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**CERTIFIED MAIL - RETURN RECEIPT REQUESTED**

October 31, 2007

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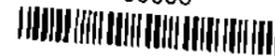
David Gregory  
Federal Project Director  
Department of Energy, Los Alamos Site Office  
528 35<sup>th</sup> Street, Mail Stop A316  
Los Alamos, New Mexico 87544

**RE: NOTICE OF DISAPPROVAL  
INVESTIGATION REPORT FOR GUAJE/BARRANCAS/RENDIJA CANYONS  
AGGREGATE AREA AT TECHNICAL AREA 00  
LOS ALAMOS NATIONAL LABORATORY (LANL)  
EPA ID #NM0890010515  
HWB-LANL-07-018**

Dear Messrs. McInroy and Gregory:

The New Mexico Environment Department (NMED) is in receipt of the United States Department of Energy and the Los Alamos National Security, LLC's (collectively the "Permittees") document entitled *Investigation Report for Guaje/Barrancas/Rendija Canyons Aggregate Area at Technical Area 00* (Report) dated August 31, 2007 and referenced by LA-UR-07-5326/EP 2007-0476. NMED has reviewed the Report and hereby issues this notice of disapproval. NMED provides the following comments:

30008



**General Comments:**

**Comment 1:** The potential for soil contamination to impact groundwater was not adequately addressed in the risk assessment or in any other section of the Report. Although general discussion of chemical properties affecting the mobility and persistence of inorganic and organic contaminants in soil was included in Section F-3.1, Environmental Fate and Transport, as a basis for determining that migration to groundwater would not occur at the site, a migration screen using NMED soil screening levels (SSLs) for the protection of groundwater was not conducted. Such a screen must be used to conclude that highly mobile constituents such as perchlorate will not reach groundwater, a migration-based screen using available NMED SSLs must be conducted. The Permittees must revise the risk assessment to include a migration screen using NMED SSLs for the protection of groundwater. Alternatively, the potential risks and hazards associated with this pathway could be assessed in a quantitative risk assessment. In any event, qualitative statements or assertions regarding chemical properties are not sufficient justification for eliminating this pathway from evaluation.

**Comment 2:** The Permittees must provide storm water monitoring data for Guaje, Rendija, and Barrancas Canyons in accordance with Sections VII.A and VIII.C.1 of the Order. This will allow NMED to verify whether the Permittees are in compliance with the Surface Water Regulations specified in Section VIII.C of the March 1, 2005 Consent Order and that migration of contaminants from SWMLs and AOCs are controlled.

**Comment 3:** The Screening Level Ecological Risk Assessment (SLERA) followed guidance provided in the *Screening Level Ecological Risk Assessment Methods, Revision 2* (LANL 2004, 087630). This method was developed specifically for screening the potential ecological risks that may result from past operations at LANL. The Permittees must provide a reference for this document in the reference section of the SLERA.

**Comment 4:** A three-tiered screening approach was used to identify the final list of chemicals of potential ecological concern (COPECs) in each solid waste management unit (SWMU) and area of concern (AOC). However, there are a number of concerns with the approach used.

**a) Selection of Chemicals of Potential Concern COPCs**

A chemical was selected as a chemical of potential concern (COPC) if the detected concentration or detection limit exceeded the background value (BV) or maximum background concentration, whichever was greater. The LANL SLERA method does not refer to the use of BVs or maximum background concentrations as a screening tool. The June 2001 EPA *Eco Update* (EPA 540/F-01/014) specifically addresses the use of background concentrations as a screening tool. This guidance document states that the comparison of site data to background levels generally cannot be used to remove COPCs; however, such a comparison can be used to focus a baseline risk assessment. The Permittees must provide justification for this step in Section E-1.2, Overview of COPC Selection.

**b) Final Screening in the Uncertainty Analysis**

A final screening effort was discussed in the Uncertainty Analysis (Section F-5.4). The LANL SLERA method states that more accurate estimates of exposure for the COPECs can be considered by including factors such as area use and bioavailability. Modification of these types of factors can result in the addition or deletion of a particular COPEC. Residential soil screening levels and surrogate screening values were used to remove COPECs in each SWMU and AOC from further consideration. For example, perchlorate maximum concentrations were compared to the Region 6 medium-specific screening level (MSSL) for residential soil. This type of screening is not acceptable in a SLERA, because it is based on a screening level which does not protect ecological receptors. This type of screening also does not adhere to the concept of adjusting variables within the screening process to represent more real-life exposures. The Permittees must provide justification for this step in Section F-5.4, Uncertainty Analysis.

