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FEB 2010
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National Nuclear Security Administration
Los Alamos Site Office, MS A316
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Date: FEB 26 2010
Refer To: EP2010-0107

James Bearzi, Bureau Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6303

Subject: Submittal of the Replacement Page for Investigation Report for Upper Los Alamos Canyon Aggregate Area, Revision 1

Dear Mr. Bearzi:

Enclosed please find two hard copies of the replacement for page 100 and revised electronic files of the Investigation Report for Upper Los Alamos Canyon Aggregate Area, Revision 1.

If you have any questions, please contact Becky Coel-Roback at (505) 665-5011 (becky_cr@lanl.gov) or Cheryl Rodriguez at (505) 665-5330 (crodriguez2@doeal.gov).

Sincerely,

Michael J. Graham, Associate Director
Environmental Programs
Los Alamos National Laboratory

Sincerely,

Cheryl J Rodriguez for

David R. Gregory, Project Director
Environmental Operations
Los Alamos Site Office

MG/DG/DM/BCR:sm

Cy: (w/enc.)
Neil Weber, San Ildefonso Pueblo
Cheryl Rodriguez, DOE-LASO, MS A316
Becky Coel-Roback, EP-CAP, MS M992
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Public Reading Room, MS M992

Cy: (Letter and CD only)
Laurie King, EPA Region 6, Dallas, TX
Steve Yanicak, NMED-DOE-OB, MS M894
Dave Davenport, LATA, Los Alamos, NM (w/ MS Word files on CD)
Kristine Smeltz, EP-WES, MS M992

Cy: (w/o enc.)
Tom Skibitski, NMED-OB, Santa Fe, NM
Annette Russell, DOE-LASO (date-stamped letter emailed)
Dave McInroy, EP-CAP, MS M992
Michael J. Graham, ADEP, MS M991
IRM-RMMSO, MS A150 (date-stamped letter emailed)

below background. Chromium and nickel were COPCs in tuff much more frequently than they were COPCs in soil, fill, or sediment. Further, chromium and nickel concentrations were detected at a ratio of approximately 2:1 in many samples. Based on the manufacturer's material safety data sheet, the ratio of chromium to nickel in the stainless-steel hand augers used was also approximately 2:1 (17.5% to 20.5% chromium; 8% to 11% nickel). Several samples were reanalyzed for chromium, with poor reproducibility, indicating that chromium results are variable within the same sample. This finding suggests the possibility of a "nugget effect," as would be expected in samples that are impacted by small particles of metal from sampling equipment. More consistent chromium results would be expected in samples contaminated by effluent. While the data in this investigation do not provide conclusive evidence, it appears that the increasing chromium and nickel concentrations with depth at some locations are artifacts related to the use of stainless-steel hand augers in relatively hard tuff. The hardness of the tuff is variable, depending upon the degree of welding, and therefore, the effort required and the corresponding abrasion of auger buckets varies from location to location. The effect of using a hand auger to collect samples in indurated tuff has been noted at other Laboratory sites (LANL 2005, 090112).

The extent evaluations in this investigation report have conservatively treated such increasing concentrations of chromium and nickel as instances where vertical extent is not defined, unless the concentrations were relatively low compared to the range of background or other locations in the vicinity provided supplemental information to define vertical extent.

Because the Upper Los Alamos Canyon Aggregate Area is largely located in developed areas with extensive roads and paved areas, it is likely that most locations sampled have received surface runoff containing chemicals originating from asphalt pavement and automotive fuels and other fluids. At most locations on the mesa top, PAHs and other organic chemicals were detected at low concentrations in shallow samples. Concentrations were generally low, near the estimated quantitation limits, and decreased with depth and distance downslope from paved sources. At TA-32, Los Alamos County stages asphalt for subsequent use and also washes out the contents of street sweepers. PAHs are ubiquitous in samples from TA-32. It is unlikely that the PAHs detected at these sites are related to past or present Laboratory operations, but PAH concentrations have conservatively been evaluated as site contaminants.

