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Title:	Los Alamos National Laboratory Sitewide Monitoring Program Drinking Water Results for the Los Alamos County Water Supply Wells
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Intended for:	Mr. Pete Padilla Department of Public Utilities County of Los Alamos Los Alamos, NM 87544

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Date:
Refer To: EP2010-XXXX

Mr. Pete Padilla
Environmental Compliance Officer
Department of Public Utilities
County of Los Alamos
P.O. Drawer 1030
Los Alamos, NM 87544

Subject: Los Alamos National Laboratory Sitewide Monitoring Program Drinking Water Results for the Los Alamos County Water Supply Wells

Dear Mr. Padilla:

This report, prepared by Los Alamos National Laboratory (the Laboratory), provides the analytical results from the March 22 and April 2, 2010, sampling and analysis of Los Alamos County Water Supply Wells O-1, O-4, PM-1, PM-3, PM-4 and PM-5. Water supply well PM-2 was out of service at the time of sampling. In addition, tritium results from the November 17, 2009, sampling of water supply wells O-1, O-4, PM-1, PM-3, and PM-5 have been included in this report. All results were below the U.S. Environmental Protection Agency (EPA) primary and secondary drinking water standards, with the exception of the following:

- pH was measured at water supply well O-1 at 8.67 su. The National Secondary Drinking Water Regulations have established a guideline for pH in drinking water of 6.5–8.5 su.

Quarterly monitoring of the county's water supply wells is conducted in accordance with the March 23, 2010, sampling and analysis plan. Under this plan, all Los Alamos County water supply wells will be sampled annually for full-suite analysis (radionuclides, general inorganics, metals, and organics). In addition, select wells are sampled quarterly for specific contaminants of concern: chromium, perchlorate, diesel range organics (DROs), tritium, volatile organic compounds (VOCs), nitrate+nitrite, molybdenum, and high explosives. Below is a detailed discussion of the analytical results from the first quarter 2010 sampling event.

The attached CD also contains the following items: (1) General Engineering Laboratories, Inc. (GEL) and University of Miami Tritium Laboratory (UMTL) data package; and (2) an Excel file of the analytical results with a glossary of laboratory qualification codes, secondary validation codes, and secondary validation reason codes. The analytical results are as follows.

Tritium: Analytical results from sampling water supply wells O-1, O-4, PM-1, PM-3, PM-4, and PM-5 for low-level tritium are presented in Table 1.0. Tritium activities at all locations were nondetect (U flag) with the exception of the following:

- Tritium was detected in the November 17, 2009, sample from O-1 at 16.92 pCi/L. This value is consistent with previous results from O-1 and was below the EPA MCL of 20,000 pCi/L for tritium in drinking water.

General Inorganics: The analytical results from sampling at water supply wells O-1, O-4, PM-1, PM-3, PM-4, and PM-5 for general inorganics are summarized in Table 2.0.

- **Perchlorate:** Perchlorate concentrations at all locations ranged between 0.37 µg/L and 0.45 µg/L, with the exception of O-1. The perchlorate concentration at O-1 was 1.25 µg/L; this value is consistent with previous measurements taken from this location.

  Currently, neither the federal government nor the State of New Mexico has established a drinking water standard for perchlorate. On January 8, 2009, EPA issued an interim health advisory of 15 µg/L for perchlorate in drinking water, replacing the existing preliminary remediation goal of 24.5 µg/L.

- **Nitrate+Nitrite (as Nitrogen):** The nitrate+nitrite (as N) concentrations at PM-4 and PM-5 were 0.37 mg/L and 0.38 mg/L, respectively, well below the EPA MCL of 10 mg/L.

Metals: The analytical results from sampling at water supply wells O-4, PM-1, PM-3, PM-4, and PM-5 for metals are summarized in Table 3.0.

- **Molybdenum:** The unfiltered molybdenum concentration at O-4 was 1.2 µg/L; there is no EPA MCL for molybdenum in drinking water. The New Mexico ground water standard for molybdenum is 1000 µg/L (20.6.2.3103 NMAC).

- **Chromium:** The filtered chromium concentrations at O-4, PM-1, PM-3, PM-4, and PM-5 ranged between 3.25 µg/L and 10.1µg/L, below the EPA MCL of 100 µg/L and the New Mexico groundwater standard of 50 µg/L (20.6.2.3103 NMAC).

In summary, all results presented in this report are below EPA MCLs and New Mexico groundwater standards, with the exception of pH at water supply well O-1.

If you would like additional information regarding this report, please contact Bob Beers at (505) 667-7969 (bbeers@lanl.gov).

