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SOIL CHARACTERIZATION REPORT FOR THE INSTALLATION OF A NEW GAS TURBINE GENERATOR AND UTILITIES AT THE TA-3 POWER PLANT

January 29, 2003

Prepared by:

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SOIL CHARACTERIZATION REPORT FOR THE INSTALLATION OF A NEW GAS TURBINE GENERATOR AND UTILITIES AT THE TA-3 POWER PLANT

January 29, 2003

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ACRONYMS

BV	background values
COPC	contaminants of potential concern
FWO	Facilities Waste Operations
LANL	Los Alamos National Laboratory
RRES-R	Risk Reduction and Environmental Stewardship - Remediation
SAL	screening action levels
SWMU	Solid Waste Management Unit
TA	Technical Area

1.0 INTRODUCTION

This report presents results of soil characterization activities implemented at portions of Solid Waste Management Unit (SWMU) 03-012(b)-00 located east of the Technical Area (TA)-03 power plant (Building 03-22) prior to the installation of a gas turbine generator and associated utilities near or within the boundary of SWMU 03-012(b)-00. SWMU 03-012(b)-00 consists of three cooling towers (structures 03-58, 03-592,and structure 03-285), and holding tank (structure 03-336) for TA-46 Wastewater Facility effluent storage, and associated drainlines and outfalls that discharge into Sandia Canyon (Figure 1 of Appendix D). Historically, treated effluent from the former TA-03 wastewater treatment plant was used in the two former cooling towers (03-25 and -58). Previously, chromates were used to treat cooling tower piping systems to inhibit corrosion; this practice ceased in the late 1970s. Cooling tower 03-285 serves cooling requirements of 03-132 and 03-1498. Soil samples were collected around the current and former mesa top structures of SWMU 03-012(b)-00 to characterize existing site conditions and for waste characterization purposes prior to the installation of the new gas turbine generator and associated utilities.

Based on Phase I RFI analytical results, inorganic chemicals including chromium are the primary contaminants of potential concern (COPCs) for SWMU 03-012(b)-00 near the cooling towers. Because the cooling towers produced an over spray that fell to the ground around the towers, the soil in the vicinity of the cooling towers may contain elevated chromium concentrations. The sampling objective for these locations was to determine if there has been releases to mesa top soils from the cooling towers and to collect enough data to assess if the COPCs are present near the towers above site-wide background soil levels.

2.0 PREVIOUS INVESTIGATIONS

In accordance with the RFI Work Plan for OU 1114, Phase I RFI samples were collected from the SWMU 03-012(b)-00 cooling tower outfalls in Sandia Canyon in 1995. Analytical results presented in the *RFI Report for 53 Potential Release Sites in TA-3, TA-59, TA-60, TA-61 (Los Alamos National Laboratory [LANL], 1996)*, showed the presence of chromium, cadmium, lead and silver above background levels and identified these as the primary COPCs for SWMU 03-012(b)-00 (LANL 1996, LA-UR-96-726). The 1996 Phase I RFI Report also recommended a sampling and analysis plan for the area around the mesa top structures of SWMU 03-012(b)-00 (structures 03-592, 03–58, 03-285, and 03-336). Note: A new cooling tower (structure 03-592) has been constructed on the concrete pad of former cooling tower 03-25 and although cooling tower 03-58 was replaced, the new cooling tower was given the same structure number.

3.0 SCOPE OF WORK

The excavation permit reviewed by the Risk Reduction and Environmental Stewardship - Remediation (RRES-R) Project in August 2002 indicated that LANL's Facilities Waste Operations (FWO) Utilities and Infrastructure Group planned to install a gas turbine generator and associated utilities near the mesa top portion of SWMU 03-012(b)-00. Since this portion of SWMU 03-012(b)-00 had not yet been characterized by the RRES-R Project, Benchmark Environmental/Kellog, Brown & Root, Shaw Group, LATA (KSL)

Health and Environmental worked with RRES-R Project staff to identify proposed locations for the new gas turbine generator and associated utilities within the boundary of SWMU 03-012(b)-00 and associated site characterization requirements. To minimize impact to SWMU 03-012(b)-00 and to minimize waste generation, the FWO Utilities and Infrastructure Group determined that only a portion of the utility corridor for the new gas turbine generator would be located within the boundary of SWMU 03-012(b)-00. Figure 2 of Appendix D shows the proposed footprint for the utility corridor for the new turbine at TA-03. The corridor will consist of four adjoining trenches for the following individual lines; 1) a 13.8 kV electric conduit, 2) a natural gas line, 3) grounding cables, and 4) communication lines. Each trench will be approximately 4 ft deep and the width of the utility corridor will be approximately twenty feet.

The Phase II Sampling and Analysis Plan for the mesa top portion of SWMU 03-012(b)-00 described in the 1996 RFI Report specified the collection of 64 soil samples from two depth intervals (0- to 6-inches and 6- to 12-inches) at 32 locations around structures 03-592, 03-58 and 03-285. However, for this characterization effort the number of sample locations was reduced to address only the planned location of the utility corridor in the area directly adjacent to cooling tower 03-285. The sample locations are shown in Figure 3 of Appendix D.

The project was performed in accordance with approved site health, safety, and emergency response plans. The project was performed in accordance with applicable U.S. Department of Energy, LANL, and State of New Mexico requirements.

4.0 SAMPLE COLLECTION METHODOLOGY AND SAMPLING PROTOCOLS

The soil characterization activities described herein were conducted to determine if there had been a release from the mesa top structures associated with SWMU 03-012(b)-00, the nature and extent of any release, and the potential risk to site workers from any release within the proposed location of the utility corridor. In the case of this assessment, as required by RRES-R Project protocol, soils were sampled within the anticipated footprint of the proposed utility corridor for the new gas turbine near cooling towers at 03-592 and 03-58. A total of 32 soil samples were collected from 19 sample locations (Figure 3 of Appendix D). All 32 soil samples were collected in accordance with the LANL RRES-R-SOP-6.09 Spade and Scoop Method for Collection of Soil Samples. Soil samples were collected from two depth intervals (0- to 6-inches and 6- to 12-inches); however, six of the 6- to 12-inch samples were not collected. Those samples could not be retrieved by Spade and Scoop method because soils were not present at that depth interval.

The samples were documented and preserved in accordance with RRES-R procedures. The samples were submitted to Assaigai Analytical Laboratories through the sample management office for the following analyses:

- TAL metals by Inductively Coupled Plasma Emission Spectroscopy

5.0 ANALYTICAL RESULTS

Six inorganic chemicals; cadmium, chromium, copper, mercury, silver, and zinc were detected in the site characterization samples above their respective background values (BVs). Table 1 below presents the analytical results for all samples with detected inorganic chemical concentrations or detection limits exceeding BVs (LANL 1998, 59730). Qualifiers associated

with the data are defined in Appendix A. Summary tables of all TAL metals are in Appendix B, Tables 1 and 2. Complete analytical laboratory results are presented in Appendix C.

Table 1
Analytical Results for Detected Inorganic Chemicals during the Mesa Top Site Characterization at SWMU 03-012(b)-00

Analyte	Location ID	Sample Number	Sample Concentration (mg/kg)	Media	Depth (in)
Cadmium	117	49270	0.606	Soil	0.0-6.0
Chromium	100	49293	20.3	Soil	0.0-6.0
	106	49283	39.6	Soil	0.0-6.0
	117	49270	149.0	Soil	0.0-6.0
	120	49272	37.3	Soil	0.0-6.0
Copper	120	49272	17.9	Soil	0.0-6.0
Mercury	117	49270	0.09	Soil	0.0-6.0
Silver	102	49278	1.03	Soil	0.0-6.0
	106	49283	1.41	Soil	0.0-6.0
	117	49270	5.68	Soil	0.0-6.0
	120	49272	1.30	Soil	0.0-6.0
Zinc	100	49293	72.1	Soil	6.0-12.0
	102	49292	70.8	Soil	6.0-12.0
	112	49301	55.2	Soil	6.0-12.0

Four of the sample locations (location IDs 100, 102, 106, and 112) where inorganic chemicals were detected above BVs are directly west and north of cooling tower 03-285 and are outside of the planned footprint of the proposed utility corridor for the new gas turbine generator.

Analytical results for samples collected from two locations east of cooling tower 03-592, (location IDs 117 and 120) within the proposed utility corridor showed inorganic chemical concentrations above BVs (Figure 4 of Appendix D). Cadmium, chromium, and silver were detected at sample location 117 at concentrations of 0.606 mg/kg, 149.0 mg/kg, and 5.68 mg/kg, respectively. Chromium copper and silver were detected at sample location 120 at concentrations of 37.9 mg/kg, 17.9 mg/kg, and 1.30 mg/kg, respectively. None of the detected inorganic chemicals exceeded their respective residential screening action levels (SALs).

6.0 DISCUSSION

Because of the relatively random distribution of the soil sample locations with concentrations of several inorganic chemicals above background, the nature and extent of contamination at

SWMU 03-012(b)-00 was not defined for the purposes of Resource Conservation and Recovery Act corrective action. However, the nature and extent of contamination was adequately defined within the proposed footprint of the utility corridor to allow the project to proceed. Concentrations of inorganic chemicals detected at sample locations (location IDs 117 and 120) within the proposed utility corridor footprint are above site wide BVs, but are well below SALs for residential land use.

The RRES-R Project requested that all soil excavated for placement of the utility lines within the fence surrounding structures 03-592, 03-285, and 03-58 be managed inside the fence within the boundary of the SWMU. The soil will be placed on plastic during construction. Prior to utility line installation, approximately ten confirmation soil samples must be collected from two depth intervals at five locations within the bottom of the excavation trench and submitted to the sample management office for analysis of TAL metals. As much of the excavated soil as possible will then be returned to the excavation following installation of the individual utility lines. The site should then be restored (Bertino, 2002).

Any excavated soil that cannot be returned to the utility trench excavation must be managed in accordance with applicable RRES-R and LANL waste management requirements. Specifically, the soil must be containerized and sampled for waste characterization purposes. Because the source of the soil is a SWMU, a waste characterization strategy form must be prepared by a LANL trained waste management coordinator, and submitted to and approved by FWO/SWO before any excavation may begin. Waste characterization results will then be used to complete and submit a waste profile form to FWO/SWO for approval. Any residual soil would most likely be classified as non-hazardous solid waste.

7.0 CONCLUSIONS

The purpose of this investigation was to characterize soils in the vicinity of a proposed underground utility corridor that will serve a new gas turbine generator east of the TA-03 power plant (03-22). A total of 32 soil samples were collected at 0.0-0.6" and 0.6-12" depths and then analyzed for TAL metals. Seven samples from five of the 32 samples analyzed showed five inorganic chemical concentrations above site wide background soil values. Discussions with RRES-R Program staff have resulted in the following resolution for the proposed utility corridor within the boundary of SWMU-3-012(b)-00. Once the corridor trenches are excavated, confirmatory samples will be collected from the bottom of the excavation, along the length of the corridor. Excavated materials, will be placed on plastic adjacent to the trenches, and will be used to backfill the excavations. Any excess soils will be containerized, characterized and managed in accordance with RRES-R and LANL FWO-SWO requirements.

FWO Utilities and Infrastructure Group personnel will notify RRES-R Project staff if the proposed locations for the utility corridor and associated gas turbine generator change from the locations indicated in this report. FWO Utilities and Infrastructure Group personnel will also provide updates to RRES-R Project staff regarding the project schedule and allow sufficient time in the construction schedule for the collection of confirmation samples from the bottom of the utility corridor trench prior to the installation of utility lines. In accordance with Module VIII of the Laboratory's Hazardous Waste Facility Permit, the RRES-R Project must provide 10-day written notice to the New Mexico Environment Department prior to the collection of any characterization samples from a SWMU.

8.0 REFERENCES

Bertino, P. M. Personnel Communication, RE: Installation of Utilities and Turbine at TA-3. 2002

LANL *RFI Work Plan for OU1114*, Environmental Restoration Project, (LA-UR-93 -1000) Los Alamos National Laboratory, Los Alamos, NM. 1993

LANL *RFI Report for 53 Potential Release Sites in TA-3, TA-59, TA-60, TA-61, Field Unit 1*, Environmental Restoration Project, (LA-UR-96-726) Los Alamos National Laboratory, Los Alamos, NM. 1996

LANL *Spade and Scoop Method for Collection of Soil Samples*. Environmental Restoration Project. (ER-SOP-6.09-R.1) Los Alamos National Laboratory, Los Alamos, NM. 2001

Ryti, R. T., Longmire, P. A., Broxton, D. E., Reneau, S. L., and McDonald, E. V. *Inorganic and Radionuclide Background Data For Soils, Canyon, Sediments, and Bandelier Tuff at Los Alamos National Laboratory.* LA-12913-MS, Los Alamos National Laboratory, Los Alamos, NM. 1998

APPENDIX A

DATA QUALIFIERS

DATA QUALIFIERS – ASSAIGAI ANALYTICAL LABORATORIES

Two data qualifiers of note for all elements analyzed in this report:

Tin was detected in the method blank.

Silicon results are estimated.

APPENDIX B

SUMMARY TAL METAL TABLES

Table 1
Analytical Results for Major Inorganic Chemicals Detected During Characterization at SWMU 03-012(b)-00 [a]

Location ID	Depth (ft)	Media	Sample Number	Aluminum	Calcium	Iron	Magnesium	Manganese	Potassium	Silicon	Sodium	Titanium	Uranium
100	0–0.5	Soil	49279	5580	NA	NA	NA	189	NA	207	NA	271	0.409
100	0.5-1	Soil	49293	4900	1610	9280	1030	206	753	224	171	322	0.496
101	0–0.5	Soil	49277	7390	NA	NA	NA	131	NA	175	NA	277	0.320
101	0.5-1	Soil	49291	4190	1100	9040	873	175	490	211	109	318	0.326
102	0–0.5	Soil	49278	3500	NA	NA	NA	156	NA	212	NA	195	0.440
102	0.5-1	Soil	49292	2360	743	8090	641	232	411	222	86.6	402	0.331
103	0–0.5	Soil	49276	3120	NA	NA	NA	228	NA	165	NA	394	0.340
103	0.5-1	Soil	49290	3030	751	9250	695	262	454	250	117	435	0.356
104	0–0.5	Soil	49280	1530	NA	NA	NA	140	NA	172	NA	142	0.330
104	0.5-1	Soil	49294	645	288	3340	155	165	139	183	68.5	95.8	0.388
105	0–0.5	Soil	49281	2740	NA	NA	NA	149	NA	203	NA	148	0.325
105	0.5-1	Soil	49295	487	270	3280	120	169	110	186	63.1	91.7	0.400
106	0–0.5	Soil	49283	9800	NA	NA	NA	212	NA	235	NA	281	0.682
106	0.5-1	Soil	49297	2520	696	7420	521	255	394	232	117	362	0.334
107	0–0.5	Soil	49282	6240	NA	NA	NA	200	NA	246	NA	299	0.424
107	0.5-1	Soil	49296	8070	1040	10600	1120	244	723	246	80.8	309	0.426
109	0.5-1	Soil	49298	4290	3080	7270	846	195	595	311	293	229	0.430
110	0.5-1	Soil	49299	8750	1200	11000	1200	230	775	216	85.4	286	0.385
111	0.5-1	Soil	49300	4000	822	5970	516	178	469	227	121	164	0.404
112	0.5-1	Soil	49301	3430	672	7530	619	237	500	233	458	267	0.392
Bckgrnd				**29200**	**6120**	**21500**	**4610**	**671**	**3460**	*	**915**	*	**1.82**
SALs				**74000**	*	**23000**	*	**7800**	*	*	*	*	**230**

[a] All concentrations are in mg/kg.

[b] ND indicates chemical was not detected in sample. NA indicates not analyzed.

[c] Asterisk indicates not applicable.

Table 1 (Continued)
Analytical Results for Major Inorganic Chemicals Detected During Characterization at SWMU 03-012(b)-00 [a]

Location ID	Depth (ft)	Media	Sample Number	Aluminum	Calcium	Iron	Magnesium	Manganese	Potassium	Silicon	Sodium	Titanium	Uranium
117	0–0.5	Soil	49270	6220	NA	NA	NA	203	NA	424	NA	212	1.24
117	0.5-1	Soil	49284	4760	NA	NA	NA	168	NA	231	NA	163	0.384
118	0–0.5	Soil	49271	6040	NA	NA	NA	167	NA	204	NA	152	0.441
118	0.5-1	Soil	49285	5330	NA	NA	NA	127	NA	265	NA	107	0.419
119	0–0.5	Soil	49273	6010	NA	NA	NA	178	NA	203	NA	162	0.451
119	0.5-1	Soil	49287	4720	760	6050	621	153	613	254	115	142	0.433
120	0–0.5	Soil	49272	6390	NA	NA	NA	128	NA	291	NA	119	0.698
120	0.5-1	Soil	49286	4910	NA	NA	NA	182	NA	240	NA	157	0.370
121	0–0.5	Soil	49275	6920	NA	NA	NA	180	NA	235	NA	261	0.424
121	0.5-1	Soil	49289	6600	2780	9270	1110	202	760	251	131	262	0.424
122	0–0.5	Soil	49274	7540	NA	NA	NA	170	NA	195	NA	203	0.431
122	0.5-1	Soil	49288	3740	796	6140	530	176	505	246	114	156	0.405
Bckgrnd				**29200**	**6120**	**21500**	**4610**	**671**	**3460**	*	**915**	*	**1.82**
SALs				**74000**	*	**23000**	*	**7800**	*	*	*	*	**230**

[a] All concentrations are in mg/kg.
[b] ND indicates chemical was not detected in sample. NA indicates not analyzed.
[c] Asterisk indicates not applicable.

