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Date: July 8, 2003
 Refer to: ER2003-0464



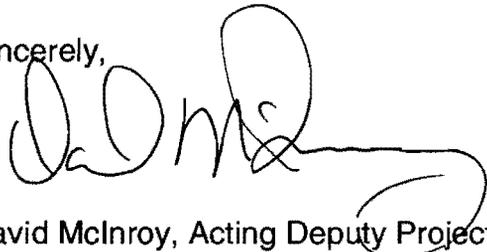
Mr. John Young, Corrective Action Project Leader
 Permits Management Program
 NMED – Hazardous Waste Bureau
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SUBJECT: SUBMITTAL OF SAMPLING AND ANALYSIS PLAN (SAP) ADDENDUM TO THE RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) FACILITY INVESTIGATION (RFI) WORK PLAN FOR OPERABLE UNIT (OU) 1147 FOR SOLID WASTE MANAGEMENT UNITS (SWMUs) 50-004(c) AND 50-011(a), AT TECHNICAL AREA (TA) 50

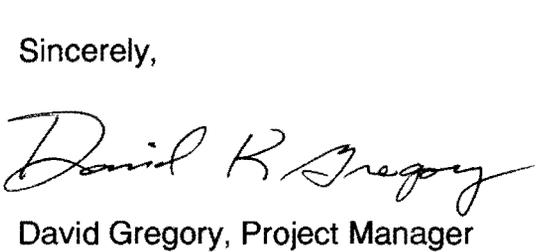
Dear Mr. Young:

Enclosed please find two copies of the "Sampling and Analysis Plan Addendum to the Operable Unit 1147 Work Plan for Waste Lines and a Septic System, SWMUs 50-004(c) and 50-011(a) at Technical Area 50". During the summer and fall of 2003, the Laboratory will construct a new pump house and influent storage tank vault, and install new radioactive liquid waste (RLW) transfer lines at the RLW Treatment Facility at TA-50. Upon completion of this construction, access to sections of SWMUs 50-004(c) and 50-011(a) will not be feasible due to the unacceptable risks associated with disturbing the new RLW lines and the presence of the new influent pump house and tank vault. Therefore, the Los Alamos National Laboratory Risk Reduction and Environmental Stewardship Remediation Services Program is planning to collect supplemental samples to complete the RFI of SWMUs 50-004(c) and 50-011(a) while access to these sites is still available.

If you have any questions, please contact John Hopkins at (505) 667-9551 or Woody Woodworth at (505) 667-5820.

Sincerely,


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

Sincerely,


David Gregory, Project Manager
 Department of Energy
 Los Alamos Site Operations



Mr. John Young
ER2003-0464

-2-

July 8, 2003

DM/DG/PB/dv

Enclosure: 1) SAP Addendum to the RFI Work Plan for OU 1147 for SWMUs 50-004(c) and 50-011(a) at TA-50

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Remediation Program

LA-UR-03-3816
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ER2003-0395



**Sampling and Analysis Plan
Addendum to the
Operable Unit 1147 Work Plan
for Waste Lines and Septic
System, SWMUs 50-004(c) & 50-
011(a), at Technical Area 50**



Los Alamos NM 87545

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Produced by the Risk Reduction and Environmental Stewardship Remediation Services Program

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1.0 INTRODUCTION

This addendum to the sampling and analysis plan (SAP) in the approved Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) work plan for Operable Unit 1147 (LANL 1992, 07672) describes additional sampling at Solid Waste Management Units (SWMUs) 50-004(c) and 50-011(a) at Technical Area (TA) 50 (Figure 1.0-1). Sampling will be conducted by the Los Alamos National Laboratory (the Laboratory) Risk Reduction and Environmental Stewardship Remediation Services Program (RRES-RS).

During the summer and fall of 2003, the Laboratory will construct a new pump house and influent storage tank vault, and install new radioactive liquid waste (RLW) transfer lines at the Radioactive Liquid Waste Treatment Facility (RLWTF) at TA-50. Upon completion of this construction, access to sections of SWMUs 50-004(c) and 50-011(a) will not be feasible due to the unacceptable risks associated with disturbing the new RLW lines and the presence of the new influent pump house and tank vault. Therefore, the RRES-RS Program is planning to collect supplemental samples to complete the RFI of SWMUs 50-004(c) and 50-011(a) while access to these sites is still available.