**c) Chemical Analyses**

The tables summarizing the inorganic and organic chemicals detected above BVs (Tables E-2-1.1, E-3-1.1, E-4-1.1, and E-5-1.1 in Appendix E) only present a subset of the chemicals analyzed at each of the SWMUs and AOCs. For example, Table E-2.2-1 presents only 15 of the 23 metals from the Target Analyte List (TAL) for SWMU 00-001(a). The Permittees must include results of all chemical analyses in the tables. In addition, the frequency of detection, minimum detected concentration, maximum detected concentration, specific depth of the maximum detected concentration, the selected screening concentrations, and selected screening values must be provided. Currently, only the detected concentration or non-detect detection limit for each location are listed. The selected screening concentration for each chemical should be either the maximum detected concentration or the highest detection limit, if not detected. These changes would reduce the number of values shown in the tables and make it easier to identify which chemicals are in exceedance, and therefore selected as a COPEC. The Permittees must amend the SLERA accordingly.

**d) Detected Concentrations and the Detection Limits**

The organic chemicals detected in the soil samples from AOC C-00-0041 were selected as COPECs because no background values were available. This selection process does not take into account the potential for elevated detection limits caused by dilution during analysis. An elevated detection limit can increase the uncertainty as to whether or not the chemical was present. The Permittees must compare the detected concentrations and the detection limits of the non-detects to the conservative soil ecological screening values (such as those developed by EPA Region 4 [USEPA Region 4, August 2003]). The comparison to soil screening values would ensure that non-detected chemicals with detection limits above the screening values are not eliminated as COPECs.

**e) Estimated Quantitation Limits**

The Permittees rejected Estimated Quantitation Limits (ESLs) based on species similar to those selected as ecological receptors in this SLERA. The ESLs were derived from: No Observable Adverse Effect Levels (NOAELs), Lowest Observable Adverse Effect Levels (LOAELs), or doses lethal to 50% of the population (LC<sub>50</sub>). The ECORISK Database (Version 2.2, LANL, 2005) provided the information used to derive the ESLs. However, the June 1997 EPA *Ecological Risk Assessment Guidance for Superfund* (EPA 540-R-97-006) specifically addresses the importance of conservative assumptions to ensure that all potential ecological threats are considered. Some examples of conservative assumptions include, but are not limited to: using the most sensitive life state, minimum body weight, 100% of the diet consisting of the most contaminated dietary component, and assuming the chemical is 100% bioavailable. The Permittees must amend Section F-5.2 to include a table which presents the equations and input parameters (including justification) used to derive the ESLs.

**Comment 5:** Although approximately 10 cubic yards of asphalt were removed from the stream channel at AOC C-00-041, NMED observed asphalt throughout the stream channel during a site visit on September 13, 2007. Asphalt removal was not complete; continued monitoring of the asphalt source and channel is therefore necessary. The Permittees must submit a plan to monitor the migration of asphalt-related contaminant that includes benchmarks that will trigger a removal response, cleanup existing asphalt, and a cleanup schedule for future exposed asphalt at AOC C-00-041 by November 29, 2007. Monitoring of AOC C-00-041 must be completed soon after the end of the snowmelt and monsoon seasons.

**Specific Comments:**

1. Section 2.1.2 Active Site, pg 4:

**Permittees Statement:** "No sample collection or remedial actions have been conducted at the site. Investigation of this site will be deferred until the site is no longer active because ongoing activities at the site prevent performing a representative characterization. Deferring investigation on this site is consistent with the approach described in Section IV.A.5 of the Consent Order for deferring investigation of certain SWMUs and AOCs associated with active firing sites."

**NMED Comment:** The Permittees justification for deferral of investigation activities based on Section IV.A.5 of the Consent Order is not appropriate because the AOC is not identified in Table IV-2. Table IV-2 specifically refers to sites within testing hazard zones. However, investigation activities were approved for deferral in NMED's *Approval with Modifications*, dated January 5, 2006. Therefore, NMED will accept the proposed deferral until the Sportsman Club is closed or there is evidence that contamination from the AOC is migrating off site. The Permittees must notify NMED within thirty (30) days of closure of the Sportsman Club and provide a submittal date for NMED approval of an Investigation Work Plan.