Table 2
Analytical Results for Trace Inorganic Chemicals Detected During Characterization at SWMU 03-012(b)-00 [a]

Location ID	Depth (ft)	Media	Sample Number	Arsenic	Barium	Beryllium	Cadmium	Chromium (total)	Cobalt	Copper	Lead	Nickel	Selenium	Silver	Strontium	Vanadium	Zinc
100	0–0.5	Soil	49279	1.71	38.3	0.485	0.309	11.7	0.955	5.60	12.3	2.99	0.575	0.585	31.6	NA	NA
100	0.5-1	Soil	49293	1.72	41.1	0.505	0.278	**20.3**	1.45	7.04	14.0	4.03	0.550	0.639	32.7	7.82	**72.1**
101	0–0.5	Soil	49277	2.24	49.0	0.622	ND	5.00	1.29	3.73	7.23	3.76	0.603	ND	36.0	NA	NA
101	0.5-1	Soil	49291	1.06	35.7	0.532	ND	3.54	1.08	2.03	7.94	3.41	0.646	ND	23.7	6.35	35.2
102	0–0.5	Soil	49278	2.15	25.7	0.375	0.281	17.2	0.867	9.93	16.4	2.71	0.572	**1.03**	22.1	NA	NA
102	0.5-1	Soil	49292	1.49	33.2	0.406	ND	8.53	0.742	4.67	6.66	2.44	0.564	ND	20.2	5.21	**70.8**
103	0–0.5	Soil	49276	1.09	20.6	0.490	ND	3.91	0.844	2.15	7.52	2.45	0.529	ND	21.9	NA	NA
103	0.5-1	Soil	49290	0.914	22.1	0.553	ND	4.14	0.963	2.19	8.56	3.03	0.494	ND	22.6	5.68	38.0
104	0–0.5	Soil	49280	0.815	19.1	0.296	ND	4.39	0.393	4.07	3.43	1.26	0.427	ND	9.72	NA	NA
104	0.5-1	Soil	49294	0.461	9.66	0.338	ND	1.60	ND	1.95	2.31	0.530	0.368	ND	4.33	1.54	23.4
105	0–0.5	Soil	49281	1.30	34.7	0.349	ND	13.4	0.722	13.3	6.38	2.04	0.383	0.310	18.9	NA	NA
105	0.5-1	Soil	49295	ND	9.11	0.335	ND	0.69	ND	1.47	2.13	0.493	0.428	ND	3.49	1.09	23.6
106	0–0.5	Soil	49283	2.50	58.9	0.564	0.336	**39.6**	2.18	7.61	13.9	4.59	0.550	**1.41**	51.4	NA	NA
106	0.5-1	Soil	49297	0.912	22.3	0.399	ND	2.46	0.663	1.17	4.35	3.30	0.728	ND	14.3	3.89	29.9
107	0–0.5	Soil	49282	1.56	33.1	0.341	ND	4.38	2.70	1.91	8.02	2.93	0.493	ND	33.2	NA	NA
107	0.5-1	Soil	49296	1.53	56.9	0.518	ND	16.0	1.74	3.90	15.2	4.21	0.436	0.252	41.0	10.6	47.3
109	0.5-1	Soil	49298	1.26	34.9	0.420	ND	5.05	1.07	4.22	7.99	2.69	0.558	ND	34.8	6.31	37.0
110	0.5-1	Soil	49299	2.02	65.1	0.587	ND	14.0	1.95	4.00	15.9	4.57	0.486	ND	48.3	11.1	38.8
111	0.5-1	Soil	49300	1.06	25.2	0.414	ND	2.53	2.53	5.59	4.62	1.74	0.454	ND	26.1	4.21	25.5
112	0.5-1	Soil	49301	1.30	28.8	0.355	0.383	13.7	1.17	10.2	14.5	4.22	0.484	0.507	23.9	7.73	**55.2**
Bckgrnd				**8.17**	**295**	**1.83**	**0.40**	**19.3**	**8.64**	**14.70**	**22.30**	**15.40**	**1.52**	**1.0**	*	**39.6**	**48.8**
SALs				**0.39**	**5200**	**150**	**70**	**210**	**4500**	**2800**	**400**	**1500**	**380**	**380**	**3700**	**530**	**2300**

[a] All concentrations are in mg/kg.

[b] ND indicates chemical was not detected in sample. Antimony, boron and thallium were not detected in any soil sample. Mercury was detected in sample number 49270 (location 117, 0.0-0.5') at 0.09 ppm. Tin and molybdenum, although detected in all samples, was not considered in background /SAL evaluations and therefore not reported.

[c] NA indicates sample not analyzed for analyte.

Table 2 (Continued)
Analytical Results for Trace Inorganic Chemicals Detected During Characterization at SWMU 03-012(b)-00 [a]

Location ID	Depth (ft)	Media	Sample Number	Arsenic	Barium	Beryllium	Cadmium	Chromium (total)	Cobalt	Copper	Lead	Nickel	Selenium	Silver	Strontium	Vanadium	Zinc
117	0–0.5	Soil	49270	3.80	84.1	0.363	**0.606**	**149.0**	1.81	1.81	18.7	4.74	0.432	**5.68**	45.7	NA	NA
117	0.5-1	Soil	49284	0.966	30.7	0.431	ND	2.53	0.606	1.99	9.21	2.05	0.464	ND	31.1	NA	NA
118	0–0.5	Soil	49271	1.27	45.9	0.486	ND	3.06	0.763	2.33	8.80	2.39	0.496	ND	37.2	NA	NA
118	0.5-1	Soil	49285	1.53	34.3	0.443	ND	2.74	0.911	2.02	9.25	2.27	0.502	ND	34.0	NA	NA
119	0–0.5	Soil	49273	1.20	33.9	0.455	ND	2.83	0.808	2.22	10.1	2.35	0.662	ND	35.1	NA	NA
119	0.5-1	Soil	49287	0.910	35.2	0.381	ND	2.82	0.743	2.08	7.80	2.13	0.390	ND	33.6	4.72	25.7
120	0–0.5	Soil	49272	1.37	42.0	0.383	ND	**37.3**	1.03	**17.9**	14.6	3.17	0.496	**1.30**	35.1	NA	NA
120	0.5-1	Soil	49286	1.20	31.9	0.421	ND	2.49	0.865	1.94	8.50	2.18	0.388	ND	31.5	NA	NA
121	0–0.5	Soil	49275	1.49	46.7	0.492	ND	7.46	1.36	3.64	14.9	3.48	0.574	0.336	39.4	NA	NA
121	0.5-1	Soil	49289	1.48	50.8	0.488	ND	9.86	1.66	4.15	14.6	3.98	0.444	0.390	44.3	9.13	43.0
122	0–0.5	Soil	49274	1.22	49.8	0.604	ND	3.53	0.906	2.53	9.00	2.58	0.714	ND	45.5	NA	NA
122	0.5-1	Soil	49288	0.917	29.3	0.414	ND	2.34	0.568	1.88	6.32	1.94	0.372	ND	27.6	3.98	26.5
Bckgrnd				**8.17**	**295**	**1.83**	**0.40**	**19.3**	**8.64**	**14.70**	**22.30**	**15.40**	**1.52**	**1.0**	*	**39.6**	**48.8**
SALs				**0.39**	**5200**	**150**	**70**	**210**	**4500**	**2800**	**400**	**1500**	**380**	**380**	**3700**	**530**	**2300**

[a] All concentrations are in mg/kg.

[b] ND indicates chemical was not detected in sample. Antimony, boron and thallium were not detected in any soil sample. Mercury was detected in sample number 49270 (location 117, 0.0-0.5') at 0.09 ppm. Tin and molybdenum, although detected in all samples, was not considered in background /SAL evaluations and therefore not reported.

[c] NA indicates sample not analyzed for analyte.

APPENDIX C

ASSAGAI LABORATORY DATA SHEETS

LANL-DDP03-0271-014,RM100 E SI
attn: KEITH GREENE
P.O. BOX 1663, MS H865
LOS ALAMOS NM 87544

Explanation of codes

B	analyte detected in Method Blank
E	result is estimated
H	analyzed out of hold time
N	tentatively identified compound
S	subcontracted
1-9	see footnote

STANDARD

Assaigai Analytical Laboratories, Inc.

Certificate of Analysis

Client: LANL-DDP03-0271-014,RM100 E SI
Project: XURP 0460 3219 0000
Order: 0209364 LOS40 Receipt: 09-17-02

William P. Bava President of Assaigai Analytical Laboratories, Inc.

Sample: *RE3-02-49270* Collected: *09-12-02 0:00:00* By:
M S

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209364-01A		SW846 3050A/6020 ICP-MS					By:	CJ		
M021282	MT.2002.1109.15	7429-90-5	Aluminum	6220	mg / Kg	99	0.5		09-23-02	09-23-02
M021282	MT.2002.1109.14	7440-36-0	Antimony	ND	mg / Kg	10	0.05		09-23-02	09-23-02
M021282	MT.2002.1109.14	7440-38-2	Arsenic	3.80	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.14	7440-39-3	Barium	84.1	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.14	7440-41-7	Beryllium	0.363	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.14	7440-43-9	Cadmium	0.606	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.15	7440-47-3	Chromium	149	mg / Kg	99	0.05		09-23-02	09-23-02
M021282	MT.2002.1109.14	7440-48-4	Cobalt	1.81	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.14	7440-50-8	Copper	23.0	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.14	7439-92-1	Lead	18.7	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.15	7439-96-5	Manganese	203	mg / Kg	99	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.14	7439-98-7	Molybdenum	0.398	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.14	7440-02-0	Nickel	4.74	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.14	7782-49-2	Selenium	0.432	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.14	7440-21-3	Silicon	424	mg / Kg	10	1	E	09-23-02	09-23-02
M021282	MT.2002.1109.14	7440-22-4	Silver	5.68	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.14	7439-89-6	Strontium	45.7	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.14	7440-28-0	Thallium	ND	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.14	7440-31-5	Tin	3.30	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.15	7440-32-6	Titanium	212	mg / Kg	99	0.025		09-23-02	09-23-02
M0[illegible]	MT.2002.1109.14	7440-61-1	Uranium	1.24	mg / Kg	10	0.025		09-23-02	09-23-02
020[illegible]-01A		SW846 7471 CVAA					By:	JRE		
M021284	MT.2002.1103.12	7439-97-6	Mercury	0.09	mg / Kg	1	0.05		09-23-02	09-23-02

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Certificate of Analysis

Client: LANL-DDP03-0271-014,RM100 E SI
Project: XURP 0460 3219 0000
Order: 0209364 LOS40 Receipt: 09-17-02

Sample: *RE3-02-49271* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209364-02A		SW846 3050A/6020 ICP-MS					By	CJ		
M021282	MT.2002.1109.23	7429-90-5	Aluminum	6040	mg / Kg	99	0.5		09-23-02	09-23-02
M021282	MT.2002.1109.22	7440-36-0	Antimony	ND	mg / Kg	10	0.05		09-23-02	09-23-02
M021282	MT.2002.1109.22	7440-38-2	Arsenic	1.27	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.22	7440-39-3	Barium	45.9	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.22	7440-41-7	Beryllium	0.486	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.22	7440-43-9	Cadmium	ND	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.22	7440-47-3	Chromium	3.06	mg / Kg	10	0.05		09-23-02	09-23-02
M021282	MT.2002.1109.22	7440-48-4	Cobalt	0.763	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.22	7440-50-8	Copper	2.33	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.22	7439-92-1	Lead	8.80	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.23	7439-96-5	Manganese	167	mg / Kg	99	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.22	7439-98-7	Molybdenum	0.684	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.22	7440-02-0	Nickel	2.39	mg / Kg	10	0.025		09-23-02	09-23-02
M0[illegible]	MT.2002.1109.22	7782-49-2	Selenium	0.496	mg / Kg	10	0.025		09-23-02	09-23-02
M[illegible]	MT.2002.1109.22	7440-21-3	Silicon	204	mg / Kg	10	1	E	09-23-02	09-23-02
M021282	MT.2002.1109.22	7440-22-4	Silver	ND	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.22	7439-89-6	Strontium	37.2	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.22	7440-28-0	Thallium	ND	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.22	7440-31-5	Tin	0.961	mg / Kg	10	0.025	B	09-23-02	09-23-02
M021282	MT.2002.1109.23	7440-32-6	Titanium	152	mg / Kg	99	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.22	7440-61-1	Uranium	0.441	mg / Kg	10	0.025		09-23-02	09-23-02
0209364-02A		SW846 7471 CVAA					By	JRE		
M021284	MT.2002.1103.15	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-23-02

Sample: *RE3-02-49272* Collected: *09-12-02 0:00:00* By:
Matrix: *S* (2)

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209364-03A		SW846 3050A/6020 ICP-MS					By	CJ		
M021282	MT.2002.1109.25	7429-90-5	Aluminum	6390	mg / Kg	98	0.5		09-23-02	09-23-02
M021282	MT.2002.1109.24	7440-36-0	Antimony	ND	mg / Kg	10	0.05		09-23-02	09-23-02
M021282	MT.2002.1109.24	7440-38-2	Arsenic	1.37	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.24	7440-39-3	Barium	42.0	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.24	7440-41-7	Beryllium	0.383	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.24	7440-43-9	Cadmium	ND	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.24	7440-47-3	Chromium	37.3	mg / Kg	10	0.05		09-23-02	09-23-02
M021282	MT.2002.1109.24	7440-48-4	Cobalt	1.03	mg / Kg	10	0.025		09-23-02	09-23-02
M0[illegible]	MT.2002.1109.24	7440-50-8	Copper	17.9	mg / Kg	10	0.025		09-23-02	09-23-02
M[illegible]	MT.2002.1109.24	7439-92-1	Lead	14.6	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.25	7439-96-5	Manganese	128	mg / Kg	98	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.24	7439-98-7	Molybdenum	ND	mg / Kg	10	0.025		09-23-02	09-23-02

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Project: XURP 0460 3219 0000
Order: 0209364 LOS40 Receipt: 09-17-02

Sample: *RE3-02-49272* Collected: *09-12-02 0:00.00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209364-03A		SW846 3050A/6020 ICP-MS					By	CJ		
M021282	MT.2002.1109.24	7440-02-0	Nickel	3.17	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.24	7782-49-2	Selenium	0.496	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.24	7440-21-3	Silicon	291	mg / Kg	10	1	E	09-23-02	09-23-02
M021282	MT.2002.1109.24	7440-22-4	Silver	1.30	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.24	7439-89-6	Strontium	35.1	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.24	7440-28-0	Thallium	ND	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.24	7440-31-5	Tin	1.06	mg / Kg	10	0.025	B	09-23-02	09-23-02
M021282	MT.2002.1109.25	7440-32-6	Titanium	119	mg / Kg	98	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.24	7440-61-1	Uranium	0.698	mg / Kg	10	0.025		09-23-02	09-23-02
0209364-03A		SW846 7471 CVAA					By	JRE		
M021284	MT.2002.1103.16	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-23-02

Sample: *RE3-02-49273* Collected: *09-12-02 0:00.00* By:
M *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209364-04A		SW846 3050A/6020 ICP-MS					By:	CJ		
M021282	MT.2002.1109.27	7429-90-5	Aluminum	6010	mg / Kg	94	0.5		09-23-02	09-23-02
M021282	MT.2002.1109.26	7440-36-0	Antimony	ND	mg / Kg	9	0.05		09-23-02	09-23-02
M021282	MT.2002.1109.26	7440-38-2	Arsenic	1.20	mg / Kg	9	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.26	7440-39-3	Barium	33.9	mg / Kg	9	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.26	7440-41-7	Beryllium	0.455	mg / Kg	9	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.26	7440-43-9	Cadmium	ND	mg / Kg	9	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.26	7440-47-3	Chromium	2.83	mg / Kg	9	0.05		09-23-02	09-23-02
M021282	MT.2002.1109.26	7440-48-4	Cobalt	0.808	mg / Kg	9	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.26	7440-50-8	Copper	2.22	mg / Kg	9	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.26	7439-92-1	Lead	10.1	mg / Kg	9	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.27	7439-96-5	Manganese	178	mg / Kg	94	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.26	7439-98-7	Molybdenum	0.624	mg / Kg	9	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.26	7440-02-0	Nickel	2.35	mg / Kg	9	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.26	7782-49-2	Selenium	0.662	mg / Kg	9	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.26	7440-21-3	Silicon	203	mg / Kg	9	1	E	09-23-02	09-23-02
M021282	MT.2002.1109.26	7440-22-4	Silver	ND	mg / Kg	9	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.26	7439-89-6	Strontium	35.1	mg / Kg	9	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.26	7440-28-0	Thallium	ND	mg / Kg	9	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.26	7440-31-5	Tin	1.03	mg / Kg	9	0.025	B	09-23-02	09-23-02
M021282	MT.2002.1109.27	7440-32-6	Titanium	162	mg / Kg	94	0.025		09-23-02	09-23-02
M021[illegible]	MT.2002.1109.26	7440-61-1	Uranium	0.451	mg / Kg	9	0.025		09-23-02	09-23-02
020[illegible]-04A		SW846 7471 CVAA					By	JRE		
M021284	MT.2002.1103.17	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-23-02

