Monthly Progress Report
Corrective Measures Study (CMS)/Corrective Measures Implementation (CMI) for Consolidated Unit 16-021(c)-99
September 2010

This report summarizes Los Alamos National Laboratory (LANL) activities completed during September of fiscal year 2010 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 the New Mexico Environment Department [NMED] Hazardous Waste Bureau on 9/8/99) and other related activities are described herein.

Description of Activities and Contacts – LANL representatives provided a site visit to the permeable reactive barrier (PRB) to NMED personnel on September 10, 2010. The initial stages of implementation of repairs to the PRB were observed (see description of repair activities below).

Best Management Practices (BMPs) – BMPs are inspected quarterly and following significant precipitation events. Numerous small precipitation events occurred in September; one exceeded 0.5 in. BMPs were maintained in both the 260 Outfall and PRB installation area in support of the CMI.

CMS Hydrogeologic Investigations – Hydrogeologic investigations include periodic water sampling as outlined in the Phase II Resource Conservation and Recovery Act facility investigation (RFI) work plan 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 LANL's interim facility-wide groundwater monitoring plan.

All locations in the Cañon de Valle watershed were sampled in early September.

Flow in the TA-16 canyons decreased in September. Water levels have decreased by several inches in the wells and piezometers located near the PRB. Martin Spring is flowing at a rate of >0.1 L/s, Burning Ground Spring is flowing at a rate of <0.3 L/s, and SWSC Spring is not flowing over the weirbox exit but contains ponded water next to the spring.

The 90s Line Pond remains wet. Surface water is present in Cañon de Valle from upstream of the outfall channel to beyond the former location of Material Disposal Area P.

RFI and CMS/CME for Surface System – These activities have been completed.

RFI/Investigation Report and CMS/Corrective Measures Evaluation (CME) for Deep Groundwater – Well R-25c, completed in September 2008, is not producing water.

Well R-47i at TA-14 was completed in November 2009 to a depth of 895 ft (NMED complete on November 15, 2009).

Well CdV-16-4ip was drilled to a depth of 1150 ft in August (NMED complete on August 23, 2010). During September, well development was accomplished on both screens. The waste water sample collected after development of the upper screen has the highest RDX level (265 ppb) detected in the deep-perched aquifer to date.

CMI – Permitting for CMI activities is proceeding slowly. It was determined that the storm-filter systems in the springs required National Pollutant Discharge Elimination System (NPDES) permits because of elevated levels of aluminum. The basic problem is that naturally occurring levels of aluminum in the spring water exceed current water standards. During the PRB tour of September 10, NMED representatives suggested reconsidering a "French drain" instead of a discharge pipe to avoid NPDES issues. They indicated they would discuss this issue with NMED–Groundwater Bureau personnel.

TerranearPMC continued water-level monitoring and sampling activities in September. Manual water-level measurements were collected from the alluvial monitoring wells; several wells more distant from the stream channel remain dry. Water levels in all the alluvial wells are down several inches. Flow into the PRB is low.

Data received in July from the first round of sampling at the PRB suggest water flow within the PRB treatment vessel is largely bypassing the zero-valent iron (ZVI) and zeolite media. Only the sampling port within the ZVI showed degradation of high explosives and removal of barium. The barium may be experiencing removal by precipitation of barium-rich phases in this high pH environment.

Terranear PMC personnel implemented repairs to the PRB on September 10, 2010. Upon removal of the lid from the treatment vessel, water bypass was confirmed, and biofouling within the chamber was noted. Flow was down and indications of plugging between the cells were observed (water levels differed by several inches between cells). Repair activities included (1) removal of all treatment media from the second and final vessel cells; (2) switching of the ZVI and zeolite media cells so that barium would be removed prior to water impact on the ZVI; (3) addition of additional gravel beneath the ZVI media; (4) replacement of the gaskets with new ones of slightly different design and careful reseating of the lid on the vessel. Because of the low flow in the alluvial system, the vessel had not completely refilled by the end of September.

Waste from the soil removal in the Consolidated Unit 16-021(c)-99 outfall source area continued to be processed for off-site shipping.

The "Long-Term Monitoring and Maintenance Plan for the Corrective Measures Implementation at Consolidated Unit 16-021(c)-99" was submitted to NMED on April 23, 2010.

The "Addendum to the Summary Report for the Corrective Measures Implementation at Consolidated Unit 16-021(c)-99 was submitted to NMED. This document included a revised risk assessment for the TA-16-260 outfall source region and additional CMI data collected during spring 2010.

Public and Stakeholder Involvement –NMED personnel visited the PRB site on September 10, 2010.

Percentage of CMS Completed

LANL estimates 100% of the surface CMS has been completed.

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 based on sampling field parameters. LANL will continue to monitor the well screens.

The status of aluminum under potential NPDES permits for the storm-filter systems is problematic, as noted above in the CMI section.

Key Personnel Issues – None

Projected Work for October 2010

BMPs

- Continue inspection of existing BMPs following significant precipitation events
- Inspect new BMPs to support CMI

CMS Hydrogeologic Investigations

- Maintain site at the TA-16 trailers
- Check for presence and levels of water in Cañon de Valle alluvial system
- Continue rainfall monitoring

Groundwater CME/CMI

- Continue planning for the R-25b and CdV-16-4ip pump tests
- Conduct R-25b pump test

CMI

- Continue NPDES permitting discussions with the U.S. Environmental Protection Agency
- Continue monitoring water levels and field parameters in PRB wells
- Complete geochemical modeling of PRB

- Evaluate PRB data from the second sampling round.
- Continue waste management activities at CMI remedy sites

Public and Stakeholder Involvement – Continued interaction with NMED personnel concerning the PRB.