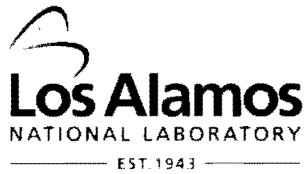
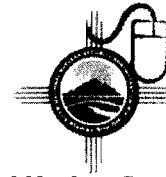


TA 06



Environmental Programs
P.O. Box 1663, MS M991
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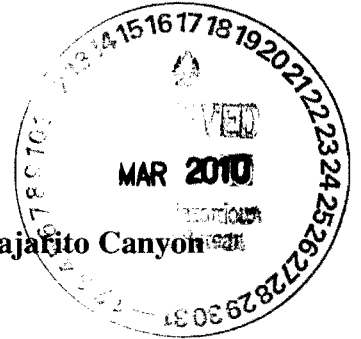


ENTERED

National Nuclear Security Administration
Los Alamos Site Office, MS A316
Environmental Restoration Program
Los Alamos, New Mexico 87544
(505) 667-4255/FAX (505) 606-2132

Date: **MAR 17 2010**
Refer To: EP2010-0096

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



Subject: Submittal of the Results of 2009 Sediment Monitoring in the Pajarito Canyon Watershed

Dear Mr. Bearzi:

Enclosed please find two hard copies with electronic files of the Results of 2009 Sediment Monitoring in the Pajarito Canyon Watershed. As specified in a November 13, 2009, Approval with Modifications of the Sampling and Analysis Plan for Sediment Monitoring in the Pajarito Canyon Watershed, the New Mexico Environment Department requested submittal of these data by March 31, 2010. This report fulfills that request.

If you have any questions, please contact Steve Veenis at (505) 667-0013 (veenis@lanl.gov) or Suzy Schulman at (505) 606-1962 (sschulman@doeal.gov).

Sincerely,

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

Sincerely,

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



MG/DG/DM/SV/SR:sm

Enclosures: Two hard copies with electronic files – Results of 2009 Sediment Monitoring in the Pajarito Canyon Watershed (LA-UR-10-1362)

Cy: (w/enc.)
Neil Weber, San Ildefonso Pueblo
Suzy Schulman, DOE-LASO, MS A316
Steve Veenis, EP-CAP, MS M992
Steve Reneau, EES-16, MS D452
RPF, MS M707 (w/ two CDs)
Public Reading Room, MS M992

Cy: (Letter and CD and/or DVD only)
Laurie King, EPA Region 6, Dallas, TX
Steve Yanicak, NMED-DOE-OB, MS M894
Danny Katzman, EP-ET-DO, MS 992
Kristine Smeltz, EP-WES, MS M992

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

Results of 2009 Sediment Monitoring in the Pajarito Canyon Watershed

Introduction

This report presents analytical data obtained from sediment samples in the Pajarito Canyon watershed in 2009 as part of the Los Alamos National Laboratory (LANL or the Laboratory) Environmental Surveillance Program, following a September 2009 sampling and analysis plan (SAP) (LANL 2009, 107340). The New Mexico Environment Department (NMED) issued an Approval with Modifications for the SAP (NMED 2009, 108123) that included the requirement to provide these results in a report to NMED by March 31, 2010. This report satisfies that requirement. Information on radioactive materials and radionuclides, including the results of sampling and analysis of radioactive constituents, is voluntarily provided to NMED in accordance with U.S. Department of Energy policy.

Samples Collected

The SAP indicated that seven active stream channel samples will be collected in 2009 in the Pajarito Canyon watershed, and up to an additional eight fine-grained sediment samples were identified as “contingency” samples, to be collected in the event large floods occurred (LANL 2009, 107340). No large floods occurred in 2009 in this watershed; therefore, the fine-grained contingency samples were not collected. In addition, 2009 was the first year since the E250 stream gage was installed in Pajarito Canyon above NM 4 that no flow was recorded at E250. Therefore, the two active stream channel locations planned below E250 were not sampled in 2009 because no change occurred since sampling was conducted in 2008.

The NMED’s approval with modifications letter for the SAP specified that semivolatile organic compounds, dioxins, and furans should be added to the analytical suite for each sample (NMED 2009, 108123). However, the samples for 2009 had already been collected and submitted before the Laboratory received NMED’s letter on November 17, 2009; hence, these analyses were not done. These analyses will be conducted in 2010, as appropriate.