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Certificate of Analysis

Cli: LANL-DDP03-0271-014,RM100 E SI
Project: XURP 0460 3219 0000
Order: 0209364 LOS40 Receipt: 09-17-02

Sample: *RE3-02-49274* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209364-05A		SW846 3050A/6020 ICP-MS					By	CJ		
M021282	MT.2002.1109.29	7429-90-5	Aluminum	7540	mg / Kg	96	0.5		09-23-02	09-23-02
M021282	MT.2002.1109.28	7440-36-0	Antimony	ND	mg / Kg	10	0.05		09-23-02	09-23-02
M021282	MT.2002.1109.28	7440-38-2	Arsenic	1.22	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.28	7440-39-3	Barium	49.6	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.28	7440-41-7	Beryllium	0.604	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.28	7440-43-9	Cadmium	ND	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.28	7440-47-3	Chromium	3.53	mg / Kg	10	0.05		09-23-02	09-23-02
M021282	MT.2002.1109.28	7440-48-4	Cobalt	0.905	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.28	7440-50-8	Copper	2.53	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.28	7439-92-1	Lead	9.00	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.29	7439-96-5	Manganese	170	mg / Kg	96	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.28	7439-98-7	Molybdenum	0.896	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.28	7440-02-0	Nickel	2.58	mg / Kg	10	0.025		09-23-02	09-23-02
M02[illegible]	MT.2002.1109.28	7782-49-2	Selenium	0.714	mg / Kg	10	0.025		09-23-02	09-23-02
M[illegible]	MT.2002.1109.28	7440-21-3	Silicon	195	mg / Kg	10	1	E	09-23-02	09-23-02
M021282	MT.2002.1109.28	7440-22-4	Silver	ND	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.28	7439-89-6	Strontium	45.5	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.28	7440-28-0	Thallium	ND	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.28	7440-31-5	Tin	1.09	mg / Kg	10	0.025	B	09-23-02	09-23-02
M021282	MT.2002.1109.29	7440-32-6	Titanium	203	mg / Kg	96	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.28	7440-61-1	Uranium	0.431	mg / Kg	10	0.025		09-23-02	09-23-02
0209364-05A		SW846 7471 CVAA					By	JRE		
M021284	MT.2002.1103.18	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-23-02

Sample: *RE3-02-49275* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209364-06A		SW846 3050A/6020 ICP-MS					By	CJ		
M021282	MT.2002.1109.33	7429-90-5	Aluminum	6920	mg / Kg	97	0.5		09-23-02	09-23-02
M021282	MT.2002.1109.30	7440-36-0	Antimony	ND	mg / Kg	10	0.05		09-23-02	09-23-02
M021282	MT.2002.1109.30	7440-38-2	Arsenic	1.49	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.30	7440-39-3	Barium	46.7	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.30	7440-41-7	Beryllium	0.492	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.30	7440-43-9	Cadmium	ND	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.30	7440-47-3	Chromium	7.46	mg / Kg	10	0.05		09-23-02	09-23-02
M021282	MT.2002.1109.30	7440-48-4	Cobalt	1.36	mg / Kg	10	0.025		09-23-02	09-23-02
M02[illegible]	MT.2002.1109.30	7440-50-8	Copper	3.64	mg / Kg	10	0.025		09-23-02	09-23-02
M[illegible]	MT.2002.1109.30	7439-92-1	Lead	14.9	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.33	7439-96-5	Manganese	180	mg / Kg	97	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.30	7439-98-7	Molybdenum	0.346	mg / Kg	10	0.025		09-23-02	09-23-02

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Certificate of Analysis

Cli: LANL-DDP03-0271-014,RM100 E SI
Project: XURP 0460 3219 0000
Order: 0209364 LOS40 Receipt: 09-17-02

Sample: *RE3-02-49275* Collected: *09-12-02 0:00.00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209364-06A		SW846 3050A/6020 ICP-MS					By	CJ		
M021282	MT.2002.1109.30	7440-02-0	Nickel	3.48	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.30	7782-49-2	Selenium	0.574	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.30	7440-21-3	Silicon	235	mg / Kg	10	1	E	09-23-02	09-23-02
M021282	MT.2002.1109.30	7440-22-4	Silver	0.336	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.30	7439-89-6	Strontium	39.4	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.30	7440-28-0	Thallium	ND	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.30	7440-31-5	Tin	0.755	mg / Kg	10	0.025	B	09-23-02	09-23-02
M021282	MT.2002.1109.33	7440-32-6	Titanium	261	mg / Kg	97	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.30	7440-61-1	Uranium	0.424	mg / Kg	10	0.025		09-23-02	09-23-02
0209364-06A		SW846 7471 CVAA					By	JRE		
M021284	MT.2002.1103.21	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-23-02

Sample: *RE3-02-49276* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209364-07A		SW846 3050A/6020 ICP-MS					By	CJ		
M021282	MT.2002.1109.34	7429-90-5	Aluminum	3120	mg / Kg	10	0.5		09-23-02	09-23-02
M021282	MT.2002.1109.34	7440-36-0	Antimony	ND	mg / Kg	10	0.05		09-23-02	09-23-02
M021282	MT.2002.1109.34	7440-38-2	Arsenic	1.09	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.34	7440-39-3	Barium	20.6	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.34	7440-41-7	Beryllium	0.490	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.34	7440-43-9	Cadmium	ND	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.34	7440-47-3	Chromium	3.91	mg / Kg	10	0.05		09-23-02	09-23-02
M021282	MT.2002.1109.34	7440-48-4	Cobalt	0.844	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.34	7440-50-8	Copper	2.15	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.34	7439-92-1	Lead	7.52	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.35	7439-96-5	Manganese	228	mg / Kg	100	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.34	7439-98-7	Molybdenum	1.28	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.34	7440-02-0	Nickel	2.45	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.34	7782-49-2	Selenium	0.529	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.34	7440-21-3	Silicon	165	mg / Kg	10	1	E	09-23-02	09-23-02
M021282	MT.2002.1109.34	7440-22-4	Silver	ND	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.34	7439-89-6	Strontium	21.9	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.34	7440-28-0	Thallium	ND	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.34	7440-31-5	Tin	1.06	mg / Kg	10	0.025	B	09-23-02	09-23-02
M021282	MT.2002.1109.35	7440-32-6	Titanium	394	mg / Kg	100	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.34	7440-61-1	Uranium	0.340	mg / Kg	10	0.025		09-23-02	09-23-02
0209364-07A		SW846 7471 CVAA					By:	JRE		
M021284	MT.2002.1103.22	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-23-02

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Certificate of Analysis

Cli: LANL-DDP03-0271-014,RM100 E SI
Project: XURP 0460 3219 0000
Order: 0209364 LOS40 Receipt: 09-17-02

Sample: *RE3-02-49277* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209364-08A		SW846 3050A/6020 ICP-MS					By:	CJ		
M021282	MT.2002.1109.37	7429-90-5	Aluminum	7390	mg / Kg	94	0.5		09-23-02	[illegible]
M021282	MT.2002.1109.36	7440-36-0	Antimony	ND	mg / Kg	9	0.05		[illegible]	[illegible]
M021282	MT.2002.1109.36	7440-38-2	Arsenic	2.24	mg / Kg	9	0.025		[illegible]	[illegible]
M021282	MT.2002.1109.36	7440-39-3	Barium	49.0	mg / Kg	9	0.025		09-23-02	[illegible]
M021282	MT.2002.1109.36	7440-41-7	Beryllium	0.622	mg / Kg	9	0.025		09-23-02	[illegible]
M021282	MT.2002.1109.36	7440-43-9	Cadmium	ND	mg / Kg	9	0.025		[illegible]	[illegible]
M021282	MT.2002.1109.36	7440-47-3	Chromium	5.00	mg / Kg	9	0.05		09-23-02	[illegible]
M021282	MT.2002.1109.36	7440-48-4	Cobalt	1.29	mg / Kg	9	0.025		09-23-02	[illegible]
M021282	MT.2002.1109.36	7440-50-8	Copper	3.73	mg / Kg	9	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.36	7439-92-1	Lead	7.23	mg / Kg	9	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.37	7439-96-5	Manganese	131	mg / Kg	94	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.36	7439-98-7	Molybdenum	1.26	mg / Kg	9	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.36	7440-02-0	Nickel	3.76	mg / Kg	9	0.025		09-23-02	[illegible]
M[illegible]	MT.2002.1109.36	7782-49-2	Selenium	0.603	mg / Kg	9	0.025		[illegible]	[illegible]
M[illegible]	MT.2002.1109.36	7440-21-3	Silicon	175	mg / Kg	9	1	E	09-23-02	[illegible]
M021282	MT.2002.1109.36	7440-22-4	Silver	ND	mg / Kg	9	0.025		09-23-02	[illegible]
M021282	MT.2002.1109.36	7439-89-6	Strontium	36.0	mg / Kg	9	0.025		09-23-02	[illegible]
M021282	MT.2002.1109.36	7440-28-0	Thallium	ND	mg / Kg	9	0.025		09-23-02	[illegible]
M021282	MT.2002.1109.36	7440-31-5	Tin	1.06	mg / Kg	9	0.025	B	09-23-02	[illegible]
M021282	MT.2002.1109.37	7440-32-6	Titanium	277	mg / Kg	94	0.025		09-23-02	[illegible]
M021282	MT.2002.1109.36	7440-61-1	Uranium	0.320	mg / Kg	9	0.025		09-23-02	09-23-02
0209364-08A		SW846 7471 CVAA					By:	JRE		
M021284	MT.2002.1103.23	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-23-02

Sample: *RE3-02-49278* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209364-09A		SW846 3050A/6020 ICP-MS					By	CJ		
M021282	MT.2002.1109.38	7429-90-5	Aluminum	3500	mg / Kg	9	0.5		[illegible]	[illegible]
M021282	MT.2002.1109.38	7440-36-0	Antimony	ND	mg / Kg	9	0.05		[illegible]	[illegible]
M021282	MT.2002.1109.38	7440-38-2	Arsenic	2.15	mg / Kg	9	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.38	7440-39-3	Barium	25.7	mg / Kg	9	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.38	7440-41-7	Beryllium	0.375	mg / Kg	9	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.38	7440-43-9	Cadmium	0.281	mg / Kg	9	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.38	7440-47-3	Chromium	17.2	mg / Kg	9	0.05		09-23-02	09-23-02
M021282	MT.2002.1109.38	7440-48-4	Cobalt	0.867	mg / Kg	9	0.025		09-23-02	09-23-02
M02[illegible]	MT.2002.1109.38	7440-50-8	Copper	9.93	mg / Kg	9	0.025		09-23-02	09-23-02
M[illegible]	MT.2002.1109.38	7439-92-1	Lead	16.4	mg / Kg	9	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.39	7439-96-5	Manganese	156	mg / Kg	94	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.38	7439-98-7	Molybdenum	1.34	mg / Kg	9	0.025		09-23-02	09-23-02

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Certificate of Analysis

Cli: LANL-DDP03-0271-014,RM100 E SI
Project: XURP 0460 3219 0000
Order: 0209364 LOS40 Receipt 09-17-02

Sample: *RE3-02-49278* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209364-09A		SW846 3050A/6020 ICP-MS					By	CJ		
M021282	MT.2002.1109.38	7440-02-0	Nickel	2.71	mg / Kg	9	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.38	7782-49-2	Selenium	0.572	mg / Kg	9	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.38	7440-21-3	Silicon	212	mg / Kg	9	1	E	09-23-02	09-23-02
M021282	MT.2002.1109.38	7440-22-4	Silver	1.03	mg / Kg	9	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.38	7439-89-6	Strontium	22.1	mg / Kg	9	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.38	7440-28-0	Thallium	ND	mg / Kg	9	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.38	7440-31-5	Tin	0.975	mg / Kg	9	0.025	B	09-23-02	09-23-02
M021282	MT.2002.1109.39	7440-32-6	Titanium	195	mg / Kg	94	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.38	7440-61-1	Uranium	0.440	mg / Kg	9	0.025		09-23-02	09-23-02
0209364-09A		SW846 7471 CVAA					By	JRE		
M021284	MT.2002.1103.24	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-23-02

Sample: *RE3-02-49279* Collected: *09-12-02 0:00:00* By:
Mi *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209364-10A		SW846 3050A/6020 ICP-MS					By:	CJ		
M021282	MT.2002.1109.41	7429-90-5	Aluminum	5580	mg / Kg	95	0.5		09-23-02	09-23-02
M021282	MT.2002.1109.40	7440-36-0	Antimony	ND	mg / Kg	10	0.05		09-23-02	09-23-02
M021282	MT.2002.1109.40	7440-38-2	Arsenic	1.71	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.40	7440-39-3	Barium	36.3	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.40	7440-41-7	Beryllium	0.485	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.40	7440-43-9	Cadmium	0.309	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.40	7440-47-3	Chromium	11.7	mg / Kg	10	0.05		09-23-02	09-23-02
M021282	MT.2002.1109.40	7440-48-4	Cobalt	0.955	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.40	7440-50-8	Copper	5.60	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.40	7439-92-1	Lead	12.3	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.41	7439-96-5	Manganese	189	mg / Kg	95	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.40	7439-98-7	Molybdenum	1.12	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.40	7440-02-0	Nickel	2.99	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.40	7782-49-2	Selenium	0.575	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.40	7440-21-3	Silicon	207	mg / Kg	10	1	E	09-23-02	09-23-02
M021282	MT.2002.1109.40	7440-22-4	Silver	0.585	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.40	7439-89-6	Strontium	31.6	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.40	7440-28-0	Thallium	ND	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.40	7440-31-5	Tin	0.941	mg / Kg	10	0.025	B	09-23-02	09-23-02
M021282	MT.2002.1109.41	7440-32-6	Titanium	271	mg / Kg	95	0.025		09-23-02	09-23-02
M021282	MT.2002.1109.40	7440-61-1	Uranium	0.409	mg / Kg	10	0.025		09-23-02	09-23-02
0209364-10A		SW846 7471 CVAA					By	JRE		
M021284	MT.2002.1103.25	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-23-02

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Certificate of Analysis

Clk LANL-DDP03-0271-014,RM100 E SI
Project XURP 0460 3219 0000
Order 0209364 LOS40 Receipt: 09-17-02

Sample *RE3-02-49280* Collected: *09-12-02 0:00:00* By:
Matrix *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209364-11A		SW846 3050A/6020 ICP-MS					By:	CJ		
M021282	MT 2002.1109.42	7429-90-5	Aluminum	1530	mg / Kg	10	0.5		09-23-02	09-23-02
M021282	MT 2002.1109.42	7440-36-0	Antimony	ND	mg / Kg	10	0.05		09-23-02	09-23-02
M021282	MT 2002.1109.42	7440-38-2	Arsenic	0.815	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT 2002.1109.42	7440-39-3	Barium	19.1	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT 2002.1109.42	7440-41-7	Beryllium	0.296	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT 2002.1109.42	7440-43-9	Cadmium	ND	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT 2002.1109.42	7440-47-3	Chromium	4.39	mg / Kg	10	0.05		09-23-02	09-23-02
M021282	MT 2002.1109.42	7440-48-4	Cobalt	0.393	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT 2002.1109.42	7440-50-8	Copper	4.07	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT 2002.1109.42	7439-92-1	Lead	3.43	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT 2002.1109.45	7439-96-5	Manganese	140	mg / Kg	97	0.025		09-23-02	09-24-02
M021282	MT 2002.1109.42	7439-98-7	Molybdenum	ND	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT 2002.1109.42	7440-02-0	Nickel	1.26	mg / Kg	10	0.025		09-23-02	09-23-02
M02[illegible]	MT 2002.1109.42	7782-49-2	Selenium	0.427	mg / Kg	10	0.025		09-23-02	09-23-02
M[illegible]	MT 2002.1109.42	7440-21-3	Silicon	172	mg / Kg	10	1	E	09-23-02	09-23-02
M021282	MT 2002.1109.42	7440-22-4	Silver	ND	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT 2002.1109.42	7439-89-6	Strontium	9.72	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT 2002.1109.42	7440-28-0	Thallium	ND	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT 2002.1109.42	7440-31-5	Tin	ND	mg / Kg	10	0.025		09-23-02	09-23-02
M021282	MT 2002.1109.45	7440-32-6	Titanium	142	mg / Kg	97	0.025		09-23-02	09-24-02
M021282	MT 2002.1109.42	7440-61-1	Uranium	0.330	mg / Kg	10	0.025		09-23-02	09-23-02
0209364-11A		SW846 7471 CVAA					By:	JRE		
M021264	MT 2002.1103.26	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-23-02

