Environmental
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U.S. Department of Energy
Los Alamos Area Office, MS A316
Environmental Restoration Program
Los Alamos, New Mexico 87544
505-667-7203/FAX 505-665-4504

Date: January 18, 2000
Refer to: E/ER:00-014

HSWA LANL 5/11/6

Mr. John Kieling
NMED-HRMB
P.O. Box 26110
Santa Fe, NM 87502

JAN 2000
RECEIVED

SUBJECT: SUBMITTAL OF RESPONSE TO REQUEST FOR SUPPLEMENTAL INFORMATION (RSI) FOR THE RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) FACILITY INVESTIGATION REPORT (RFI) FOR POTENTAL RELEASE SITES IN THE EASTERN AND WESTERN AGGREGATES AT TECHNICAL AREA (TA)-6

Dear Mr. Kieling:

Enclosed is the Los Alamos National Laboratory Environmental Restoration (ER) Project's Response to your RSI on the RFI Report for the Eastern and Western Aggregates at TA-6. The RSI was received at the ER Project Office on November 10, 1999. Your office approved an extension request for our response until January 25, 2000.

If you have any questions or concerns please feel free to call Dave McInroy at (505) 667-0819 or Joe Mose at (505) 667-5808.

Sincerely,

Julie A. Canepa, Program Manager
Los Alamos National Laboratory
Environmental Restoration

Sincerely,

Theodore J. Taylor, Program Manager
Department of Energy
Los Alamos Area Office

JC/TT/NR/ev-nr

Enclosure: Response to RSI

3061

T2

Cy (w/enc.):
M. Buksa, E/ET, MS M992
D. Hickmott, EES-1, MS M992
B. Kopp, ESH-19, MS M992
J. Mose, LAAO, MS A316
N. Riebe, E/ET, MS M992
C. Rodriguez, CRO-1, MS M992
T. Taylor, LAAO, MS A316
J. Parker, NMED-AIP
S. Yanicak, NMED-AIP, MS J993
E/ER File (CT #'s C772 and C782), MS M992
E/ER File, MS M992
RPF, (ER Catalog # 200000011), MS M707

Cy (w/o enc.):
J. Canepa, E/ER, MS M992
D. McInroy, E/ER, MS M992
V. Rhodes, Aurora, MS M992
J. Bearzi, NMED-HRMB

Response to
"Supplemental Information Request
RCRA Facility Investigation Report
Eastern and Western Aggregates at Technical Area 6
Los Alamos National Laboratory
NM0890010515"

INTRODUCTION

To facilitate review of this response, the New Mexico Environment Department's (NMED's) comments are included verbatim. The comments are divided into general and specific categories as presented in the letter. Los Alamos National Laboratory's (LANL's) responses follow each NMED comment. [Also included is any information that is pertinent to the response as a whole.]

ATTACHMENT

The italicized text that follows (with the exception of the table footnotes, which are part of LANL's response) was included as an attachment to the letter from NMED HRMB referenced above.

The following table includes a complete listing of the potential release sites (PRSs) presented in this document, LANL's (Los Alamos National Laboratory) proposed actions, and the rationale for the Administrative Authority's (AA) concurrence or non-concurrence on each proposed action.

Eastern Aggregate

PRS	LANL'S Proposed Action	Does AA Concur?	AA Rationale
06-002	NFA	No	Extent of release not adequately determined
06-003(c)	NFA	No	Extent of release not adequately determined
C-06-005	NFA	No	Extent of release not adequately determined
C-06-006	NFA	Yes	No known or suspected release of RCRA constituents
C-06-016	NFA	Yes	No known or suspected release of RCRA constituents
C-06-020	NFA	No	Detailed ecological risk assessment necessary

Western Aggregate

PRS	LANL'S Proposed Action	Does AA Concur?	AA Rationale
C-06-003	NFA	Yes	No known or suspected release of RCRA constituents
06-003(g)	NFA	No	Extent of release not adequately determined
C-06-007	NFA	Yes	No known or suspected release of RCRA constituents
C-06-008	NFA	Yes	No known or suspected release of RCRA constituents
C-06-009	NFA	Yes	No known or suspected release of RCRA constituents
C-06-010	NFA	Yes	No known or suspected release of RCRA constituents
C-06-011	NFA	No	Detailed ecological risk assessment necessary
C-06-012	NFA	Yes	No known or suspected release of RCRA constituents
C-06-013	NFA	No*	Extent of release not adequately determined
C-06-014	NFA	Yes	No known or suspected release of RCRA constituents
C-06-015	NFA	Yes	No known or suspected release of RCRA constituents
C-06-017	NFA	Yes	No known or suspected release of RCRA constituents
C-06-018	NFA	No**	Clarification is needed regarding the depth of Sample ID 0506-97-1306
C-06-021	NFA	No*	Detailed ecological risk assessment necessary

* At the December 16, 1999, meeting with NMED HRMB, NMED HRMB stated that they had re-evaluated and concurred with these NFA recommendations.

** LANL has provided clarification of the depth of Sample ID 0506-95-1306 and requests that NMED HRMB re-evaluate the NFA proposal for this site. See LANL's response to specific comment 9.

The following table includes a complete listing of the SWMUs (Solid Waste Management Unit) or AOCs (Area of Concern) which should be added to the HSWA (Hazardous and Solid Waste Amendments of 1984) module of the RCRA (Resource Conservation and Recovery Act) operating permit.

PRS	Rationale
C-06-005	Inorganic RCRA constituent released at this AOC.
C-06-011	Inorganic RCRA constituent released at this AOC.
C-06-013	Inorganic RCRA constituent released at this AOC.
C-06-018	Inorganic RCRA constituent released at this AOC.
C-06-020	Inorganic RCRA constituent released at this AOC.
C-06-021	Inorganic RCRA constituent released at this AOC.

LANL Response to Attachment

As discussed with NMED at the July 13, 1999, monthly meeting, LANL ER will consolidate the sites in each aggregate as part of the FY 00 Annual Unit Audit. Consolidation of the sites is based on operational history, geographic proximity, transport mechanisms of similar contaminants, and the investigation needed to assess potential contamination at each aggregate. Consolidation of the Eastern Aggregate will result in one consolidated PRS (tentatively identified as PRS 06-002-00) consisting of the following six individual PRSs: 06-002, 06-003(c), C-06-005, C-06-006, C-06-016, and C-06-020. Consolidation of the Western Aggregate will result in one consolidated PRS (tentatively identified as PRS 06-003(g)-00) consisting of the following 14 individual PRSs: 06-003(g), C-06-003, C-06-007 through C-06-015, C-06-017, C-06-018, C-06-021.

At the December 16, 1999 meeting with NMED HRMB, NMED HRMB stated that they had re-evaluated and concurred with the NFA recommendations for PRSs C-06-013 and C-06-021 within the Western Aggregate. Additionally, LANL has provided clarification of the depth of Sample ID 0506-95-1306 at PRS C-06-018 as part of Specific Comment 9. Upon NMED's approval of this RSI response, LANL intends to a submit revised ecological screening/assessment as part of an NFA proposal within a future Permit Modification Request for the Consolidated Sites in the Western Aggregate.

