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JOHN R. D'ANTONIO Jr.
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**CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

December 17, 2002

Dr. John C. Browne, Director
Los Alamos National Laboratory
P.O. Box 1663, Mail Stop A100
Los Alamos, New Mexico 87545

Mr. Everett Trollinger, Project Manager
Office of Los Alamos Site Operations
Department of Energy
528 35th Street, Mail Stop A316
Los Alamos, New Mexico 87544

**RE: NOTICE OF DEFICIENCY- VOLUNTARY CORRECTIVE MEASURES PLAN
FOR SOLID WASTE MANAGEMENT UNIT (SWMU) 21-011(k) at TECHNICAL
AREA 21 (REVISION 2).
LOS ALAMOS NATIONAL LABORATORY EPA ID No: NM0890010515
TASK NUMBER HWB-02-020**

Dear Dr. Browne and Mr. Trollinger:

The Hazardous Waste Bureau of the New Mexico Environment Department (NMED) has received the Los Alamos National Laboratory and the Department of Energy (the Permittees) voluntary corrective measures (VCM) plan titled "Voluntary Corrective Measures Plan for Solid Waste Management Unit 21-011(k) at Technical Area 21 - Revision 2," dated October 2002 and referenced by LA-UR-02-6797 (ER2002-0745). NMED has reviewed Revision 2 of the VCM Plan for SWMU 21-011(k) and is issuing this Notice of Deficiency (NOD). The Permittees must revise Revision 2 of the VCM Plan for 21-011(k) as outlined in the attachment and submit the revised plan to NMED for review and approval on or before January 17, 2003.

The original submittal date for the VCM Plan was April 19, 2002, however, the Permittees did not meet the report submittal deadline or provide prior notification to NMED. A VCM Plan (LA-UR-02-2218) was submitted to NMED on April 22, 2002 and NMED sent electronic comments to the Permittees staff on May 7, 2002. On May 8, 2002 NMED met with the Permittees staff to discuss the technical deficiencies and schedule for submittal of a modified



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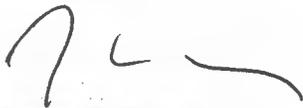
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VCM Plan for the site. NMED sent a record of communication to the Permittees staff on May 8, 2002 to document the new deadline of July 1, 2002 for submittal of the revised VCM Plan. NMED determined the VCM Plan to be technically incomplete in a letter dated May 15, 2002 and outlined key elements for inclusion in the revised VCM Plan. A revised VCM Plan (Revision 1) was submitted to NMED on July 1, 2002 (LA-UR-02-3807). The revised VCM Plan (Revision 1) was subsequently withdrawn by the Permittees in a letter dated September 18, 2002 titled "Withdrawal of Revision 1 of the Voluntary Corrective Measures Plan for Solid Waste Management Unit 21-011(k)." On October 31, 2002, Revision 2 (LA-UR-02-0745), which selects a new remedy for the site, was submitted to NMED for review. NMED has found Revision 2 (LA-UR-02-0745) of the VCM Plan for 21-011(k) to be deficient, and is therefore issuing this NOD.

Failure to comply with the requirements set forth in this NOD and its attachments or adequately justify to NMED's satisfaction such failure to respond within thirty (30) days of receipt of this NOD, on or before January 17, 2003, is considered noncompliance with the Permittees RCRA Permit, and may be subject to an enforcement action.

If you have any questions or concerns regarding this NOD, or require additional clarification regarding content of the required revised VCM plan (Revision 3), please contact Vickie Maranville at (505) 428-2546.

