



Guardian

America's ~~Best~~ Choice for Environmental Restoration

A Publication of the Environmental Restoration Program

Travis Air Force Base, California

January 2010

Award-Winning

INSIDE

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Glossary

Outfall: An outfall is defined as a mouth or drainage outlet of an effluent (something that flows out), such as a sewer or stream. The outfalls at Travis AFB are a part of its stormwater drainage system that allows rain water to enter Union Creek. Outfall #2 connects the west branch of Union Creek to the main branch.



(Photo by Glenn Anderson)

In a Scrape: A long-arm excavator removes a shovel full of contaminated sediment from the main branch of Union Creek. Two separate sediment cleanup actions were carried out last year and achieved cleanup levels that protect the plant and animal species that call the creek their home.

It's **Screeky** Clean

Sediment Cleanup Actions in Union Creek Complete

By Glenn Anderson

Travis Environmental Project Manager

Thanks to warm delta breezes along with dry weather conditions, Travis AFB successfully completed two sediment cleanup actions last autumn.

"This eliminates sediment as a medium of concern," said Mr. Mark Smith, Travis Remedial Program Manager. "Although it was a relatively minor part of our base cleanup program, these completed actions leave only soil and groundwater as the remaining contaminated media to address."

Also, once the paperwork associated with these actions is reviewed by environmental regulatory agencies and finalized, one of the

two sites will require no additional cleanup actions, so it will be closed.

Contaminated sediment was discovered along two small portions of Union Creek during a remedial investigation in the mid-1990's. Both locations were near outfalls where storm water pipes from the aircraft parking ramps and taxiways enter the creek. Although the sediment did not present a health risk to people, it did pose a potential risk to several animal species living in the creek.

Although simple in design, a proper cleanup of contaminated sediment can be challenging. In most cases, dams are built upstream and downstream of the contaminated sediment, and the water between the dams is drained to expose the sediment. A portable

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The Pursuit of Excellence

Christmas came early to the Travis AFB environmental restoration team last year when we learned that the base had won the General Thomas D. White award for having the top Environmental Restoration Flight within Air Mobility Command. This annual award recognizes the installation conducting the best or most improved environmental restoration program during the previous and current fiscal year. Travis AFB is now eligible to compete for top Restoration Flight recognition Air Force-wide.

General Thomas Dresser White (1901-1965) was the fourth Chief of Staff of the Air Force from 1957 to 1961. Along with a distinguished career that included command of the Fifth Air Force and Seventh Air Force, he provided early leadership in the establishment of Air Force environmental programs.

The purpose of the General Thomas D. White award competition is to promote excellence in every aspect of Air Force environmental programs. The competition is designed to recognize the efforts of installations and individuals for environmental quality, restoration, pollution prevention, recycling, and conservation of natural and cultural resources.

As the Travis Restoration Program Manager, it was my privilege to travel to Scott AFB in Illinois last December to accept this award on behalf of all of the members of the Travis environmental restoration team. Most people enjoy a pat on the back for their efforts, because it gives them a sense of accomplishment that does not come with a paycheck. For me, the receipt of this professional recognition was a highlight to a very busy but productive 2009.

Probably the most exciting aspect of this environmental award is that it rewards team, rather than individual, effort. How many times have we seen a professional or student athlete receive an individual award on television with a big smile, only to confess later on that they would trade it gladly for the team award that comes from winning the last game of the playoff season? In the end, the team award offers the most satisfaction to the most people.



VIEWPOINT

Mark H. Smith
Travis AFB Remedial
Program Manager

And who are these people who deserve the credit for winning this prestigious award? The list of contributors is long, but the easiest place to start is with my small but dedicated staff. Lonnie Duke and Glenn Anderson are our two project managers who put in long hours and perform their work with precision and a sense of urgency. With them, everything is done both right and right now, and most of the heavy lifting would not get done without them. Sherry Cassidy, our administrative assistant, keeps our records intact and up-to-date and Greg Parrott, our environmental attorney, keeps us on the legal straight-and-narrow.