As outlined in General Comment 5 and Specific Comments 2 and 4, additional samples are required to complete the characterization at Potential Release Sites (PRSs) 06-002 and C-06-005 within the Eastern Aggregate. Once additional sampling is completed and supports and NFA recommendation, the consolidated PRSs in the Eastern Aggregate will be re-submitted with a revised ecological/screening assessment within an NFA proposal.

GENERAL COMMENTS

NMED Comment

1. *LANL should supply the AA with the digestion method used in the radiochemical analysis.*

LANL Response

1. Radiochemical sample preparation procedures vary depending on the analyte. Cesium-137 is determined by gamma spectroscopy. The soil sample receives no chemical sample preparation for gamma spectroscopy. Gamma spectroscopy involves direct counting of soil or sediment. Sr-90 is determined using beta counting. The soil sample undergoes aggressive digestion with hot concentrated acid. Strontium is isolated from the digestate using a series of chemical separations. Isotopic uranium is determined by alpha spectroscopy. The soil sample is completely dissolved using hydrofluoric acid or fusion treatments. Uranium is separated and precipitated from the digestate using chemical separation techniques.

NMED Comment

2. *As it currently exists, comments on the document can only be presented in generalities because no details have been presented in the document which can be reviewed to verify risk calculations. The document references a methodology outlined in Kelly, et al., 1998, however that document does not supply adequate information on factors such as concentration equations, dose equations, bioconcentration factors, biotransfer factors, food chain multipliers, ingestion rates, body weights, toxicity reference values, and receptor diets to evaluate how hazard quotients were calculated in this document. Please present all relevant information necessary to calculate hazard quotients including concentration equations, dose equations, bioconcentration factors, biotransfer factors, food chain multipliers, ingestion rates, body weights, toxicity reference values, and receptor diets.*

LANL Response

2. General comments 2 and 4(a) both request additional detailed background information pertinent to the calculations used in ecological screening. This response therefore applies to general comment 4(a), as well.

   LANL will rewrite the ecological screening evaluation for potential release sites in the Eastern and Western Aggregates at TA-6, based on the most current screening guidance, and will include the

information NMED has requested. The December 1999 version of SLERA-M includes information on the use of concentration equations, dose equations, bioconcentration factors, biotransfer factors, food-chain multipliers (not used since direct food-chain sequences are observed), receptor ingestion rates, body weights, diets, and the derivation of ecological screening levels (ESLs) and the employment of media-specific hazard quotients. The December 1999 version of the ECORISK database and associated spreadsheets include information and references regarding toxicity reference values. The rewritten ecological evaluation for the Western Aggregate will be summarized in the no further action (NFA) proposal in the future permit modification request. The rewritten ecological evaluation for the Eastern Aggregate will be provided in a future NFA proposal.

NMED Comment

3. *The risk assessment shows that several COPCs (Chemical of Potential Concern) fail the ecological screening assessment based on the toxicity values used. This should bring the risk assessment to the baseline stage. Then uncertainties should be looked at more closely to see if: 1) site specific adjustments can be made to the concentration or dose equation inputs, or 2) a site-specific toxicity reference value can be substituted for the screening value utilized in calculating the hazard quotient. Dropping the site without presenting and documenting how assumptions have been altered should not be used to recommend NFA (No Further Action) decisions. Please propose and document any changes made to the screening assumptions to show that NFA is a viable option.*

LANL Response

3. Per our discussions at the HRMB office on December 16, 1999, it is LANL's understanding that NMED is not requesting that the ecological risk assessment progress to the baseline stage; however, as previously stated, a future rewrite of the ecological screening assessment, as well as further documentation of the uncertainty analysis, will be included as part of the permit modification request submitted for the Western Aggregate. The rewritten ecological assessment will not be developed and submitted until LANL collects the requested additional sampling data at PRSs 06-002 (the septic tank outfall) and C-06-005 (the French drain).

NMED Comment

4(a) *In a screening level risk assessment, maximum media concentrations are either used to directly compare to no-observed adverse effect levels (NOAEL) for community level receptors (e.g., plants, invertebrates, etc.) or used to calculate NOAEL dose levels to upper trophic level receptors (e.g., omnivores, carnivores, etc.). The ecological soil screening levels (ESLs) presented (should be equal to NOAELs) appear to be nearer the lowest observed adverse effect level (LOAEL) in soil for plant and invertebrate species, based on a check of literature values (see references below). This would have a tendency to increase the screening level hazard quotients by an order of magnitude. Please present all toxicity reference values used to calculate hazardous quotients along with full documentation of references. The following table summarizes toxicity reference values as reviewed by EPA and cited:*

Constituent	Duration and Endpoint	Test Organism	LOAEL	Reference
Cadmium	*Chronic LOAEL*	*Spruce seedling growth*	*2 mg/kg*	*Burton, et al. (1984)*
Lead	*Chronic LOAEL*	*Senna*	*46 mg/kg*	*Krishnayya and Bedi (1986)*
Zinc	*Chronic LOAEL*	*Spring Barley*	*9 mg/kg*	*Davis, Beckett, and Wollan (1978)*

Burton, K. W., E. Morgan, and A. Roig, 1984. The influence of Heavy Metals Upon the Growth of Sitka-Spruce in South Wales Forests. II. Greenhouse Experiment. Plant and Soil. Volume 78. Pages 271-282.

Krishnayya, N.S.R., and S.J. Bedi. 1986. Effect of Automobile Lead Pollution in Cassis tora L. and Cassia Occidentalis L. Environmental Pollution. Volume 40A. Pages 221-226.

Davis, R.D., P.H.T. Beckett, and E. Wollan. 1978. Critical Levels of Twenty Potentially Toxic Elements in Young Spring Barley. Plant and Soil. Volume 49. Pages 395-408.

LANL Response

4(a) See LANL's response to general comment 2. When the ecological risk screening is completed, the appropriate reference will be provided.

NMED Comment

4(b) The argument that contaminated "hot spots" are not ecologically relevant for most species because of their large home range is flawed. If food items of larger organisms are weakened by exposure at a site, thereby becoming more vulnerable to predation, they may occupy a larger portion of a predators diet than would be assumed by an adjustment for home range. The "hot spot" might also serve other ecologically relevant functions such as breeding site for some species. Analysis of "hot spots" is past the level generally considered in a screening assessment. If the initial screening assessment is well documented including equations used to calculate the soil screening level, "hot spots" can be dealt with by adjusting the area use factors and proportion of diet that is contaminated factor in the risk equation as appropriate. Documentation of the adjustments should be presented along with a discussion of what constitutes an ecologically relevant "hot spot". This belongs in the baseline assessment. Another alternative is to conduct "hot spot" removal and confirmatory sampling.