Sincerely,



James P. Bearzi
Chief
Hazardous Waste Bureau

JPB:vm

Attachments

cc: D. Cobrain, NMED HWB
J. Davis, NMED SWQB
J. Parker, NMED DOE OB
V. Maranville, NMED HWB
S. Yanicak, NMED DOE OB, MS J993
J. Young, NMED HWB
L. King, EPA 6PD-N
B. Ramsey, LANL RRES-DO, MS J591

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N. Quintana, LANL RRES-R, MS M992
D. McInroy, LANL RRES-R, MS M992
W. Woodworth, OLASO, MS A906
File: Reading and HSWA LANL TA-21 (SWMU 21-011(k) outfall)

ATTACHEMENT

General Comments

1. Maps displaying data using a colorimetric scale must be submitted in color. Since the maps were not submitted in color, it is difficult for the reader to determine contaminant distribution. In addition, color photographs (Attachment 1) should be submitted in color, not black and white. Please revise all maps displaying data using a colorimetric scale and submit color maps and photographs to NMED in the revised VCM Plan.
2. Ecological risk at the site is not addressed in the VCM Plan. The Permittees must assess ecological risk from uptake of residual contaminants through plants into the food chain using LANL ecological screening levels (ESLs) for contaminants or sampling results from vegetation removed from the site. Results of ecological risk can be presented in the VCM Completion Report.

Specific Comments

1. Section 1.2 Regulatory History, Page 4

"Table 1.2-2 Regulatory Activity for SWMU 21-011(k)"

The above referenced Table is incomplete as submitted, missing plan submittals, and NMED and the Permittees correspondence. Please update the Table to accurately reflect the regulatory activity for SWMU 21-011(k).

2. Section 1.3 Rationale for Proposed Corrective Measure, Page 4

"Consequently, the trail-user land use scenario is proposed for this VCM (LANL 2001, 70217) and used to screen soil and sediment areas with potentially elevated radionuclide concentration exceeding the acceptable human health dose level (15 mrem/yr)."

A dose of 15 mrem/yr may be considered acceptable to the Permittees; however, NMED does not evaluate human health based on dose per year. NMED evaluates risk to human health based on lifetime carcinogenic risk. Please revise the above statement to indicate that a dose of 15 mrem/yr. is acceptable to the Permittees, but may not be acceptable to NMED.

In order to determine if the proposed VCM could be considered a final remedy the risk assessment must contain an estimate of dose and risk over time for a residential receptor based on the starting residual level of radionuclides in soil being equivalent to the target goals and demonstrating how many years would be required for the risk to reach no further action (NFA) criteria of 10^{-5} excess risk for a residential receptor.

**3. Section 1.3-1 Present-day dose vs. time for trail-user scenario at SWMU 21-011(k),
Page 5**

"This remedial approach is a cost-effective and proactive remedial alternative, and is preferred over no action, fencing of the site, and/or stabilization and placement in an on-site containment cell."

The VCM Plan submitted to NMED in April 2000 (LA-UR-02-2218) and deemed technically deficient (NMED letter dated May 15, 2000) stated in Section 1.3, page 6, "The estimated cost savings of onsite stabilization compared to transportation and disposal at Area G is expected to be approximately \$2 million because onsite stabilization eliminates the costs associated with the coordination and implementation of transporting low level contaminated waste over public roadways, through public areas, and disposal at Area G." The current plan does not demonstrate that removal and disposal at Area G will result in a cost savings. In addition, the current proposed remedial method (removal and off-site disposal) requires contaminated material to be transported through the town of Los Alamos. Also, the cost estimate provided in the current revision of the VCM Plan Appendix B (VCM Checklist and Fact Sheet), Page B-5 is the same fact sheet as previously submitted to NMED. Please explain in more detail the benefits of the selected remedial alternative.

4. 3.0 BASIS FOR CLEANUP LEVELS, Page 16

"By comparison, the calculated dose to a hypothetical recreational trail user following implementation of the proposed excavation and disposal of 500 yd³ of contaminated material with concentrations of Cs-137 greater than 150 pCi/g and approximately 60 yd³ of contaminated sediment in the western drainage with Am-241 concentrations greater than 170 pCi/g is between 3 and 4 mrem/yr or about 1/4 the criterion of 15 mrem/yr for the free-release of real property (DOE 2000, 67489)."

Please explain why the selected remedy is preferred over stabilization in place. Stabilization in place, prior to installation of the engineered cover, was estimated to provide between 2 and 3 mrem/yr or 1/5 the Department of Energy (DOE) criterion of 15 mrem/yr for free-release of real

property, whereas the selected remedy is estimated to provide between 3 and 4 mrem/yr or $\frac{1}{4}$ the DOE criterion. Also, please provide risk estimates for each remedy proposed.

