LANL TA-21

Los Alamos NATIONAL LABORATORY
Los Alamos National Laboratory/University of California
Risk Reduction & Environmental Stewardship (RRES)
Remediation Services (RS), MS M992
Los Alamos, New Mexico 87545
(505) 667-0808/FAX (505) 665-4747

National Nuclear Security Administration.
Los Alamos Site Operations, MS A316
Environmental Restoration Program
Los Alamos, New Mexico 87544
(505) 667-7203/FAX (505) 665-4504

LIBRARY COPY

Date: April 7, 2004
Refer to: ER2004-0178

Mr. John Young, Corrective Action Project Leader
Permits Management Program
NMED – Hazardous Waste Bureau
2905 Rodeo Park Drive East
Building 1
Santa Fe, NM 87505-6303

SUBJECT: RESPONSE TO THE NOTICE OF DEFICIENCY ON THE VOLUNTARY CORRECTIVE ACTION COMPLETION REPORT ADDENDUM FOR SOLID WASTE MANAGEMENT UNIT 21-013(d)-99 DATED SEPTEMBER 2003

Dear Mr. Young:

Enclosed please find the certification and two copies of the response of the Los Alamos National Laboratory Risk Reduction and Environmental Stewardship–Remediation Services (RRES–RS) to your notice of deficiency (NOD) for the Voluntary Corrective Action Completion Report Addendum for Solid Waste Management Unit 21-013(d)-99. The Department of Energy–Los Alamos Site Operations Office received the NOD on March 5, 2004, and the RRES–RS project office received the NOD on March 9, 2004.

If you have any questions, please contact Becky Coel-Roback at (505) 665-5011 or Woody Woodworth at (505) 665-5820.

Sincerely,

for

David McInroy, Deputy Project Director
Remediation Services
Los Alamos National Laboratory

Sincerely,

David Gregory, Federal Project Director
Department of Energy
Los Alamos Site Operations

DM/DG/RCR/th

Enclosure: (1) Response to NOD (ER2004-0166)
(2) Certification

Cy: (w/enc)
A. Dorries, RRES-ECR, MS M992
B. Coel Roback, RRES-ECR, MS M992
N. Quintana, RRES-RS, MS M992
C. Rodriguez, RRES-ECR, MS M992
D. Gregory, LASO, MS A316
L. Woodworth, LASO, MS A316
J. Kieling, NMED-HWB
S. Yanicak, NMED-OB
L. King, EPA Region 6
RRES-RS File, MS M992
IM-5, MS A150
RPF, MS M707

Cy: (w/o enclosure)
D. McInroy, RRES-RS, MS M992
J. Johnson, ADO, MS A104
S. Martin, NMED-HWB
C. Voorhees, NMED-OB

CERTIFICATION

CERTIFICATION BY THE RISK REDUCTION AND ENVIRONMENTAL STEWARDSHIP (RRES) PROJECT TECHNICAL REPRESENTATIVES

Document Title: Responses to the Notice of Deficiency on the Voluntary Corrective Action Completion Report Addendum for Solid Waste Management Unit 21-013(d)-99

I certify under penalty of law that these documents and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violation.

Name: _____ for Date: April ~~March~~ 7, 2004

David McInroy, Acting Program Manager
Remediation Program
Los Alamos National Laboratory

or

_____ Date: _____

Beverly A. Ramsey, Division Leader
Risk Reduction and Environmental Stewardship Division
Los Alamos National Laboratory

David R Gregory Date: April 7, 2004

David Gregory, Project Manager
Environmental Restoration Program
Department Of Energy/Los Alamos Site Office

or

_____ Date: _____

Herman LeDoux,
Assistant Area Manager of
Environmental Projects
Department Of Energy/Los Alamos Site Operations

Los Alamos
NATIONAL LABORATORY

LIBRARY COPY

Response to Notice of Deficiency
on the Voluntary Corrective Action Completion Report Addendum for
Solid Waste Management Unit 21-013(d)-99, Dated March 5, 2004,
Los Alamos National Laboratory, EPA ID# NM0890010515