Although AOC 00-015 is deferred from investigation activities until closure of the firing range, the Permittees must ensure that contamination does not migrate off site. To prevent off site contaminant migration, the Permittees must provide a Work Plan to NMED for approval by January 31, 2008. The plan must include provisions for monitoring storm water. If migration of contamination from the AOC is identified, the Permittees will be required to install additional erosion controls and/or remove the source of contamination.

2. Section 5.1 Screening Levels, Pg. 16:

**Permittees Statement:** "The human health risk screening assessments follow guidance provided by the EPA and NMED. The Human health soil screening levels (SSLs) for chemicals are obtained from NMED guidance (NMED 2006, 092513). If screening levels are not available from NMED, EPA Region 6 (EPA 2006, 094321) SSLs are used. The residential SSLs are used in the human health risk screening assessment (Appendix F)."

**NMED Comment:** Section 5.1 indicates that the December 2006 version of the EPA Region 6 residential-based SSLs were used in the absence of an SSL developed by NMED. The Permittees must ensure that the most current EPA Region 6 SSLs are used in future reports, as these levels were updated in February and May of 2007. The Permittees must include in the Uncertainty Analysis, a discussion of any SSLs from the EPA Region 6 that have changed significantly and how these changes impact the risk conclusion.

3. Section E-1.2 Overview of COPC Identification, Pg. E-1

**Permittees Comment:** "The purpose of the data review is to identify chemicals of potential concern (COPCs) for each site (SWMU or AOC) in the Guaje/Barrancas/Rendija Canyons Aggregate Area."

**NMED Comment:** The concepts of "less than twice the BV" and "less than 50% above the BV" were used to remove chemicals from the COPC list. The significance of twice the BV and less than 50% above the BV was not described in this section. The Permittees must provide an explanation of these two concepts in Section E-1.2.

4. Section F-2.2 Investigation Sampling and Determination of Chemicals of Potential Concern, Pg. F-2:

**Permittees Comment:** "[T]he inorganic chemical samples from 1993 were analyzed by the Laboratory's Chemical Sciences and Technology (CST) Group. The quality assurance/quality control (QA/QC) data for validation of the CST data is incomplete; therefore, the inorganic chemical data cannot be used to quantitatively determine the nature and extent of contamination."

**NMED Comment:** The tables which summarized the data collected from each of the SWMUs and AOC (Tables E-2.0-1, E-3.01-, E-4.0-1, and E-5.0-1 in Appendix E, Data Review) must

indicate the sample dates. This information will allow an independent reviewer the opportunity to verify that the data from 1993 was not included in this risk assessment. The Permittees must revise the Report accordingly.

5. Section F-3.1.1 Inorganic Chemicals, Pg. F-4

**Permittees Comment:** “[I]n addition, vertical extent of perchlorate is defined at all sites investigated within the aggregate area indicating that perchlorate is not migrating to groundwater.”

**NMED Comment:** Although NMED agrees the vertical extent of perchlorate has been defined, insufficient technical information exists to support the conclusion that soil contamination is not migrating to groundwater. The Permittees must revise Section F-3.1.1 to provide adequate justification that soil contamination will not migrate to groundwater. Examples of the types of interpretive information needed, either singly or in combination with other lines of evidence, include, but are not limited to:

- Documentation that soil concentrations are below migration-based soil screening levels
- Discussion of the age of perchlorate release(s); and
- Documentation that contaminants were not detected in groundwater samples.

The Permittees must revise the Report accordingly.

6. Section F-3.1.1 Inorganic Chemicals, Pg. F-4

**Permittees Comment:** “[C]hemicals with  $K_d$  values greater than 40 are very unlikely to migrate through soil towards the water table (Kincaid et al. 1998, 093270). Based on this  $K_d$  criterion, cobalt, lead, manganese, mercury, and nickel have a very low potential for migration to groundwater (Table F-3.1-1).”

**NMED Comment:** Nickel was not selected as a COPC and no  $K_d$  criterion was listed in Table F-3.1-1. The Permittees must remove nickel from the aforementioned statement or include it in Table F-3.1-1.