SWMU 50-004(c) consists of 13 industrial waste lines (44, 45, 45a, 46, 47, 48, 48a, 49, 54, 55, 56, 65, and 67) and three associated manholes (structures 50-6, -55, and -56) that discharged to a decommissioned underground vault (structure 50-3). All of the waste lines and manholes associated with former SWMU 50-004(c) were removed between 1981 and 1989, with the exception of waste line 56, which remains in service in the northwest corner of TA-50. During decommissioning of the radioactive liquid waste lines, excavated soils were characterized for radioactive constituents and remediated to meet ALARA levels (LANL 1992, 07672). During the 1994 RFI, 67 subsurface soil samples (including field blanks and duplicates) were collected from 21 boreholes located 100 feet apart along the former waste line trenches of SWMU 50-004(c) in accordance with the approved RFI work plan for Operable Unit 1147 (LANL 1992, 07672). All 67 samples were analyzed for target analyte list (TAL) metals and radionuclides, and eight of the samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and polychlorinated biphenyls (PCBs). Analytical results presented in the February 1996 RFI report show that no SVOCs or PCBs were detected, and only the VOC methylene chloride was detected in two samples from different sample locations (Location IDs 50-03020 and -03016) and depths at concentrations of 15 and 17 micrograms per kilogram (ug/kg), respectively (LANL 1996, 54460). The extent of inorganic and radionuclide contamination was not fully determined. Supplemental analytical data for samples collected from geotechnical boreholes advanced in 2001 showed no detected SVOCs, PCBs, or VOCs. No metals were detected in soil/fill above background concentrations; however, barium, chromium, and lead were detected in tuff above Laboratory background values. Several radionuclides were detected slightly above Laboratory background values including cesium-137 (Cs-137), radium-226 (Ra-226), americium-241 (Am-241), plutonium-239/240 (Pu-239/240), plutonium-238 (Pu-238), uranium-234 and -235 (U-234 and U-235), and strontium-90 (Sr-90).

SWMU 50-011(a) is the location of a decommissioned septic system that was installed in 1964 at the south end of the RLWTF (Building 50-1). The system consisted of an influent line from Building 50-1 that discharged to manhole 50-9 and then to the septic tank (Structure 50-10). The effluent line from the tank tied to a distribution box (Structure 50-11), which discharged to four parallel, perforated pipes traversing a leach field. A 4-ft-diameter x 5-ft-deep infiltration shaft was drilled at the east end of the leach field in 1978 to address problems with standing water on the ground surface. A 4-in. perforated pipe was installed in the shaft and the annulus was backfilled to within 4 ft of the ground surface. The outlets of the four parallel pipes were then tied into the 4-in. perforated pipe. The septic system, except for the perforated pipe (infiltration shaft), was removed in 1983. Currently, the western segment of the former location of the leach field and the section of the effluent line between the former septic tank and the leach field are the only segments of the former septic system not covered by the concrete slab for former storage building 50-83. This area is beneath an asphalt pad located between the pumping station (Building 50-2) and the concrete slab for Building 50-83. The 50-ft-deep infiltration shaft is located beneath the southeast corner of the Building 50-83 slab.