Sample: *RE3-02-49281* Collected: *09-12-02 0:00:00* By:
Matrix *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209364-12A		SW846 3050A/6020 ICP-MS					By:	CJ		
M021282	MT 2002.1109.46	7429-90-5	Aluminum	2740	mg / Kg	10	0.5		09-23-02	09-24-02
M021282	MT 2002.1109.46	7440-36-0	Antimony	ND	mg / Kg	10	0.05		09-23-02	09-24-02
M021282	MT 2002.1109.46	7440-38-2	Arsenic	1.30	mg / Kg	10	0.025		09-23-02	09-24-02
M021282	MT 2002.1109.46	7440-39-3	Barium	34.7	mg / Kg	10	0.025		09-23-02	09-24-02
M021282	MT 2002.1109.46	7440-41-7	Beryllium	0.349	mg / Kg	10	0.025		09-23-02	09-24-02
M021282	MT 2002.1109.46	7440-43-9	Cadmium	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021282	MT 2002.1109.46	7440-47-3	Chromium	13.4	mg / Kg	10	0.05		09-23-02	09-24-02
M021282	MT 2002.1109.46	7440-48-4	Cobalt	0.722	mg / Kg	10	0.025		09-23-02	09-24-02
M021282	MT 2002.1109.46	7440-50-8	Copper	13.3	mg / Kg	10	0.025		09-23-02	09-24-02
M021282	MT 2002.1109.46	7439-92-1	Lead	8.38	mg / Kg	10	0.025		09-23-02	09-24-02
M021282	MT 2002.1109.47	7439-96-5	Manganese	149	mg / Kg	97	0.025		09-23-02	09-24-02
M021282	MT 2002.1109.46	7439-98-7	Molybdenum	0.669	mg / Kg	10	0.025		09-23-02	09-24-02

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Certificate of Analysis

Cl: LANL-DDP03-0271-014,RM100 E SI
Project: XURP 0460 3219 0000
Order: 0209364 LOS40 Receipt: 09-17-02

Sample: *RE3-02-49281* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209364-12A		SW846 3050A/6020 ICP-MS					By:	CJ		
M021282	MT.2002.1109.46	7440-02-0	Nickel	2.04	mg / Kg	10	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.46	7782-49-2	Selenium	0.333	mg / Kg	10	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.46	7440-21-3	Silicon	203	mg / Kg	10	1	E	09-23-02	09-24-02
M021282	MT.2002.1109.46	7440-22-4	Silver	0.310	mg / Kg	10	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.46	7439-89-6	Strontium	18.9	mg / Kg	10	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.46	7440-28-0	Thallium	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.46	7440-31-5	Tin	0.373	mg / Kg	10	0.025	B	09-23-02	09-24-02
M021282	MT.2002.1109.47	7440-32-6	Titanium	148	mg / Kg	97	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.46	7440-61-1	Uranium	0.325	mg / Kg	10	0.025		09-23-02	09-24-02
0209364-12A		SW846 7471 CVAA					By:	JRE		
M021284	MT.2002.1103.27	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-23-02

Sample: *RE3-02-49282* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209364-13A		SW846 3050A/6020 ICP-MS					By:	CJ		
M021282	MT.2002.1109.49	7429-90-5	Aluminum	6240	mg / Kg	92	0.5		09-23-02	09-24-02
M021282	MT.2002.1109.48	7440-36-0	Antimony	ND	mg / Kg	9	0.05		09-23-02	09-24-02
M021282	MT.2002.1109.48	7440-38-2	Arsenic	1.56	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.48	7440-39-3	Barium	33.1	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.48	7440-41-7	Beryllium	0.341	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.48	7440-43-9	Cadmium	ND	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.48	7440-47-3	Chromium	4.38	mg / Kg	9	0.05		09-23-02	09-24-02
M021282	MT.2002.1109.48	7440-48-4	Cobalt	2.70	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.48	7440-50-8	Copper	1.91	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.48	7439-92-1	Lead	8.02	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.49	7439-96-5	Manganese	200	mg / Kg	92	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.48	7439-98-7	Molybdenum	0.378	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.48	7440-02-0	Nickel	2.93	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.48	7782-49-2	Selenium	0.493	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.48	7440-21-3	Silicon	248	mg / Kg	9	1	E	09-23-02	09-24-02
M021282	MT.2002.1109.48	7440-22-4	Silver	ND	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.48	7439-89-6	Strontium	30.2	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.48	7440-28-0	Thallium	ND	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.48	7440-31-5	Tin	0.834	mg / Kg	9	0.025	B	09-23-02	09-24-02
M021282	MT.2002.1109.49	7440-32-6	Titanium	299	mg / Kg	92	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.48	7440-61-1	Uranium	0.424	mg / Kg	9	0.025		09-23-02	09-24-02
0209364-13A		SW846 7471 CVAA					By:	JRE		
M021284	MT.2002.1103.28	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-23-02

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Certificate of Analysis

Cli: LANL-DDP03-0271-014,RM100 E SI
Project: XURP 0460 3219 0000
Order: 0209364 LQS40 Receipt: 09-17-02

Sample: *RE3-02-49283* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209364-14A		SW846 3050A/6020 ICP-MS					By:	CJ		
M021282	MT 2002.1109.51	7429-90-5	Aluminum	9800	mg / Kg	95	0.5		09-23-02	09-24-02
M021282	MT 2002.1109.50	7440-36-0	Antimony	ND	mg / Kg	9	0.05		09-23-02	09-24-02
M021282	MT 2002.1109.50	7440-38-2	Arsenic	2.50	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.50	7440-39-3	Barium	58.9	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.50	7440-41-7	Beryllium	0.564	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.50	7440-43-9	Cadmium	0.336	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.50	7440-47-3	Chromium	39.6	mg / Kg	9	0.05		09-23-02	09-24-02
M021282	MT.2002.1109.50	7440-48-4	Cobalt	2.18	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.50	7440-50-8	Copper	7.61	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.50	7439-92-1	Lead	13.9	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.51	7439-96-5	Manganese	212	mg / Kg	95	0.025		09-23-02	09-24-02
M021282	MT 2002.1109.50	7439-98-7	Molybdenum	0.621	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.50	7440-02-0	Nickel	4.59	mg / Kg	9	0.025		09-23-02	09-24-02
M02[illegible]	MT.2002.1109.50	7782-49-2	Selenium	0.550	mg / Kg	9	0.025		09-23-02	09-24-02
M[illegible]	MT.2002.1109.50	7440-21-3	Silicon	235	mg / Kg	9	1	E	09-23-02	09-24-02
M021282	MT.2002.1109.50	7440-22-4	Silver	1.41	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.50	7439-89-6	Strontium	51.4	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT 2002.1109.50	7440-28-0	Thallium	ND	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT 2002.1109.50	7440-31-5	Tin	1.71	mg / Kg	9	0.025	B	09-23-02	09-24-02
M021282	MT 2002.1109.51	7440-32-6	Titanium	281	mg / Kg	95	0.025		09-23-02	09-24-02
M021282	MT 2002.1109.50	7440-61-1	Uranium	0.682	mg / Kg	9	0.025		09-23-02	09-24-02
0209364-14A		SW846 7471 CVAA					By:	JRE		
M021284	MT.2002 1103 29	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-23-02

Sample: *RE3-02-49284* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209364-15A		SW846 3050A/6020 ICP-MS					By	CJ		
M021282	MT.2002 1109 52	7429-90-5	Aluminum	4760	mg / Kg	9	0.5		09-23-02	09-24-02
M021282	MT 2002 1109 52	7440-36-0	Antimony	ND	mg / Kg	9	0.05		09-23-02	09-24-02
M021282	MT 2002.1109.52	7440-38-2	Arsenic	0.966	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109 52	7440-39-3	Barium	30.7	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT 2002.1109 52	7440-41-7	Beryllium	0.431	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT 2002.1109.52	7440-43-9	Cadmium	ND	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT 2002.1109 52	7440-47-3	Chromium	2.53	mg / Kg	9	0.05		09-23-02	09-24-02
M021282	MT.2002.1109 52	7440-48-4	Cobalt	0.606	mg / Kg	9	0.025		09-23-02	[illegible]
M[illegible]	MT 2002.1109.52	7440-50-8	Copper	1.99	mg / Kg	9	0.025		09-23-02	09-24-02
M[illegible]	MT 2002 1109.52	7439-92-1	Lead	9.21	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT 2002 1109 53	7439-96-5	Manganese	168	mg / Kg	95	0.025		[illegible]	[illegible]
M021282	MT 2002.1109 52	7439-98-7	Molybdenum	0.772	mg / Kg	9	0.025		[illegible]	[illegible]

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Certificate of Analysis

Cli. LANL-DDP03-0271-014,RM100 E SI
Project: XURP 0460 3219 0000
Order: 0209364 LOS40 Receipt: 09-17-02

Sample: *RE3-02-49284* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209364-15A		SW846 3050A/6020 ICP-MS					By:	CJ		
M021282	MT.2002.1109.52	7440-02-0	Nickel	2.05	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.52	7782-49-2	Selenium	0.464	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.52	7440-21-3	Silicon	231	mg / Kg	9	1	F	09-23-02	09-24-02
M021282	MT.2002.1109.52	7440-22-4	Silver	ND	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.52	7439-89-6	Strontium	31.1	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.52	7440-28-0	Thallium	ND	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.52	7440-31-5	Tin	0.881	mg / Kg	9	0.025	B	09-23-02	09-24-02
M021282	MT.2002.1109.53	7440-32-6	Titanium	163	mg / Kg	95	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.52	7440-61-1	Uranium	0.384	mg / Kg	9	0.025		09-23-02	09-24-02
0209364-15A		SW846 7471 CVAA					By:	JRE		
M021284	MT.2002.1103.30	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-23-02

Sample: *RE3-02-49285* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209364-16A		SW846 3050A/6020 ICP-MS					By:	CJ		
M021282	MT.2002.1109.59	7429-90-5	Aluminum	5330	mg / Kg	10	0.5		09-23-02	09-24-02
M021282	MT.2002.1109.59	7440-36-0	Antimony	ND	mg / Kg	10	0.05		09-23-02	09-24-02
M021282	MT.2002.1109.59	7440-38-2	Arsenic	1.53	mg / Kg	10	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.59	7440-39-3	Barium	34.3	mg / Kg	10	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.59	7440-41-7	Beryllium	0.443	mg / Kg	10	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.59	7440-43-9	Cadmium	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.59	7440-47-3	Chromium	2.74	mg / Kg	10	0.05		09-23-02	09-24-02
M021282	MT.2002.1109.59	7440-48-4	Cobalt	0.911	mg / Kg	10	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.59	7440-50-8	Copper	2.02	mg / Kg	10	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.59	7439-92-1	Lead	9.25	mg / Kg	10	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.60	7439-96-5	Manganese	127	mg / Kg	97	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.59	7439-98-7	Molybdenum	1.39	mg / Kg	10	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.59	7440-02-0	Nickel	2.27	mg / Kg	10	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.59	7782-49-2	Selenium	0.502	mg / Kg	10	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.59	7440-21-3	Silicon	265	mg / Kg	10	1	E	09-23-02	09-24-02
M021282	MT.2002.1109.59	7440-22-4	Silver	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.59	7439-89-6	Strontium	34.0	mg / Kg	10	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.59	7440-28-0	Thallium	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.59	7440-31-5	Tin	1.05	mg / Kg	10	0.025	B	09-23-02	09-24-02
M021282	MT.2002.1109.60	7440-32-6	Titanium	107	mg / Kg	97	0.025		[illegible]	[illegible]
M021282	MT.2002.1109.59	7440-61-1	Uranium	0.419	mg / Kg	10	0.025		[illegible]	[illegible]
02[illegible]-16A		SW846 7471 CVAA					By	JRE		
M021284	MT.2002.1103.33	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-23-02

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Certificate of Analysis

Cli: **LANL-DDP03-0271-014,RM100 E SI**
Project: **XURP 0460 3219 0000**
Order: **0209364 LOS40** Receipt: **09-17-02**

Sample: ***RE3-02-49286*** Collected: *09-12-02 0:00:00* By:
Matrix: ***S***

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209364-17A		**SW846 3050A/6020 ICP-MS**					By:	CJ		
M021282	MT.2002.1109.61	7429-90-5	Aluminum	4910	mg / Kg	9	0.5		09-23-02	09-24-02
M021282	MT.2002.1109.61	7440-36-0	Antimony	ND	mg / Kg	9	0.05		09-23-02	09-24-02
M021282	MT.2002.1109.61	7440-38-2	Arsenic	1.20	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.61	7440-39-3	Barium	31.9	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.61	7440-41-7	Beryllium	0.421	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.61	7440-43-9	Cadmium	ND	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.61	7440-47-3	Chromium	2.49	mg / Kg	9	0.05		09-23-02	09-24-02
M021282	MT.2002.1109.61	7440-48-4	Cobalt	0.865	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.61	7440-50-8	Copper	1.94	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.61	7439-92-1	Lead	8.50	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.62	7439-96-5	Manganese	182	mg / Kg	94	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.61	7439-98-7	Molybdenum	0.716	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.61	7440-02-0	Nickel	2.18	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.61	7782-49-2	Selenium	0.338	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.61	7440-21-3	Silicon	240	mg / Kg	9	1		09-23-02	09-24-02
M021282	MT.2002.1109.61	7440-22-4	Silver	ND	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.61	7439-89-6	Strontium	31.5	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.61	7440-28-0	Thallium	ND	mg / Kg	9	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.61	7440-31-5	Tin	0.973	mg / Kg	9	0.025	B	09-23-02	09-24-02
M021282	MT.2002.1109.62	7440-32-6	Titanium	157	mg / Kg	94	0.025		09-23-02	09-24-02
M021282	MT.2002.1109.61	7440-61-1	Uranium	0.370	mg / Kg	9	0.025		09-23-02	09-24-02
0209364-17A		**SW846 7471 CVAA**					By:	JRE		
M021284	MT.2002.1103.34	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-23-02

Unless otherwise noted, all samples were received in acceptable condition and all sampling was performed by client or client representative. Sample result of ND indicates Not Detected, ie result is less than the sample specific Detection Limit. Sample specific Detection Limit is determined by multiplying the sample Dilution Factor by the listed Reporting Detection Limit. All results relate only to the items tested. Any miscellaneous workorder information or footnotes will appear below.

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LANL-DDP03-0271-014,RM100 E SI
attn KEITH GREENE
P.O. BOX 1663, MS H865
LOS ALAMOS NM 87544

Explanation of codes

B	analyte detected in Method Blank
E	result is estimated
H	analyzed out of hold time
N	tentatively identified compound
S	subcontracted
1-9	see footnote

STANDARD

Assaigai Analytical Laboratories, Inc.

Certificate of Analysis

Client: LANL-DDP03-0271-014,RM100 E SI
Project: XURP 0460 3219 0000
Order: 0209373 LOS40 Receipt: 09-17-02

William P. Biava President of Assaigai Analytical Laboratories, Inc.