5. 3.0 BASIS FOR CLEANUP LEVELS, Page 16

"The total dose rate is projected to decline to less than than 2 mrem/yr within approximately 30 years after excavation due solely to the decay of Cs-137, thereby decreasing the dose within 1/8 the time without VCM implementation."

The above statement is confusing; please clarify the estimated risk after 30 years with and without implementation of the proposed VCM activities.

6. BASIS FOR CLEANUP LEVELS, Page 16

"Figure 3.0-1 is a dose versus time plot produced by RESRAD 6.1 (Appendix F, Exhibit F.C) for the recreational trail user following implementation of the proposed excavation and disposal of 50 yd³ of contaminated material with concentrations of Cs-137 greater than 150 pCi/g..."

Based on information provided in Section 1.1 Purpose and Scope, page 1 of the VCM Plan, approximately 500 yd³ of contaminated soil, tuff, and sediment, and approximately 60 yd³ of contaminated sediment are proposed for removal during the VCM activities. Please correct the above statement to reflect actual amount of material planned for removal during the proposed VCM activities.

7. 3.0 BASIS FOR CLEANUP LEVEL, Page 17

"The mixture derived concentration guideline (DCGL) (Appendix F) for soil is satisfied when the sum of ratios or the radionuclides present is less than or equal to 1. Based on site average concentrations current dose at SWMU 21-011(k) is 7.3 mrem/yr for a recreational trail-user scenario, well below the 15 mrem/yr dose-based criteria."

Although a calculated dose of 7.3 mrem/yr may be a legitimate dose to DOE, it does not satisfy NMED requirements. NMED requires risk to be calculated for each radionuclide present, the risk for individual radionuclides can then be summed to determine total risk at the site. Estimates of excess risk corresponding to the estimated doses should be included; the excess risk should be estimated for a 30-year exposure for the trail-user and for the residential scenario where that scenario is considered. The trail-user scenario adequately estimates current potential exposure, but in order to determine if the proposed VCM could be considered a final remedy the risk assessment must contain an estimate of dose and risk over time for a residential receptor

based on the starting residual level of radionuclides in soil being equivalent to the target goals and demonstrating how many years would be required for the risk to reach NFA criteria of 10^{-5} excess risk for a residential receptor.

8. 4.1 Conceptual Model, Page 19

"The SWMU is vegetated, and portions of it are covered with plant litter, thereby minimizing any contaminant transport via wind and fugitive dust."

Based on communication between the Permittees and NMED, the site had been cleared of vegetation during the summer of 2002 in preparation for solidification activities that were proposed to NMED in prior submittals of the VCM Plan. Please clarify or revise the above statement to reflect actual site conditions.

9. 4.3 Remedial Approach, Page 21

"Site preparation activities will include clearing and grubbing of vegetation in areas to be excavated; set-up of site trailers; survey and staking of area to be excavated; construction of site support zones; installation of sanitary facilities; tree removal and chipping..."

Based on communication between the Permittees and NMED, the site had been cleared of vegetation, grubbed and the trees removed and chipped during the summer of 2002 in preparation for solidification activities that were proposed to NMED in the prior submittals of the VCM Plan. In addition, the following paragraphs in section 4.3 of the VCM Plan detail site clearing activities. The above statement is confusing to the reader; please revise or remove the statement to reflect actual site conditions. If clearing and grubbing have in fact been successfully completed, state that clearing activities have already been conducted and provide the details of such activities.

10. 4.3 Remedial Approach, Page 22

"Roll off containers will be bought on site and the excavated material will be loaded into the containers with a front-end loader. Trucks will then be used to transport the full rolloff containers to Area G at TA-54."

Excavated material must be sampled and managed in accordance with the NMED letter entitled "Contained-In Determination for Solid Waste Management Unit (SWMU) 21-011(k), Technical Area 21," dated November 25, 2002.

