



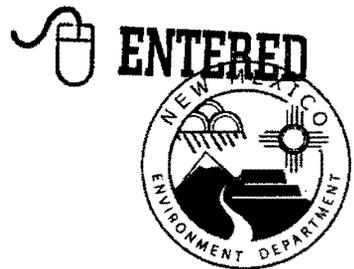
SUSANA MARTINEZ  
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16  
NEW MEXICO  
ENVIRONMENT DEPARTMENT

*Hazardous Waste Bureau*

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DAVE MARTIN  
Secretary

RAJ SOLOMON, P.E.  
Deputy Secretary

**CERTIFIED MAIL - RETURN RECEIPT REQUESTED**

January 31, 2011

George J. Rael  
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Los Alamos Site Office  
U.S. Department of Energy  
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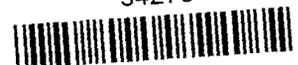
Michael J. Graham  
Associate Director Environmental Programs  
Los Alamos National Security, LLC  
P.O. Box 1663, MS M991  
Los Alamos, NM 87545

**RE: WELL EVALUATION AND NETWORK RECOMMENDATIONS STUDY  
TECHNICAL AREA 16 AND UPPER WATER CANYON WATERSHED  
LOS ALAMOS NATIONAL LABORATORY  
EPA ID#NM0890010515  
HWB-LANL-GW-MISC**

Dear Messrs. Rael and Graham:

The complexity of the groundwater flow system and contaminant migration pathways beneath TA-16 and the Upper Water Canyon Watershed suggest that the typical approach to establishing a monitoring-well network may not be appropriate or effective, especially for the deeper regional aquifer. Multiple and potentially interconnected intermediate aquifers appear to be present beneath the upper and lower on-site reaches of Cañon de Valle and the upper and middle on-site reaches of Upper Water Canyon Aggregate Area. These complex groundwater conditions also have been identified in the vicinity of 90s-line Pond and the surrounding areas. A basic understanding of groundwater flow directions, the extent and interconnection of zones of saturation within these intermediate aquifers, and infiltration pathways to the regional aquifer is necessary to develop an effective groundwater monitoring network for TA-16. The lack of regional and intermediate groundwater monitoring locations at and downgradient of the TA-16 mesa top sites (e.g., current and former explosives processing sites) and at potential zones of

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surface water and alluvial groundwater infiltration in Upper Water Canyon and its tributaries prevents the assessment and selection of an appropriate remedy for Consolidated Unit 16-021(C)-99 intermediate and regional groundwater. This brings into question the ability of the Permittees to provide effective detection monitoring in the area.

To overcome these issues, the Permittees must conduct an evaluation of all existing intermediate and regional aquifer wells located within, and downgradient of, TA-16 including Consolidated Unit 16-021(C)-99 and the Upper Water Canyon Watershed encompassing S-Site, Upper Water Canyon and Cañon de Valle Aggregate Areas. The evaluation must determine the effectiveness of the current well network to detect groundwater contamination associated with current and historical TA-16 operations and propose changes and additions necessary to address any deficiencies. The evaluation also is essential to complete the groundwater characterization necessary for the Consolidated Unit 16-021(C)-99 Corrective Measures Evaluation for Intermediate and Regional Groundwater.

As part of the evaluation, the Permittees must assess each existing well for its capability to produce representative samples given potential impacts from drilling fluids, and its ability to detect contamination with respect to location, depth of screen(s), and well construction. The evaluation must utilize all available groundwater monitoring, geologic and hydrogeologic information. The Permittees also must provide recommendations for the replacement of defective wells and the installation of additional wells to complete the groundwater monitoring network. Proposed locations for wells that may be part of potential remediation systems for cleanup of intermediate and regional ground water must also be a component of the evaluation.

The recommendations must: 1) identify gaps in well coverage for intermediate and regional groundwater in all potential groundwater flow directions; 2) propose locations for additional monitoring wells, including locations that address potential flow directions in the intermediate zone that may not be generally parallel to regional groundwater flow; 3) determine the need to replace and/or plug and abandon wells due to inadequacies in well integrity or performance; and 4) provide recommendations for wells where data quality problems are identified but which may still be of some limited use (e.g., water-level monitoring, sampling and analysis for restricted analytical suites).

The Permittees must submit a report that includes the results of the evaluation and recommendations to address any deficiencies in the well network to NMED no later than **July 1, 2011**.

Messrs. Rael and Graham  
January 31, 2011  
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Should you have any questions or comments, please contact Michael Dale at (505) 661-2673.

Sincerely,



James P. Bearzi  
Chief  
Hazardous Waste Bureau

JPB:md

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File: 2011 Reading and Groundwater TA-16 Consolidated Unit 16-021(C)-99 and Upper Water  
Canyon Watershed – Requirement to Conduct Well Evaluation