

**Monthly Progress Report**  
**Corrective Measures Study (CMS)/Corrective Measures Implementation (CMI) for**  
**Consolidated Unit 16-021(c)-99**  
**July 2009**

This report summarizes Los Alamos National Laboratory (LANL) activities completed during July of fiscal year (FY) 2009 on the CMS/CMI for Consolidated Unit 16-021(c)-99, the Technical Area 16 (TA-16) 260 Outfall. Activities outlined in the CMS plan ([LA-UR-98-3918] approved by New Mexico Environment Department [NMED] Hazardous Waste Bureau [HWB] on 9/8/99), and other related activities are described herein.

**Description of Activities and Contacts – None**

**Best Management Practices (BMPs)** – BMPs are inspected quarterly and following significant precipitation events. There were multiple precipitation events in July: three exceeded 0.5 in.; however, they did not require BMP repair in the 260 Outfall area.

**CMS Hydrogeologic Investigations** – Hydrogeologic investigations include periodic water sampling as outlined in the Phase II Resource Conservation and Recovery Act facility investigation (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 sampling at Martin, SWSC, and Burning Ground Springs; these activities are now conducted under the auspices of the interim facility-wide groundwater monitoring plan.

The hydrologic system in Cañon de Valle is moderately wet because of the early monsoonal rains. Martin Spring is flowing at ~0.02 L/s. Burning Ground Spring is flowing at a rate of ~0.3 L/s; SWSC Spring is flowing at ~0.01 L/s.

The 90s Line Pond remained wet throughout July. Downgradient surface locations in Martin Spring Canyon and Cañon de Valle remain wet. The alluvial wells in lower Cañon de Valle and lower Martin Spring Canyon and Fishladder Canyon are also wet. Surface water is present in Cañon de Valle from Burning Ground Spring past the former location of Material Disposal Area P.

**Ecological Risk Pilot** – The ecological risk pilot study has been completed, and the 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 high explosives (HE) program was focused on two DOE sites: LANL and Pantex. Ongoing studies, mainly consisting of monitoring in support of the previous studies, include:

1. A study of the passive barrier technology of Stormwater Management, Inc., potentially useful for removing HE and barium from waters (LANL). The pilot unit at Martin Spring

was turned off in July 2009 because of concerns that it may require a National Pollutant Discharge Elimination System (NPDES) permit.

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 was reviewed and the results incorporated in the CME report submitted to NMED on August 31, 2007.

***RFI and CMS/CME for Surface System*** – The surface system CMS report was completed and submitted to NMED on November 26, 2003; the RFI report was completed and submitted in September 2003. A response to the notice of deficiency on the RFI report was submitted on January 28, 2004, and an addendum to that 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. A notice of disapproval (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.

***RFI/Investigation Report (IR) and CMS/CME for Deep Groundwater*** – The IR for TA-16 groundwater was completed and submitted to NMED on August 31, 2006; an approval with direction, dated November 29, 2006, was received by email the same day. This approval required an additional report assessing the quality of the wells in and around TA-16. Additional information requested in this approval, including borehole videos and X-ray diffraction data, 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, and an NOD was received on August 17, 2007. The response to that NOD and a revised report were provided to NMED on September 30, 2007. NMED approved the revised TA-16 well evaluation report on February 11, 2008. A response to this approval was submitted on March 15, 2008. Two drilling work plans [for CdV-R-15-1 and CdV-16-3(i)] were submitted as part of this approval response and were approved by NMED in letter dated March 28, 2008. An approval of the drilling work plan for the R-25b well, which was submitted in June 2007, was received in November 2007. A letter from NMED requiring completion of the CdV-16-3(i) as a regional well by July 30, 2008, was received in December 2008. The drilling work plan for R-25c was submitted during February 2008 and approved in a letter dated March 11, 2008. Drilling of well R-25c was completed in September and the well was constructed at that time. The well is not producing water. R-25b was drilled and the well was constructed in October 2008. The well completion report for R-25c was submitted in September 2008, and the well completion report for R-25b was submitted in October 2008.

