

Introducing . . . AFCEE and MACTEC

The Defense Logistics Agency (DLA) welcomes two new members to the environmental restoration team at the former Memphis Depot – the Air Force Center for Environmental Excellence (AFCEE) and MACTEC Engineering and Consulting.

AFCEE has joined the team as the service agent for the environmental restoration program. Jesse Perez, Program Manager with AFCEE, is the point of contact between DLA and Depot staff and the environmental companies contracted on behalf of DLA to complete the construction and operation of the selected cleanup actions.

AFCEE is located at Brooks City Base in San Antonio, TX. Since it was formed in 1991, AFCEE has been the principal environmental services agency for the United States Air Force. In 2001, DLA hired AFCEE to review and evaluate several of its ongoing environmental restoration programs to ensure they were moving efficiently and effectively towards cleanup. In 2003, AFCEE took over as service agent at DLA sites in Richmond and Memphis.

Headquartered in Atlanta, MACTEC Engineering and Consulting is a leader in the engineering, environmental and remedial construction industries. The company has more than 100 U.S. offices and 4,000 employees with specialists in more than 50 scientific and engineering disciplines. The company has been working with DLA since 1990 on the environmental restoration program at the Defense Supply

Center in Richmond, Virginia. MACTEC joined the Memphis environmental team in 2003.

“We are the remedial action contractor for the Memphis cleanup program,” explained Tom Holmes, MACTEC’s project manager in Memphis. “What that means is we will be assisting CH2M HILL to complete the remedial design for the cleanup remedies in the Records of Decision for the MI and Dunn Field. Once that phase is completed, we’ll create a work plan and implement the remedy as required for close-out of the site. We have also taken over the operation and maintenance of the pump and treat system, and will be responsible for ongoing monitoring.”

Holmes, an environmental professional since 1980 with a background in geology, is familiar with Base Realignment and Closure (BRAC) sites. He was part of the MACTEC team that helped close out and transfer the former Bergstrom Air Force Base in Texas, which is now the Austin-Bergstrom International Airport. Joining him on the MACTEC team is Greg Wrenn, MACTEC’s lead engineer on the Depot project, who will be onsite regularly to oversee the implementation of the remedial actions.

MACTEC will also be assisting with overall program management throughout the completion of the environmental program at the Depot. □

Pilot study proves enhanced bioremediation works at MI

The tiny natural organisms living in the groundwater beneath the Depot’s Main Installation prefer sodium lactate to vegetable oil.

It’s an important finding for the Depot’s environmental team as they complete a one-year pilot study to determine the effectiveness of enhanced bioremediation as a cleanup remedy for groundwater at the Main Installation (MI).

Naturally occurring organisms present in the environment help to break down, or degrade, chemicals, such as the chlorinated solvents found in the groundwater at the MI, into safe, natural compounds. This process is called bioremediation. Enhanced bioremediation involves injecting natural nutrients into the groundwater as an additional “food” source for these organisms that “enhances” or speeds up the natural bioremediation process by encouraging the growth and development of more organisms.

According to David Nelson, a Project Manager with the Depot’s environmental contractor, CH2M HILL, two study areas were set up at the MI. Vegetable oil was added to the groundwater through injection wells at Study Area 1 in the southwest corner of the MI. Another organic nutrient, sodium lactate, was added to the groundwater at Study Area 2 in the southeast corner of the MI.

“Tests showed that the conditions at both sites had changed favorably to support the organisms needed to breakdown the chlorinated chemicals found in the groundwater,” said Nelson. “But the most dramatic changes occurred at Study Area 2.”

At Study Area 1, concentrations of trichloroethene (TCE) and tetrachloroethene (PCE) declined faster than would have occurred naturally. But the process took place slowly over the course of a year, and

the study’s results indicate that some of the solvents were actually absorbed by the vegetable oil rather than degraded.

At Study Area 2, the concentrations of TCE and PCE declined significantly within three months of the first lactate injection. The rate of decline appeared to slow down as the lactate was depleted or diluted, but additional lactate injections resulted in a continuing decline and TCE and PCE were eventually reduced within the study area.

Importantly, another chlorinated chemical in the groundwater in Study Area 2, carbon tetrachloride, was completely removed during the study period. Dichloroethene (DCE), a chemical byproduct that commonly results during the breakdown of TCE and PCE, was not successfully removed in either area. But Nelson says this may be because the sampling period ended before further breakdown could occur.

Based on these results, CH2M HILL’s report recommends that a full-scale treatment program for the MI be designed using multiple injections of lactate to remove TCE and PCE from the groundwater.

CH2M HILL estimates it would take approximately two years to treat the most affected areas of the MI using both enhanced bioremediation and natural attenuation. These results will now be incorporated in the Remedial Design (RD) Report for the MI. The report will include a detailed set of plans for implementing the enhanced bioremediation as the preferred cleanup remedy.

For more information on the results of the enhanced bioremediation pilot study, or the Depot’s ongoing cleanup program, call the Community Relations office at (901) 544-0613. □