found in gasoline.

To facilitate the installation of the pipes that connect the extraction wells to the treatment plant, a horizontal drilling technique was used. While horizontal boring tends to cost more than traditional trenching, it avoids the cost associated with the refilling of trenches, the repaving of streets and parking lots, and the repairs to damaged landscaping. So, the costs balance out. Also, because horizontal drilling is faster, cleaner, less intrusive and generates fewer soil cuttings than trenching, it is more accepted by facility managers and base leadership.

After plant construction was complete, the system startup tests proceeded quickly and successfully. The

Tricks

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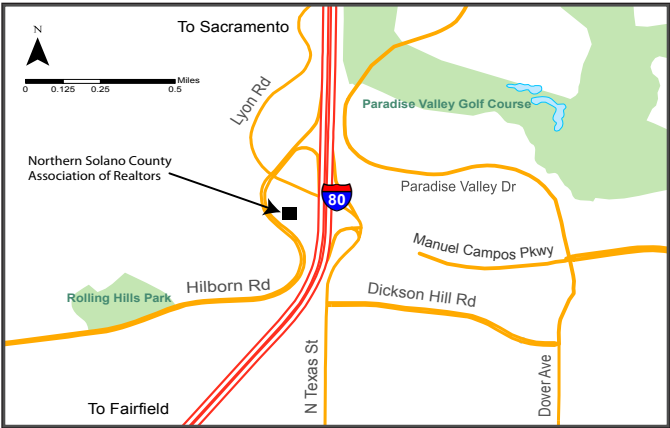
base is now working with California environmental regulators on a National Pollution Discharge Elimination System permit that will allow the clean treated water to be discharged into Union Creek. The permit lists all required monthly chemical tests that must be accomplished to demonstrate that the plant is working properly. With permit in hand, the plant will then be officially started and run continuously to treat the MTBE plume.

“Travis AFB is proud of its leadership role in promoting GSR technologies,” said Mr. Smith. “Our newest groundwater treatment system proves that even an old dog like pump and treat can learn a few environmentally-friendly tricks.”

Travis AFB
Restoration
Advisory
Board
Meeting

April 21, 2011
7 p.m.

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



LOCATION OF INFORMATION REPOSITORIES

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