Results

Analytical results for the five sediment samples from the Pajarito Canyon watershed are included electronically as Attachment 1 (on CD). Tables in Attachment 2 (on CD) summarize the frequencies of detected results and identify sampling results above the sediment background values (BVs) for inorganic chemicals and radionuclides or detected results for organic chemicals. Attachment 3 (on CD) presents particle-size data obtained from these samples. These results will also be presented in the 2009 Environmental Surveillance Report, scheduled to be published in September 2010.

Five inorganic chemicals (antimony, chromium, copper, silver, and zinc) were detected above the BVs in a fine-grained, silt-rich sample collected from the lower retention pond in drainage G-6 at Material Disposal Area (MDA) G, and two of these chemicals (antimony and zinc) were also detected above their BVs in a coarse-grained sample from drainage G-7. Two organic chemicals (Aroclor-1254 and Aroclor-1260) were detected in the sample from the lower retention pond in drainage G-6. Four radionuclides (americium-241, plutonium-238, plutonium-239/240, and tritium) were detected above the BVs in two samples each, including drainage G-4, the lower retention pond in drainage G-6, and drainage G-7. These results are similar to previous years (e.g., LANL 2009, 108621).

REFERENCES

The following list includes all documents cited in this report. Parenthetical information following each reference provides the author(s), publication date, and ER ID. This information is also included in text citations. ER IDs are assigned by the Environmental Programs Directorate's Records Processing Facility (RPF) and are used to locate the document at the RPF and, where applicable, in the master reference set.

Copies of the master reference set are maintained at the NMED Hazardous Waste Bureau and the Directorate. The set was developed to ensure that the administrative authority has all material needed to review this document, and it is updated with every document submitted to the administrative authority. Documents previously submitted to the administrative authority are not included.

LANL (Los Alamos National Laboratory), September 2009. "Sampling and Analysis Plan for Sediment Monitoring in the Pajarito Canyon Watershed," Los Alamos National Laboratory document LA-UR-09-5858, Los Alamos, New Mexico. (LANL 2009, 107340)

LANL (Los Alamos National Laboratory), September 2009. "Environmental Surveillance at Los Alamos during 2008," Los Alamos National Laboratory report LA-14407-ENV, Los Alamos, New Mexico. (LANL 2009, 108621)

NMED (New Mexico Environment Department), November 13, 2009. "Notice of Approval with Modifications; Sampling and Analysis Plan for Sediment Monitoring in the Pajarito Canyon Watershed," New Mexico Environment Department letter to D. Gregory (DOE-LASO) and D. McInroy (LANL) from J.P. Bearzi (NMED-HWB), Santa Fe, New Mexico. (NMED 2009, 108123)

Attachments 1 to 3

Analytical Results
(on CD included with this document)