INTRODUCTION

This submittal is the response by Los Alamos National Laboratory (LANL or the Laboratory) to the "*Notice of Deficiency, VCA Completion Report Addendum, Solid Waste Management Unit (SWMU) 21-013(d)-99,*" issued by the New Mexico Environment Department (NMED) Hazardous Waste Bureau on March 5, 2004. The "Voluntary Corrective Action Completion Report Addendum for Solid Waste Management Unit 21-013(d)-99" (LANL 2003, 83094) was submitted by LANL to NMED in September 2003.

To facilitate review of these responses, the NMED's comments are included verbatim. The comments are divided into general and specific categories as presented in the letter. LANL's responses follow each NMED comment.

GENERAL COMMENTS

NMED Comment

1. *The Permittees must submit all Voluntary Corrective Action Work Plans to NMED for review prior to commencing field work. NMED never received the "Voluntary Corrective Action Plan Addendum for Solid Waste Management Unit (SWMU) 21-013(d)-99 at Technical Area 21," and was not given the opportunity to provide technical or regulatory input prior to the implementation of the plan. This lack of involvement on the part of the Permittees only serves to hinder the corrective action process and delay final decision-making.*

LANL Response

1. LANL agrees that NMED's involvement is important and helps expedite the corrective action process. The Voluntary Corrective Action (VCA) Work Plan referenced in the comment is an addendum to the original VCA plan (LANL 1995, 50085) and was designed to address all comments received in the form of a request for supplemental information (RSI) (NMED 1998, 58836) on the original VCA completion report (LANL 1996, 54320). Although LANL had responded to the RSI (LANL 1998, 58709), no acknowledgement to the response was received from NMED. The subject addendum to the VCA plan was written to provide additional information and direct additional sampling to address the RSI comments.

NMED Comment

2. *For appendix J, the Permittees must identify what "Correspondences with Regulatory Agencies" should be included.*

LANL Response

2. Agreed. Appendix J consists of the 1998 RSI from NMED and LANL's response. Following the cover page, the first four pages (front and back) of Appendix J are the NMED RSI. The remainder

of the appendix is LANL's response, including attachments that, in some cases, do not relate to the SWMU 21-013(d)-99 document because the original VCA completion report (LANL 1995, 54320) also included SWMUs 21-013(c) and 31-001. In addition, an extra copy of the RSI response, without attachments, was erroneously included in Appendix J. The last nine pages (front and back) of the appendix are the duplicate copy of the response and may be removed. LANL regrets this error and any confusion it has caused.

NMED Comment

3. *The signature page of the report is incorrect and reads "VCA Completion Report for SWMU 21-024(f) and AOCs C-21-015 and 21-030 at TA-50".*

LANL Response

3. LANL regrets this error. Extra care will be taken to ensure this does not happen again.

SPECIFIC COMMENTS

NMED Comment

1. ***Section 2.2.3, Preliminary Conceptual Model, p.8-9, paragraphs 1 & 2***

The Permittees cannot prove that the subsurface will not be disturbed and contamination brought to the surface. As a land transfer parcel, land development may include the construction of buildings with basements and/or the development of gardens, thus disrupting the subsurface and increasing the potential for contaminants to be brought to the surface. The potential for exposure to subsurface contamination must be included in the risk screening and assessments. Subsurface contamination must be included as a potential pathway to humans because LANL cannot guarantee that this type of exposure won't occur. The Permittees shall revise the report accordingly.

LANL Response

1. LANL agrees with NMED's assertion, and therefore both surface and subsurface data were used in the risk assessment, as should have been stated more clearly in the document. The conceptual site model for exposure describes the potential as well as actual exposures to receptors. Although exposure to subsurface contamination can or will occur only if the area is excavated, the pathways under this circumstance are the same as for surface exposure. The conceptual site model does not speculate as to the likelihood of this happening, and therefore all of the data (surface and subsurface) are used in assessing the potential risk to receptors. The 95% upper confidence limit (UCL) for each COPC evaluated includes all of the data regardless of whether the receptors are currently exposed or not. For this reason, revision to the report is not warranted.