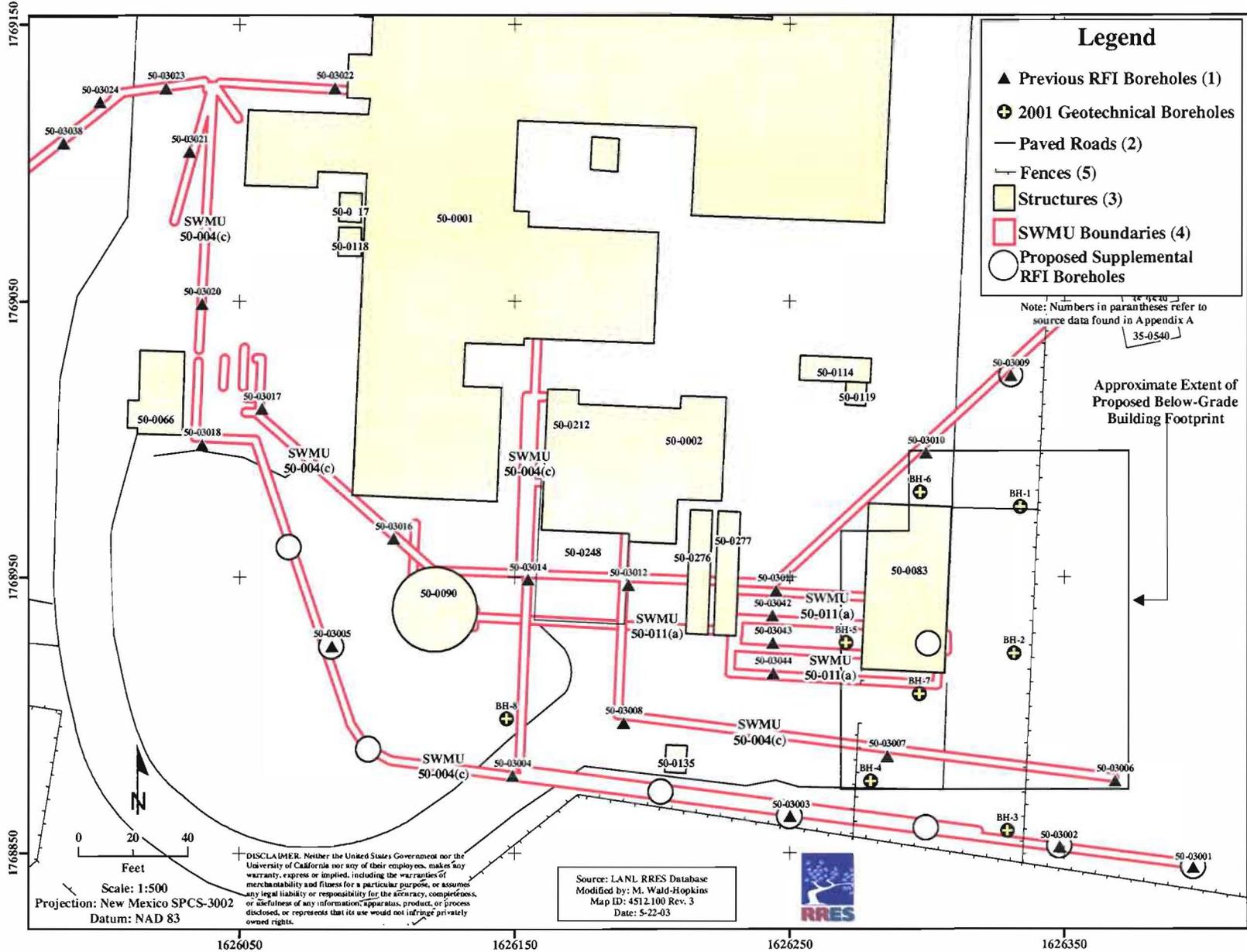


Figure 1.0-1. Location of SWMUs 50-004(c) and 50-011(a) and previous and proposed boreholes

During the 1994 RFI, seven subsurface soil samples (including field blanks and duplicates) were collected from four 10-ft-deep vertical boreholes within the former leach field associated with SWMU 50-011(a). All seven samples were analyzed for TAL metals and radionuclides, and three of the samples were analyzed for VOCs, SVOCs, and PCBs. Analytical results presented in the February 1996 RFI report show that no SVOCs or PCBs were detected (LANL 1996, 54460). Acetone was detected in all three samples at concentrations of 59, 69, and 88 ug/kg respectively, and 2-butanone was detected in one sample at 27 ug/kg. The VOC results showed no trend indicating a release; however, the extent of VOCs has not been defined. The extent of inorganic and radionuclide contamination was not fully determined. Supplemental analytical data for samples collected from geotechnical boreholes advanced in 2001 showed no detected SVOCs, PCBs, or VOCs. No metals were detected in soil/fill above background concentrations; however, barium, chromium, and lead were detected in tuff above Laboratory background values. Several radionuclides were detected slightly above Laboratory background values including Cs-137, Ra-226, Am-241, Pu-239/240, Pu-238, U-234, U-235, and Sr-90.