LANL Response

4(b) The term "hot spots" was an unfortunate misnomer and only used in the uncertainty analysis of the ecological risk assessment. LANL would reserve the option to discuss "hotspots" (i.e., areas of detects slightly elevated above background) within the screening level ecological risk assessment, contrary to the NMED position suggested in the comment above, and to discuss this further in the interpretation section of the ecological screening evaluation. As discussed in the uncertainty section of the risk assessment, these areas of elevated detects of particular COPCs are not consistent across the sites in question and should not be interpreted as "hot spots," requiring the evaluation to progress to the baseline risk assessment.

NMED Comment

5. *Some PRS's from the Eastern and Western Aggregate need to be investigated further to better understand the extent of contamination. These PRS's are listed in the Specific Comments. LANL should produce a comprehensive Sampling and Analysis Plan (SAP) indicating how investigations for these PRS's will proceed.*

LANL Response

5. As we agreed in our December 16, 1999, meeting, a formal sampling and analysis plan (SAP) is not required. However, LANL will collect additional samples at PRSs 06-002 and C 06-005 to ensure that specific PRS locations are better defined and that nature and extent of contamination are identified. The additional sampling will consist of at least two additional samples taken from each of the PRSs. A general description of the additional sampling is provided in LANL's responses to specific comments 2 and 4. The results of the additional sampling will be used to support recommendations for the eastern consolidated PRS as well the Upper Pajarito Canyon watershed.

NMED Comment

6. The data tables in the RFI contained valuable information, however the data was difficult to follow because the data was presented in a aggregate specific basis. In future presentations of data LANL should present the data on a site specific basis.

LANL Response

6. *As part of the ongoing process to revise the RFI report outline, LANL will work with NMED to ensure that, in the future, data are presented in a clear, comprehensible fashion.*

SPECIFIC COMMENTS

NMED Comment

1. *§ 2.0 Eastern Aggregate, Figure 2.1-2 Photograph of the Eastern Aggregate with PRSs identified (photo date: November 1, 1946), page 8*

   The photo submitted of the Eastern Aggregate is too unclear to make out any features in the aggregate which may have existed in the area. LANL should submit another sharper photograph of the aggregate which better indicates any features which may exist or once existed in the eastern Aggregate.

LANL Response

1. Figure 2.1-2 was based on a glossy, black-and-white print of an aerial photograph taken of the Eastern Aggregate on November 1, 1946. The rendition of the photograph in Figure 2.1-2 was a "blowup" of the upper-right-hand quadrant of the aerial photograph. Enlarging the upper-right-hand quadrant resulted in a grainy print. While the photo resolution is limited, the photo's inclusion in the report was intended to provide the reader with a visual perspective of the area as it existed during the period of operation. The photo confirms the location of the physical structures, which are also indicated on supporting site maps. The photo also allows the reader to evaluate the presence or

absence of "significant" or "substantial" anomalies which may have influenced site processes or the characterization and assessment activities. LANL feels that this information, at its current resolution, is still of value to the reviewer; however, a duplicate of the original photo is included with this response as Attachment A.

NMED Comment

2. *§ 2.2.2 Operational History, Eastern Aggregate, TA-6, page 15*

   "PRS 06-002 is located toward the western end of the aggregate. The 1000-gal steel septic tank received process wastewater from two sources: The process wastewater from the PETN recrystallization operation in building TA-6-10 [PRS C-06-003(g) in the Western Aggregate], and sanitary wastewater from the employees resthouse (PRS C-06-020). The discharge from the septic tank is shown in engineering drawings to have been 100 ft to the southeast of the septic tank. The plan does not show an associated leach field. The septic tank was removed in 1965. The pipelines to and from the tank remain in place and are considered part of the PRS"

   Samples 06-8060 and 06-8061 from PRS 06-002 appear to have been taken up gradient from the end of the septic tank discharge line. LANL should positively locate and identify the design of all effluent discharge features associated with PRS 06-002. Once the effluent discharge locations(s) and method(s) are identified then LANL should investigate this PRS more thoroughly.

LANL Response

2. As agreed in our December 16, 1999, meeting with HRMB, LANL will make further attempts to locate the septic tank outfall. LANL intends to locate the outfall by trenching across the discharge pipeline and/or by "potholing" (i.e., determining the probable location of the outfall and digging for physical evidence of the outfall line). Upon locating the terminus of the line, two additional soil samples will be collected within a 3-ft radius of the end of the pipeline. Analytical results from these two samples, plus the data previously collected at location ID 06-8060 and location ID 06-8061, will be used to complete the investigation at the outfall.

NMED Comment

3. *§ 2.2.2 Operational History, Eastern Aggregate, TA-6, page 15*

   "PRS 06-003(c) is the location of an inactive firing site. It was not assigned a structure number. It consisted of a 40 ft by 60 ft asphalt pad supporting water recovery shots that used depleted uranium and cobalt tracers. After a shot, metal fragments were washed from the surface of the pad into a 2 ft by 5 ft by 2-ft-deep concrete-lined pit located on the east side of the pad."

   Sample data for PRS 06-003(c) indicate inorganic contamination detected throughout the PRS. Sample data also indicate contaminant concentrations increase with depth at many sample locations. LANL should conduct another sampling campaign to better characterize the nature and extent of the release at this PRS. The investigation should include samples taken further from the source of contamination [PRS 06-003(c)] and should include samples taken at a greater depth than the previous sampling campaigns to get a better understanding of the depth of contamination. LANL should also indicate the location of the pit on maps of PRS 06-003(c).

LANL Response

3. LANL agrees to indicate the location of the pit on maps of PRS 06-003(c); a revised Figure 2.3-1 is included with this response as Attachment B.

   LANL agrees that low-level inorganic contamination was found throughout PRS 06-003(c). However, LANL believes that the current data set is adequate to characterize the low-level releases at this PRS. TAL metals are commonly reported or positively detected in environmental samples at varying concentrations within the range of background concentrations.

   Inorganics at this PRS were characterized through the analysis of 24 analytes in each of 12 samples collected, for a total of 288 observations across the site. A total of 31 of these observations exceeded a background screening value. Approximately half of the exceedances of background value (BV) (15 of 31) were for analytes with common detection limit problems, namely antimony and cadmium. The resampling effort of 1998 provides strong evidence for concluding that these analytes are not present at levels greater than background. Eleven exceedances consisted of sporadic, isolated detects (and non-detects) of arsenic, cobalt, manganese, and zinc across the site. The only analyte that was detected above BV frequently and at depth was lead.

   Lead was reported in a field duplicate (sample ID AAB7854) collected from location ID 06-4012 at 159 mg/kg; the original sample for that location was 42.8 mg/kg. The current policy at LANL is to use original samples to characterize a site; field duplicates, as well as laboratory replicates, are used for QC purposes to evaluate small-scale variability and relative percent differences in analytical results. Because of the high variability, all the lead concentrations for this PRS (request number 18523) may be more uncertain than normal and were therefore qualified as estimated (J).