Sample: *RE3-02-49287* Collected: *09-12-02 0:00:00* By:
Mtx: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209373-01A		SW846 3050A/6020 ICP-MS					By:	JWB		
MC21283	MT.2002.1110.15	7429-90-5	Aluminum	4720	mg / Kg	10	0.5		09-23-02	09-24-02
MC21283	MT.2002.1110.15	7440-36-0	Antimony	ND	mg / Kg	10	0.05	1	09-23-02	09-24-02
MC21283	MT.2002.1110.15	7440-38-2	Arsenic	0.910	mg / Kg	10	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.15	7440-39-3	Barium	35.2	mg / Kg	10	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.15	7440-41-7	Beryllium	0.381	mg / Kg	10	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.15	7440-42-8	Boron	ND	mg / Kg	10	0.15		09-23-02	09-24-02
MC21283	MT.2002.1110.15	7440-43-9	Cadmium	ND	mg / Kg	10	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.15	7440-70-2	Calcium	760	mg / Kg	10	0.5		09-23-02	09-24-02
MC21283	MT.2002.1110.15	7440-47-3	Chromium	2.82	mg / Kg	10	0.05		09-23-02	09-24-02
MC21283	MT.2002.1110.15	7440-48-4	Cobalt	0.743	mg / Kg	10	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.15	7440-50-8	Copper	2.08	mg / Kg	10	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.14	7439-89-6	Iron	6050	mg / Kg	95	0.5		09-23-02	09-24-02
MC21283	MT.2002.1110.15	7439-89-6	Iron	5750	mg / Kg	10	0.5		09-23-02	09-24-02
MC21283	MT.2002.1110.15	7439-92-1	Lead	7.80	mg / Kg	10	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.15	7439-95-4	Magnesium	621	mg / Kg	10	0.5		09-23-02	09-24-02
MC21283	MT.2002.1110.14	7439-96-5	Manganese	153	mg / Kg	95	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.15	7439-96-5	Manganese	150	mg / Kg	10	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.15	7439-98-7	Molybdenum	1.20	mg / Kg	10	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.15	7440-02-0	Nickel	2.13	mg / Kg	10	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.15	7440-09-7	Potassium	613	mg / Kg	10	0.5		09-23-02	09-24-02
MC21283	MT.2002.1110.15	7782-49-2	Selenium	0.390	mg / Kg	10	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.15	7440-21-3	Silicon	254	mg / Kg	10	1	E	09-23-02	09-24-02
MC21283	MT.2002.1110.15	7440-22-4	Silver	ND	mg / Kg	10	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.15	7440-23-5	Sodium	115	mg / Kg	10	0.5		09-23-02	09-24-02

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Certificate of Analysis

Cl: **LANL-DDP03-0271-014,RM100 E SI**
Project: **XURP 0460 3219 0000**
Order: **0209373 LOS40** Receipt: **09-17-02**

Sample: *RE3-02-49287* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209373-01A		SW846 3050A/6020 ICP-MS					By:	JWB		
MC21283	MT.2002.1110.15	7439-89-6	Strontium	33.6	mg / Kg	10	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.15	7440-28-0	Thallium	ND	mg / Kg	10	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.15	7440-31-5	Tin	1.67	mg / Kg	10	0.025	B	09-23-02	09-24-02
MC21283	MT.2002.1110.14	7440-32-6	Titanium	142	mg / Kg	95	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.15	7440-61-1	Uranium	0.433	mg / Kg	10	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.15	7440-62-2	Vanadium	4.72	mg / Kg	10	0.05		09-23-02	09-24-02
MC21283	MT.2002.1110.15	7440-66-6	Zinc	25.7	mg / Kg	10	0.25		09-23-02	09-24-02
0209373-01A		SW846 7471 CVAA					By:	JRE		
MC21285	MT.2002.1103.38	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-23-02

Sample: *RE3-02-49288* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209373-02A		SW846 3050A/6020 ICP-MS					By:	JWB		
MC21283	MT.2002.1110.23	7429-90-5	Aluminum	3740	mg / Kg	9	0.5		09-23-02	09-24-02
MC21283	MT.2002.1110.23	7440-36-0	Antimony	ND	mg / Kg	9	0.05		09-23-02	09-24-02
MC21283	MT.2002.1110.23	7440-38-2	Arsenic	0.917	mg / Kg	9	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.23	7440-39-3	Barium	29.3	mg / Kg	9	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.23	7440-41-7	Beryllium	0.414	mg / Kg	9	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.23	7440-42-8	Boron	ND	mg / Kg	9	0.15		09-23-02	09-24-02
MC21283	MT.2002.1110.23	7440-43-9	Cadmium	ND	mg / Kg	9	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.23	7440-70-2	Calcium	796	mg / Kg	9	0.5		09-23-02	09-24-02
MC21283	MT.2002.1110.23	7440-47-3	Chromium	2.34	mg / Kg	9	0.05		09-23-02	09-24-02
MC21283	MT.2002.1110.23	7440-48-4	Cobalt	0.568	mg / Kg	9	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.23	7440-50-8	Copper	1.88	mg / Kg	9	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.22	7439-89-6	Iron	6140	mg / Kg	93	0.5		09-23-02	09-24-02
MC21283	MT.2002.1110.23	7439-92-1	Lead	6.32	mg / Kg	9	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.23	7439-95-4	Magnesium	530	mg / Kg	9	0.5		09-23-02	09-24-02
MC21283	MT.2002.1110.22	7439-96-5	Manganese	175	mg / Kg	93	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.23	7439-98-7	Molybdenum	1.13	mg / Kg	9	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.23	7440-02-0	Nickel	1.94	mg / Kg	9	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.23	7440-09-7	Potassium	505	mg / Kg	9	0.5		09-23-02	09-24-02
MC21283	MT.2002.1110.23	7782-49-2	Selenium	0.372	mg / Kg	9	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.23	7440-21-3	Silicon	246	mg / Kg	9	1	E	09-23-02	09-24-02
MC21283	MT.2002.1110.23	7440-22-4	Silver	ND	mg / Kg	9	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.23	7440-23-5	Sodium	114	mg / Kg	9	0.5		09-23-02	09-24-02
MC21283	MT.2002.1110.23	7439-89-6	Strontium	27.6	mg / Kg	9	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.23	7440-28-0	Thallium	ND	mg / Kg	9	0.025		09-23-02	09-24-02
MC21283	MT.2002.1110.23	7440-31-5	Tin	1.72	mg / Kg	9	0.025	B	09-23-02	09-24-02
MC21283	MT.2002.1110.22	7440-32-6	Titanium	153	mg / Kg	93	0.025		09-23-02	09-24-02

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Certificate of Analysis

Cl: LANL-DDP03-0271-014,RM100 E SI
Project: XURP 0460 3219 0000
Order: 0209373 LOS40 Receipt: 09-17-02

Sample: *RE3-02-49288* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209373-02A		SW846 3050A/6020 ICP-MS					By:	JWB		
M021283	MT.2002.1110.23	7440-61-1	Uranium	0.405	mg / Kg	9	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.23	7440-62-2	Vanadium	3.98	mg / Kg	9	0.05		09-23-02	09-24-02
M021283	MT.2002.1110.23	7440-66-6	Zinc	26.5	mg / Kg	9	0.25		09-23-02	09-24-02
0209373-02A		SW846 7471 CVAA					By	JRE		
M021285	MT.2002.1103.41	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-24-02

Sample: *RE3-02-49289* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209373-03A		SW846 3050A/6020 ICP-MS					By:	JWB		
M021283	MT.2002.1110.24	7429-90-5	Aluminum	6600	mg / Kg	98	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.25	7440-36-0	Antimony	ND	mg / Kg	10	0.05		09-23-02	09-24-02
M021283	MT.2002.1110.25	7440-38-2	Arsenic	1.48	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.25	7440-39-3	Barium	50.8	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.25	7440-41-7	Beryllium	0.488	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.25	7440-42-8	Boron	ND	mg / Kg	10	0.15		09-23-02	09-24-02
M021283	MT.2002.1110.25	7440-43-9	Cadmium	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.25	7440-70-2	Calcium	2780	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.25	7440-47-3	Chromium	9.86	mg / Kg	10	0.05		09-23-02	09-24-02
M021283	MT.2002.1110.25	7440-48-4	Cobalt	1.66	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.25	7440-50-8	Copper	4.15	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.24	7439-89-6	Iron	9270	mg / Kg	98	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.25	7439-92-1	Lead	14.6	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.25	7439-95-4	Magnesium	1110	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.24	7439-96-5	Manganese	202	mg / Kg	98	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.25	7439-98-7	Molybdenum	0.854	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.25	7440-02-0	Nickel	3.98	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.25	7440-09-7	Potassium	760	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.25	7782-49-2	Selenium	0.444	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.25	7440-21-3	Silicon	251	mg / Kg	10	1	E	09-23-02	09-24-02
M021283	MT.2002.1110.25	7440-22-4	Silver	0.390	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.25	7440-23-5	Sodium	131	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.25	7439-89-6	Strontium	44.3	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.25	7440-28-0	Thallium	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.25	7440-31-5	Tin	1.60	mg / Kg	10	0.025	B	09-23-02	09-24-02
M021283	MT.2002.1110.24	7440-32-6	Titanium	262	mg / Kg	98	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.25	7440-61-1	Uranium	0.424	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.25	7440-62-2	Vanadium	9.13	mg / Kg	10	0.05		09-23-02	09-24-02
M021283	MT.2002.1110.25	7440-66-6	Zinc	43.0	mg / Kg	10	0.25		09-23-02	09-24-02

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Certificate of Analysis

Cli: LANL-DDP03-0271-014,RM100 E SI
Project: XURP 0460 3219 0000
Order: 0209373 LOS40 Receipt: 09-17-02

Sample: *RE3-02-49289* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209373-03A		SW846 7471 CVAA					By:	JRE		
M021285	MT 2002.1103.42	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-23-02

Sample: *RE3-02-49290* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209373-04A		SW846 3050A/6020 ICP-MS					By:	JWB		
M021283	MT 2002.1110.27	7429-90-5	Aluminum	3030	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT 2002.1110.27	7440-36-0	Antimony	ND	mg / Kg	10	0.05		09-23-02	09-24-02
M021283	MT 2002.1110.27	7440-38-2	Arsenic	0.914	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT 2002.1110.27	7440-39-3	Barium	22.1	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT 2002.1110.27	7440-41-7	Beryllium	0.553	mg / Kg	10	0.025		09-23-02	09-24-02
M0	MT 2002.1110.27	7440-42-8	Boron	ND	mg / Kg	10	0.15		09-23-02	09-24-02
M0	MT 2002.1110.27	7440-43-9	Cadmium	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT 2002.1110.27	7440-70-2	Calcium	751	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.27	7440-47-3	Chromium	4.14	mg / Kg	10	0.05		09-23-02	09-24-02
M021283	MT 2002.1110.27	7440-48-4	Cobalt	0.963	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.27	7440-50-8	Copper	2.19	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.25	7439-89-6	Iron	9250	mg / Kg	99	0.5		09-23-02	09-24-02
M021283	MT 2002.1110.27	7439-92-1	Lead	8.56	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT 2002.1110.27	7439-95-4	Magnesium	695	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT 2002.1110.25	7439-96-5	Manganese	262	mg / Kg	99	0.025		09-23-02	09-24-02
M021283	MT 2002.1110.27	7439-98-7	Molybdenum	2.40	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT 2002.1110.27	7440-02-0	Nickel	3.03	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.27	7440-09-7	Potassium	454	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.27	7782-49-2	Selenium	0.494	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.27	7440-21-3	Silicon	250	mg / Kg	10	1	E	09-23-02	09-24-02
M021283	MT 2002.1110.27	7440-22-4	Silver	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT 2002.1110.27	7440-23-5	Sodium	117	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT 2002.1110.27	7439-89-6	Strontium	22.6	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT 2002.1110.27	7440-28-0	Thallium	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT 2002.1110.27	7440-31-5	Tin	2.02	mg / Kg	10	0.025	B	09-23-02	09-24-02
M021283	MT 2002.1110.26	7440-32-6	Titanium	435	mg / Kg	99	0.025		09-23-02	09-24-02
M021283	MT 2002.1110.27	7440-61-1	Uranium	0.356	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.27	7440-62-2	Vanadium	5.68	mg / Kg	10	0.05		09-23-02	09-24-02
M021283	MT 2002.1110.27	7440-66-6	Zinc	38.0	mg / Kg	10	0.25		09-23-02	09-24-02
0209373-04A		SW846 7471 CVAA					By:	JRE		
M021285	MT 2002.1103.46	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-23-02

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Certificate of Analysis

Client: LANL-DDP03-0271-014,RM100 E SI
Project: XURP 0460 3219 0000
Order: 0209373 LOS40 Receipt: 09-17-02

Sample: *RE3-02-49291* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209373-05A		SW846 3050A/6020 ICP-MS					By: JWB			
M021283	MT.2002.1110.29	7429-90-5	Aluminum	4190	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.29	7440-36-0	Antimony	ND	mg / Kg	10	0.05		09-23-02	09-24-02
M021283	MT.2002.1110.29	7440-38-2	Arsenic	1.06	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.29	7440-39-3	Barium	35.7	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.29	7440-41-7	Beryllium	0.532	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.29	7440-42-8	Boron	ND	mg / Kg	10	0.15		09-23-02	09-24-02
M021283	MT.2002.1110.29	7440-43-9	Cadmium	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.29	7440-70-2	Calcium	1100	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.29	7440-47-3	Chromium	3.54	mg / Kg	10	0.05		09-23-02	09-24-02
M021283	MT.2002.1110.29	7440-48-4	Cobalt	1.08	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.29	7440-50-8	Copper	2.03	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.28	7439-89-6	Iron	9040	mg / Kg	96	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.29	7439-92-1	Lead	7.94	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.29	7439-95-4	Magnesium	873	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.28	7439-96-5	Manganese	175	mg / Kg	96	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.29	7439-98-7	Molybdenum	1.51	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.29	7440-02-0	Nickel	3.41	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.29	7440-09-7	Potassium	490	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.29	7782-49-2	Selenium	0.646	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.29	7440-21-3	Silicon	211	mg / Kg	10	1	E	09-23-02	09-24-02
M021283	MT.2002.1110.29	7440-22-4	Silver	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.29	7440-23-5	Sodium	109	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.29	7439-89-6	Strontium	23.7	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.29	7440-28-0	Thallium	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.29	7440-31-5	Tin	1.63	mg / Kg	10	0.025	B	09-23-02	09-24-02
M021283	MT.2002.1110.28	7440-32-6	Titanium	318	mg / Kg	96	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.29	7440-61-1	Uranium	0.326	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.29	7440-62-2	Vanadium	6.35	mg / Kg	10	0.05		09-23-02	09-24-02
M021283	MT.2002.1110.29	7440-66-6	Zinc	35.2	mg / Kg	10	0.25		09-23-02	09-24-02
0209373-05A		SW846 7471 CVAA					By: JRE			
M021285	MT.2002.1103.46	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	[illegible]

Sample: *RE3-02-49292* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209373-06A		SW846 3050A/6020 ICP-MS					By: JWB			
[illegible]	MT.2002.1110.33	7429-90-5	Aluminum	2360	mg / Kg	10	0.5		09-23-02	09-24-02
[illegible]	MT.2002.1110.33	7440-36-0	Antimony	ND	mg / Kg	10	0.05		09-23-02	09-24-02
[illegible]	MT.2002.1110.33	7440-38-2	Arsenic	1.49	mg / Kg	10	0.025		09-23-02	09-24-02
[illegible]	MT.2002.1110.33	7440-39-3	Barium	32.2	mg / Kg	10	0.025		09-23-02	09-24-02

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Certificate of Analysis

C: LANL-DDP03-0271-014,RM100 E SI
Project: XURP 0460 3219 0000
Order: 0209373 LOS40 Receipt: 09-17-02

Sample: *RE3-02-49292* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209373-06A		SW846 3050A/6020 ICP-MS					By:	JWB		
M021283	MT.2002.1110.33	7440-41-7	Beryllium	0.406	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.33	7440-42-8	Boron	ND	mg / Kg	10	0.15		09-23-02	09-24-02
M021283	MT.2002.1110.33	7440-43-9	Cadmium	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.33	7440-70-2	Calcium	743	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.33	7440-47-3	Chromium	8.53	mg / Kg	10	0.05		09-23-02	09-24-02
M021283	MT.2002.1110.33	7440-48-4	Cobalt	0.742	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.33	7440-50-8	Copper	4.67	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.30	7439-89-6	Iron	8090	mg / Kg	99	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.33	7439-92-1	Lead	6.66	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.33	7439-95-4	Magnesium	641	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.30	7439-96-5	Manganese	232	mg / Kg	99	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.33	7439-98-7	Molybdenum	1.85	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.33	7440-02-0	Nickel	2.44	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.33	7440-09-7	Potassium	411	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.33	7782-49-2	Selenium	0.564	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.33	7440-21-3	Silicon	222	mg / Kg	10	1	E	09-23-02	09-24-02
M021283	MT.2002.1110.33	7440-22-4	Silver	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.33	7440-23-5	Sodium	86.6	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.33	7439-89-6	Strontium	20.2	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.33	7440-28-0	Thallium	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.33	7440-31-5	Tin	1.83	mg / Kg	10	0.025	B	09-23-02	09-24-02
M021283	MT.2002.1110.30	7440-32-6	Titanium	402	mg / Kg	99	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.33	7440-61-1	Uranium	0.331	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.33	7440-62-2	Vanadium	5.21	mg / Kg	10	0.05		09-23-02	09-24-02
M021283	MT.2002.1110.33	7440-66-6	Zinc	70.8	mg / Kg	10	0.25		09-23-02	09-24-02
0209373-06A		SW846 7471 CVAA					By:	JRE		
M021285	MT.2002.1103.47	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-23-02

Sample: *RE3-02-49293* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209373-07A		SW846 3050A/6020 ICP-MS					By:	JWB		
M021283	MT.2002.1110.35	7429-90-5	Aluminum	4900	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.35	7440-36-0	Antimony	ND	mg / Kg	10	0.05		09-23-02	09-24-02
M021283	MT.2002.1110.35	7440-38-2	Arsenic	1.72	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.35	7440-39-3	Barium	41.1	mg / Kg.	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.35	7440-41-7	Beryllium	0.505	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.35	7440-42-8	Boron	ND	mg / Kg	10	0.15		09-23-02	09-24-02
M021283	MT.2002.1110.35	7440-43-9	Cadmium	0.278	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.35	7440-70-2	Calcium	1610	mg / Kg	10	0.5		09-23-02	09-24-02