2.0 SAMPLING ACTIVITIES

Based on liability issues, contract constraints, and the project schedule for the construction of the new pump house and influent tank vault, and installation of new RLW transfer lines and utilities, the following restrictions will be met by RRES-RS subcontractors working at TA-50:

1. Sampling can occur only after construction activities have been completed for the day or week.
2. Subcontractor personnel must receive a site health and safety orientation and be escorted at all times by project personnel.
3. No heavy equipment may be brought on site; only small hand tools will be allowed. However, an exception will be made if additional boreholes are required to complete the characterization of SWMU 50-011(a). Based on the final configuration of the excavation for the new pump house, RRES-RS will use one of the following to collect subsurface samples near the infiltration shaft within the pump house and tank vault excavation: a small trailer-mounted drill rig pulled by a pickup truck, an all terrain vehicle (ATV)-mounted drill rig, or a portable handheld power auger.
4. The subcontractors will be operating under their own Health and Safety Plan and assume all liability for these activities.
5. All waste generated by the sampling activities must be managed by the subcontractor and removed at the end of the day from the site.
6. The subcontractor will not be allowed within any confined spaces (i.e., trenches).
7. Sampling activities may not in any way, impact construction activities.
8. The Project Team Leader, James Jones, must approve any on-site activities.

2.1 Sampling Events

The collection of supplemental RFI samples from SWMUs 50-004(c) and 50-011(a) will occur during four different sampling events to coincide with different phases of construction of the new pump house and RLW transfer lines. First, the Laboratory RRES-RS subcontractors will mobilize a small trailer-mounted drill rig to sample previous RFI borehole location 50-03009 during the week of June 16, 2003 to collect supplemental RFI samples from the northeastern section of the former drainline trench designated SWMU 50-004(c). This sampling event must be completed prior to mobilization of the construction subcontractor on June 23, 2003. Next, proposed supplemental

RFI sample locations where the new RLW line trench crosses the western- and southern-most segments of the former waste line trenches will be identified upon completion of the design and location of the new RLW transfer lines. An FWO-WFM representative will collect the supplemental RFI samples from these locations during trenching operations for the new RLW transfer lines. RRES-RS subcontractors will provide all sample collection equipment and bottles, complete all sampling documentation, and transport the samples to the Sample Management Facility (SMO). RRES-RS subcontractors will coordinate with the Project Team Leader and FWO-WFM representatives regarding the location and collection of samples during trenching operations that cross the western- and southern-most segments of the former waste line trenches of SWMU 50-004(c).

The third sampling event will occur if additional boreholes are required to complete the characterization of SWMU 50-011(a). This sampling event would involve RRES-RS subcontractors bringing a small trailer-mounted drill rig, an ATV-mounted drill rig, or a handheld power auger into the main excavation for the pump house to advance no more than two boreholes adjacent to the infiltration shaft for the former septic system designated as SWMU 50-011(a). The bottom of the shaft is approximately 50 feet below ground surface (bgs); however, because the depth of the excavation is expected to be approximately 25 feet, the borehole(s) will only have to be advanced to a depth of approximately 30 feet bgs of the bottom of the excavation. Additional RFI samples may be collected by hand from the bottom of the construction excavation beneath the former leach field for SWMU 50-011(a) and beneath a portion of a former waste line trench associated with SWMU 50-004(c), if determined to be accessible.

The fourth sampling event will be implemented upon completion of the construction of the new building and waste transfer lines in early summer 2004, and will involve the collection of supplemental RFI samples from the southern-most segment and the segment adjacent to structure 50-0090 of the former waste line trenches designated as SWMU 50-004(c). RRES-RS will access these sampling locations from MDA C to the south or through the TA-50 RLWTF based on the type of drilling equipment to be used. All RRES-RS sampling will occur only after construction activities have been completed for the day or week and with approval from the Project Team Leader, James Jones and the FWO-WFM representative, Rick Alexander.