12.2 Risk Assessment Summary

12.2.1 Human Health Risk Screening Assessment

Human health risk screening assessments were performed for the 20 sites for which the nature and extent of contamination have been defined. Human health risk screening assessments are presented in Appendix G, section G-4.0. Nineteen of the 20 sites were determined to have no potential unacceptable risk to human health under the current and reasonably foreseeable land-use scenarios. One site was found to pose a potential unacceptable risk to human health. SWMU 32-004 was found to have potential excess cancer risk under industrial and residential scenarios that exceeded the NMED target risk level of 1×10^{-5} (NMED 2006, 092513). The excess cancer risk was primarily from the concentrations of benzo(a)pyrene above screening levels in samples collected during the 1996 investigation.

The Laboratory's as low as reasonably achievable (ALARA) program description states that quantitative ALARA evaluations are not necessary for Laboratory activities that have a potential for annual public exposure less than a 3-mrem total effective dose equivalent individual dose ("Los Alamos National Laboratory Environmental ALARA Program," PD410, p. 7, effective November 8, 2008). For SWMUs 01-001(e), 01-006(d), 01-007(d), 01-007(e), and 01-007(j) and AOC 00-031(a), where public access is available, radiological dose was not calculated because no radionuclide COPCs were identified at these sites. The calculated radiation dose(s) for the residential scenario at the other sites with public

access ranged from 0.05 mrem/yr to 2.6 mrem/yr. Therefore, radiation exposures to the public at the sites evaluated within the Upper Los Alamos Canyon Aggregate Area in this investigation report are ALARA.

Sites at TA-03, TA-41, and TA-43 are inaccessible by the public and are not planned for release by DOE in the foreseeable future. Therefore, an ALARA evaluation for radiological exposure to the public is not currently required. Should DOE's plans for releasing these areas change, an ALARA evaluation will be conducted at that time. It should be noted that the Laboratory addresses considerations for radiation exposures to workers under the Laboratory's occupational radiological protection program in compliance with 10 Code of Federal Regulations 835. The Laboratory's radiation protection program implements ALARA and consists of the following elements: management commitment, training, design review, radiological work review, performance assessments, and documentation.

12.2.2 Ecological Risk Screening Assessment

Ecological risk screening assessments were performed for the 20 sites for which the nature and extent of contamination have been defined. Ecological risk screening assessments are presented in Appendix G, section G-5.0. No potential unacceptable risks are present to ecological receptors at any of the 20 sites.

13.0 RECOMMENDATIONS

Table 13.0-1 summarizes the findings of this investigation and the proposed additional activities, if any, for the 47 sites investigated.

The nature and extent of contamination have been defined at 20 of the 47 sites (section 12.1.1). Eighteen of these have been determined to pose no potential unacceptable risk to human health under the residential criteria or to ecological receptors and are recommended for corrective actions complete without controls. An additional 6 sites (3 in TA-00, 2 in TA-01, and 1 in TA-03—see sections 2.1, 2.2, and 2.3, respectively) were proposed for no further sampling in the approved investigation work plan (LANL 2006, 091916; NMED 2006, 095460). No further investigation or remediation activities are warranted for these 6 sites, and they are also recommended for corrective actions complete without controls. Therefore, the Laboratory will request certificates of completion for a total of 24 sites under separate cover.

At one site, AOC 43-001(b2), the nature and extent of contamination have been defined, and the site has been determined to pose a potential unacceptable risk under the residential criteria. However, the site does not pose a potential unacceptable risk to human health under the recreational scenario, which is the current and reasonably foreseeable future land use, or to ecological receptors. Therefore, AOC 43-001(b2) is proposed for corrective actions complete with controls. The Laboratory will request a certificate of completion for AOC 43-001(b2) under separate cover.

Twenty-seven of the 47 sites investigated in the Upper Los Alamos Canyon Aggregate Area require additional sampling to define the extent of contamination. Those sites and the remaining extent requirements are listed in section 12.1.2. A Phase II investigation work plan will be developed specifying sampling locations, numbers of samples, and analytical suites to collect the samples required to define the extent of contamination for those sites. The evaluation of further actions at these sites will include such factors as exposure point concentrations relative to screening levels, land use, site accessibility to potential receptors, feasibility of removal, and potential reduction in human health and ecological risk.