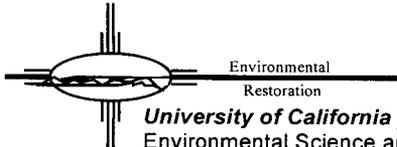


HSWA LANL 3/1082/16/16-021(c)



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Date: January 21, 2000  
Refer to: E/ER:00-016



Mr. John Kieling  
NMED-HRMB  
P.O. Box 26110  
Santa Fe, NM 87502

**SUBJECT: DECEMBER 1999 CORRECTIVE MEASURES STUDY (CMS)  
PROGRESS REPORT FOR POTENTIAL RELEASE SITE (PRS)  
16-021(c)**

Dear Mr. Kieling:

Enclosed is the December 1999 CMS Progress Report for PRS 16-021(c), the 260 Outfall. This report is being submitted as part of the reporting conditions outlined in Section R, *Scope of work for a Resource conservation and Recovery Act CMS at the Laboratory, Task IX, Reports, Part A, Progress of Module VIII of the Laboratory's Hazardous Waste Facility Permit.*

If you have any questions, please call Dave McInroy at (505) 667-0819 or Joe Mose at (505) 667-5808.

Sincerely,

Julie A. Canepa, Program Manager  
Los Alamos National Laboratory  
Environmental Restoration

Sincerely,

Theodore J. Taylor, Program Manager  
Department of Energy  
Los Alamos Area Office

JC/TT/NR/ev-nr

TU



Enclosure: December 1999 CMS Progress Report for PRS 16-021(c)

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**Monthly Progress Report**  
**Corrective Measures Study (CMS) for Potential Release Site (PRS) 16-021(c)**  
**December 1999**

This report summarizes Los Alamos National Laboratory (LANL) activities that were completed during December of fiscal year (FY) 2000 on the CMS for PRS 16-021(c), the 260 outfall. Both the activities described in the CMS plan ([LA-UR-98-3918]), which was submitted to the New Mexico Environment Department-Hazardous and Radioactive Materials Bureau [NMED-HRMB] on 9/30/98, and approved by NMED-HRMB on 9/8/99), and other related activities are described herein.

**Description of Activities and Contacts**

***RCRA Facility Investigation (RFI) Report and CMS Plan***—There was no new activity.

***Best Management Practices (BMPs)***—BMPs were inspected weekly during December. The BMPs were in good condition. All of these BMPs, including straw bales, diversion dams, and diversion piping, have been designed to minimize run-on and runoff from the contaminated outfall area.

***CMS Hydrogeologic Investigations***—CMS hydrogeologic investigations include ongoing Phase II RFI sampling as well as continuing investigations outlined in the CMS plan.

The ongoing Phase II RFI sampling included sampling the Sanitary Wastewater System Consolidation (SWSC) Spring, Burning Ground Spring, and Martin Spring every other day for bromide, other anions, and stable isotopes. The analyses from the December sampling are in process. No new bromide breakthrough has been observed in samples to date.

The wells, both alluvial and deep, were checked weekly for water level and presence of water. Four of the five alluvial wells contained water; the exception was still alluvial well 2655, which is located in the steam plant drainage. None of the intermediate-depth boreholes contained water.

In December, no samples from precipitation events were collected because there was no significant rainfall or snow.

The flow-integrated ISCO samplers in the TA-16 springs were sampled and the samples were submitted for laboratory analysis.

A tour of the geomorphic studies in Canon de Valle was provide to HRMB representatives on December 3, 1999. The geomorphologic map was reviewed and the unvalidated data was discussed. Principal preliminary observations include: 1) there appears to be a good correlation between barium screening by X-ray fluorescence and

laboratory data, which will simplify determining a contaminant inventory in Canon de Valle; 2) the highest levels of barium contamination appear concentrated in the older channel (C3) and floodplain (F2) deposits; 3) HE contamination is at a low level.

The paperwork required to begin deep drilling at site CdV-R-15-3, the Field Implementation Plan (FIP), and the Site-specific health and safety plan (SSHASP) were all completed. Planning to provide power and other utilities to the site was continued. The readiness review was held on December 13, 1999. This will allow site preparations to begin in January.