   Lead (BV = 22.3 mg/kg) was reported above BV in five of six subsurface samples. Reported values above BV were 22.6, 28.9, 42.8, 52.7, and 63.4 mg/kg; only one of the concentrations is within the range of concentrations from LANL background locations. Lead is not expected to be mobile in the subsurface environment, particularly in the absence of a hydrologic driving force (EPA 1999, 64695).

   Samples from nearby downgradient locations (PRSs C-06-016 and 06-002) support this expectation because all lead concentrations at those locations fell within LANL background concentrations. Therefore, the horizontal extent of this potential release is adequately bounded. A decreasing trend, with depth, has not been demonstrated for lead at PRS 06-003(c). However, the presence of benign results from neighboring sample locations, both within the PRS [location ID 06-4010 in PRS 06-003(c)] and in all samples in the adjacent downgradient PRSs within the aggregate (PRS C-06-016 and PRS 06-002), demonstrate that PRS 06-003(c) is not affecting the lead concentrations of the total aggregate.

   The conceptual model postulated occasional high concentrations of inorganics related to construction debris (like lead). Because the exceedances are at depth in a relatively flat area, and because lead is not mobile in the environment, there is no transport pathway. There is no expected pathway to human receptors and very limited pathways to sessile and soil-dwelling ecological receptors in immediate contact with lead at depth.

NMED Comment

4. *§ Operational History, Eastern Aggregate, TA-6, page 15*

   "PRS C-06-005 is the location of former structure TA-6-13, a 16 ft by 16 ft by 9-ft-high wood frame building used as a chemistry laboratory and detonator assembly building. The lab sink in this building discharged to a French drain adjacent to the east side of the building."

   The area of the French drain on the east side of PRS C-06-005 has not been sampled. LANL should determine the extent of the French drain and investigate this PRS further.

LANL Response

4. Engineering drawing A5-C86, titled Bldg No 13 TA-6 Modification for Chemistry Processing (58958), shows the laboratory sinks discharging to a 3-ft by 3-ft by 3-ft French drain on the east side of Building 13. The drawings show that this building was a wood-frame building constructed on wooden piers. This building was removed by burning on January 16, 1960, and today there are no surface features showing the former building location.

   As agreed in our December 16, 1999, meeting with HRMB, LANL will make further attempts to locate the French drain. LANL intends to locate the French drain by "potholing" and, if necessary, by removing shallow soil to tuff in the vicinity of former Building 13. Upon locating the French drain, two additional soil samples will be collected: one sample will be taken from within the 3-ft by 3-ft by 3-ft hole, and a second sample will be taken from 3 ft beneath the bottom of the hole. Analytical results from these two samples, together with the data previously collected at location IDs 06-8010, 06-8011, and 06-8012, will be used to complete the investigation of the French drain.

   In the event that LANL is unable to locate the French drain, four samples will be collected near Building 13. Two samples (surface and six ft BGS) will be collected 5 ft east of former Building 13 and two samples will be collected 5 ft southeast of former Building 13.

NMED Comment

5. *2.3.4.3(a) Data Review – Inorganic Chemical Comparisons with Background, Table 2.3-3, page 29*

   PRS 06-003(g) has inorganic contamination distributed throughout the PRS. Vertical extent appears to have been determined; however, the lateral extent of contamination has not been adequately determined. LANL should conduct another sampling campaign to better characterize the nature and extent of the release at this PRS. The investigation should include samples taken further from the source of contamination [PRS 06-003(g)].

LANL Response

5. LANL obtained the following clarification:

   NMED comment citation should read as follows: 3.3.4.3 Data Review (a) Inorganic Chemical Comparisons with Background, Table 3.3-4, page 116.

   Following clarification of the table citation in the RSI, it is clear that NMED is referring to PRS 06-003(g) in the Western Aggregate. LANL agrees that the vertical extent of contamination has been defined. In addition, as indicated in the RFI report, LANL also believes that the lateral extent of

contamination has been adequately determined. At PRS 06-003(g), sample locations 06-4028, -4029, and -4030 are relatively tightly clustered on a 10-ft- by-10-ft gravel test pad which would have retained much of the potential combustion product release that occurred during primacord testing at the site. The primacord tests were essentially fuse timing tests in which the fuse material burned with no detonations. Sample locations 06-4031, -4032, -4033, and -4034 were placed within 25 ft of the test pad perimeter, to characterize migration away from the pad. A decreasing concentration gradient is observed between the two sets of sample locations, particularly for inorganic contaminants typically associated with wiring and electrical components, such as antimony, copper, lead, and zinc.

Therefore, LANL believes that further sampling to resolve the extent of site contamination is not warranted. This is based on (1) the flat topography of the site which offers little run-on/runoff potential, (2) the strong vertical and horizontal gradients observed in the reported inorganic contaminant data within the limited impacted area, and (3) the presence of downgradient PRSs and specific drainage sample locations (06-8058 and 06-8059) which served to evaluate further release from PRS 06-003(g) within the integrated assessment of the Western Aggregate.

At the December 16, 1999, meeting with NMED HRMB, NMED HRMB stated that they would internally re-evaluate the need for additional sampling at this site and notify LANL of their decision. NMED HRMB notified LANL on December 23, 1999 (via telephone), that no additional samples were required at this site. The record of that telephone conversation is included with this response as Attachment C.

NMED Comment

6. *2.3.4.3(a) Data Review – Inorganic Chemical Comparisons with Background, Table 2.3-3, page 29*

PRS C-06-013 has cadmium contamination distributed throughout the PRS. The vertical and lateral extent of contamination has not been adequately determined. LANL should conduct another sampling campaign to better characterize the nature and extent of the release at this PRS. The investigation should include samples taken further from the source of contamination [PRS C-06-013] and should be deeper than the samples taken for the previous characterizing efforts at PRS C-06-013.

LANL Response

6. At our meeting on December 16, 1999, NMED HRMB stated that they concurred with LANL in the NFA recommendation for PRSs C-06-013 and C-06-021.

During the meeting, NMED HRMB also requested additional information regarding the presence of detected cobalt at PRS C-06-020. NMED HRMB requested a discussion as to why cobalt should be considered of no concern at PRS C-06-020. Cobalt (BV = 8.64 mg/kg) was detected above BV in two of six samples taken at PRS C-06-020. The detected concentrations (9.7 mg/kg and 11.7 mg/kg) were approximately 12% and 35%, respectively, above the BV. These concentrations are almost within the range of concentrations seen at LANL background locations: the maximum concentration at LANL background locations is 9.5 mg/kg. This PRS was the former location of a rest house that presumably was used to store HE components or detonators. It would be reasonable to conclude that these concentrations represent natural local background variability. Cobalt is reported with a U.S. mean soil range of 1–17 mg/kg; thus the reported concentrations are within the range of average concentrations in this country. If these concentrations represent a low-level release from an unknown source, the following should be noted. These concentrations pass both the human health screen and

the ecological screen that was cited in the report. LANL feels that these concentrations represent no substantive risk.