The groundwater CME report was submitted to NMED on August 31, 2007, and an NOD requiring submittal of a supplemental investigation work plan (IWP) was received on April 22, 2008. The supplemental IWP was completed and submitted on June 30, 2008. An approval with modifications on the IWP was received on January 26, 2009. Additional development activities for R-25b occurred in April 2009.

Initial attempts to deepen the CdV-16-3(i) well were conducted in June 2009 but were unsuccessful because the borehole was off vertical. A letter was drafted requesting drilling fluids (e.g., EZ-mud) be allowed to be used to complete this well while activities to determine a path forward for R-48 were underway. The drill rig and crew moved to the site of R-47 at TA-14 and commenced drilling. As of the end of the July 2009, this borehole had reached a depth of 975 ft; no water has been encountered. The plugging and abandonment of CdV-16-2(i) was completed in July.

**CMI** – The CMI plan was submitted to NMED on May 10, 2007. An NOD was received on June 29, 2007; LANL’s response was submitted on July 30, 2007. NMED updated the CMI schedule by letter on June 24, 2009, and added the summary report for those remedial activities to the fiscal year 2010 stipulated-penalty document delivery list.

Bench and pilot studies supporting the CMI continued. Permitting for CMI activities continued in July. The first three segments of the 401/404 permit were submitted to the Army Corps of Engineers on June 25, 2009, for the Carbon Filtration System at SWSC and Martin Spring and the permeable reactive barrier (PRB). These requests were approved in July 2009. Submittal of the 401/404 permit for the carbon filtration system at Burning Ground Spring is pending. The wetland determination for the Burning Ground Spring area was completed during July and is under review at the U.S. Department of Energy–Los Alamos Site Office. Notices of Intent to Discharge for the construction of the PRB and the operation of the springs’ carbon filtration systems were submitted to NMED Surface and Groundwater Bureaus on June 25, 2009. It was determined that the storm filter systems in the springs required NPDES permits; LANL’s permitting group began work on these permits. PR-ID comments are being resolved. The “area of contamination letter” was submitted on June 15, 2009. A request for a “contained in” determination for the springs and alluvial groundwaters impacted by the CMI was submitted to NMED on May 4, 2009. LANL is waiting for a response to these requests.

The contract for the CMI was awarded to TerranearPMC. This subcontractor is working on field preparatory activities, including (1) completion of required training; (2) the waste characterization strategy form (WCSF); and (3) health and safety documentation (e.g., integrated work documents).

**Public and Stakeholder Involvement** – None

### **Percentage of CMS Completed**

LANL estimates 100% of both the surface CMS and the groundwater CME have been completed. This estimate does not include additional work covered by the work plan submitted on June 30, 2008.

## **Problems Encountered/Actions to Rectify Problems**

R-25c is not producing water, and the current level remains below the screen; R-25b is still showing high turbidity. LANL will continue to monitor the well screens. The redrilling of CdV-16-3(i) is problematic; the path forward is contingent on NMED's approval to use drilling fluids or some alternative form of drilling based on the drillers' experience.

Pilot studies at Martin Spring have been delayed because of differences in interpretation between NMED and EPA as to whether the studies require an NPDES permit. LANL's permitting group is currently working with the regulators to resolve the issue.

**Key Personnel Issues** – None

## **Projected Work for August 2009**

### ***BMPs***

- Continuing 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

### ***Groundwater CME/CMI***

- Continuation of drilling and well construction at R-47
- Reinitiation of drilling at CdV-16-3(i) (R-48)

***CMS/CME Bench and Pilot Studies*** – No activities are projected for August.

### ***CMI***

- Continued lab scale tests to finalize media selection for permeable reactive barrier
- Submittal of the final 401/404 permit requests for installation of storm filters
- Receipt of approval for request for area of contamination for CMI
- NPDES permitting
- Kick-off meeting for fieldwork

- Contractor preparation for field deployment
- Meetings with site personnel to expedite CMI

***Public and Stakeholder Involvement*** – None