Contributors also include our two Performance-base Contract environmental contractors. CH2M HILL has been pushing hard to complete the remedy selection process for our groundwater sites, and Innovative Technical Solutions, Inc. finished two sediment cleanup actions last year and will wrap up our soil program this year. We selected these contractors based on their merits, and they have not let us down.

Another group that is often overlooked is our regulatory agency representatives. In spite of unpaid leave-of-absences and "furlough Fridays" that resulted from budget shortfalls, they found ways to keep up with the workload and support our field actions. This does not mean that they rubberstamped everything that we did; rather, we as a team found ways to reach consensus and make decisions that will lead to the selection of technically-appropriate, cost-effective, legally-defensible cleanup decisions. We cannot ask any more from the folks who oversee our work.

This list of contributors would not be complete without our counterparts from the Omaha District of the U.S. Army

Viewpoint

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Corps of Engineers. Their contractual and technical support has proved to be absolutely essential to the proper management of the two Performance-Based Contracts that we use to carry out our work. Previous Guardian articles have discussed this contractual approach in detail, and this award adds more justification for its use and for the Omaha District to manage it.

Finally, the Travis Team that won this award is more than a handful of people in the environmental office that have been assigned to the restoration branch. In its essence, the work of the restoration branch contributes to the base rapid global air mobility mission by cleaning up and freeing up land that can then be

used to support combat and peacetime operations. Therefore, credit has to be given to those who contribute to our restoration activities. From the civil engineers who clear our excavation permits to the wing leadership who apply environmental principles to base decisions, from the building

custodians who coordinate field activities within their facilities to finance folks who expedite funds transfers, and from the members of the Travis Restoration Advisory Board who help us to communicate with the local community to our base neighbors who work with us to achieve

cleanup beyond our base boundaries; we could not have undertaken this pursuit of excellence without their involvement.

There is still a lot of work to be done before all cleanup actions have been selected, initiated, and completed, but this award reminds us that we are on the right path.



Proud Moment: Major General Timothy Byers, Air Force Civil Engineer, and Colonel Theresa Carter, Air Mobility Command Civil Engineer, congratulate Mr. Mark H. Smith and the Travis AFB Restoration Program for winning the General Thomas D. White Award (Restoration) (Photo by AMC PA).

Creek

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pump system allows the creek water to move around the section of the creek between the dams. This system is also used to remove the water from the excavation area and keep the exposed sediment as dry as possible. A long-arm excavator scrapes the contaminated sediment out of the creek and places it into dump trucks.

After all of the contaminated sediment has been removed, confirmation sediment samples are collected from the creek bottom and sent to an off-base analytical laboratory to ensure that the sediment cleanup levels were achieved. Then, the two dams are removed, and the site is restored to prevent excess erosion.

“A key to success to any sediment cleanup is the control of water that enters the creek,” said Mr. Smith. “Although we

cannot control the weather, we can control the amount of treated water that our groundwater treatment plants place into the creek. So, we shut down all of our groundwater treatment systems before the start of and during the sediment cleanup to minimize the amount of water in the creek.”

Because of the dry weather conditions, field work proceeded quickly, and it appeared that the cleanup of both sediment sites was going to be completed early. Unfortunately, with only a few hours of confirmation sampling to go, the water level on the upstream side of excavation area at one of the sites started to rise quickly. Within a matter of minutes, the water poured over the dam and filled the excavation area. It took several hours to pump out the water and adjust the pumps to compensate for the extra water flow.

“The rising creek level caught us by

surprise,” said Mr. Smith. “A second excavator was removing vegetation from the upstream portion of the creek, which would have made it easier for water in the creek to reach our excavation area. As far as the extra water is concerned, our best guess is that the dry conditions encouraged longer periods of lawn irrigation, which may have increased the amount of runoff that was entering the storm sewer system. Fortunately, the setback was temporary, and we completed the field work before the first big storm.”