NMED Comment

2. ***Section 2.3.1.2, Sampling, p. 10, paragraph 1***

The VCA Plan was not approved by NMED. (Also see General Comment # 1)

LANL Response

2. Agreed. The word "approved" should be stricken from this statement.

NMED Comment

3. ***Section 2.3.2.1, Comparison of Inorganic Chemicals with Background, p. 23, paragraph 1***

The Permittees used multiple statistical procedures to eliminate COPCs when some results in the data sets exceeded the background values (BVs) for corresponding constituents. The LANL BVs were calculated based on data collected facility-wide, evaluated by statistical procedures, and established as being the upper tolerance limit (UTL) for the background population of each constituent. According to the application of the UTL, any exceedance of the UTL is indicative of a release. No further statistical tests are necessary to establish that a particular value does not belong to the background population because the calculation of the UTL itself incorporates this information. The Permittees shall not use additional statistical tests to determine COPCs at SWMU 21-013(d)-99 and shall revise the report accordingly. Comparison of exposure concentrations to maximum background is also not necessary.

LANL Response

3. LANL agrees that the use of the upper tolerance limit (UTL) as a bright line comparison provides a simplified approach for determining COPCs above or below background. However, an exceedance of the UTL does not necessarily indicate a release of contamination or even an exceedance of background. In particular, it is not feasible to establish a single bright line concentration to define background for a particular chemical. Instead, background should be expressed as a concentration range or distribution determined by statistical analysis of the chemical data. By definition, the 95 percent UTL is the concentration at which 95 percent of the background distribution will be below at a 95 percent confidence. Therefore, on-site data are expected to exceed the UTL in roughly 5 percent of the data and still be in the upper tail of the background distribution. The comparative statistical tests done in the risk assessment are to identify those data that fall within the upper tail of the distribution. The comparative statistical tests performed identify two potential distributional differences, one around the mean (Wilcoxon Rank Sum test) and the other at the upper tail of the distribution (Quantile test) that are not accounted for by the bright line UTL comparison.

Both of these tests are recommended by EPA as methods for determining if inorganic chemicals are different from background [*Determination of Background Concentrations of Inorganics in Soils and Sediments at Hazardous Waste Sites* (U.S. EPA 1995), *Statistical Tests for Background Comparison at Hazardous Waste Sites (Interim Draft Supplemental Guidance to RAGS)* (U.S. EPA 1998), *Selecting Inorganic Constituents as Chemicals of Potential Concern at Risk Assessments at Hazardous Waste Sites and Permitted Facilities* (Cal/WEPA 1997), *Evaluating and Identifying Contaminants of Concern for Human Health* (U.S. EPA 1994), *Guidance for Environmental Background Analysis Volume I: Soil* (NFESC 2002)]. LANL has described these statistical comparisons in Chapter 3 of the NMED-approved Installation Work Plan (LANL 1998, 62060) and the NMED-negotiated annotated RFI report outline (LANL 1998, 58981). Therefore, LANL retained the statistical comparisons methodology to determine which inorganic chemicals and radionuclides are different from background and thereby identify COPCs for the SWMU being investigated.

Appendix E, Section E-1.1, describes how the statistical background comparisons were conducted. Table E-1.3-1 indicates the number of samples, from both the background and site data sets, used

for the statistical comparisons. As a result of the statistical background comparisons, three inorganic chemicals (beryllium, cobalt, and manganese) were eliminated as COPCs.