11. 5.2 Confirmation Surveys and Sampling of Soil Removal Area, page 25

"Upon completion of the excavation and removal activities, but before restoration occurs, confirmation samples will be collected at a rate of at least one from each area where 25 yd³ of contaminated material has been removed. At least one surface sample will be collected from each discrete excavated area, even if the area is smaller than 25 yd². A minimum of one surface sample per 500 yd² of area not requiring excavation will be collected at random... Samples will be analyzed by gamma spectroscopy for Cs-137 and by alpha spectroscopy for Am-241 and isotopic Pu, and for Sr-90 to confirm the excavated areas meet the requirements of DOE order 5400.5. A minimum of one sample from each excavated area will be collected from the surface to a depth of approximately 12 in. In areas greater than 25 m², at least one sample per 25 m² will be collected."

The proposed plan for confirmatory sampling is not clear. Based on the above-referenced text it is unclear to NMED if the proposed sampling frequency is adequate to determine total risk of residual contaminants left at the site following excavation and removal activities. Please revise or clarify, with consistent units, the proposed confirmatory sampling plan.

SWMU 21-011(k) is listed on the Facility operating permit, and based on historical records RCRA-regulated constituents are present at the site. NMED is concerned that the proposed sampling suite may not be adequate to address all potential contaminants that may be present at the site due to historical releases from the outfall. Based on Table H-3 (page H-7 of the VCM Plan), barium, cadmium, calcium, chromium, cobalt, nickel, selenium, sodium, vanadium, mercury, and other RCRA-regulated constituents outlined in the "contained in" request (submitted to NMED by the Permittees on November 5, 2002) were detected at low levels in waste characterization and sampling results for discrete sampling intervals. The confirmation sampling does not include sampling for inorganic constituents. Please provide rationale for not including inorganic constituents in the confirmatory sampling suite or revise the suite to include inorganic constituents in the confirmatory sampling plan. Since the activities proposed in the VCM plan are intended to be a final remedy, it is essential that the nature and extent of all potential contaminants of concern, in addition to radionuclides, be fully evaluated.

12. 7.0 PROPOSED SCHEDULE AND UNCERTAINTIES, Page 29

"The VCM Completion Report will be prepared and submitted to NMED Hazardous Waste Bureau (HWB) by the end of fiscal year 2003."

Based on the current schedule provided in the VCM Plan, submittal of the VCM Completion Report by the end of fiscal year 2003 is not acceptable to NMED. The VCM Completion Report

must be submitted within 90-days of completion of field activities. Based on the schedule provided in the VCM Plan, the VCM Completion Report must be submitted on or before July 18, 2003. Should the schedule change, the actual submittal date may vary based on the final completion of the field activities, but should not be longer than 90-days after completion of field activities.

13. Table 7.0-1 VCM Field Work Schedule, Page 29

Please revise the above-referenced Table to reflect actual site conditions (i.e., start date for field activities, and report submittal date).

14. A-1.0 ACRONYMS, Page A-1

HRMB no longer exists, and is not used in the VCM Plan. Please replace HRMB with Hazardous Waste Bureau (HWB), which is used in the VCM Plan.

15. A-2.0 GLOSSARY, Page A-3

"DOE Order 5400.5, Elevated Activity Criterion... are given in DOE/CH-8901."

Please provide a copy of DOE/CH-8901 to NMED for review.

16. Appendix B, VCM Checklist and Fact Sheet, Page B-5

The Estimated Cost and Schedule provided on page B-5 is incorrect. Please correct the typographical errors (the proposed action is a VCM not VCA) and revise the cost to reflect actual proposed activities at the site. The Cost and Schedule provided are identical to the Cost and Schedule provided as part of the Revision 1 of the VCM plan that was submitted in July 2002 and subsequently withdrawn.

17. Appendix E: Estimated Cost, Page E-1

Appendix E should be revised to reflect proposed excavation and removal activities for the site. The estimated cost schedule provided is similar to the schedule provided for stabilization (VCM Plan Revision 1, dated July 2002 and referenced by LA-UR-02-3807). In addition, the proposed cost (\$1.4 million) is not the same as the proposed cost outlined in page B-5 of this VCM Plan. Page B-5 states the total cost, which would include subcontractor, analytical, and disposal costs would be approximately \$2.2 million, not \$1.4 that is stated on page E-1. Please correct the inaccuracies and provide a revised cost estimate for excavation and removal.