NMED Comment

7. *§ Table 2.3-1, Eastern Aggregate-TA-6 Former Building Sites, Summary of Samples Collected for Fixed Laboratory Analysis, page 23*

   Table 2.3-1 summarizes the samples collected for fixed laboratory analysis in the Eastern Aggregate. Samples associated with sample locations 06-4007 to 06-4012 all appear to be omitted from the table. LANL should include samples from all sample location in Table 2.3-1.

LANL Response

7. LANL agrees, and this editorial oversight has been corrected. The revised table is included with this attachment as Attachment D.

NMED Comment

8. *§ 2.3.5 Revised Site Conceptual Model, Eastern Aggregate, page 44*

   "The area was active from 1944 to sometime in 1948, when operations, storage, and utility buildings were built at TA-22 and operations were transferred there. All test firing at TA-6 ended in 1952 when operations were moved to TA-40 (see Appendix B-1.0). Therefore, 1994 to 1952 is the general timeframe during which HE and detonator development-related activities occurred and during which initial operational releases might have occurred at the Eastern Aggregate."

   In future revisions of this RFI Report, please indicate the correct timeframe during which HE and detonator development-related activities occurred.

LANL Response

8. This is an editorial error: *1994* should be corrected to read *1944*.

NMED Comment

9. *3.3.4.3(c) Data Review – Evaluation of Organic Chemicals, Table 3.3-10, Page 132*

   The Sample ID 0506-95-1306 is denoted as being taken from a depth of 3 ft. However, Table 3.3-1 denotes Samples ID 0506-95-1306 as being a surface sample (0 to 6 in). Please clarify the actual depth of Sample ID 0506-95-1306.

LANL Response

9. Sample ID 0506-95-1306 is a surface sample (0–6 in); therefore, Table 3.3-10, p. 132, should read *0–6 in.* rather than *3 ft* for this sample.

NMED Comment

10. 3.3.4.3(c) Data Review – Evaluation of Organic Chemicals, Table 3.3-10, Page 133

Organic chemicals including RDX were detected throughout PRS 06-003(g). Additional samples should be taken to determined the depth and the extent of organic contamination.

LANL Response

10. There are detected values of analytes from the VOC and HE analytical suites in the data set. The VOC analytes in question were methylene chloride and 1,1,2-trichloro-1,2,2-trifluoroethane. These compounds are extremely volatile and could not persist at shallow depths at this long-inactive site. Both compounds are common lab contaminants; therefore, the most logical explanation is that the few detected VOC compounds are due to laboratory contamination.

    Seven different high explosives analytes at four different locations were reported as detected. There is no spatial pattern that can be discerned in the data set. The 1994 sampling locations were resampled in 1997. There were inconsistencies in the compounds detected in the two sampling years. For example, 1997 data indicated low levels of RDX (less than two times the reported detection limits) at location IDs 06-4030 and 06-4029. The 1994 sampling at those same locations did not find RDX but instead reported detected levels of tetryl at location IDs 06-4028 and 06-4029. As noted in Appendix C (RN 18664), this result is peculiar because of the relative instability of tetryl in the environment.

    In both of these sampling years, neither RDX nor tetryl were detected at nearby locations [within PRS 06-003(g)] or more distant locations (other PRSs within the Western Aggregate), thereby supporting the idea that the small number of low-level detections might simply be an analytical artifact. However, whether this is truly the case cannot be known, so LANL assumes the high explosives compounds are present at the four locations mentioned above.

    High explosive compounds could be transported horizontally and vertically by wind-borne soil or precipitation. If HE is present and mobile at PRS 06-003(g), our numerous (110) clean samples from neighboring PRSs within the Western Aggregate indicate that HE is degraded or diluted to non-detectable levels within a short distance.

    One possible objection to this assertion is that PRS 06-003(g) is near the northern perimeter of the Western Aggregate and therefore our results do not bound extent to the north. However, the general relief of the site slopes is to the south-southeast, and Two-Mile Mesa Road forms a physical boundary to the north. In addition, no detectable HE was found in the northern-most sample location within 06-003(g): location ID 06-4034.

    The fact that RDX was detected at location IDs 06-4030 and 06-4029 in samples taken at 36-in. below grade might call into question whether vertical extent is known. Again, neighboring samples show no migration laterally at depth. If RDX is present at these two locations, it is fixed or migrating straight down. In either case, there is no direct pathway to possible receptors. Also note that the detected concentrations were reported at very low levels (.2–.4 mg/kg), much below the contract-required detection limit (1 mg/kg). Finally, note that the surface and depth samples taken in 1994 from those same locations did not detect RDX.

    At the December 16, 1999, meeting with NMED HRMB, NMED HRMB stated that they would internally re-evaluate the need for additional sampling at this site and notify LANL of their decision.

NMED HRMB notified LANL on December 23, 1999 (via telephone), that no additional samples were required at this site.

REFERENCE

EPA, August 1999, "Understanding Variation in Partition Coefficient, K_d,Values, Volume II: Review of Geochemistry and Available K_d,Values for Cadmium, Cesium, Chromium, Lead, Plutonium, Radon, Strontium, Thorium, Tritium (^3H), and Uranium," EPA 402-R-99-004B, Washington DC, pp. 21–37, 58–67, 213–221. (EPA 1999, 64695)

