Monthly Progress Report
Corrective Measures Study (CMS)/Corrective Measures Implementation (CMI) for
Consolidated Unit 16-021(c)-99
June 2007

This report summarizes Los Alamos National Laboratory (LANL) activities completed during June of fiscal year (FY) 2007 on the CMS/CMI for Consolidated Unit 16-021(c)-99, the TA-16-260 Outfall. Activities described in the CMS plan ([LA-UR-98-3918], approved by New Mexico Environment Department (NMED)-HWB on 9/8/99), and other related activities are described herein.

Description of Activities and Contacts

***NMED Interactions* –** LANL and Department of Energy (DOE) representatives met with NMED representatives on June 18, 2007. The principal topic of discussion was the upcoming Corrective Measures Evaluation (CME) Report.

LANL provided background information on the CME Report, which is due on August 31, 2007. A handout was provided. The overall format of the CME report is similar to that for the CMS Report for the near-surface and alluvial system that was initially submitted to NMED in November 2003. Key questions posed to NMED include:

- NMED has recently indicated they prefer not to approve final remedies for groundwater CMEs until the associated monitoring well networks are installed, determined to be reliable, and have provided four quarters of data. As a result, LANL inquired whether they should propose a decisional remedy in the CME Report, a conditional remedy, or wait to propose a remedy until the TA-16 monitoring well network has been installed and four quarters of data are available. NMED personnel stated they would talk to their management and provide feedback to LANL.
- LANL noted the two treatment technologies that would likely be evaluated in detail (including cost estimates) for intermediate groundwater were a pump and treat alternative and monitored natural attenuation (MNA). LANL noted that other technologies such as in-situ reduction, in-situ bioremediation, and in-situ oxidation were probably not mature enough for detailed evaluations or immediate implementation based on the Pantex CMS Report, which was issued in 2006. LANL plans to evaluate these technologies largely based on Pantex's previous work. Pump and treat would be evaluated under a phased approach in which pilot hydrologic drilling and testing would precede full scale implementation of a treatment system.
- LANL noted that recent data for the regional aquifer at TA-16 showed all HE constituent levels were now below standards. As a result, LANL proposes to evaluate only MNA for regional groundwater.

RCRA Facility Investigation (RFI) Phase II Report and CMS Plan– No activities this month

Best Management Practices (BMPs) – BMPs are inspected quarterly and following significant precipitation events. There were six small precipitation events in June (one greater than 0.5 in); however, these did not require repair of BMPs in the 260 outfall area.

CMS Hydrogeologic Investigations– Hydrogeologic investigations include periodic water sampling as outlined in the Phase II RFI as well as continuing investigations delineated in the CMS plan. The ongoing spring sampling program, currently focused on capturing high-flow events, includes biannual stable isotope sampling at Martin and Burning Ground Springs. These sampling activities are now being accomplished under the auspices of the interim facility-wide groundwater monitoring plan. Groundwater monitoring sampling of all TA-16 localities was accomplished in May.

The hydrologic system in Cañon de Valle remains wet following the higher-than-average intensity monsoonal rains, significant November through January snows, and unusual May rainfall. Martin Spring is flowing at ~ 2 L/min., Burning Ground Spring is flowing at a rate of ~0.3 L/ sec. After several years of being dry, SWSC Spring has wet up and is flowing at a rate of ~0.1 L/sec.

The 90s Line Pond and downgradient surface locations in Martin Spring Canyon and Cañon de Valle remain wet. The alluvial wells in lower Cañon de Valle, Fishladder Canyon, and lower Martin Spring Canyon are wet. Surface water in Cañon de Valle is present from Burning Ground spring to MDA-P.

Ecological Risk Pilot–

The ecological risk pilot study is complete; results are presented in the Phase III RFI Report.