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Client: LANL-DDP03-0271-014,RM100 E SI
Project: XURP 0460 3219 0000
Order: 0209373 LOS40 Receipt: 09-17-02

Sample: *RE3-02-49293* Collected: *09-12-02 0:00:00* By
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209373-07A		SW846 3050A/6020 ICP-MS					By: JWB			
M021283	MT.2002.1110.35	7440-47-3	Chromium	20.3	mg / Kg	10	0.05		09-23-02	09-24-02
M021283	MT.2002.1110.35	7440-48-4	Cobalt	1.45	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.35	7440-50-8	Copper	7.04	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.34	7439-89-6	Iron	9280	mg / Kg	99	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.35	7439-92-1	Lead	14.0	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.35	7439-95-4	Magnesium	1030	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.34	7439-96-5	Manganese	206	mg / Kg	99	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.35	7439-98-7	Molybdenum	1.64	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.35	7440-02-0	Nickel	4.03	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.35	7440-09-7	Potassium	753	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.35	7782-49-2	Selenium	0.550	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.35	7440-21-3	Silicon	224	mg / Kg	10	1	E	09-23-02	09-24-02
M021283	MT.2002.1110.35	7440-22-4	Silver	0.639	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.35	7440-23-5	Sodium	171	mg / Kg	10	0.5		09-23-02	09-24-02
M[illegible]	MT.2002.1110.35	7439-89-6	Strontium	32.7	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.35	7440-28-0	Thallium	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.35	7440-31-5	Tin	1.75	mg / Kg	10	0.025	B	09-23-02	09-24-02
M021283	MT.2002.1110.34	7440-32-6	Titanium	322	mg / Kg	99	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.35	7440-61-1	Uranium	0.496	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.35	7440-62-2	Vanadium	7.82	mg / Kg	10	0.05		09-23-02	09-24-02
M021283	MT.2002.1110.35	7440-66-6	Zinc	72.1	mg / Kg	10	0.25		09-23-02	09-24-02
0209373-07A		SW846 7471 CVAA					By: JRE			
M021295	MT.2002.1103.48	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-23-02

Sample: *RE3-02-49294* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209373-08A		SW846 3050A/6020 ICP-MS					By: JWB			
M021283	MT.2002.1110.37	7429-90-5	Aluminum	645	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.37	7440-36-0	Antimony	ND	mg / Kg	10	0.05		09-23-02	09-24-02
M021283	MT.2002.1110.37	7440-38-2	Arsenic	0.461	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.37	7440-39-3	Barium	9.66	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.37	7440-41-7	Beryllium	0.338	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.37	7440-42-8	Boron	ND	mg / Kg	10	0.15		09-23-02	09-24-02
M021283	MT.2002.1110.37	7440-43-9	Cadmium	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.37	7440-70-2	Calcium	283	mg / Kg	10	0.5		[illegible]	[illegible]
M021283	MT.2002.1110.37	7440-47-3	Chromium	1.60	mg / Kg	10	0.05		[illegible]	[illegible]
[illegible]	MT.2002.1110.37	7440-48-4	Cobalt	ND	mg / Kg	10	0.025		[illegible]	[illegible]
M021283	MT.2002.1110.37	7440-50-8	Copper	1.95	mg / Kg	10	0.025		[illegible]	[illegible]
M021283	MT.2002.1110.37	7439-89-6	Iron	3340	mg / Kg	10	0.5		[illegible]	[illegible]

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C LANL-DDP03-0271-014,RM100 E SI
Project: XURP 0460 3219 0000
Order: 0209373 LOS40 Receipt: 09-17-02

Sample: *RE3-02-49294* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209373-08A		SW846 3050A/6020 ICP-MS					By: JWB			
M021283	MT 2002 1110.37	7439-92-1	Lead	2.31	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT 2002 1110.37	7439-95-4	Magnesium	155	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT 2002 1110.36	7439-96-5	Manganese	165	mg / Kg	98	0.025		09-23-02	09-24-02
M021283	MT 2002 1110.37	7439-98-7	Molybdenum	0.658	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT 2002 1110.37	7440-02-0	Nickel	0.530	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT 2002 1110.37	7440-09-7	Potassium	139	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT 2002 1110.37	7782-49-2	Selenium	0.368	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT 2002 1110.37	7440-21-3	Silicon	183	mg / Kg	10	1	E	09-23-02	09-24-02
M021283	MT 2002 1110.37	7440-22-4	Silver	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT 2002 1110.37	7440-23-5	Sodium	68.5	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT 2002 1110.37	7439-89-6	Strontium	4.33	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT 2002 1110.37	7440-28-0	Thallium	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT 2002 1110.37	7440-31-5	Tin	0.760	mg / Kg	10	0.025	B	09-23-02	09-24-02
M021283	MT 2002 1110.37	7440-32-6	Titanium	95.8	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT 2002 1110.37	7440-61-1	Uranium	0.388	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT 2002 1110.37	7440-62-2	Vanadium	1.54	mg / Kg	10	0.05		09-23-02	09-24-02
M021283	MT 2002 1110.37	7440-66-6	Zinc	23.4	mg / Kg	10	0.25		09-23-02	09-24-02
0209373-08A		SW846 7471 CVAA					By: JRE			
M021285	MT 2002 1103.49	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-23-02

Sample: *RE3-02-49295* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209373-09A		SW846 3050A/6020 ICP-MS					By: JWB			
M021283	MT 2002 1110.39	7429-90-5	Aluminum	487	mg / Kg	9	0.5		09-23-02	09-24-02
M021283	MT 2002 1110.39	7440-36-0	Antimony	ND	mg / Kg	9	0.05		09-23-02	09-24-02
M021283	MT 2002 1110.39	7440-38-2	Arsenic	ND	mg / Kg	9	0.025		09-23-02	09-24-02
M021283	MT 2002 1110.39	7440-39-3	Barium	9.11	mg / Kg	9	0.025		09-23-02	09-24-02
M021283	MT 2002 1110.39	7440-41-7	Beryllium	0.335	mg / Kg	9	0.025		09-23-02	09-24-02
M021283	MT 2002 1110.39	7440-42-8	Boron	ND	mg / Kg	9	0.15		09-23-02	09-24-02
M021283	MT 2002 1110.39	7440-43-9	Cadmium	ND	mg / Kg	9	0.025		09-23-02	09-24-02
M021283	MT 2002 1110.39	7440-70-2	Calcium	270	mg / Kg	9	0.5		09-23-02	09-24-02
M021283	MT 2002 1110.39	7440-47-3	Chromium	0.669	mg / Kg	9	0.05		09-23-02	09-24-02
M021283	MT 2002 1110.39	7440-48-4	Cobalt	ND	mg / Kg	9	0.025		09-23-02	09-24-02
M021283	MT 2002 1110.39	7440-50-8	Copper	1.47	mg / Kg	9	0.025		09-23-02	09-24-02
M021283	MT 2002 1110.39	7439-89-6	Iron	3280	mg / Kg	9	0.5		09-23-02	09-24-02
M021283	MT 2002 1110.39	7439-92-1	Lead	2.13	mg / Kg	9	0.025		09-23-02	09-24-02
M021283	MT 2002 1110.39	7439-95-4	Magnesium	120	mg / Kg	9	0.5		09-23-02	09-24-02
M021283	MT 2002 1110.38	7439-96-5	Manganese	169	mg / Kg	93	0.025		09-23-02	09-24-02
M021283	MT 2002 1110.39	7439-98-7	Molybdenum	0.559	mg / Kg	9	0.025		09-23-02	09-24-02

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Certificate of Analysis

Cli. LANL-DDP03-0271-014,RM100 E SI
Project: XURP 0460 3219 0000
Order: 0209373 LOS40 Receipt: 09-17-02

Sample: *RE3-02-49295* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209373-09A		SW846 3050A/6020 ICP-MS					By: JWB			
M021283	MT.2002.1110.39	7440-02-0	Nickel	0.493	mg / Kg	9	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.39	7440-09-7	Potassium	110	mg / Kg	9	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.39	7782-49-2	Selenium	0.428	mg / Kg	9	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.39	7440-21-3	Silicon	186	mg / Kg	9	1	E	09-23-02	09-24-02
M021283	MT.2002.1110.39	7440-22-4	Silver	ND	mg / Kg	9	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.39	7440-23-5	Sodium	63.1	mg / Kg	9	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.39	7439-89-6	Strontium	3.49	mg / Kg	9	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.39	7440-28-0	Thallium	ND	mg / Kg	9	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.39	7440-31-5	Tin	0.768	mg / Kg	9	0.025	B	09-23-02	09-24-02
M021283	MT.2002.1110.39	7440-32-6	Titanium	91.7	mg / Kg	9	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.39	7440-61-1	Uranium	0.400	mg / Kg	9	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.39	7440-62-2	Vanadium	1.09	mg / Kg	9	0.05		09-23-02	09-24-02
M021283	MT.2002.1110.39	7440-66-6	Zinc	23.6	mg / Kg	9	0.25		09-23-02	09-24-02
07 -09A		SW846 7471 CVAA					By: JRE			
M0.	MT.2002.1103.50	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-23-02

Sample: *RE3-02-49296* Collected: *09-12-02 0:00:00* By:
Matrix *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209373-10A		SW846 3050A/6020 ICP-MS					By: JWB			
M021283	MT.2002.1110.40	7429-90-5	Aluminum	8070	mg / Kg	97	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.41	7440-36-0	Antimony	ND	mg / Kg	10	0.05		09-23-02	09-24-02
M021283	MT.2002.1110.41	7440-38-2	Arsenic	1.53	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.41	7440-39-3	Barium	56.9	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.41	7440-41-7	Beryllium	0.518	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.41	7440-42-8	Boron	ND	mg / Kg	10	0.15		09-23-02	09-24-02
M021283	MT.2002.1110.41	7440-43-9	Cadmium	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.41	7440-70-2	Calcium	1040	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.41	7440-47-3	Chromium	16.0	mg / Kg	10	0.05		09-23-02	[illegible]
M021283	MT.2002.1110.41	7440-48-4	Cobalt	1.74	mg / Kg	10	0.025		09-23-02	[illegible]
M021283	MT.2002.1110.41	7440-50-8	Copper	3.90	mg / Kg	10	0.025		[illegible]	[illegible]
M021283	MT.2002.1110.40	7439-89-6	Iron	10600	mg / Kg	97	0.5		[illegible]	[illegible]
M021283	MT.2002.1110.41	7439-92-1	Lead	15.2	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.41	7439-95-4	Magnesium	1120	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.40	7439-96-5	Manganese	244	mg / Kg	97	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.41	7439-98-7	Molybdenum	1.11	mg / Kg	10	0.025		09-23-02	09-24-02
[illegible]	MT.2002.1110.41	7440-02-0	Nickel	4.21	mg / Kg	10	0.025		09-23-02	09-24-02
M	MT.2002.1110.41	7440-09-7	Potassium	723	mg / Kg	10	0.5		09-23-02	09-24-02
[illegible]	MT.2002.1110.41	7782-49-2	Selenium	0.436	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.41	7440-21-3	Silicon	246	mg / Kg	10	1	E	09-23-02	09-24-02

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Certificate of Analysis

Cl: LANL-DDP03-0271-014,RM100 E SI
Project: XURP 0460 3219 0000
Order: 0209373 LOS40 Receipt: 09-17-02

Sample: *RE3-02-49296* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209373-10A		SW846 3050A/6020 ICP-MS					By:	JWB		
M021293	MT.2002.1110.41	7440-22-4	Silver	0.252	mg / Kg	10	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.41	7440-23-5	Sodium	80.8	mg / Kg	10	0.5		09-23-02	09-24-02
M021293	MT.2002.1110.41	7439-89-6	Strontium	41.0	mg / Kg	10	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.41	7440-28-0	Thallium	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.41	7440-31-5	Tin	1.81	mg / Kg	10	0.025	B	09-23-02	09-24-02
M021293	MT.2002.1110.40	7440-32-6	Titanium	309	mg / Kg	97	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.41	7440-61-1	Uranium	0.426	mg / Kg	10	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.41	7440-62-2	Vanadium	10.5	mg / Kg	10	0.05		09-23-02	09-24-02
M021293	MT.2002.1110.41	7440-66-6	Zinc	47.3	mg / Kg	10	0.25		09-23-02	09-24-02
0209373-10A		SW846 7471 CVAA					By:	JRE		
M021245	MT.2002.1103.51	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-23-02

Sample: *RE3-02-49297* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209373-11A		SW846 3050A/6020 ICP-MS					By:	JWB		
M021293	MT.2002.1110.45	7429-90-5	Aluminum	2520	mg / Kg	10	0.5		09-23-02	09-24-02
M021293	MT.2002.1110.45	7440-36-0	Antimony	ND	mg / Kg	10	0.05		09-23-02	09-24-02
M021293	MT.2002.1110.45	7440-38-2	Arsenic	0.912	mg / Kg	10	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.45	7440-39-3	Barium	22.3	mg / Kg	10	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.45	7440-41-7	Beryllium	0.399	mg / Kg	10	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.45	7440-42-8	Boron	ND	mg / Kg	10	0.15		09-23-02	09-24-02
M021293	MT.2002.1110.45	7440-43-9	Cadmium	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.45	7440-70-2	Calcium	696	mg / Kg	10	0.5		09-23-02	09-24-02
M021293	MT.2002.1110.45	7440-47-3	Chromium	2.46	mg / Kg	10	0.05		09-23-02	09-24-02
M021293	MT.2002.1110.45	7440-48-4	Cobalt	0.863	mg / Kg	10	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.45	7440-50-8	Copper	1.17	mg / Kg	10	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.42	7439-89-6	Iron	7420	mg / Kg	100	0.5		09-23-02	[illegible]
M021293	MT.2002.1110.45	7439-92-1	Lead	4.35	mg / Kg	10	0.025		[illegible]	[illegible]
M021293	MT.2002.1110.45	7439-95-4	Magnesium	521	mg / Kg	10	0.5		09-23-02	09-24-02
M021293	MT.2002.1110.42	7439-96-5	Manganese	255	mg / Kg	100	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.45	7439-98-7	Molybdenum	1.04	mg / Kg	10	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.45	7440-02-0	Nickel	3.30	mg / Kg	10	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.45	7440-09-7	Potassium	394	mg / Kg	10	0.5		09-23-02	09-24-02
M021293	MT.2002.1110.45	7782-49-2	Selenium	0.728	mg / Kg	10	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.45	7440-21-3	Silicon	232	mg / Kg	10	1	E	09-23-02	09-24-02
M021293	MT.2002.1110.45	7440-22-4	Silver	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.45	7440-23-5	Sodium	117	mg / Kg	10	0.5		09-23-02	09-24-02
M021293	MT.2002.1110.45	7439-89-6	Strontium	14.0	mg / Kg	10	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.45	7440-28-0	Thallium	ND	mg / Kg	10	0.025		09-23-02	09-24-02

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Certificate of Analysis

Cl LANL-DDP03-0271-014,RM100 E SI
Project: XURP 0460 3219 0000
Order 0209373 LOS40 Receipt: 09-17-02

Sample: *RE3-02-49297* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209373-11A		SW846 3050A/6020 ICP-MS					By:	JWB		
M021283	MT 2002.1110 45	7440-31-5	Tin	2.42	mg / Kg	10	0.025	B	09-23-02	09-24-02
M021283	MT 2002.1110 42	7440-32-6	Titanium	362	mg / Kg	100	0.025		09-23-02	09-24-02
M021283	MT 2002.1110 45	7440-61-1	Uranium	0.334	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT 2002 1110 45	7440-62-2	Vanadium	3.89	mg / Kg	10	0.05		09-23-02	09-24-02
M021283	MT 2002.1110 45	7440-66-6	Zinc	29.9	mg / Kg	10	0.25		09-23-02	09-24-02
0209373-11A		SW846 7471 CVAA					By	JRE		
M021285	MT 2002.1103 52	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-23-02