NMED Comment

4. ***Section 2.3.3.1, Nature and Extent of Contamination (Inorganic Chemicals), p. 41, paragraph 1***

NMED does not agree with this assertion for the following reasons:

- *Unless the Permittees are using sampling equipment that has been compromised (e.g., rusted and chipping), pieces of the sampling equipment should not be found in the sampling medium. Stainless steel is used for such sampling devices because of its physical and chemical properties. Unless the hand auger bucket is not in good condition and under certain circumstances (e.g., in the presence of water), chemicals from the stainless steel should not be detected in the tuff samples.*

- *Even though low levels of chromium are ubiquitous throughout the site, the anomalously high concentrations are found in select sampling locations that are clustered in the western portion of the site. Chromium ranges from 171 to 679 ppm in sample locations 21-01932 to 21-01941. These are also the same locations where nickel and copper are consistently detected above background levels. If the Permittees' theory were accurate, the higher concentrations of contaminants would more likely be found uniformly throughout the site rather than clustered.*

Even though the Permittees claim these occurrences are difficult to explain, there is a strong possibility that they represent a contaminant release at the site. Given this, the Permittees are required to determine the vertical and horizontal extent of the metals contamination detected above background values with additional sampling.

LANL Response

4. LANL believes the hand auger is the likely cause of the observed chromium detections (as well as the nickel and copper detections) in some of the 2003 samples from SWMU 21-013(d)-99. The sampling equipment used was nearly new and in good condition. Although the Bandelier tuff is friable and relatively easy to sample by hand auger in most locations, individual minerals within the tuff are harder than the steel and can cause abrasion to the auger bucket. Because the Bandelier tuff can exhibit inhomogeneity (e.g., in mineralogy, degree of welding or weathering, etc.) on a relatively small scale, it is not necessarily true that the same degree of abrasion would be seen from one side of the site to the other.

   LANL believes there is little possibility that the chromium is a result of a contaminant release. Because the site was used for surface disposal, it is difficult to explain how the chromium could be present in subsurface tuff samples without exceeding the background value (BV) for soil in the corresponding 0 to 0.5 bgs samples. Additionally, many of the samples collected during the 2003 field effort coincide with sample locations (although not the exact depths) for which previous data exist. Table 1 shows the chromium data for samples collected in 1994 or 1995 and re-collected in 2003. The chromium results from the 1994/95 sampling effort (conducted with a core barrel sampler) are significantly lower than the chromium results from the 2003 sampling effort.

As the summary of the nature and extent discussion points out, "all of the COPCs, regardless of their distribution or potential source, are carried forward to the site assessment..." Chromium was retained as a COPC and evaluated in the risk screening process. The site was found to pose no unacceptable risk, even with a residential scenario.