7. Section F-3.1.1 Inorganic Chemicals, Pg. F-4

**Permittees Comment:** “[I]n soil with a pH greater than 7.5, selenates, which have high solubility and a low tendency to adsorb onto soil particles, are the major selenium species and are very mobile. The soil pH at SWMU 00-022(a), SWMU 00-022(d), SWMU 00-011(e), and AOC C-00-041 is much lower than 7.5, indicating that selenium is not likely to migrate.”

**NMED Comment:** The soil pH ranges for each of the SWMUs and AOC areas were not provided in the data tables. Permittees must revise Appendix F to address this issue.

8. Section F-4.1 Soil Screening Levels, AOC C-00-041, Pg. F-7

**Permittees Comment:** “[T]PH-GRO has no screening value, but it was detected at low concentrations across the AOC. The screening assessment indicates no potential for unacceptable risk to human health at AOC C-00-041 under a residential scenario.”

**NMED Comment:** The NMED screening methodology requires sites contaminated by gasoline release to be screened using SSLs established for gasoline constituents including benzene, toluene, ethylbenzene, xylene, and the individual polycyclic aromatic hydrocarbons (PAHs). The Permittees must therefore revise the SSL screening analysis for contamination detected at the site against the appropriate contaminant-specific NMED SSLs. If not all of the petroleum constituents were included in the analytical suite for this site, the Permittees must include an explanation of the potential impact on risk conclusions in the Uncertainty Analysis. The Permittees must include a site history that examines fuels use (or lack thereof), a comparison of TPH-GRO concentrations, and the percentage of benzene in gasoline to the NMED SSL for benzene.

9. Figure F-3.1-1 Conceptual Site Model for Guaje/Barramcas/Rendija Canyons Aggregate Area, Pg. F-21

**NMED Comment:** This figure does not identify the historical potential sources of contamination. Rather, the figure only addresses the sources listed as mechanisms of release. The Permittees must revise Figure F-3.1-1 to accurately depict the chemical sources of contamination (e.g., munitions and explosives of concern (MEC), asphalt plant, firing sites). In addition, the Permittees must provide a comprehensive depiction of all migration and exposure pathways considered. The migration of soil contaminants to groundwater should be included in the Conceptual Site Model (CSM) with a “low” designation for exposure potential.

10. Table F-2.2-1 Exposure Point Concentrations for the Residential Scenario and Ecological Assessment, Pg. F-23

**NMED Comment:** Table F-2.2-1 listed the selected COPCs for each of the SWMUs and AOCs and provides values used to select the exposure point concentrations (EPCs). The column with the heading of “95% UCL (mg/kg)” lists two types of values: 1) a value calculated using the 95% Upper Confidence Level (UCL); and 2) the maximum detected concentration. The Permittees must list only the values calculated using the 95% UCL in the “95% UCL” column. A column containing the selected EPC values (the 95% UCL and maximum detected concentration) must be added.

11. Tables F-5.3-4, F-5.3-6, and F-5.3-8 HI Analysis for SWMUs and AOCs, Pgs. F-30-32

**NMED Comment:** These tables summarized the HIs for each receptor in a given SWMU or AOC. The Permittees must provide the following information in the above listed tables:

- Perchlorate, TPH-GRO, TPH-DRO, and 1,2,4-trimethylbenzene (only in AOC C-00-0041) were not listed in the tables because there were no ESLs available. The Permittees must list these chemicals with "NA" (not available) in the ESL column and a "Yes" in the COPEC column. This will illustrate whether or not all the chemicals selected as COPECs for a specific SWMU or AOC were evaluated and summarized in these tables.

The Permittees must address these comments herein, cross-referencing NMED's numbered comments, in a response letter and redline/strikeout revision indicating all changes to the Report by November 29, 2007. The Permittees must submit to NMED the monitoring plan and cleanup schedule for AOC C-00-041 no later than April 30, 2008 and a Work Plan for AOC 00-015 by January 31, 2008. All submittals must be in the form of two paper copies and one electronic copy in accordance with section XI.A of the Consent Order. An electronic copy of the redline/strikeout version is acceptable. Should you have any questions regarding this letter, please contact Jennifer Holman of my staff at (505) 476-6043.

Sincerely,



James P. Bcarzi  
Chief  
Hazardous Waste Bureau

cc: J. Holman, NMED HWB  
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file: Reading and LANL'07, North Canyons (Guaje/Barrancas/Rendija Canyons Aggregate Area)