### ***Ecological Risk Pilot-***

Ecological risk screening has been completed for the sediment and overbank data generated from the geomorphic investigation. The results are being assembled into displays that will support the Problem Formulation.

***CMS Bench and Pilot Studies-***Bench and pilot studies continued in collaboration with the Innovative Treatment Remediation Demonstration (ITRD) Program. The ITRD HE program is focused on two DOE sites: LANL and Pantex. Four studies are ongoing under the auspices of ITRD, all of which may benefit the PRS 16-021(c) CMS:

1. A study of the passive barrier technology of Stormwater Management, Inc., which is potentially useful for removing HE and barium from waters. Water from Cañon de Valle is being used in the study.
2. A study of chemical treatment of HE-contaminated soil using zero-valent iron (ZVI). This is being completed by the University of Nebraska/H&H Ecosystems using PRS 16-021(c) soil. This soil was taken from a moderately contaminated location within PRS 16-021(c) and does not constitute a RCRA-regulated hazardous waste (based on results from laboratory analysis).
3. A study of in situ anaerobic bioremediation of HE using gas-phase carbon additions. This study is being completed by Idaho National Engineering and Environment Laboratory (INEEL), together with Texas Tech University, using Pantex soil and a Pantex field site.
4. A study of ex situ anaerobic bioremediation of Pantex soils using the W. R. Grace process, which combines anaerobic bioremediation with a ZVI treatment.

Regarding the first study, LANL representatives and Jim Phelan of Sandia National Laboratory (SNL) met with NMED on December 15, 1999. The preliminary engineering design was outlined. Surface Water Bureau representatives expressed significant concerns with constructing a weir in the perennial reach of Canon de Valle. They also indicated that a design that minimizes the treatment system footprint is desirable. LANL will attempt to redesign the system to minimize the footprint and submit a revised 401/404 application to reflect the new design. LANL will also arrange a meeting with the Army Corps of Engineers and the Surface Water Bureau to discuss this issue

Regarding the second study, the University of Nebraska/H&H Ecosystems study of ZVI remediation in building TA-16-224 was continued in December 1999. Samples from all experiments were collected at 120 days; these were submitted for screening analysis. Analytical results of these samples are pending.

No new results were received on the third or fourth studies.

Due to the equivocal results from the ZVI pilot test for HMX, LANL and ITRD personnel have decided to implement a series of tests of HE composting as a backup to the ZVI process. The first of these tests is being performed on HE-free material to identify appropriate composting amendment mixes for northern New Mexico environmental media.

***Interim Measure (IM)*** – Weekly ER Project meetings were held to discuss IM Planning.

LANL representatives had several discussions with NMED representatives on issues associated with the IM. A meeting to discuss the health-based contained in determination was held on December 6, 1999. As a result of this meeting a letter to HRMB requesting a health-based contained in determination was finalized and was submitted to HRMB on December 7, 1999. HRMB representatives indicated that the IM Plan should be submitted, even though several regulatory and technical issues remain unresolved. These issues include: 1) soil blending for safety reasons; 2) the regulatory status of blended soil; 3) the regulatory status for requesting Temporary Authorization (TA) and 3) whether Solid Waste Bureau permits might be required. The draft IM Plan was submitted for legal and security reviews and for editing.

Preparations for IM fieldwork continued. The ESH-ID paperwork for the IM was completed. The site-specific health and safety plan (SSHASP) has been reviewed and is awaiting signatures. The waste characterization strategy form (WCSF) has been modified to reflect current thinking on the IM.

Data from waste characterization samples that were submitted to support using naturally occurring radioactive materials (NORM) to expedite disposal of low-level uranium-contaminated soils were received. Based on unvalidated data, all of the samples appear to contain only natural uranium. Inasmuch as only depleted uranium is known to have been used in TA-16-260, this suggests that the 'above background' uranium detects are due to natural processes.

***Public and Stakeholder Involvement***– There were no public or stakeholder involvement activities during December 1999.