RRES-RS subcontractors will be allowed to survey all of the supplemental RFI sample locations and the location of the infiltration shaft associated with SWMU 50-011(a).

2.1.1 SWMU 50-004(c)

The Laboratory RRES-RS Program plans to collect approximately 15 supplemental subsurface tuff samples from accessible sections of SWMU 50-004(c). Two samples will be collected from two depth intervals at proposed supplemental RFI locations identified in Figure 1.0-1. At each new location, one sample will be collected directly beneath the soil/tuff interface, and the second sample will be collected from a depth approximately 5 ft below this interface. The remaining supplemental samples will be collected from one depth at previous RFI sample locations identified in Figure 1.0-1. These samples will be collected from a depth approximately 5 ft below the deepest previous sample depth. Note: due to safety concerns, liability issues, contract constraints, and the project schedule, sample collection depths at locations where the new trench intersects sections of the former waste-line trenches of SWMU 50-004(c) may be limited to the depth of the bottom of the new trench. Additional samples may be collected from the bottom of the construction excavation beneath the segments of decommissioned sections of SWMU 50-004(c), if accessible. The final number of sample locations and supplemental samples collected will be described in the future RFI report for SWMUs 50-004(c) and 50-011(a). Analytical suites for the supplemental RFI samples from SWMU 50-004(c) will include TAL metals, Cs-137 by gamma spectroscopy, Am-241 by alpha spectroscopy, Sr-90, tritium by liquid scintillation, isotopic plutonium, isotopic uranium, and perchlorates. All samples will be collected in accordance with applicable RRES-RS Program standard operating procedures.

2.1.2 SWMU 50-011(a)

If deemed necessary, the RRES-RS program plans to collect supplemental RFI subsurface tuff samples from the bottom of the pump house excavation from two locations near the SWMU 50-011(a) infiltration shaft (Note: these proposed sample locations are not included in Figure 1.0-1). Four samples will be collected from two depths from two new RFI boreholes to be located approximately 5 ft northeast and southeast of the seepage pit. The first sample from each borehole will be collected from a depth equivalent to the bottom of the shaft (approximately 50 ft below current ground surface), and the second sample will be collected from a depth at least 5 ft below the bottom of the shaft. However, no additional boreholes or just one additional borehole will be required if one or more of the geotechnical boreholes drilled in 2001 (boreholes BH-2, BH-5, or BH-7 on Figure 1.0-1) are determined to be adequate for characterizing a potential release from the infiltration shaft. The exact location of the infiltration shaft should be obvious during the excavation for the new pump house and influent tank vault. Once the infiltration shaft is located, it will be surveyed and supplemental sample locations determined. Additional RFI samples may be collected from the bottom of the construction excavation beneath the former leach field for SWMU 50-011(a), if determined to be accessible. Analytical suites for the supplemental RFI samples from SWMU 50-011(a) will include VOCs, TAL metals, Cs-137 by gamma spectroscopy, Am-241 by alpha spectroscopy, Sr-90, tritium by liquid scintillation, isotopic plutonium, isotopic uranium, and perchlorates. All samples will be collected in accordance with applicable RRES-RS Program standard operating procedures.

The following table summarizes the data collection activity. Proposed sample locations are shown in Figure 1.0-1. Analytical results from this sampling effort and from the geotechnical sampling effort conducted in 2001 will be reported in a future addendum to the RFI report for SWMUs 50-004(c) and 50-011(a) in early fiscal year 2005.