Group Name	USI	Sample ID	Request Number	URI	RFI Class	Analytical Suite	Analytical Method	Analyte	Lab Matrix	Std Result	Std Uncertainty	Std Result Unit	Std MDA	Std MDL	Std Quant Limit	Percent Moisture	Dilution Factor	Reporting Qualifier	Reporting Qualifier Reason	Lab Qualifier	Lab Sample Type
C-00-011	953722	CAPA-10-4885	10-420	66202352	INORGANIC	METALS	SW-846:6010B	Lead	Solid	7.06		mg/kg		0.28	1.13	11	1				Client Sample
C-00-011	953722	CAPA-10-4885	10-420	66204212	INORGANIC	METALS	SW-846:6010B	Magnesium	Solid	664		mg/kg		9.6	33.8	11	1	J	I10a	*	Client Sample
C-00-011	953722	CAPA-10-4885	10-420	66201882	INORGANIC	METALS	SW-846:6010B	Potassium	Solid	664		mg/kg		7.2	28.2	11	1				Client Sample
C-00-011	953722	CAPA-10-4885	10-420	66205672	INORGANIC	METALS	SW-846:6010B	Silver	Solid	0.318		mg/kg		0.11	0.563	11	1	J	J_LAB	J	Client Sample
C-00-011	953722	CAPA-10-4885	10-420	66204742	INORGANIC	METALS	SW-846:6010B	Sodium	Solid	87.9		mg/kg		7.9	28.2	11	1				Client Sample
C-00-011	953722	CAPA-10-4885	10-420	66205772	INORGANIC	METALS	SW-846:6010B	Vanadium	Solid	8.2		mg/kg		0.11	0.563	11	1				Client Sample
C-00-011	953722	CAPA-10-4885	10-420	66202992	INORGANIC	METALS	SW-846:6010B	Zinc	Solid	74.6		mg/kg		0.37	1.13	11	1			*	Client Sample
C-00-011	953722	CAPA-10-4885	10-420	66205822	INORGANIC	METALS	SW-846:6020	Arsenic	Solid	0.809		mg/kg		0.22	1.09	11	2	J	J_LAB	J	Client Sample
C-00-011	953722	CAPA-10-4885	10-420	66203222	INORGANIC	METALS	SW-846:6020	Beryllium	Solid	0.353		mg/kg		0.022	0.109	11	2				Client Sample
C-00-011	953722	CAPA-10-4885	10-420	66205292	INORGANIC	METALS	SW-846:6020	Nickel	Solid	3.02		mg/kg		0.11	0.437	11	2				Client Sample
C-00-011	953722	CAPA-10-4885	10-420	66204862	INORGANIC	METALS	SW-846:6020	Selenium	Solid	1.09		mg/kg		0.55	1.09	11	2	U	U_LAB	U	Client Sample
C-00-011	953722	CAPA-10-4885	10-420	66203912	INORGANIC	METALS	SW-846:6020	Thallium	Solid	0.218		mg/kg		0.066	0.218	11	2	U	U_LAB	U	Client Sample
C-00-011	953722	CAPA-10-4885	10-420	66202362	INORGANIC	METALS	SW-846:7471A	Mercury	Solid	0.0117		mg/kg		0.004	0.0117	11	1	U	U_LAB	U	Client Sample
C-00-011	953722	CAPA-10-4885	10-420	66204272	ORGANIC	PCB	SW-846:8082	Aroclor-1016	Solid	0.00374		mg/kg		0.0012	0.0037	11.2	1	U	U_LAB	U	Client Sample
C-00-011	953722	CAPA-10-4885	10-420	66203662	ORGANIC	PCB	SW-846:8082	Aroclor-1221	Solid	0.00374		mg/kg		0.0012	0.0037	11.2	1	U	U_LAB	U	Client Sample
C-00-011	953722	CAPA-10-4885	10-420	66204692	ORGANIC	PCB	SW-846:8082	Aroclor-1232	Solid	0.00374		mg/kg		0.0012	0.0037	11.2	1	U	U_LAB	U	Client Sample
C-00-011	953722	CAPA-10-4885	10-420	66203062	ORGANIC	PCB	SW-846:8082	Aroclor-1242	Solid	0.00374		mg/kg		0.0012	0.0037	11.2	1	U	U_LAB	U	Client Sample
C-00-011	953722	CAPA-10-4885	10-420	66203252	ORGANIC	PCB	SW-846:8082	Aroclor-1248	Solid	0.00374		mg/kg		0.0012	0.0037	11.2	1	U	U_LAB	U	Client Sample
C-00-011	953722	CAPA-10-4885	10-420	66202442	ORGANIC	PCB	SW-846:8082	Aroclor-1254	Solid	0.00374		mg/kg		0.0012	0.0037	11.2	1	U	U_LAB	U	Client Sample
C-00-011	953722	CAPA-10-4885	10-420	66202642	ORGANIC	PCB	SW-846:8082	Aroclor-1260	Solid	0.00374		mg/kg		0.0012	0.0037	11.2	1	U	U_LAB	U	Client Sample
C-00-011	953722	CAPA-10-4885	10-420	66204952	RAD	AM_241	HASL-300:AM-241	Americium-241	Solid	0.36	0.032	pCi/g	0.025				1				Client Sample
C-00-011	953722	CAPA-10-4885	10-420	66202252	RAD	H3	EPA:906.0	Tritium	Solid	0.0407865	0.0081573	pCi/g	0.0234831			11	1				Client Sample
C-00-011	953722	CAPA-10-4885	10-420	66205762	RAD	ISO_PU	HASL-300:ISOPU	Plutonium-238	Solid	0.0376	0.0075	pCi/g	0.021				1				Client Sample
C-00-011	953722	CAPA-10-4885	10-420	66201972	RAD	ISO_PU	HASL-300:ISOPU	Plutonium-239/240	Solid	0.659	0.045	pCi/g	0.024				1				Client Sample
C-00-011	953722	CAPA-10-4885	10-420	66205112	RAD	ISO_U	HASL-300:ISOU	Uranium-234	Solid	0.83	0.076	pCi/g	0.12				1				Client Sample
C-00-011	953722	CAPA-10-4885	10-420	66203972	RAD	ISO_U	HASL-300:ISOU	Uranium-235/236	Solid	0.0661	0.016	pCi/g	0.058				1				Client Sample
C-00-011	953722	CAPA-10-4885	10-420	66204722	RAD	ISO_U	HASL-300:ISOU	Uranium-238	Solid	0.834	0.076	pCi/g	0.057				1				Client Sample