Sincerely,

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

MG/PH/DK/RB:sm

Attachment: CD with the following items:
(1) GEL and UMTL data packages
(2) Excel file of Tables 1.0–3.0and glossary of laboratory qualification codes, secondary validation codes, and secondary validation reason codes (LA-UR-10-xxxx)

Cy: (w/enc.)
Tim Glasco, Los Alamos County, Los Alamos, NM
Wayne Witten, Los Alamos County, Los Alamos, NM
Steve Yanicak, NMED-DOE-OB, MS M894
Nancy Werdel, DOE-LASO, MS A316
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Michael J. Graham, ADEP, MS M991
IRM-RMMSO, MS A150 (date-stamped letter emailed)

Table 1.0
Los Alamos County Water Supply Wells
Tritium

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Location Name	Start Date	Analyte	Anyl Meth Code	Fld Prep Code		Result	Units	Std Uncert	Std Mda	Lab Qual Code	Concat Flag Code	Fld Qc Type Code	Lab Code	Sample Id
O-4	3/2/10	H-3	Generic:Low_Level_Tritium	UF	<	0.03	pCi/L	0.287	0.287	U	U		UMTL	CALA-10-12104
PM-4	3/2/10	H-3	Generic:Low_Level_Tritium	UF	<	-0.03	pCi/L	0.287	0.287	U	U		UMTL	CALA-10-12109
PM-5	3/2/10	H-3	Generic:Low_Level_Tritium	UF	<	0.13	pCi/L	0.287	0.287	U	U	FD	UMTL	CALA-10-12184
PM-5	3/2/10	H-3	Generic:Low_Level_Tritium	UF	<	0.29	pCi/L	0.287	0.287	U	U		UMTL	CALA-10-12111
O-1	11/17/09	H-3	Generic:Low_Level_Tritium	UF		16.92	pCi/L	0.287	0.543				UMTL	CALA-10-4781
O-4	11/17/09	H-3	Generic:Low_Level_Tritium	UF	<	0.03	pCi/L	0.287	0.287	U	U		UMTL	CALA-10-4779
PM-1	11/17/09	H-3	Generic:Low_Level_Tritium	UF	<	0.16	pCi/L	0.287	0.287	U	U		UMTL	CALA-10-4783
PM-3	11/17/09	H-3	Generic:Low_Level_Tritium	UF	<	0.16	pCi/L	0.287	0.287	U	U		UMTL	CALA-10-4787
PM-5	11/17/09	H-3	Generic:Low_Level_Tritium	UF	<	0.38	pCi/L	0.287	0.287		U		UMTL	CALA-10-4791