Table 1
Chromium Results for 1994/1995 and 2003 for SWMU 21-013(d)-99

		2003			1994/1995		
Location ID	**Media**	**Sample ID**	**Depth (ft)**	**Result[a]**	**Sample ID**	**Depth (ft)**	**Result[a]**
21-01920	Soil	MD21-03-50452	0.00-0.50	8.72	—[b]	—	—
	Soil/Qbt3	—	—	—	AAB7150	0.00-2.50	7.1
	Qbt 3	MD21-03-50453	3.50-4.50	15.5 (J+)	—	—	—
21-01921	Soil	MD21-03-50454	0.00-0.50	10.5	—	—	—
	Soil/Qbt3	—	—	—	AAB7154	0.00-2.50	2.9
	Qbt 3	MD21-03-50455	3.50-4.50	13.9 (J+)	—	—	—
21-01922	Soil	MD21-03-50456	0.00-0.50	8.14	—	—	—
	Soil/Qbt3	—	—	—	AAB7158	0.00-2.50	0.94 (U)
	Qbt 3	MD21-03-50457	3.50-4.50	7.78 (J+)	—	—	—
21-01923	Soil	MD21-03-50458	0.00-0.50	8.29	AAB7161	0.00-0.50	14.6
	Qbt 3	MD21-03-50459	3.50-4.50	27.3 (J)	—	—	—
21-01924	Soil	MD21-03-50460	0.00-0.50	6.45	—	—	—
	Soil/Qbt3	—	—	—	AAB7166	0.00-2.50	2.7
	Qbt 3	MD21-03-50461	3.50-4.50	27 (J+)	—	—	—
21-01925	Soil	MD21-03-50462	0.00-0.50	4.65 (J+)	—	—	—
	Soil/Qbt3	—	—	—	AAB7170	0.00-2.50	5.9
	Qbt 3	MD21-03-50463	3.50-4.50	14.9 (J+)	—	—	—
21-01926	Soil	MD21-03-50464	0.00-0.50	9.43	AAB7173	0.00-0.50	10.4
	Qbt 3	MD21-03-50465	2.00-3.00	23.8 (J+)	—	—	—
21-01927	Soil	MD21-03-50466	0.00-0.50	9.79	AAB7177	0.00-0.50	9.7
	Soil/Qbt3	—	—	—	AAB7178	0.00-2.50	7.2
	Qbt 3	MD21-03-50467	2.00-3.00	10.1 (J+)	—	—	—
21-01928	Soil	MD21-03-50468	0.00-0.50	11.1	—	—	—
	Soil/Qbt3	—	—	—	AAB7182	0.00-2.50	7.2
	Qbt 3	MD21-03-50469	3.50-4.50	15.2 (J)	—	—	—
21-01929	Soil	MD21-03-50470	0.00-0.50	9.48	—	—	—
	Soil/Qbt3	—	—	—	AAB7186	0.00-2.50	2.9
	Qbt 3	MD21-03-50471	3.50-4.50	17.4 (J)	—	—	—
21-01932	Soil	MD21-03-50472	0.00-0.50	6.35	—	—	—
	Soil/Qbt3	—	—	—	AAB7198	0.00-2.50	8.1
	Qbt 3	MD21-03-50473	3.50-4.50	502	—	—	—
21-01933	Soil	MD21-03-50474	0.00-0.50	7.54	AAB7201	0.00-0.50	6.0
	Qbt 3	MD21-03-50475	2.00-3.00	679	—	—	—
21-01934	Soil	MD21-03-50476	0.00-0.50	8.09	AAB7205	0.00-0.50	5.2 (J)
	Qbt 3	MD21-03-50477	2.50-3.00	224	—	—	—
21-01935	Soil	MD21-03-50478	0.00-0.50	7.11	—	—	—
	Soil/Qbt3	—	—	—	AAB7210	0.00-2.50	1.8 (UJ)
	Qbt 3	MD21-03-50479	3.50-4.50	335	—	—	—
21-01936	Soil	MD21-03-50480	0.00-0.50	6.3	—	—	—
	Soil/Qbt3	—	—	—	AAB7214	0.00-2.50	4.5 (J)
	Qbt 3	MD21-03-50481	3.50-4.50	229	—	—	—
21-01939	Soil	MD21-03-50482	0.00-0.50	10.1	—	—	—
	Soil/Qbt3	—	—	—	AAB7226	0.00-2.50	0.56 (UJ)
	Qbt 3	MD21-03-50538	6.00-7.00	171	—	—	—

Table 1 (continued)