Group Name	Analyte	Media	Number of Analyses	Number of Detects	Concentration Range	Std Result UOM	Background Value	Frequency of Detects above Background Value	Frequency of Nondetects above Background Value	Min Detected Result
C-00-011	Aluminum	SED	5	5	2210 to 7140	mg/kg	15400	0/5	0/5	2210
C-00-011	Antimony	SED	5	2	0.861 to 3.36	mg/kg	0.83	2/5	3/5	0.861
C-00-011	Arsenic	SED	5	5	0.617 to 1.61	mg/kg	3.98	0/5	0/5	0.617
C-00-011	Barium	SED	5	5	22.8 to 84.5	mg/kg	127	0/5	0/5	22.8
C-00-011	Beryllium	SED	5	5	0.345 to 0.875	mg/kg	1.31	0/5	0/5	0.345
C-00-011	Cadmium	SED	5	2	0.117 to [0.545]	mg/kg	0.4	0/5	3/5	0.117
C-00-011	Calcium	SED	5	5	748 to 3800	mg/kg	4420	0/5	0/5	748
C-00-011	Chromium	SED	5	5	2.27 to 15.7	mg/kg	10.5	1/5	0/5	2.27
C-00-011	Cobalt	SED	5	5	0.91 to 3.04	mg/kg	4.73	0/5	0/5	0.91
C-00-011	Copper	SED	5	5	1.71 to 16.5	mg/kg	11.2	1/5	0/5	1.71
C-00-011	Iron	SED	5	5	4610 to 12100	mg/kg	13800	0/5	0/5	4610
C-00-011	Lead	SED	5	5	4.87 to 13.4	mg/kg	19.7	0/5	0/5	4.87
C-00-011	Magnesium	SED	5	5	538 to 2080	mg/kg	2370	0/5	0/5	538
C-00-011	Mercury	SED	5	2	0.00548 to 0.0948	mg/kg	0.1	0/5	0/5	0.00548
C-00-011	Nickel	SED	5	5	1.96 to 7.16	mg/kg	9.38	0/5	0/5	1.96
C-00-011	Potassium	SED	5	5	428 to 1540	mg/kg	2690	0/5	0/5	428
C-00-011	Selenium	SED	5	0	[1 to 1.12]	mg/kg	0.3	0/5	5/5	0
C-00-011	Silver	SED	5	5	0.276 to 4.77	mg/kg	1	1/5	0/5	0.276
C-00-011	Sodium	SED	5	5	40 to 178	mg/kg	1470	0/5	0/5	40
C-00-011	Thallium	SED	5	1	0.128 to [0.218]	mg/kg	0.73	0/5	0/5	0.128
C-00-011	Vanadium	SED	5	5	4.37 to 14	mg/kg	19.7	0/5	0/5	4.37
C-00-011	Zinc	SED	5	5	22.4 to 125	mg/kg	60.2	2/5	0/5	22.4

Sample Id	Location Id	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Potassium	Selenium	Silver	Vanadium	Zinc
Inorganic Chemicals Above Background per Sample, Standard UOM = mg/kg				15400	0.83	3.98	127	1.31	0.4	4420	10.5	4.73	11.2	13800	19.7	2370	543	0.1	9.38	2690	0.3	1	19.7	60.2
SED Background Value																								
C-00-011																								
CAPA-10-4881	MDA G-4	0.0000-0.3300	SED -		1.06 (U)	-	-	-	0.53 (U)	-	-	-	-	-	-	-	-	-	-	-	1.07 (U)	-	-	-
CAPA-10-4882	MDA G-5	0.0000-0.2600	SED -		0.996 (U)	-	-	-	0.498 (U)	-	-	-	-	-	-	-	-	-	-	-	1 (U)	-	-	-
CAPA-10-4883	MDA G-6	0.0000-0.2000	SED -		1.09 (U)	-	-	-	0.545 (U)	-	-	-	-	-	-	-	-	-	-	-	1.07 (U)	-	-	-
CAPA-10-4884	MDA G-6 Retention Pond Lower	0.0000-0.0700	SED -		0.861 (U)	-	-	-	-	-	15.7	-	16.5	-	-	-	-	-	-	-	1.12 (U)	4.77	-	125
CAPA-10-4885	MDA G-7	0.0000-0.1000	SED -		3.36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.09 (U)	-	-	74.6