Site restoration consisted of the attachment of netting and silt barriers to the side slopes of the excavated portions of the creek to prevent erosion. Large rock was placed on the creek bottom also as an erosion-control measure. Native seed was spread along the creek sides to promote

Downsizing Our Cleanup

When Smaller Is A Lot Better

By Lonnie Duke

Travis Environmental Project Manager

Most people are not thrilled these days when they hear or read about downsizing, mainly because it is almost always associated with job losses or economic woes. However, there are some aspects of life (credit card debt, waistslines) where a little shrinkage would put smiles on their faces.

When it comes to environmental cleanup, downsizing is actually a natural part of the lifecycle of a groundwater extraction and treatment system. When first built, the system was designed to successfully remove high concentrations of con-

taminants from a large volume of water that came from an extensive extraction well network. If it is performing as designed, those concentrations should drop, so the water entering the system becomes cleaner over time.

Also, if a part of a groundwater site gets cleaned up quicker than expected, then the extraction wells in that area are shut off, reducing the amount of water that enters the system.

This description fits the North Groundwater Treatment Plant (NGWTP) on Travis AFB really well. This facility was designed to remove dissolved solvents from groundwater and became operational in 2000. Over the last ten years, it used a powerful air stripper to remove over 174 pounds of solvents from over 82 million gallons of groundwater. The air stripper

forces a large volume of low pressure air through the contaminated groundwater to strip solvents from the water.

However, it is a victim of its own success. Contaminant concentrations of water entering the plant have dropped from a high of over 1,000 parts per billion (ppb) to about 30 ppb. The volume of water entering the plant has also dropped because the pumps in those wells that reached cleanup standards have been turned off.

This situation is analogous to a mass transit bus, which is most efficient when it is full of passengers and the cost of fuel per passenger is low. As the bus loses passengers, the rate of fuel consumption per passenger rises. When there are only

pumps in most of the extraction wells, to run transfer pumps to move the water around the plant, to operate the air stripper and to power a computer, alarm panels, auto dialers, etc. That is close to what an average home uses in one year!

Another way to look at system performance is to view its Green House Gas (GHG) emissions, specifically Carbon Dioxide (CO₂). In full operation, the NGWTP uses about 132,000 kWh of electricity annually. Using the Department of Energy estimate of 1.37 pounds of CO₂ produced for each kWh of electricity equates to 180,840 lbs of CO₂ created annually! With the contaminant concentrations now down to 30 ppb, the NGWTP

only removes approximately ½ pound of solvents from the groundwater annually! At this rate, the NGWTP seems to create more pollution than it is cleaning up.

Of course, there are options to make groundwater cleanup more efficient. One option that was mentioned earlier is to downsize the number of extraction wells. Each well contains a pump that consumes electricity, so when the groundwater around an extraction well becomes clean, it needs to be shut off. To ensure that the contaminants do not show up again or rebound, those wells undergo a period

of water sample collection and analysis to verify that the cleanup is complete. This is usually called a rebound study.

Another option is to downsize the treatment system. Just as it is possible to trade the bus in for a higher mileage van, the NGWTP can be reengineered with smaller, low-volume equipment that is more suited for the cleanup of groundwater with lower



(Photo by Glenn Anderson)

The Right Fit: A network of groundwater extraction wells is hooked up to two 55-gallon drums of granular activated carbon. Because the solvent concentrations in the groundwater have significantly dropped, this portable unit can treat the water at a fraction of the cost.

a few passengers left, the bus still burns up the same amount of fuel to get to its destination, so it is no longer a cost-effective travel alternative.

Similarly, the costs for operating a treatment plant stay relatively constant, regardless of whether the water entering it is really contaminated or really clean. The NGWTP uses approximately 11,000 kWh of electricity each month to power electric

Sediment Photo Gallery

Downsizing

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(Photo by Glenn Anderson)

Before: It was very difficult to see the west branch of Union Creek at the start of the sediment cleanup action in 2009, thanks to the thick vegetation in and around the creek. Field team members can barely be seen in the brush as they set up a temporary dam.

