

TA00

NEW MEXICO  
ENVIRONMENT DEPARTMENT

*Hazardous Waste Bureau*

2905 Rodeo Park Drive East, Building 1

Santa Fe, New Mexico 87505-6303

Phone (505) 476-6000 Fax (505) 476-6030

[www.nmenv.state.nm.us](http://www.nmenv.state.nm.us)



BILL RICHARDSON  
Governor

DIANE DENISH  
Lieutenant Governor



RON CURRY  
Secretary

JON GOLDSTEIN  
Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

March 28, 2008

David Gregory  
Federal Project Director  
Los Alamos Site Office, Department of Energy  
528 35<sup>th</sup> Street, Mail Stop A316  
Los Alamos, NM 87544

David McInroy  
Remediation Services Deputy Project Director  
Los Alamos National Laboratory  
P.O. Box 1663, Mail Stop A992  
Los Alamos, NM 87545

**RE: APPROVAL WITH DIRECTION  
LOS ALAMOS AND PUEBLO CANYONS GROUNDWATER MONITORING  
WELL NETWORK EVALUATION AND RECOMMENDATIONS, REVISION 1  
LOS ALAMOS NATIONAL LABORATORY  
EPA ID #NM0890010515  
HWB-LANL-07-039**

Dear Messrs. Gregory and McInroy:

The New Mexico Environment Department (NMED) is in receipt of the United States Department of Energy and Los Alamos National Security, LLC (collectively, the Permittees) document entitled *Los Alamos and Pueblo Canyons Groundwater Monitoring Well Network Evaluation and Recommendations, Revision 1* (hereafter, the Report) dated February 2008 and referenced by LA-UR-08-1105/EP2008-0076. NMED has reviewed the Report and hereby issues this Approval with Direction. NMED provides the following comments.

As documented in the Report (Appendix C), in terms of protection of the municipal water supply well O-4, the current groundwater monitoring well network can only provide a protection efficiency in a range of 52 to 90% for timely detection of contaminants that could be released from several potential sources, including the TA-21 mesa top and outfalls and TA-53 outfalls, that could migrate toward O-4 (see Figure 2.0-3 and Tables C-3 and C-4 in the Report for details). Protection efficiencies below 95% suggest that the monitoring objectives set up in this



Report could not be achieved if they are solely dependent on the current monitoring network. No appropriate measures have been assessed and proposed in the Report to safeguard water supplied by well O-4. NMED therefore imposes the following requirements for the Permittees to ensure the safety of the municipal water supply.

1. According to the Report, tritium has been detected as a primary contaminant in the perched intermediate zone in the vicinity of O-4. Other contaminants have also been detected in this zone. Because tritium migrates as fast as water in the subsurface, it is an indicator of groundwater contamination and serves as the early warning for the potential for transport of other contaminants to O-4. TW-3 is a regional groundwater monitoring well located approximately 400 feet east of O-4 that is screened starting at a depth about 18 feet below the regional groundwater table. Thus, TW-3 is capable of providing timely detection as soon as tritium reaches the regional aquifer. Due to the possibility of leakage through the well annulus, TW-3 was initially proposed to be plugged and abandoned in the Report. However, after further evaluation of the chemical and geochemical data collected from TW-3 and nearby intermediate groundwater monitoring wells, the Permittees concluded that communication between the different water-bearing zones through the well annulus is minimal (if any), and therefore recommended retaining this well as part of the regional groundwater monitoring network (*Information and Recommendations Concerning the Protection of Supply Well O-4*, submitted to NMED by the Permittees on March 27, 2008).

Based on the information summarized above, the Permittees must therefore retain well TW-3 as a regional groundwater monitoring well and conduct semiannual monitoring. The monitoring must include measurement of tritium and water levels. In addition, the Permittees must conduct annual assessments of the integrity of TW-3 to ensure that contaminants do not migrate to the regional groundwater through the well annulus. If necessary, the Permittees must take appropriate actions for rehabilitating TW-3 to eliminate the possibility of cross-contamination resulting from leakage through the well annulus.

2. To effectively demonstrate the safety of water supplied by O-4, the Permittees must conduct quarterly sampling of this municipal water supply well. If feasible, zonal sampling methods must be employed to collect water samples from multiple zones within O-4. Water samples collected from O-4 must be analyzed for the full suite of constituents that could potentially be released from the facilities surrounding O-4. The Permittees must document the proposed sampling and analyses that will be performed at O-4 as part of the Interim Facility-Wide Groundwater Monitoring Plan.
3. The Permittees must further evaluate the need for additional regional groundwater monitoring wells surrounding well O-4 after assessing the potential southward

Messrs. Gregory and McInroy

Approval with Direction – LA and Pueblo Canyons Monitoring Well Network Evaluation. Rev 1  
March 28, 2008

Page 3

diversion of perched-intermediate groundwater along the base of the Guaje Pumice Bed beneath TA-53. This evaluation must be conducted based on hydrogeologic and geochemical results to be obtained through installation of the intermediate perched groundwater monitoring well recommended in the Report.

The Permittees must incorporate the above requirements and develop a work plan that describes the details of the drilling and well abandonment activities proposed in Section 5.0 of the Report. The work plan must include a schedule to complete each activity. The Permittees must submit the work plan to NMED no later than May 5, 2008.

Should you have any questions or comments, please contact Hai Shen of my staff at (505) 476-6039.

Sincerely,



James P. Bearzi  
Chief  
Hazardous Waste Bureau

JPB:hs

cc: D. Cobrain, NMED HWB  
J. Young, NMED HWB  
K. Roberts, NMED HWB  
H. Shen, NMED HWB  
T. Skibitski, NMED DOE OB  
S. Yanicak, NMED DOE OB, MS J993  
B. Olson, NMED GWQB  
L. King, EPA 6PD-N  
M. Johansen, DOE LASO, MS A316  
S. Stiger, LANL ENV, MS J591  
P. Huber, LANL ENV, MS M992  
D. Katzman, LANL ENV, MS M992

file: Reading and LANL General (Los Alamos and Pueblo Canyons, Groundwater, TA-21)