		2003			1994/1995		
Location ID	**Media**	**Sample ID**	**Depth (ft)**	**Result**	**Sample ID**	**Depth (ft)**	**Result**
21-01940	Soil	MD21-03-50484	0.00-0.50	8.66	—	—	—
	Soil/Qbt3	—	—	—	AAB7230	0.00-2.50	1.5 (UJ)
	Qbt 3	MD21-03-50485	3.50-4.50	460	—	—	—
21-01941	Soil	MD21-03-50486	0.00-0.50	5.68	—	—	—
	Soil/Qbt3	—	—	—	AAB7234	0.00-2.50	1.1 (UJ)
	Qbt 3	MD21-03-50487	3.50-4.50	286	—	—	—
21-09008	Soil	MD21-03-50492	0.00-0.50	13.4	VCXX-95-0046	0.00-0.50	7.7
	Qbt 3	MD21-03-50493	2.00-3.00	8.58 (J)	—	—	—
21-09009	Soil	MD21-03-50494	0.00-0.50	6.46	VCXX-95-0047	0.00-0.50	3.4
	Qbt 3	MD21-03-50495	2.00-3.00	8.08 (J)	—	—	—
21-09010	Soil	MD21-03-50496	0.00-0.50	10.1	VCXX-95-0048	0.00-0.25	8.3
	Qbt 3	MD21-03-50497	3.50-4.50	25.8 (J)	—	—	—
21-09011	Soil	MD21-03-50498	0.00-0.50	9.86	VCXX-95-0049	0.00-0.25	7.1
	Qbt 3	MD21-03-50499	2.00-3.00	13.1 (J)	—	—	—

[a] = All results are in units of mg/kg

[b] = No sample collected at this depth/date

NOTE: Soil chromium background value = 19.3 mg/kg; Qbt3 chromium background value = 7.14 mg/kg

NMED Comment

5. ***Section 2.3.3.1, Nature and Extent of Contamination (Radionuclides), p. 43, paragraph 2***

The Permittees compare site data to TA-21-specific baseline radionuclide levels. NMED does not accept site-specific background levels. BVs found in the "Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff At Los Alamos National Laboratory" document must be used. The Permittees shall revise the report accordingly.

LANL Response

5. LANL recognizes that NMED does not accept comparisons to TA-21 baseline data for decision-making, and the purpose of these comparisons should have been stated more clearly in the document. Background comparisons for identification of COPCs were completed using the "Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at Los Alamos National Laboratory (LANL 1998, 59730). The relationship to TA-21 baseline levels is provided so that the concentrations of COPCs relative to TA-wide levels are evident. Decisions to eliminate or retain individual radionuclides as COPCs were not made based on a comparison to TA-21 baseline levels. Because of the nature of the TA-21 operations, this comparison does have a bearing on whether we have determined nature and extent of SWMU-related contamination. At some point SWMU related contamination blends with TA-wide contamination such that additional sampling for nature and extent does not provide any substantial changes in concentrations. At this point, the extent of contamination from the SWMU is defined and no further sampling is warranted. Therefore, revision to the report is not necessary.

NMED Comment

6. ***Section 2.3.3.1, Nature and Extent of Contamination (Summary of Nature and Extent of Contamination) p. 45, paragraph 1***

NMED does not agree that data should show a trend between wastepiles at the site. SWMU 21-013(d)-99 is referred to as a "cold dump" and was used for disposal of construction-related debris and building debris. (Appendix H, Section 1.0, & Appendix J, Attachment 4) The debris disposed of originated at different locations, thus the material is not similar. The waste-piles are likely to be heterogeneous. (Also see specific comment # 11.)

LANL Response

6. Although the document states that there is no clear trend in the distribution of some COPCs, it was not LANL's intention to imply that a trend should be evident. As stated on p. 41 of the report, "The use of the site for surface disposal would not result in a regular distribution of contaminants." The only distribution of contaminants that would be expected, based on the conceptual model, is a prevalence of contamination on the ground surface.

Note that there are no waste piles left at SWMU 21-013(d)-99. As described in section 2.2.2 of the report, all of the construction-related debris was removed from the site during the VCA conducted in 1995. The piles that remain on site are soil piles that resulted from grading the site at some time prior to 1995. These piles were investigated during debris removal to ensure that they did not contain construction debris (LANL 1996, 54320).