Sample: *RE3-02-49298* Collected: *09-12-02 0.00.00* By:
Matrix *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
02 12A		SW846 3050A/6020 ICP-MS					By	JWB		
M021283	MT.2002.1110.47	7429-90-5	Aluminum	4290	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110 47	7440-36-0	Antimony	ND	mg / Kg	10	0.05		09-23-02	09-24-02
M021283	MT 2002.1110 47	7440-38-2	Arsenic	1.26	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT 2002.1110 47	7440-39-3	Barium	34.9	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002 1110 47	7440-41-7	Beryllium	0.420	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.47	7440-42-8	Boron	ND	mg / Kg	10	0.15		09-23-02	09-24-02
M021283	MT.2002.1110 47	7440-43-9	Cadmium	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT 2002.1110 47	7440-70-2	Calcium	3080	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.47	7440-47-3	Chromium	5.05	mg / Kg	10	0.05		09-23-02	09-24-02
M021283	MT.2002.1110.47	7440-48-4	Cobalt	1.07	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT 2002.1110.47	7440-50-8	Copper	4.22	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.46	7439-89-6	Iron	7270	mg / Kg	99	0.5		09-23-02	[illegible]
M021283	MT 2002.1110.47	7439-92-1	Lead	7.99	mg / Kg	10	0.025		[illegible]	[illegible]
M021283	MT.2002.1110 47	7439-95-4	Magnesium	846	mg / Kg	10	0.5		[illegible]	[illegible]
M021283	MT.2002.1110.46	7439-96-5	Manganese	195	mg / Kg	99	0.025		[illegible]	[illegible]
M021283	MT.2002.1110 47	7439-98-7	Molybdenum	0.879	mg / Kg	10	0.025		[illegible]	[illegible]
M021283	MT.2002.1110 47	7440-02-0	Nickel	2.69	mg / Kg	10	0.025		[illegible]	[illegible]
M021283	MT.2002.1110.47	7440-09-7	Potassium	595	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110 47	7782-49-2	Selenium	0.558	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT 2002.1110.47	7440-21-3	Silicon	311	mg / Kg	10	1	E	09-23-02	09-24-02
M021283	MT 2002.1110 47	7440-22-4	Silver	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT 2002.1110 47	7440-23-5	Sodium	293	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT 2002.1110 47	7439-69-6	Strontium	34.8	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT 2002.1110 47	7440-28-0	Thallium	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT 2002.1110.47	7440-31-5	Tin	1.69	mg / Kg	10	0.025		[illegible]	[illegible]
M021283	MT 2002.1110.46	7440-32-6	Titanium	229	mg / Kg	99	0.025		[illegible]	[illegible]
M021283	MT 2002.1110 47	7440-61-1	Uranium	0.430	mg / Kg	10	0.025		[illegible]	[illegible]
M021283	MT 2002.1110.47	7440-62-2	Vanadium	6.31	mg / Kg	10	0.05		[illegible]	[illegible]

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Certificate of Analysis

Client: LANL-DDP03-0271-014,RM100 E SI
Project: XURP 0460 3219 0000
Order: 0209373 LOS40 Receipt: 09-17-02

Sample: *RE3-02-49298* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209373-12A		SW846 3050A/6020 ICP-MS					By	JWB		
M021283	MT.2002.1110.47	7440-66-6	Zinc	37.0	mg / Kg	10	0.25		[illegible]	[illegible]
0209373-12A		SW846 7471 CVAA					By	JRE		
M021285	MT.2002.1103.53	7439-97-6	Mercury	ND	mg / Kg	1	0.05		[illegible]	[illegible]

Sample: *RE3-02-49299* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209373-13A		SW846 3050A/6020 ICP-MS					By:	JWB		
M021283	MT.2002.1110.48	7429-90-5	Aluminum	8750	mg / Kg	96	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.49	7440-36-0	Antimony	ND	mg / Kg	10	0.05		09-23-02	09-24-02
M021283	MT.2002.1110.49	7440-38-2	Arsenic	2.02	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.49	7440-39-3	Barium	65.1	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.49	7440-41-7	Beryllium	0.587	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.49	7440-42-8	Boron	ND	mg / Kg	10	0.15		09-23-02	09-24-02
M021283	MT.2002.1110.49	7440-43-9	Cadmium	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.49	7440-70-2	Calcium	1200	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.49	7440-47-3	Chromium	14.0	mg / Kg	10	0.05		09-23-02	09-24-02
M021283	MT.2002.1110.49	7440-48-4	Cobalt	1.95	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.49	7440-50-8	Copper	4.00	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.48	7439-89-6	Iron	11000	mg / Kg	96	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.49	7439-92-1	Lead	15.9	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.49	7439-95-4	Magnesium	1200	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.48	7439-96-5	Manganese	230	mg / Kg	96	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.49	7439-98-7	Molybdenum	1.07	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.49	7440-02-0	Nickel	4.57	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.49	7440-09-7	Potassium	775	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.49	7782-49-2	Selenium	0.486	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.49	7440-21-3	Silicon	216	mg / Kg	10	1	E	09-23-02	09-24-02
M021283	MT.2002.1110.49	7440-22-4	Silver	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.49	7440-23-5	Sodium	85.4	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.49	7439-89-6	Strontium	48.3	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.49	7440-28-0	Thallium	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.49	7440-31-5	Tin	1.78	mg / Kg	10	0.025	B	09-23-02	09-24-02
M021283	MT.2002.1110.48	7440-32-6	Titanium	286	mg / Kg	96	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.49	7440-61-1	Uranium	0.385	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.49	7440-62-2	Vanadium	11.1	mg / Kg	10	0.05		[illegible]	[illegible]
M021283	MT.2002.1110.49	7440-66-6	Zinc	38.8	mg / Kg	10	0.25		[illegible]	[illegible]
0209373-13A		SW846 7471 CVAA					By	JRE		
M021295	MT.2002.1103.54	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-23-02

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Certificate of Analysis

Cli: LANL-DDP03-0271-014,RM100 E SI
Project: XURP 0460 3219 0000
Order: 0209373 LOS40 Receipt: 09-17-02

Sample: *RE3-02-49300* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209373-14A		SW846 3050A/6020 ICP-MS					By: JWB			
M021283	MT.2002.1110.51	7429-90-5	Aluminum	4000	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.51	7440-36-0	Antimony	ND	mg / Kg	10	0.05		09-23-02	09-24-02
M021283	MT.2002.1110.51	7440-38-2	Arsenic	1.06	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.51	7440-39-3	Barium	25.2	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.51	7440-41-7	Beryllium	0.414	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.51	7440-42-8	Boron	ND	mg / Kg	10	0.15		09-23-02	09-24-02
M021283	MT.2002.1110.51	7440-43-9	Cadmium	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.51	7440-70-2	Calcium	822	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.51	7440-47-3	Chromium	2.53	mg / Kg	10	0.05		09-23-02	09-24-02
M021283	MT.2002.1110.51	7440-48-4	Cobalt	0.552	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.51	7440-50-8	Copper	5.59	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.50	7439-89-6	Iron	5970	mg / Kg	99	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.51	7439-92-1	Lead	4.62	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.51	7439-95-4	Magnesium	516	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.50	7439-96-5	Manganese	178	mg / Kg	99	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.51	7439-98-7	Molybdenum	0.814	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.51	7440-02-0	Nickel	1.74	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.51	7440-09-7	Potassium	469	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.51	7782-49-2	Selenium	0.454	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.51	7440-21-3	Silicon	227	mg / Kg	10	1	E	09-23-02	09-24-02
M021283	MT.2002.1110.51	7440-22-4	Silver	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.51	7440-23-5	Sodium	121	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.51	7439-89-6	Strontium	26.1	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.51	7440-28-0	Thallium	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.51	7440-31-5	Tin	1.69	mg / Kg	10	0.025	B	09-23-02	09-24-02
M021283	MT.2002.1110.50	7440-32-6	Titanium	164	mg / Kg	99	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.51	7440-61-1	Uranium	0.404	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.51	7440-62-2	Vanadium	4.21	mg / Kg	10	0.05		09-23-02	09-24-02
M021283	MT.2002.1110.51	7440-66-6	Zinc	25.5	mg / Kg	10	0.25		09-23-02	09-24-02
0209373-14A		SW846 7471 CVAA					By: JRE			
M021285	MT.2002.1133.57	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-23-02

Sample: *RE3-02-49301* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209373-15A		SW846 3050A/6020 ICP-MS					By: JWB			
M021283	MT.2002.1110.53	7429-90-5	Aluminum	3430	mg / Kg	9	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.53	7440-36-0	Antimony	ND	mg / Kg	9	0.05		09-23-02	09-24-02
M021283	MT.2002.1110.53	7440-38-2	Arsenic	1.30	mg / Kg	9	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.53	7440-39-3	Barium	28.8	mg / Kg	9	0.025		09-23-02	09-24-02

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Cli: LANL-DDP03-0271-014,RM100 E SI
Project: XURP 0460 3219 0000
Order: 0209373 LOS40 Receipt: 09-17-02

Sample: *RE3-02-49301* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209373-15A		SW846 3050A/6020 ICP-MS					By:	JWB		
M021293	MT.2002.1110.53	7440-41-7	Beryllium	0.355	mg / Kg	9	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.53	7440-42-8	Boron	ND	mg / Kg	9	0.15		09-23-02	09-24-02
M021293	MT.2002.1110.53	7440-43-9	Cadmium	0.383	mg / Kg	9	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.53	7440-70-2	Calcium	672	mg / Kg	9	0.5		09-23-02	09-24-02
M021293	MT.2002.1110.53	7440-47-3	Chromium	13.7	mg / Kg	9	0.05		09-23-02	09-24-02
M021293	MT.2002.1110.53	7440-48-4	Cobalt	1.17	mg / Kg	9	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.53	7440-50-8	Copper	10.2	mg / Kg	9	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.52	7439-89-6	Iron	7530	mg / Kg	92	0.5		09-23-02	09-24-02
M021293	MT.2002.1110.53	7439-92-1	Lead	14.5	mg / Kg	9	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.53	7439-95-4	Magnesium	619	mg / Kg	9	0.5		09-23-02	09-24-02
M021293	MT.2002.1110.52	7439-96-5	Manganese	237	mg / Kg	92	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.53	7439-98-7	Molybdenum	0.816	mg / Kg	9	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.53	7440-02-0	Nickel	4.22	mg / Kg	9	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.53	7440-09-7	Potassium	500	mg / Kg	9	0.5		09-23-02	09-24-02
M[illegible]	MT.2002.1110.53	7782-49-2	Selenium	0.484	mg / Kg	9	0.025		09-23-02	09-24-02
M02[illegible]	MT.2002.1110.53	7440-21-3	Silicon	233	mg / Kg	9	1	E	09-23-02	09-24-02
M021293	MT.2002.1110.53	7440-22-4	Silver	0.507	mg / Kg	9	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.53	7440-23-5	Sodium	458	mg / Kg	9	0.5		09-23-02	09-24-02
M021293	MT.2002.1110.53	7439-89-6	Strontium	23.9	mg / Kg	9	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.53	7440-28-0	Thallium	ND	mg / Kg	9	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.53	7440-31-5	Tin	1.67	mg / Kg	9	0.025	B	09-23-02	09-24-02
M021293	MT.2002.1110.52	7440-32-6	Titanium	267	mg / Kg	92	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.53	7440-61-1	Uranium	0.392	mg / Kg	9	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.53	7440-62-2	Vanadium	7.73	mg / Kg	9	0.05		09-23-02	09-24-02
M021293	MT.2002.1110.53	7440-66-6	Zinc	55.2	mg / Kg	9	0.25		09-23-02	09-24-02
0209373-15A		SW846 7471 CVAA					By:	JRE		
M021295	MT.2002.1103.58	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-23-02

Sample: *RE3-02-49530* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209373-16A		SW846 3050A/6020 ICP-MS					By:	JWB		
M021293	MT.2002.1110.60	7429-90-5	Aluminum	2890	mg / Kg	10	0.5		09-23-02	09-24-02
M021293	MT.2002.1110.60	7440-36-0	Antimony	ND	mg / Kg	10	0.05		09-23-02	09-24-02
M021293	MT.2002.1110.60	7440-38-2	Arsenic	1.27	mg / Kg	10	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.60	7440-39-3	Barium	23.4	mg / Kg	10	0.025		09-23-02	09-24-02
M021293	MT.2002.1110.60	7440-41-7	Beryllium	0.567	mg / Kg	10	0.025		09-23-02	09-24-02
M[illegible]	MT.2002.1110.60	7440-42-8	Boron	ND	mg / Kg	10	0.15		09-23-02	09-24-02
M[illegible]	MT.2002.1110.60	7440-43-9	Cadmium	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M[illegible]	MT.2002.1110.60	7440-70-2	Calcium	768	mg / Kg	10	0.5		[illegible]	[illegible]

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Client: LANL-DDP03-0271-014,RM100 E SI
Project: XURP 0460 3219 0000
Order: 0209373 LOS40 Receipt: 09-17-02

Sample: *RE3-02-49530* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209373-16A		SW846 3050A/6020 ICP-MS					By:	JWB		
M021283	MT.2002.1110.60	7440-47-3	Chromium	4.57	mg / Kg	10	0.05		09-23-02	09-24-02
M021283	MT.2002.1110.60	7440-48-4	Cobalt	0.912	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.60	7440-50-8	Copper	2.28	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.59	7439-89-6	Iron	9000	mg / Kg	96	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.60	7439-92-1	Lead	8.38	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.60	7439-95-4	Magnesium	728	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.59	7439-96-5	Manganese	279	mg / Kg	96	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.60	7439-98-7	Molybdenum	2.78	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.60	7440-02-0	Nickel	3.24	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.60	7440-09-7	Potassium	493	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.60	7782-49-2	Selenium	0.648	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.60	7440-21-3	Silicon	241	mg / Kg	10	1	E	09-23-02	09-24-02
M021283	MT.2002.1110.60	7440-22-4	Silver	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.60	7440-23-5	Sodium	114	mg / Kg	10	0.5		09-23-02	09-24-02
M[illegible]	MT.2002.1110.60	7439-89-6	Strontium	22.3	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.60	7440-28-0	Thallium	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.60	7440-31-5	Tin	1.91	mg / Kg	10	0.025	B	09-23-02	09-24-02
M021283	MT.2002.1110.59	7440-32-6	Titanium	437	mg / Kg	96	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.60	7440-61-1	Uranium	0.322	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.60	7440-62-2	Vanadium	5.67	mg / Kg	10	0.05		09-23-02	09-24-02
M021283	MT.2002.1110.60	7440-66-6	Zinc	38.5	mg / Kg	10	0.25		09-23-02	09-24-02
0209373-16A		SW846 7471 CVAA					By:	JRE		
M021285	MT.2002.1103.59	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-23-02

Sample: *RE3-02-49531* Collected: *09-12-02 0:00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209373-17A		SW846 3050A/6020 ICP-MS					By	JWB		
M021283	MT.2002.1110.62	7429-90-5	Aluminum	4620	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.62	7440-36-0	Antimony	ND	mg / Kg	10	0.05		09-23-02	09-24-02
M021283	MT.2002.1110.62	7440-38-2	Arsenic	1.31	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.62	7440-39-3	Barium	35.3	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.62	7440-41-7	Beryllium	0.435	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.62	7440-42-8	Boron	ND	mg / Kg	10	0.15		09-23-02	09-24-02
M021283	MT.2002.1110.62	7440-43-9	Cadmium	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.62	7440-70-2	Calcium	1360	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002.1110.62	7440-47-3	Chromium	5.57	mg / Kg	10	0.05		09-23-02	09-24-02
M[illegible]	MT.2002.1110.62	7440-48-4	Cobalt	1.16	mg / Kg	10	0.025		09-23-02	09-24-02
M[illegible]	MT.2002.1110.62	7440-50-8	Copper	4.85	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002.1110.61	7439-89-6	Iron	7400	mg / Kg	100	0.5		09-23-02	09-24-02

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Cli: LANL-DDP03-0271-014,RM100 E SI
Project: XURP 0460 3219 0000
Order: 0209373 LOS40 Receipt: 09-17-02

Sample: *RE3-02-49531* Collected: *09-12-02 0.00:00* By:
Matrix: *S*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0209373-17A		SW846 3050A/6020 ICP-MS					By:			
M021283	MT.2002 1110.62	7439-92-1	Lead	6.09	mg / Kg	10	0.025		[illegible]	[illegible]
M021283	MT 2002 1110.62	7439-95-4	Magnesium	965	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT 2002 1110.61	7439-96-5	Manganese	182	mg / Kg	100	0.025		09-23-02	09-24-02
M021283	MT.2002 1110.62	7439-98-7	Molybdenum	1.00	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002 1110.62	7440-02-0	Nickel	2.89	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002 1110.62	7440-09-7	Potassium	686	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002 1110.62	7782-49-2	Selenium	0.495	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002 1110.62	7440-21-3	Silicon	359	mg / Kg	10	1	E	09-23-02	09-24-02
M021283	MT 2002 1110.62	7440-22-4	Silver	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT 2002 1110.62	7440-23-5	Sodium	306	mg / Kg	10	0.5		09-23-02	09-24-02
M021283	MT.2002 1110.62	7439-89-6	Strontium	36.9	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT.2002 1110.62	7440-28-0	Thallium	ND	mg / Kg	10	0.025		09-23-02	09-24-02
M021283	MT 2002 1110.62	7440-31-5	Tin	1.64	mg / Kg	10	0.025	B	09-23-02	09-24-02
M021283	MT 2002 1110.61	7440-32-6	Titanium	242	mg / Kg	100	0.025		09-23-02	09-24-02
Mk	MT 2002 1110.62	7440-61-1	Uranium	0.450	mg / Kg	10	0.025		09-23-02	09-24-02
M02[illegible]	MT 2002 1110.62	7440-62-2	Vanadium	5.76	mg / Kg	10	0.05		09-23-02	09-24-02
M021283	MT.2002 1110.62	7440-66-6	Zinc	38.4	mg / Kg	10	0.25		09-23-02	09-24-02
0209373-17A		SW846 7471 CVAA					By:	JRE		
M021286	MT.2002 1100.60	7439-97-6	Mercury	ND	mg / Kg	1	0.05		09-23-02	09-23-02

Unless otherwise noted, all samples were received in acceptable condition and all sampling was performed by client or client representative. Sample result of ND indicates Not Detected. The result is less than the sample specific Detection Limit. Sample specific Detection Limit is determined by multiplying the sample Dilution Factor by the listed Reporting Detection Limit. All results relate only to the items tested. Any miscellaneous workorder information or footnotes will appear below.