CMS Bench and Pilot Studies– Write-up of bench and pilot studies, many of which were conducted under the auspices of the Innovative Technology Remediation Demonstration (ITRD) program, have been completed. The ITRD HE program is focused on two DOE sites: LANL and Pantex. Ongoing studies include:

1. A study of the passive barrier technology of Stormwater Management, Inc., potentially useful for removing HE and barium from waters (LANL). Monitoring of barrier effectiveness recommenced after several quarters of drought conditions during which Martin spring was dry.
2. A study of in situ anaerobic bioremediation of HE using gas-phase carbon additions (Pantex).
3. Oxidation, reduction, and in-situ bioremediation studies of groundwater contamination (Pantex).

The CMS Report from Pantex detailing these studies is being reviewed and results will be incorporated in the upcoming CME report.

Interim Measure (IM) –

The IM Report was approved by NMED in a letter dated January 13, 2003. No new activities occurred during this reporting period.

RFI/IR and CMS/CME Reports –

The surface system CMS Report was completed and submitted to NMED on November 26, 2003; the RFI Report was completed and submitted in September of 2003. A response to the NOD on the RFI Report was submitted on January 28, 2004 and an addendum to that NOD response was submitted on February 25, 2004. An approval with modifications for the RFI was received June 23, 2004, and a response to the approval was submitted to NMED on July 23, 2004. The RFI text modifications were completed during December 2004 and submitted to NMED. An NOD on the CMS Report was received May 16, 2005. A response to that NOD was submitted on June 15, 2005.

NMED issued the "Intent to Public Notice Remedy Selection for the Solid Waste Management Unit 16-021(c)" on May 15, 2006. Public comments on this notice were due to NMED by July 14, 2006. LANL provided comments on this public notice. The remedy was approved by NMED in a letter dated October 13, 2006.

The Investigation Report (IR) for TA-16 groundwater was completed and submitted to NMED on August 31, 2006. An approval with direction of this IR dated November 29, 2006 was received by e-mail the same day. This approval requires an additional report assessing the quality of the wells in and around TA-16. Additional information, including borehole videos and X-ray diffraction data, requested in this approval was provided to NMED in a letter dated January 17, 2007.

The TA-16 Well Evaluation Report was submitted to NMED on April 30, 2007.

A draft outline for the Groundwater CME Report was completed and approved by NMED. A decision peer review for that report occurred in June. Modeling to support that report is ongoing.

Corrective Measures Implementation (CMI) Plan –

Batch and column studies supporting the permeable reactive barrier (PRB) design are continuing; initial studies suggest there are several media, including gypsum, a zeolite and "fishbone" that are appropriate for removal of barium from groundwater. Zero valent iron (ZVI) columns appear to generate H_2, which is a problem for the column studies due to permeability reduction. Geophysics in three boreholes drilled to aid in the grouting design was completed in March: there was no evidence of the surge beds in these holes.

The CMI Plan was submitted to NMED on May 10, 2007. An NOD on that document was received on June 29, 2007.

Public and Stakeholder Involvement – None

Percentage of CMS Completed

LANL estimates 100% of the surface CMS has been completed (please note this percentage does not reflect the deep groundwater CMS, which is still in progress)

Problems Encountered/Actions to Rectify Problems

Column studies to support the CMI Plan PRB designs have encountered unexpected technical problems; additional studies to resolve these issues are being designed. These studies will continue beyond the submittal date of the CMI Plan.

Key Personnel Issues

None

Projected Work for July 2007

Investigation Reports and CMS/CME Reports

- Discussions regarding the Groundwater Investigation and CME Reports with NMED personnel
- Continuation of groundwater modeling
- Peer review of the CME Report
- Write-up of draft sections of the CME Report

BMPs

- Continued inspection of existing BMPs following significant precipitation events

CMS Hydrogeologic Investigations

- Site maintenance at the TA-16 trailers
- Checking for presence and levels of water in Cañon de Valle alluvial system
- Precipitation monitoring

Ecological Risk Pilot

- None

CMS Bench and Pilot Studies

- None

CMI

- Continuation of batch and column studies for designs of barrier materials for use in the PRB

Public and Stakeholder Involvement

None