**Table 2.0-1
Proposed Supplemental RFI Sample Descriptions and Rationale**

Sample Type	Sample Location and Depth	Sample Description and Rationale	Analytical Suites
Subsurface core – soil/tuff	A minimum of eight samples from two depth intervals at four new RFI borehole locations along the decommissioned sections of SWMU 50-004(c). Up to four samples from two depth intervals within the construction excavation beneath decommissioned sections of SWMU 50-004(c), if accessible.	At each borehole location, one sample will be collected beneath the soil/tuff interface at the bottom of the decommissioned trenches, and one sample will be collected approximately 5 ft beneath the soil/tuff interface sample to define vertical extent.	TAL metals; perchlorates; gamma spectroscopy for cesium-137; alpha spectroscopy for americium-241; isotopic uranium and plutonium; tritium; and gross alpha, beta and gamma radiation.
Subsurface core – soil/tuff	A minimum of five samples from one depth at former RFI borehole locations (50-03001 through -03003, -03005, & -03009) along decommissioned sections of SWMU 50-004(c).	At each borehole location, one sample will be collected from a depth of approximately 5 ft beneath the previous sample depth to define vertical extent.	TAL metals; perchlorates; gamma spectroscopy for cesium-137; alpha spectroscopy for americium-241; isotopic uranium and plutonium; tritium; and gross alpha, beta and gamma radiation.

Table 2.0-1 (continued)

Sample Type	Sample Location and Depth	Sample Description and Rationale	Analytical Suites
Subsurface core – soil/tuff	<p>If deemed necessary, four samples from two depth intervals at two new RFI borehole locations near the infiltration shaft of SWMU 50-011(a). If accessible, four samples from two depth intervals within construction excavation beneath former leach field of SWMU 50-011(a).</p>	<p>Determine location of infiltration shaft SWMU 50-011(a) and adequacy of location and data from proximate geotechnical boreholes (BH-2, BH-5, & BH-7). If geotechnical boreholes are determined to be adequate, either no additional boreholes will be required or just one new RFI borehole will be drilled downgradient of the shaft. If geotechnical boreholes are determined to be insufficient, two new RFI boreholes will be drilled downgradient of the shaft. At each borehole, one sample will be collected from a depth adjacent to shaft bottom (~50 ft) and one sample will be collected from a depth at least five ft deeper to define extent and a determination of no further action. Access to this location will be precluded once the influent pump house is installed.</p>	<p>VOCs; TAL metals; perchlorates; gamma spectroscopy for cesium-137; alpha spectroscopy for americium-241; isotopic uranium and plutonium; tritium; and gross alpha, beta and gamma radiation.</p>

3.0 REFERENCES

LANL (Los Alamos National Laboratory), May 1, 1992. "RFI Work Plan for Operable Unit 1147." Los Alamos National Laboratory document LA-UR-92-969, Los Alamos, New Mexico. (LANL 1992, 07672)

LANL (Los Alamos National Laboratory), October 2, 1995. "Modification to the Resource and Conservation and Recovery Act Facility Investigation (RFI) Work Plan for Operable Unit (OU) 1147, Los Alamos National Laboratory NM0890010515," Los Alamos National Laboratory letter EM/ER: 95-472 to B. Driscoll (NM Federal Facilities Section, Multimedia Planning and Permitting Section, EPA) from J. Jansen (Program Manager, Environmental Restoration) and T. J. Taylor (Program Manager, DOE/LA), Los Alamos, New Mexico. (LANL 1995, 49969)

LANL (Los Alamos National Laboratory), February 1996. "RFI Report for Potential Release Sites at TA-50, 50-004(a), 50-004(c), 50-011(a) (located in former operable unit 1147) Field Unit 5," Los Alamos National Laboratory document LA-UR-96-148, Los Alamos, New Mexico. (LANL 1996, 54460)

Appendix A

Sources of Spatial Data Used for Map Generation

Table A-1.0-1 shows sources of the spatial data used to generate the map for the TA-50 SAP. The numbers in the first column correspond the numbers in parentheses found next to the layer descriptions in the map legend in Figure 1.0-1.

**Table A-1.0-1
Sources of Spatial Data used in RFI Maps**

Number Shown in Parenthesis	Theme name	Data Provider/Data Owner	Date Published
1	sde.DBO.location_ids_pnt	Los Alamos National Laboratory/ER	Feb. 14, 2003
2	sde.DBO.paved_rds_arc	Los Alamos National Laboratory/FWO	Aug. 12, 2002
3	sde.DBO.lac_structures_ply	Los Alamos National Laboratory/FWO	Unknown
4	sde.DBO.prs_ply	Los Alamos National Laboratory/ER	Unknown
5	sde.DBO.fences_arc	Los Alamos National Laboratory/FWO	Aug. 12, 2002