Attachment A


SANDIA LAB-O-1-1 NOV 46-1030-12" 1000'-LOS ALAMOS
91990-40-1-3166

Attachment B

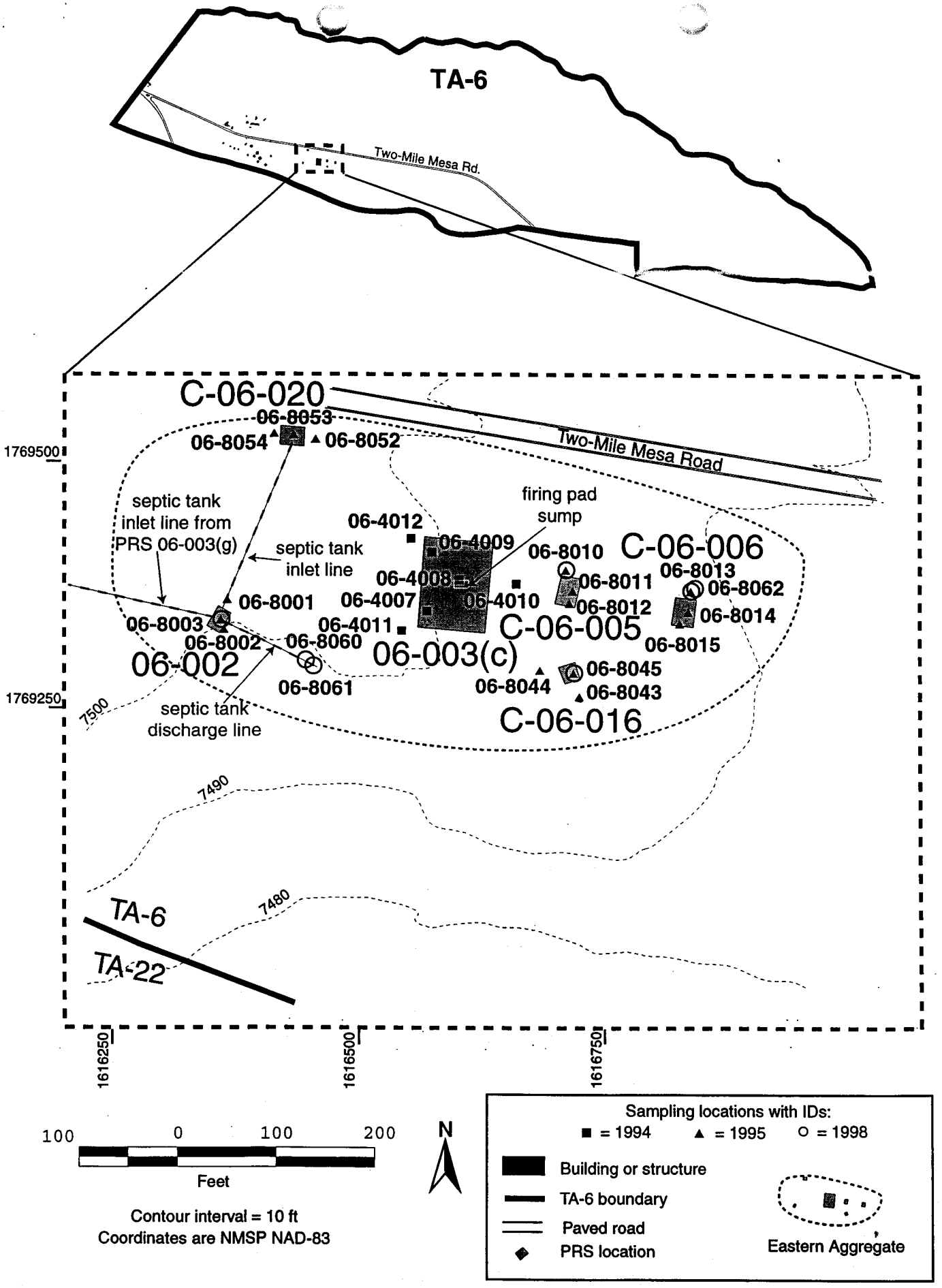

Figure 2.3-1. Eastern Aggregate sample and PRS locations.

Attachment C

ENVIRONMENTAL RESTORATION PROJECT
TELEPHONE COMMUNICATION RECORD

Date: 12/24/99	**Time:** 11:25am	**Recorded By:** V. Rhodes
To: John Young	**From:** Val Rhodes	**Telephone No.:** 827-1558 x 1036
Affiliation: NMED HRMB		
Other Parties: NA		

Discussion:

I left a voicemail message for John Young (NMED HRMB) inquiring about NMED's re-evaluation of Specific Comments #5 and #10 of the RSI (and associated LANL response) for the RSI for the TA-6 RFI Report. NMED's comments and LANL's associated responses were discussed at a December 16, 1999 meeting; NMED stated that they would re-evaluate whether additional sampling was required for PRS 06-003(g) in regard to Specific Comments #5 and #10.

On December 24, 1999, I called John Young in response to a page. John explained that NMED internally discussed Specific Comments #5 and #10 and agreed that no additional sampling is required for PRS 06-003(g).

Action Items:

Distribution:
Val Rhodes
Bill Kopp
Don Hickmott
RPF

DI-4.3, R0	**LOS ALAMOS** **Environmental Restoration Project**

Attachment D

Revised Table 2.3-1

Eastern PRS Aggregate—TA-6 Former Building Sites
Summary of Samples Collected for Fixed-Laboratory Analysis

Location ID	Sample ID	Sample Type	Depth, inches	Media	Inorganic Chemicals	High Explosives	VOCs	Rads
06-8001	0506-95-1200	Grab	0-6	Soil	317	315	NA	NA
06-8001	0506-95-1201	Grab/duplicate	0-6	Soil	317	315	NA	NA
06-8001	0506-95-1202	Grab	34-38	Soil	317	315	314	NA
06-8002	0506-95-1203	Grab	0-6	Soil	317	315	NA	NA
06-8002	0506-95-1204	Grab	31-38	Soil	317	315	314	NA
06-8003	0506-95-1205	Grab	0-6	Soil	317	315	NA	NA
06-8003	0506-95-1206	Grab	36-40	Soil	317	315	314	NA
06-8010	0506-95-1219	Grab	0-6	Soil	317	315	314	NA
06-8010	0506-95-1220	Grab	36-40	Soil	317	315	NA	NA
06-8011	0506-95-1221	Grab	0-6	Soil	317	315	NA	NA
06-8011	0506-95-1222	Grab	36-40	Soil	317	315	314	NA
06-8012	0506-95-1223	Grab	0-6	Soil	317	315	NA	NA
06-8012	0506-95-1224	Grab/duplicate	0-6	Soil	317	315	NA	NA
06-8012	0506-95-1225	Grab	32-38	Soil	317	315	314	NA
NA	0506-95-1320	Trip Blank	NA	Water	NA	NA	314	NA
NA	0506-95-1321	Field Blank	NA	Water	NA	NA	314	NA
06-8013	0506-95-1226	Grab	0-6	Soil	429	424	NA	NA
06-8013	0506-95-1227	Grab	33-36	Soil	429	424	NA	NA
06-8014	0506-95-1228	Grab	0-6	Soil	429	424	NA	NA
06-8014	0506-95-1229	Grab	36-44	Soil	429	424	NA	NA
06-8015	0506-95-1230	Grab	0-6	Soil	429	424	NA	NA
06-8015	0506-95-1231	Grab	36-44	Soil	429	424	NA	NA
06-8043	0506-95-1289	Grab	0-6	Soil	469	468	NA	NA
06-8043	0506-95-1290	Grab	35-38	Soil	469	468	NA	NA

Revised Table 2.3-1
(continued)