NMED Comment

7. ***Section 2.4.1.2, Ecological (c) Uncertainty Analysis Tables 2.4-6 & 2.4-8, p. 56 & 59***

The Permittees must provide the following information pertaining to Tables 2.4-6 & 2.4-8:

- *The calculations for the numbers generated under the 95% UCL (mg/kg). Include discussions of how the distributions (e.g., normal, log normal) were identified/determined.*
- *The unit of the Bandelier Tuff from which samples were collected and to which background value data were compared.*

LANL Response

7. The discussion and presentation of 95% UCL calculations is in Appendix E as referenced on page 48 of the report. This discussion includes the distributions of the data used to calculate the 95% UCLs.

The unit of tuff from which samples were collected is Qbt3, as indicated in Tables 2.3-2 through 2.3-5 and 2.3-7, as well as in text locations within Sections 2.3.2 (SWMU Data Review) and 2.3.3.1 (Nature and Extent of Contamination). These data were compared to the background value (BV) established for Qbt 2,3,4 as published in *Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at Los Alamos National Laboratory* (LANL 1998, 59730) and indicated in Tables 2.3-5 and 2.3-7. For additional information, the geological setting of TA-21 is described in detail in Appendix B (Technical Area 21, Operational and Environmental Setting).

NMED Comment

8. ***Section 2.4.1.2, Ecological (c) Uncertainty Analysis, p. 58, paragraph 1***

Subjective analyses such as visual appearance cannot solely be used to quantify the health of an ecosystem. The Permittees shall provide rationale behind the assertion that the site is healthy based on a visual analysis. The Permittees shall identify whether further studies were completed to confirm this information.

LANL Response

8. LANL agrees with the first part of NMED's comment that subjective analysis cannot solely be used to quantify the health of an ecosystem. In the case of SWMU 21-013(d)-99, it is not the sole assessment used because a hazard quotient (HQ) and hazard index (HI) were also calculated. None of the HQs were greater than 1.0 and the HI was only 1.2. None of these values indicates a potential for adverse effects to the plants, and, combined with the visual observations, provide a more comprehensive assessment of the vegetative community. Because the plants are the only receptors that are on site 100% of the time and have been exposed to the contamination for the last 40 years or more, the visual appearance of the plants is an important indicator of whether they are affected by contamination. The vegetative community is not different within and around the SWMU, and the plants appear healthy, with the exception of those trees affected by the bark beetle infestation. Therefore, visual observations plus HQ/HI indicate that the COPCs are not affecting the plants and no further studies are warranted.

NMED Comment

9. ***Section 2.4.1.2, Ecological (c) Uncertainty Analysis, p. 58, paragraph 7***

The Permittees must provide an explanation that ensures the tuff will not be disturbed and contaminants will not be available to ecological and human receptors. (Also see specific comment # 1)

LANL Response

9. The 95% UCLs used in the human health and ecological risk assessment included all of the data (surface and subsurface). The statement on which the NMED comment is made is true under current conditions. Because there is no certainty that this condition will hold in the future, the risk assessment used all of the data to assess the potential risk to receptors. See response to specific comment #1.

NMED Comment

10. ***Appendix C, Results of Quality Assurance/Quality Control Activities, Table C-5.31, p. C-24***

The Permittees must clarify if the MDC is an appropriate term or if minimum detectable activity (MDA) is more appropriate when applied to radionuclides.

LANL Response

10. The values presented in the report as minimum detectable concentrations (MDC) are neither true activities (i.e., curies, counts per minute [cpm], etc.) nor true concentrations (i.e., mg/kg, ppm, etc.), but rather activity per unit mass (i.e., the specific activity). In the past, minimum detectable activity (MDA) and MDC have been used interchangeably in LANL documents. However, because "MDA" could easily be confused with another acronym (applied to material disposal areas), LANL prefers to use "MDC." Regardless of the acronym used, the value and the units presented would not change.

NMED Comment

11. ***Appendix H, VCA Plan Addendum for SWMU 21-013(d)-99, Section 4.2 Supplemental Surface and Subsurface Sampling p. 11, paragraph 3***

It is clear from Figure 2.3-1 that many of the waste-piles have not been sampled. The Permittees must explain why all the waste-piles were not sampled as described in the VCA Plan Addendum and provide rationale for sampling those that were sampled. The Permittees shall sample all waste-piles (if they still remain) to adequately characterize the waste.