### **Percentage of CMS Completed**

LANL estimates that 40% of the CMS has been completed to date. Note that this percentage does not reflect the deep wells that will be drilled per the CMS plan addendum.

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

### ***CMS Hydrogeologic Investigations***

*Problem (1)* The lack of a completed well at R-25 remains a significant concern to the TA-16-260 team.

*Problem (2)* The change from mud drilling to casing-advance air rotary drilling of deep borehole CdV-R-15-3 yielded significant logistical issues related to drilling the borehole. LANL does not currently have access to sufficient drill rigs and drill string to support parallel completion of two deep (greater than 1000 ft) wells.

*Problem (3)* The drilling of the Martin Spring canyon boreholes is delayed due to driller availability. Drilling will begin in February, following completion of the pilot auger holes for the TA-15 plume chasing well and R-19.

*Action to Rectify Problem (1):* The screens have been installed. The well is now being readied for purging, geophysical investigations, and Westbay installation.

*Actions to Rectify Problem (2):* The drilling support facility is investigating three possible actions to speed drilling the deep boreholes: (1) drilling during two daily shifts rather than one; (2) obtaining additional drill string; and (3) procuring an additional dual air rotary rig. All of these options are being pursued.

*Actions to Rectify Problem (3):* LANL will wait until drilling support is available.

### ***CMS Bench and Pilot Studies***

*Problem (1)* The ZVI pilot test is not currently working effectively for HMX.

*Problem(2)* LANL is concerned that 401/404 permit issues may impede implementation of the Stormwater Management Unit pilot scale deployment.

*Action(s) to Rectify Problem (1)* The protocols for this test have been changed. Another round of ZVI was applied to several subtests. Composting is being investigated as a backup to ZVI.

*Actions to Rectify Problem (2)* LANL will meet with the Army Corps of Engineers and the Surface Water Bureau to resolve 401/404 issues

### ***IM***

*Problem (1)* Several regulatory issues still need to be resolved prior to implementation of the IM (see above).

*Problem(2)* Delays at MDA-P will delay availability of the remote excavator. This will delay portions of the IM.

*Problem(3)* There are still unresolved 401/404 issues associated with the IM.

*Action(s) to Rectify Problem (1)* LANL is meeting frequently with NMED representatives to solve these regulatory issues. The IM Plan will be submitted without resolution of these issues to enable HRMB to better review the entire IM process.

*Action(s) to Rectify Problem (2)* LANL will wait until the remote excavator is available.

*Action(s) to rectify Problem (3)* LANL will resubmit the 401/404 application to reflect modifications to the IM Plan. LANL will work closely with the Surface Water Bureau on this.

### **Key Personnel Issues**

None.

### **Projected Work for January 2000**

#### ***RFI Report and CMS Plan***

- No work is scheduled for this month.

#### ***BMPs***

- Inspection of existing BMPs following significant precipitation events will continue.

#### ***CMS Hydrogeologic Investigations***

- Continued bromide sampling of springs.
- Weekly checking of water levels and presence of water in alluvial and deep wells.
- Sampling of flow-integrated ISCO samplers.
- Continued precipitation monitoring and sampling for stable isotopes.
- Data analysis
- Site preparation at CdV-R-15-3
- Drilling of augered pilot hole at CdV-R-15-3

### ***Ecological Risk Pilot***

- Additional literature work is ongoing to develop ecological risk screening values.
- Aquatic screening results are being evaluated relative to site specific solubility constraints for inorganics.
- Work to-date is being documented.
- Preparations are underway for a Problem Formulation meeting with NMED.

### ***CMS Bench and Pilot Studies***

- Final sampling of the ZVI treatment test for performance at 20-day intervals.
- Modification of Stormwater Management pilot design.
- Continuation of composting tests on HE-free materials.

### ***IM***

- Submission of the IM plan (pending LANL and DOE reviews).
- Resolution of IM issues with operating group.
- Completion of readiness review.

### ***Public and Stakeholder Involvement***

- No public or stakeholder involvement activities are anticipated for January 1999. There will be a general ER availability session on January 19, 1999.