Location ID	Sample ID	Sample Type	Depth, inches	Media	Inorganic Chemicals	High Explosives	VOCs	Rads
06-8044	0506-95-1291	Grab	0-6	Soil	469	468	NA	NA
06-8044	0506-95-1292	Grab	35-39	Soil	469	468	NA	NA
06-8045	0506-95-1293	Grab	0-6	Soil	469	468	NA	NA
06-8045	0506-95-1294	Grab	36-40	Soil	469	468	NA	NA
06-8052	0506-95-1308	Grab	0-6	Soil	505	504	NA	NA
06-8052	0506-95-1309	Grab	35-37	Soil	505	504	NA	NA
06-8053	0506-95-1310	Grab	0-6	Soil	505	504	NA	NA
06-8053	0506-95-1311	Grab	35-38	Soil	505	504	NA	NA
06-8054	0506-95-1312	Grab	0-6	Soil	505	504	NA	NA
06-8054	0506-95-1313	Grab	33-36	Soil	505	504	NA	NA
06-8003	RE06-98-0001	Grab	62-68	Soil	4363R	4362R	NA	NA
06-8003	RE06-98-0002	Grab	90-96	Qbt 3	4363R	4362R	NA	NA
06-8060	RE06-98-0003	Grab	0-6	Soil	4363R	4362R	NA	NA
06-8060	RE06-98-0004	Grab	51-60	Soil	4363R	4362R	4361R	NA
06-8061	RE06-98-0006	Grab	0-6	Soil	4363R	4362R	NA	NA
06-8061	RE06-98-0007	Grab	51-60	Soil	4363R	4362R	4361R	NA
06-8010	RE06-98-0017	Grab	0-6	Soil	4365R	NA	NA	NA
06-8010	RE06-98-0018	Grab	121-127	Soil	4365R	NA	NA	NA
06-8045	RE06-98-0020	Grab	0-6	Soil	4365R	NA	NA	NA
06-8045	RE06-98-0021	Grab	80-86	Soil	4365R	NA	NA	NA
06-8013	RE06-98-0047	Grab	0-6	Soil	4365R	NA	NA	NA
06-8013	RE06-98-0048	Grab	110-116	Soil	4365R	NA	NA	NA
06-8013	RE06-98-0049	Grab	122-128	Qbt 3	4365R	NA	NA	NA

Revised Table 2.3-1
(concluded)

Location ID	Sample ID	Sample Type	Depth, inches	Media	Inorganic Chemicals	High Explosives	VOCs	Rads
06-8062	RE06-98-0050	Grab	0-6	Soil	4365R	NA	NA	NA
06-8062	RE06-98-0051	Grab	110-116	Soil	4365R	NA	NA	NA
06-8062	RE06-98-0052	Grab	122-128	Qbt 3	4365R	NA	NA	NA
06-4007	AAB7849	Grab	0-6	Soil	18523	18504	NA	18979
06-4007	AAB7850	Grab	24-36	Soil	18523	18504	NA	18979
06-4008	AAB7851	Grab	0-6	Soil	18523	18504	NA	18979
06-4008	AAB7852	Grab	24-36	Soil	18523	18504	NA	18979
06-4009	AAB7853	Grab	0-6	Soil	18523	18504	NA	18979
06-4009	AAB7854	Grab	24-36	Soil	18523	18504	NA	18979
06-4010	AAB7855	Grab	0-6	Soil	18523	18504	NA	18979
06-4010	AAB7856	Grab	24-36	Soil	18523	18504	NA	18979
06-4011	AAB7857	Grab	0-6	Soil	18523	18504	NA	18979
06-4011	AAB7858	Grab	24-36	Soil	18523	18504	NA	18979
06-4012	AAB7859	Grab	0-6	Soil	18523	18504	NA	18979
06-4012	AAB7860	Grab	24-36	Soil	18523	18504	NA	18979

Revised Table 3.3-1

Western Aggregate—TA-6 Former Building Sites
Summary of Samples Collected for Fixed-Laboratory Analysis

Location ID	Sample ID	Sample Type	Depth, inches	Media	Inorganic Chemicals	High Explosives	Rads
06-8007	0506-95-1213	Grab	0-6	Soil	317	315	NA
06-8007	0506-95-1214	Grab	36-38	Soil	317	315	NA
06-8008	0506-95-1215	Grab	0-6	Soil	317	315	NA
06-8008	0506-95-1216	Grab	36-38	Soil	317	315	NA
06-8009	0506-95-1217	Grab	0-6	Soil	317	315	NA
06-8009	0506-95-1218	Grab	32-39	Soil	317	315	NA
06-8016	0506-95-1232	Grab	0-6	Soil	429	424	NA
06-8016	0506-95-1233	Grab	36-44	Soil	429	424	NA
06-8017	0506-95-1234	Grab	0-6	Soil	429	424	NA
06-8017	0506-95-1235	Grab	36-44	Soil	429	424	NA
06-8018	0506-95-1236	Grab	0-6	Soil	429	424	NA
06-8018	0506-95-1237	Grab	36-38	Soil	429	424	NA
06-8019	0506-95-1238	Grab	0-6	Soil	429	424	NA
06-8019	0506-95-1239	Grab	24-32	Soil	429	424	NA
06-8020	0506-95-1240	Grab	0-6	Soil	429	424	NA
06-8020	0506-95-1241	Grab/Duplicate	0-6	Soil	429	424	NA
06-8020	0506-95-1242	Grab	36-44	Soil	429	424	NA
06-8021	0506-95-1243	Grab	0-6	Soil	429	424	NA
06-8021	0506-95-1244	Grab	22-30	Soil	429	424	NA
06-8022	0506-95-1245	Grab	0-6	Soil	429	424	NA
06-8022	0506-95-1246	Grab	36-42	Soil	429	424	NA
06-8023	0506-95-1247	Grab	0-6	Soil	429	424	NA
06-8023	0506-95-1248	Grab	30-36	Soil	429	424	NA
06-8024	0506-95-1249	Grab	0-6	Soil	429	424	NA

Revised Table 3.3-1
(continued)

Location ID	Sample ID	Sample Type	Depth, inches	Media	Inorganic Chemicals	High Explosives	Rads
06-8024	0506-95-1250	Grab	14-22	Soil	429	424	NA
06-8025	0506-95-1251	Grab	0-6	Soil	461	459	NA
06-8025	0506-95-1252	Grab	36-40	Soil	461	459	NA
06-8026	0506-95-1253	Grab	0-6	Soil	461	459	NA
06-8026	0506-95-1254	Grab	36-44	Soil	461	459	NA
06-8027	0506-95-1255	Grab	0-6	Soil	461	459	NA
06-8027	0506-95-1256	Grab	36-44	Soil	461	459	NA
06-8028	0506-95-1257	Grab	0-6	Soil	461	459	NA
06-8028	0506-95-1258	Grab	28-32	Soil	461	459	NA
06-8029	0506-95-1259	Grab	0-6	Soil	461	459	NA
06-8029	0506-95-1260	Grab/Duplicate	0-6	Soil	461	459	NA
06-8029	0506-95-1261	Grab	18-26	Soil	461	459	NA
06-8030	0506-95-1262	Grab	0-6	Soil	461	459	NA
06-8030	0506-95-1263	Grab	35-40	Soil	461	459	NA
06-8031	0506-95-1264	Grab	0-6	Soil	461	459	NA
06-8031	0506-95-1265	Grab	36-39	Soil	461	459	NA
06-8032	0506-95-1266	Grab	0-6	Soil	461	459	NA
06-8032	0506-95-1267	Grab	34-37	Soil	461	459	NA
06-8033	0506-95-1268	Grab	0-6	Soil	461	459	NA
06-8033	0506-95-1269	Grab	36-44	Soil	461	459	NA
06-8034	0506-95-1270	Grab	0-6	Soil	461	459	NA