During: Truckloads of sediment that was contaminated with polynuclear aromatic hydrocarbons were scraped from the creek, using a long-arm excavator. The wet sediment was taken to a drying station and later transported to an off-base landfill for disposal.

(Photo by Glenn Anderson)



(Photo by Glenn Anderson)

Inspection: During the two sediment cleanup actions, both sites were visited by members of the Travis AFB Restoration Advisory Board and the U.S. Environmental Protection Agency. This is Outfall 2, which connects the west branch of Union Creek to its main branch.

After: Once the excavation was complete, and lab tests proved that cleanup standards had been met, the creek was restored to better than its original condition. "Potato sack" netting was placed on the banks, and rock was added to the creek bottom to control erosion.

(Photo by Glenn Anderson)



contaminant concentrations. The new system will pump the water through filters to remove sediment and then through two 55-gallon drums filled with activated carbon. Activated carbon is very effective at removing solvents from groundwater. The carbon vessels will be placed in series so that when one canister is filled with contaminants, it can be easily replaced with a fresh canister. This makes the carbon swap a simple task.

A final option is to downsize the electrical system. Previous newsletters have described in detail the use of solar-powered panels to provide the electricity needed to operate the pumps in extraction wells, and each well that transitions to solar power reduces the amount of electricity that the base uses and generates no green house gases.

Eventually, the only piece of active equipment that will use base electricity at this newly configured NGWTP will be a transfer pump that is connected to a large 42,000 gallon storage tank. When the tank is filled with treated water, the pump will automatically start up and transfer the water to the Duck Pond to be used for recreational purposes. The transfer pump will only operate for short periods of time intermittently whenever the storage tank is full.

"We took a similar approach to optimize the operation of our Central Plant, which is connected to most of the extraction wells on-base," stated Mr. Mark Smith, Travis Restoration Program Manager. "However, because of the small size of its extraction well network, the North Plant is more suitable for the conversion to solar power."

Ultimately, the downsizing of groundwater treatment is a much more sustainable way to clean up the environment while meeting environmental regulatory cleanup standards, and it saves tax payers some money by reducing Uncle Sam's power bills. Travis AFB is committed to cleaning up the environment in a sustainable manner and will continue to look for and carry out ways to improve its treatment processes.



Creek

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vegetation growth and stabilize the areas where vegetation was removed.

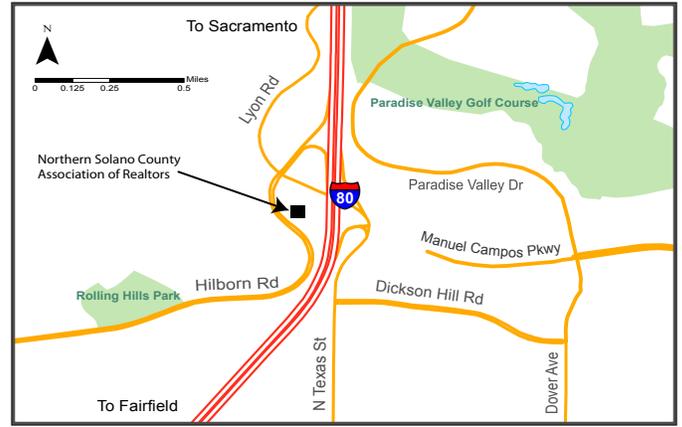
“Overall, it was a unique and well-executed cleanup project, and we are that much closer to reaching our Air Force restoration goal of establishing cleanup remedies at all of our contaminated sites by 2012,” said Mr. Smith.



Travis AFB Restoration Advisory Board Meeting

April 22, 2010
7 p.m.

Northern Solano County Association of Realtors
3690 Hilborn Road
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: Closed

Saturday: 12 p.m. - 6 p.m.

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

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If you would like more information or need special accommodations for the RAB meeting, please contact Mark Smith, (707) 424-3062. You can also view our web site at <http://www.travis.af.mil/enviro>

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