LANL Response

11. As indicated in the response to specific comment # 6, there are no waste piles remaining on site at SWMU 21-013(d)-99. All of the construction-related debris, which is the only known waste handled at this site, was removed during the 1995 VCA. The piles that remain on site are soil piles that resulted from grading of the site prior to 1995. These remaining soil piles were investigated during the VCA to ensure that no construction debris remained on site.

Based on a request made by NMED in the 1998 RSI, an attempt was made to delineate the soil piles at the site. As shown on the light detection and ranging (LIDAR) map, presented as Figure 2.1-2 of the report, very few of the soil piles have enough relief to be successfully delineated by LIDAR. Therefore, the soil piles were mapped by hand. The soil piles appear more significant in the hand-drawn map, due to the inability to show the third dimension. In general, the soil piles are less than 3 ft in height. Most are linear (trending northwest to southeast) as a result of grading and it is difficult to distinguish individual piles. Virtually all of the soil piles are well stabilized with mature native vegetation.

As shown in Table 4.2-2 of the VCA Plan Addendum, the objective was to collect samples from five previously unsampled soil pile locations, at two depths each. Note that the second depth interval in all cases was collected in tuff (Qbt3) beneath the soil pile. Because these piles are primarily soil that appears to have originated at the site, it was not expected that data from the pile samples would differ markedly from other soil data across the site (for which 38 samples were collected and analyzed). The analytical data from the 2003 samples bears this out, and indicates that soil from SWMU 21-013(d)-99, whether present in piles or otherwise, is adequately characterized.

REFERENCES

LANL (Los Alamos National Laboratory), June 1995. "Voluntary Corrective Action Plan for Site under Field Unit 1 at TA-21, DP Area: 21-013(d)," Los Alamos National Laboratory document, Los Alamos, New Mexico. (LANL 1995, 50085)

LANL (Los Alamos National Laboratory), February 1996. "Voluntary Corrective Action Completion Report for Potential Release Sites 21-013(c), 21-013(d), 21-013(e), 31-001," Los Alamos National Laboratory report LA-UR-96-259, Los Alamos, New Mexico. (LANL 1996, 54320)

LANL (Los Alamos National Laboratory), June 1998. "Resource Conservation and Recovery Act Facility Investigation Report, LANL RFI Annoted Outline," Los Alamos National Laboratory document. (LANL 1998, 58981)

LANL (Los Alamos National Laboratory), July 1998. "Response to Request for Supplemental Information on Voluntary Corrective Action Report for Potential Release Sites 21-013(c), 21-013(d), 21-013(e), and 31-001," Los Alamos National Laboratory document EM/ER: 98-239, Los Alamos, New Mexico. (LANL 1998, 58709)

LANL (Los Alamos Natiaonal Laboratory), September, 1998. "Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at Los Alamos National Laboratory," Draft, Los Alamos National Laboratory document LA-UR-98-4847, Los Alamos, New Mexico. (LANL 1998, 59730)

LANL (Los Alamos National Laboratory), November 1998. "Installation Work Plan for Environmental Restoration Project," Revision 7, draft, Los Alamos National Laboratory document LA-UR-98-4652, Los Alamos, New Mexico. (LANL 1998, 62060)

LANL (Los Alamos National Laboratory), September 2003. "Voluntary Corrective Action Completion Report Addendum for Solid Waste Management Unit 21-013(d)-99," Los Alamos National Laboratory document LA-UR-03-6494, Los Alamos, New Mexico. (LANL 2003, 83094)

NMED (New Mexico Environment Department), June 1998. "Request for Supplemental Information VCA Report for Potential Release Sites 21-013(c), 21-013(d), 21-013(e), and 31-001," Santa Fe, New Mexico. (NMED 1998, 58836)