Revised Table 3.3-1
(continued)

Location ID	Sample ID	Sample Type	Depth, inches	Media	Inorganic Chemicals	High Explosives	Rads
06-8034	0506-95-1271	Grab	36-48	Soil	461	459	NA
06-8035	0506-95-1272	Grab	0-6	Soil	461	459	NA
06-8035	0506-95-1273	Grab	36-48	Soil	461	459	NA
06-8036	0506-95-1274	Grab	0-6	Soil	461	459	NA
06-8036	0506-95-1275	Grab	35-38	Soil	461	459	NA
06-8037	0506-95-1276	Grab	0-6	Soil	469	468	NA
06-8037	0506-95-1277	Grab	36-39	Soil	469	468	NA
06-8038	0506-95-1278	Grab	0-6	Soil	469	468	NA
06-8038	0506-95-1279	Grab	36-39	Soil	469	468	NA
06-8039	0506-95-1280	Grab	0-6	Soil	469	468	NA
06-8039	0506-95-1281	Grab	34-38	Soil	469	468	NA
06-8040	0506-95-1282	Grab	0-6	Soil	469	468	NA
06-8040	0506-95-1283	Grab	34-37	Soil	469	468	NA
06-8041	0506-95-1284	Grab	0-6	Soil	469	468	NA
06-8041	0506-95-1285	Grab/Duplicate	0-6	Soil	469	468	NA
06-8041	0506-95-1286	Grab	34-36	Soil	469	468	NA
06-8042	0506-95-1287	Grab	0-6	Soil	469	468	NA
06-8042	0506-95-1288	Grab	4-8	Soil	469	468	NA
06-8046	0506-95-1295	Grab	0-6	Soil	469	468	NA
06-8046	0506-95-1296	Grab	35-37	Soil	469	468	NA
06-8047	0506-95-1297	Grab	0-6	Soil	469	468	NA
06-8047	0506-95-1298	Grab	26-28	Soil	469	468	NA
06-8048	0506-95-1299	Grab	0-6	Soil	469	468	NA
06-8048	0506-95-1300	Grab	26-28	Soil	469	468	NA
06-8049	0506-95-1301	Grab	0-6	Soil	505	504	NA
06-8049	0506-95-1302	Grab	33-36	Soil	505	504	NA
06-8050	0506-95-1303	Grab	0-6	Soil	505	504	NA
06-8050	0506-95-1304	Grab/Duplicate	0-6	Soil	505	504	NA
06-8050	0506-95-1305	Grab	33-36	Soil	505	504	NA
06-8051	0506-95-1306	Grab	0-6	Soil	505	504	NA
06-8051	0506-95-1307	Grab	36-40	Soil	505	504	NA
06-8055	0506-95-1314	Grab	0-6	Soil	505	504	NA
06-8055	0506-95-1315	Grab	33-36	Soil	505	504	NA
06-8056	0506-95-1316	Grab	0-6	Soil	505	504	NA
06-8056	0506-95-1317	Grab	36-38	Soil	505	504	NA
06-8057	0506-95-1318	Grab	0-6	Soil	505	504	NA
06-8057	0506-95-1319	Grab	32-35	Soil	505	504	NA
06-8020	RE06-98-0010	Grab	0-6	Soil	NA	4342R	NA

Revised Table 3.3-1
(concluded)

Location ID	Sample ID	Sample Type	Depth, inches	Media	Inorganic Chemicals	High Explosives	Rads
06-8020	RE06-98-0011	Grab	16-22	Soil	NA	4342R	NA
06-8051	RE06-98-0012	Grab	0-6	Soil	NA	4353R	NA
06-8051	RE06-98-0013	Grab	36-46	Soil	NA	4353R	NA
06-8036	RE06-98-0014	Grab	0-6	Soil	NA	4342R	NA
06-8036	RE06-98-0015	Grab	6-12	Soil	NA	4353R	NA
06-8056	RE06-98-0016	Grab	12-18	Soil	NA	4353R	NA
06-8047	RE06-98-0023	Grab	0-6	Soil	4341R	NA	NA
06-8047	RE06-98-0024	Grab	12-18	Soil	4341R	NA	NA
06-8041	RE06-98-0026	Grab	0-6	Soil	4341R	NA	NA
06-8041	RE06-98-0027	Grab	26-32	Soil	4341R	NA	NA
06-8037	RE06-98-0029	Grab	0-6	Soil	4354R	NA	NA
06-8037	RE06-98-0030	Grab	16-22	Soil	4354R	NA	NA
06-8032	RE06-98-0038	Grab	0-6	Soil	4354R	NA	NA
06-8032	RE06-98-0039	Grab	90-96	Soil	4354R	NA	NA
06-8025	RE06-98-0041	Grab	0-6	Soil	4363R	NA	NA
06-8025	RE06-98-0042	Grab	21-27	Soil	4363R	NA	NA
06-8029	RE06-98-0044	Grab	0-6	Soil	4354R	NA	NA
06-8029	RE06-98-0045	Grab	52-58	Soil	4354R	NA	NA
06-8058	RE06-98-0053	Grab	0-6	Soil	4363R	4362R	NA
06-8058	RE06-98-0054	Grab	24-30	Soil	4363R	4362R	NA
06-8058	RE06-98-0055	Grab	50-56	Qbt 3	NA	4362R	NA
06-8059	RE06-98-0056	Grab	0-6	Soil	4363R	4362R	NA
06-8059	RE06-98-0057	Grab	22-28	Soil	4363R	4362R	NA
06-8059	RE06-98-0058	Grab	48-54	Qbt 3	NA	4362R	NA
06-4028	AAB7875	Grab	0-4	SOIL	18755	18664	18980
06-4028	AAB7876	Grab	24-28	SOIL	18755	18664	18980
06-4029	AAB7877	Grab	0-4	SOIL	18755	18664	18980
06-4029	AAB7878	Grab	24-28	SOIL	18755	18664	18980
06-4030	AAB7881	Grab	0-4	SOIL	NA	18665	18981
06-4030	AAB7882	Grab	12-16	SOIL	NA	18665	18981
06-4031	AAB7883	Grab	0-4	SOIL	NA	18665	18981
06-4031	AAB7884	Grab	24-28	SOIL	NA	18665	18981
06-4032	AAB7885	Grab	0-4	SOIL	NA	18665	18981
06-4032	AAB7886	Grab	12-16	SOIL	NA	18665	18981
06-4033	AAB7887	Grab	0-4	SOIL	NA	18665	18981
06-4033	AAB7888	Grab	24-28	SOIL	NA	18665	18981
06-4034	AAB7889	Grab	0-4	SOIL	NA	18665	18981
06-4034	AAB7890	Grab	24-28	SOIL	NA	18665	18981

NA = not applicable