Table 2.0
Los Alamos County Water Supply Wells
General Inorganics

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Location Name	Start Date	Analyte	Analyte Desc	Anyl Meth Code	Fld Prep Code	Result	Units	Std Mdl	Lab Qual Code	Concat Flag Code	Fld Qc Type Code	Lab Code	Sample Id
O-1	3/2/10	TURB	Turbidity	GENERIC FIELD TURB	UF	0.36	NTU					FLD	CALA-10-12106
O-1	3/2/10	ClO4	Perchlorate	SW-846:6850	UF	1.25	ug/L	0.1				GELC	CALA-10-12106
O-1	3/2/10	TEMP	Temperature	GENERIC FIELD TEMP	UF	28.3	deg C					FLD	CALA-10-12106
O-1	3/2/10	SPEC_CONDC	Specific Conductance	GENERIC FIELD CONDUCTIVITY	UF	249	uS/cm					FLD	CALA-10-12106
O-1	3/2/10	pH	pH	GENERIC FIELD PH	UF	8.67	SU					FLD	CALA-10-12106
O-4	3/2/10	TURB	Turbidity	GENERIC FIELD TURB	UF	0.07	NTU					FLD	CALA-10-12104
O-4	3/2/10	SPEC_CONDC	Specific Conductance	GENERIC FIELD CONDUCTIVITY	UF	244	uS/cm					FLD	CALA-10-12104
O-4	3/2/10	TEMP	Temperature	GENERIC FIELD TEMP	UF	26.7	deg C					FLD	CALA-10-12104
O-4	3/2/10	ClO4	Perchlorate	SW-846:6850	UF	0.45	ug/L	0.05				GELC	CALA-10-12104
O-4	3/2/10	pH	pH	GENERIC FIELD PH	UF	7.46	SU					FLD	CALA-10-12104
PM-1	2/22/10	TURB	Turbidity	GENERIC FIELD TURB	F	0.18	NTU					FLD	CALA-10-12107
PM-1	2/22/10	SPEC_CONDC	Specific Conductance	GENERIC FIELD CONDUCTIVITY	F	270	uS/cm					FLD	CALA-10-12107
PM-1	2/22/10	TEMP	Temperature	GENERIC FIELD TEMP	F	26.1	deg C					FLD	CALA-10-12107
PM-1	2/22/10	pH	pH	GENERIC FIELD PH	F	8.02	SU					FLD	CALA-10-12107
PM-3	2/22/10	pH	pH	GENERIC FIELD PH	F	7.7	SU					FLD	CALA-10-12108
PM-3	2/22/10	SPEC_CONDC	Specific Conductance	GENERIC FIELD CONDUCTIVITY	F	266	uS/cm					FLD	CALA-10-12108
PM-3	2/22/10	TURB	Turbidity	GENERIC FIELD TURB	F	0.07	NTU					FLD	CALA-10-12108
PM-3	2/22/10	TEMP	Temperature	GENERIC FIELD TEMP	F	25	deg C					FLD	CALA-10-12108
PM-4	3/2/10	ClO4	Perchlorate	SW-846:6850	UF	0.37	ug/L	0.05				GELC	CALA-10-12109
PM-4	3/2/10	TEMP	Temperature	GENERIC FIELD TEMP	UF	24.7	deg C					FLD	CALA-10-12109
PM-4	3/2/10	pH	pH	GENERIC FIELD PH	UF	7.89	SU					FLD	CALA-10-12109
PM-4	3/2/10	NO3+NO2-N	Nitrate-Nitrite as Nitrogen	EPA:353.2	UF	0.37	mg/L	0.05				GELC	CALA-10-12109
PM-4	3/2/10	TURB	Turbidity	GENERIC FIELD TURB	UF	0.06	NTU					FLD	CALA-10-12109
PM-4	3/2/10	SPEC_CONDC	Specific Conductance	GENERIC FIELD CONDUCTIVITY	UF	144.6	uS/cm					FLD	CALA-10-12109
PM-5	3/2/10	ClO4	Perchlorate	SW-846:6850	UF	0.37	ug/L	0.05			FD	GELC	CALA-10-12184
PM-5	3/2/10	NO3+NO2-N	Nitrate-Nitrite as Nitrogen	EPA:353.2	UF	0.37	mg/L	0.05			FD	GELC	CALA-10-12184
PM-5	3/2/10	pH	pH	GENERIC FIELD PH	UF	7.84	SU					FLD	CALA-10-12111
PM-5	3/2/10	TURB	Turbidity	GENERIC FIELD TURB	UF	0.19	NTU					FLD	CALA-10-12111
PM-5	3/2/10	TEMP	Temperature	GENERIC FIELD TEMP	UF	23.8	deg C					FLD	CALA-10-12111
PM-5	3/2/10	NO3+NO2-N	Nitrate-Nitrite as Nitrogen	EPA:353.2	UF	0.37	mg/L	0.05				GELC	CALA-10-12111
PM-5	3/2/10	SPEC_CONDC	Specific Conductance	GENERIC FIELD CONDUCTIVITY	UF	130.8	uS/cm					FLD	CALA-10-12111
PM-5	3/2/10	ClO4	Perchlorate	SW-846:6850	UF	0.38	ug/L	0.05				GELC	CALA-10-12111

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Table 3.0
Los Alamos County Water Supply Wells
Metals

Location Name	Start Date	Analyte	Anyl Meth Code	Fld Prep Code		Result	Units	Std Mdl	Lab Qual Code	Concat Flag Code	Concat Reason Code	Fld Qc Type Code	Lab Code	Sample Id
O-4	3/2/10	Mo	SW-846:6020	UF		1.2	ug/L	0.1			I4		GELC	CALA-10-12104
O-4	3/2/10	Cr	SW-846:6020	F	<	7.78	ug/L	2.5	J	U			GELC	CALA-10-12105
PM-1	2/22/10	Cr	SW-846:6020	F		3.25	ug/L	2.5	J	J	J_LAB		GELC	CALA-10-12107
PM-3	2/22/10	Cr	SW-846:6020	F		3.59	ug/L	2.5	J	J	J_LAB		GELC	CALA-10-12108
PM-4	3/2/10	Cr	SW-846:6020	F	<	8.7	ug/L	2.5	J	U	I4		GELC	CALA-10-12110
PM-5	3/2/10	Cr	SW-846:6020	F	<	10.1	ug/L	2.5		U	I4	FD	GELC	CALA-10-13005
PM-5	3/2/10	Cr	SW-846:6020	F	<	9.28	ug/L	2.5	J	U	I4		GELC	CALA-10-12112