Group Name	Analyte	Media	Number of Analyses	Number of Detects	Concentration Range	Std Result UOM	Frequency of Detects	EQL	Min Detected Result
C-00-011	Aroclor-1254	SED	4	1	[0.00348] to 0.0201	mg/kg	1/4	0.00374	0.0201
C-00-011	Aroclor-1260	SED	4	1	[0.00348] to 0.0209	mg/kg	1/4	0.00374	0.0209

Sample Id	Location Id	Depth (ft)	Media	Aroclor-1254	Aroclor-1260
Organic Chemical Detects per Sample, Standard UOM = mg/kg					
C-00-011					
CAPA-10-4884	MDA G-6 Retention Pond	Lower 0.0000-0.0700	SED	0.0201	0.0209

Group Name	Analyte	Media	Number of Analyses	Number of Detects	Concentration Range	Std Result UOM	Background Value	Frequency of Detects above Background Value	Min Detected Result
C-00-011	Americium-241	SED	5	2	[0.00465] to 0.36	pCi/g	0.04	2/5	0.133
C-00-011	Plutonium-238	SED	5	2	[-0.0128] to 0.0591	pCi/g	0.006	2/5	0.0376
C-00-011	Plutonium-239/240	SED	5	3	[0.0143] to 0.659	pCi/g	0.068	2/5	0.024
C-00-011	Tritium	SED	5	5	0.0407865 to 0.152634	pCi/g	0.093	2/5	0.0407865
C-00-011	Uranium-234	SED	5	5	0.83 to 1.49	pCi/g	2.59	0/5	0.83
C-00-011	Uranium-235/236	SED	5	2	[0.0392] to 0.0826	pCi/g	0.2	0/5	0.0661
C-00-011	Uranium-238	SED	5	5	0.834 to 1.39	pCi/g	2.29	0/5	0.834

Sample Id	Location Id	Depth (ft)	Media	Americium-241	Cesium-137	Plutonium-238	Plutonium-239/240	Tritium	Uranium-238
Radionuclides Detected Above Background/Fallout, Standard UOM = pCi/g				0.04	0.9	0.006	0.068	0.093	2.29
SED Background Value									
C-00-011									
CAPA-10-4881	MDA G-4	0.0000-0.3300	SED	-	NA	-	-	0.152634	-
CAPA-10-4884	MDA G-6 Retention Pond	0.0000-0.0700	Low SED	0.133	NA	0.0591	0.189	0.114944	-
CAPA-10-4885	MDA G-7	0.0000-0.1000	SED	0.36	NA	0.0376	0.659	-	-

Particle Size Data for Sediment Samples Collected in the Pajarito Canyon Watershed in 2009

Location	Sample ID	Gravel; >	Very Coarse	Coarse	Medium	Fine	Very Fine	Coarse	Fine Silt;	Clay; <2
		2 mm	Sand; 2.0-	Sand; 1.0-	Sand; 0.5-	Sand;	Sand;	Silt; 62.5-	15-2	µm
		(weight	(weight	(weight	(weight	(weight	(weight	(weight	(weight	(weight
		%)	%)	%)	%)	%)	%)	%)	%)	%)
MDA G-4	CAPA-10-4881	23.6	46.9	23.9	8.0	3.3	2.2	6.2	4.9	4.7
MDA G-5	CAPA-10-4882	1.3	33.9	30.7	9.7	3.9	2.6	7.5	6.1	5.6
MDA G-6	CAPA-10-4883	1.3	25.8	26.2	15.3	7.2	4.8	8.6	6.0	6.4
MDA G-6 Retention Pond Lowe	CAPA-10-4884	0.1	0.2	0.9	1.0	1.1	3.2	49.8	33.1	10.7
MDA G-7	CAPA-10-4885	2.3	25.4	27.0	13.5	7.4	4.7	10.6	5.7	5.7

D = Duplicate analyses

ND = No Data/Not determined

NS = Insufficient sample mass for analysis

NA = Not applicable/Not analyzed