This sample was utilized for the matrix spike and duplicate. Please note that the recoveries were outside of QC criteria, suggesting matrix interference problems. This should be taken into account when reviewing the data.

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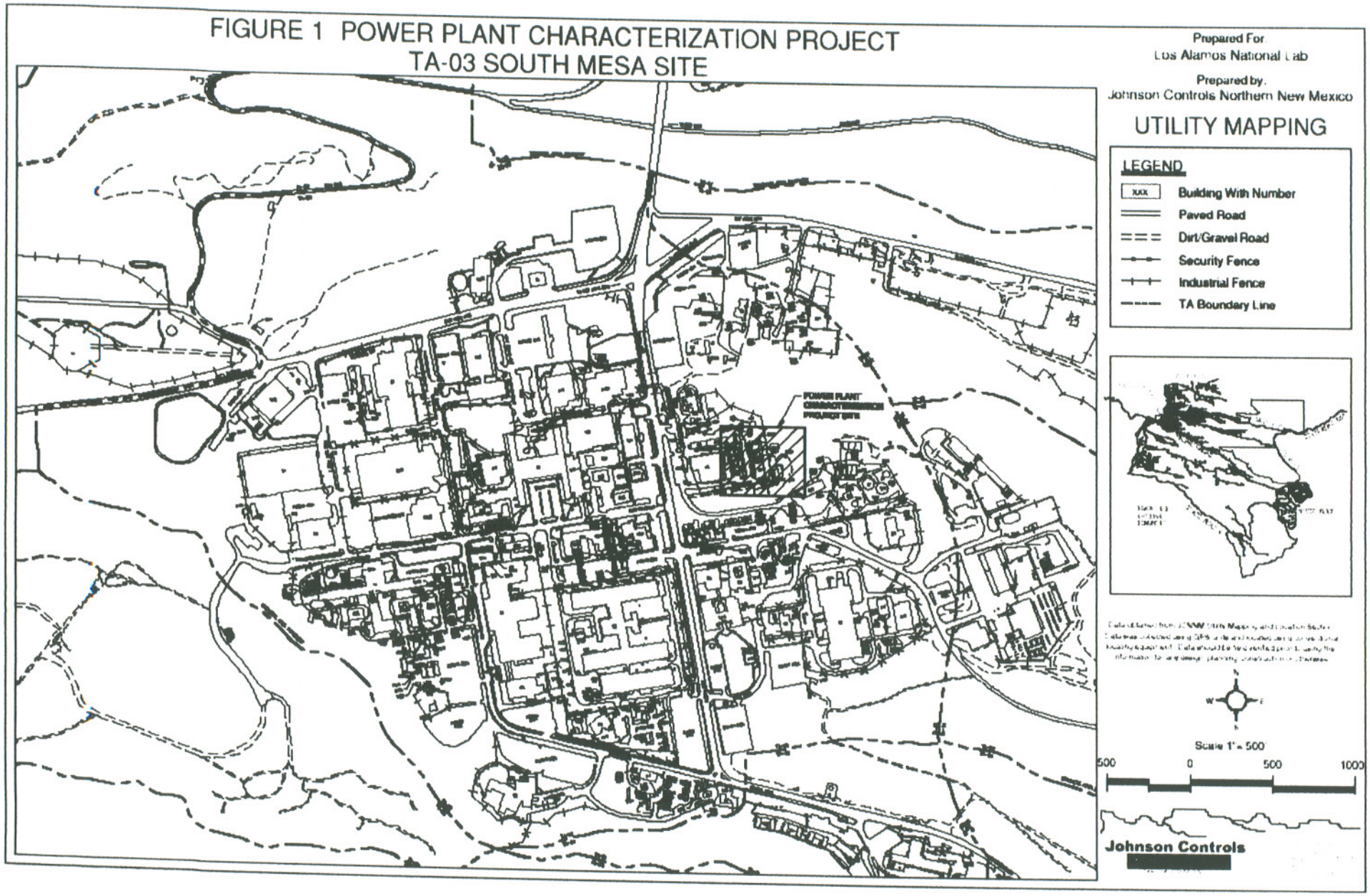
APPENDIX D

FIGURES

FIGURE 1 POWER PLANT CHARACTERIZATION PROJECT
TA-03 SOUTH MESA SITE



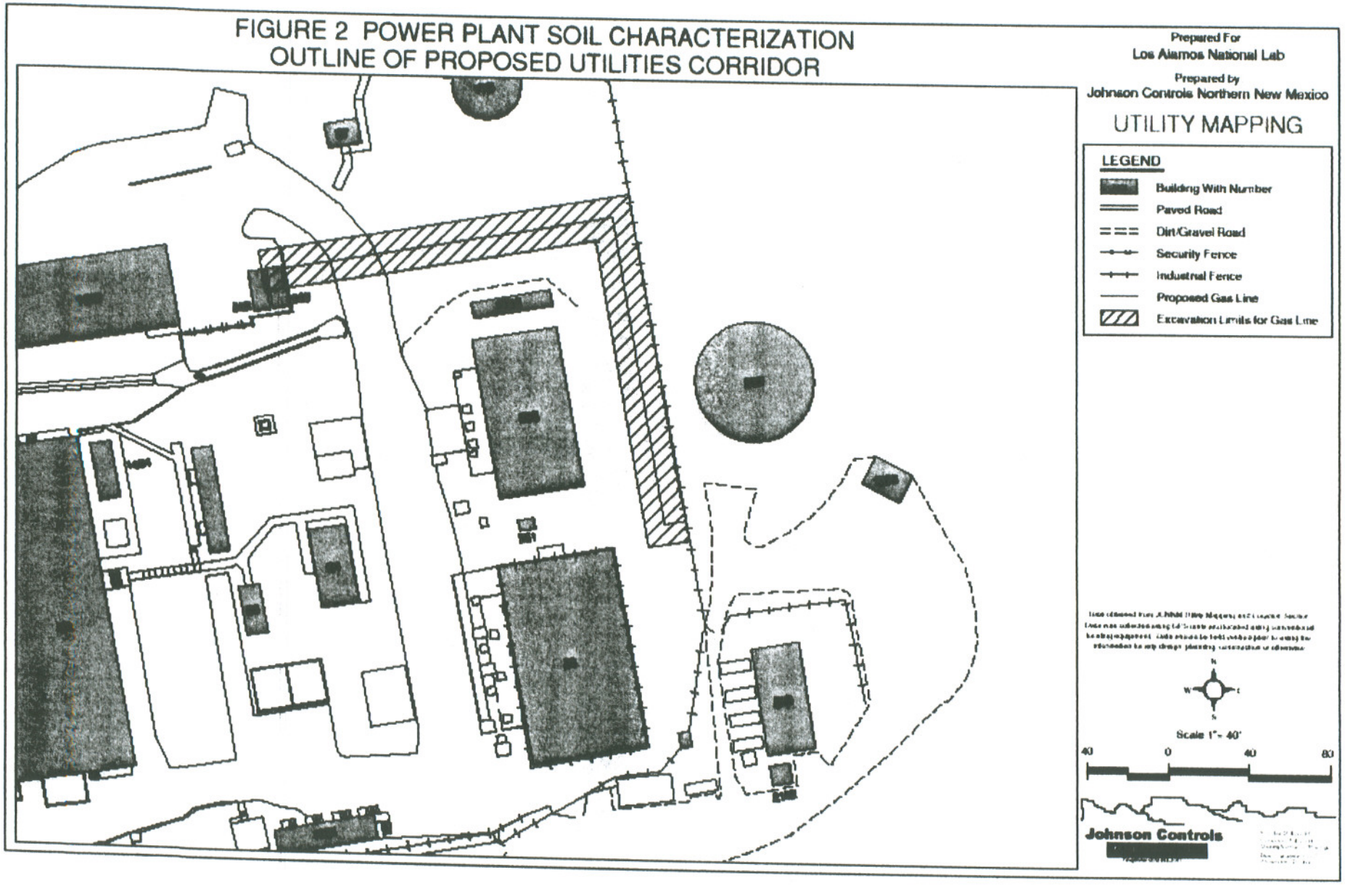


FIGURE 2 POWER PLANT SOIL CHARACTERIZATION
OUTLINE OF PROPOSED UTILITIES CORRIDOR
Prepared For
Los Alamos National Lab
Prepared by
Johnson Controls Northern New Mexico
UTILITY MAPPING
LEGEND
Building With Number
Paved Road
Dirt/Gravel Road
Security Fence
Industrial Fence
Proposed Gas Line
Excavation Limits for Gas Line
N
W
E
S
Scale 1" = 40'
40
0
40
80
Johnson Controls

FIGURE 3
SOIL SAMPLING LOCATIONS

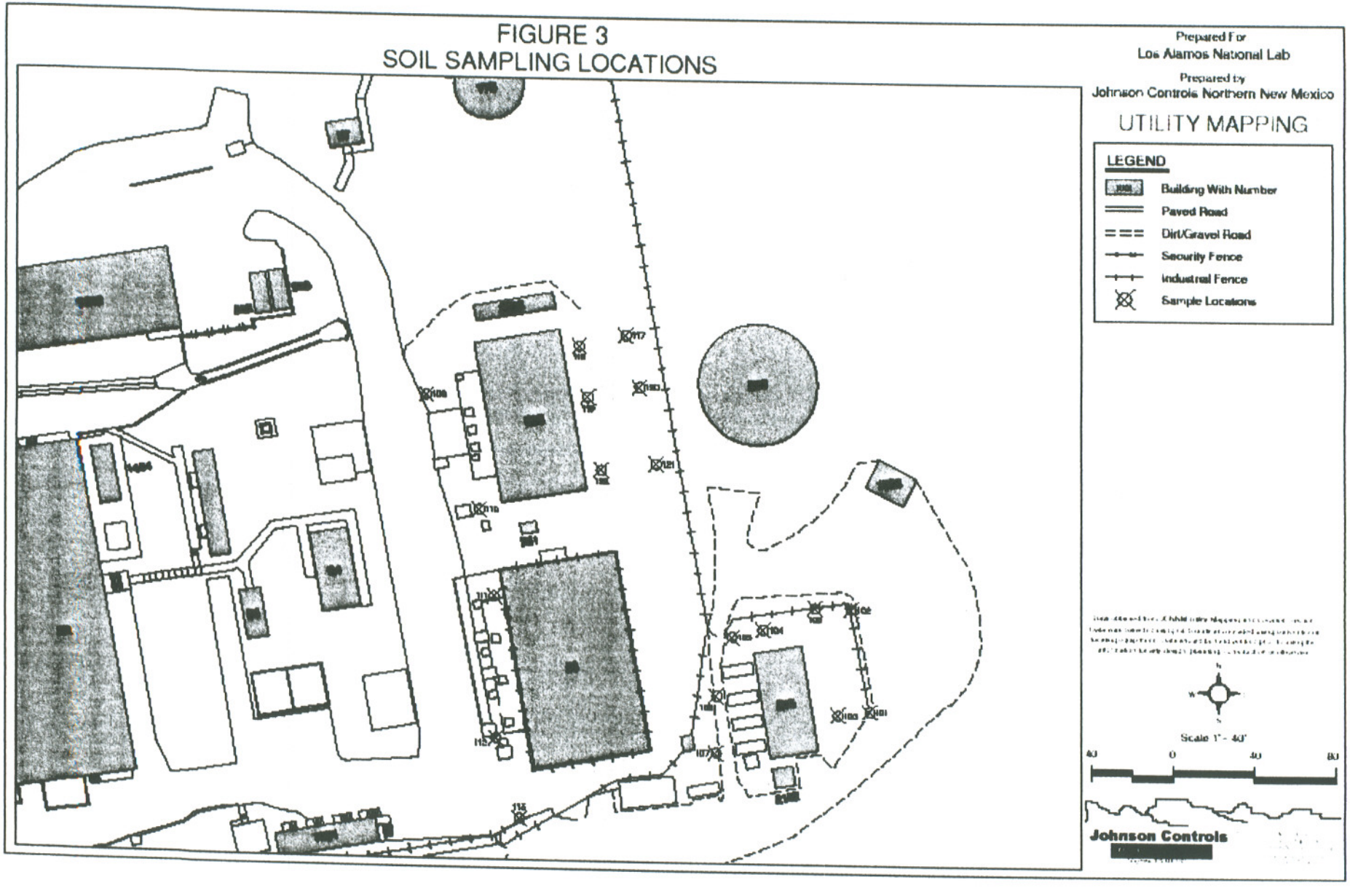
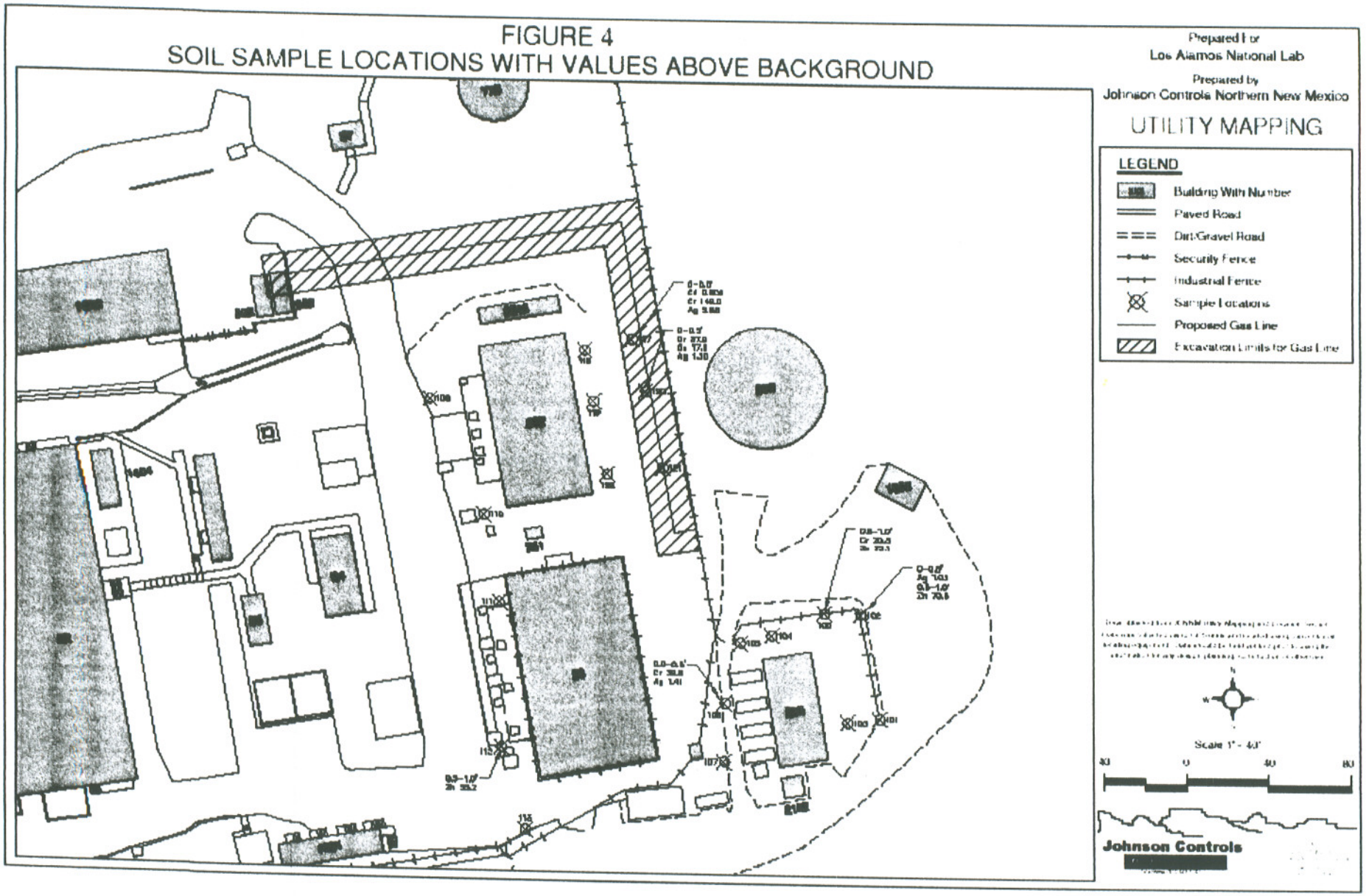



FIGURE 4
SOIL SAMPLE LOCATIONS WITH VALUES ABOVE BACKGROUND