

SUMMARY OF NEW LOS ALAMOS NATIONAL LABORATORY GROUNDWATER DATA LOADED IN SEPTEMBER 2008

INTRODUCTION

This report provides preliminary information to the New Mexico Environment Department (NMED) concerning recent groundwater monitoring data obtained by the Los Alamos National Laboratory (the Laboratory) under its interim monitoring plan. This report contains results for chemical constituents that meet the seven screening criteria laid out in the Compliance Order on Consent (Consent Order), modified May 13, 2008. The report covers groundwater samples taken from wells or springs (listed in the accompanying table) that provide surveillance of the groundwater zones indicated in the table.

The report includes one table, *Table 1: NMED 9-08 Groundwater Report*. This table contains numerous values, often because new data are reported when they are detected for the first time since June 14, 2007, or are greater than other data collected since that time (as specified in the Consent Order). These reported data are often similar to data gathered before June 14, 2007. Over time, the data that exceed the reference data are expected to be reduced substantially.

This table includes additional comments on the significance of the results for those that appear to be exceptional or are first-time occurrences of results based on considering monitoring data acquired before June 14, 2007 (using statistics described below).

The table contains supplemental information summarizing monitoring results obtained before June 14, 2007.

The table includes sampling date, the name of the well or spring, the location of the well or spring, the depth of the screened interval, the groundwater zone sampled, analytical result, detection limit, values for regulatory standards, and analytical and secondary validation qualifiers. Additional information describing the locations and analytical data is also included. All data have been through secondary validation. The definitions for abbreviations in the table may be found at <http://wqdbworld.lanl.gov/> under "Lookup Tables" under the menu on the left side of the page.

In accordance with the Consent Order, the screening levels used include the U.S. Environmental Protection Agency (EPA) maximum contaminant levels (MCLs), the New Mexico groundwater standards, and the EPA Region 6 tap water screening levels (for compounds having no other regulatory standard). In the table, the EPA Region 6 tap water screening levels are identified as being for cancer (10^{-5} excess) or noncancer risk values. The data were screened using 10 times the EPA's 10^{-6} excess cancer risk values, as indicated in Section VIII.A.1 of the Consent Order.

Background levels applied in Criteria 2 and 5 are the most recent NMED-approved 95% upper tolerance limits for background for each groundwater zone as set forth in the "Groundwater Background Investigation Report," prepared under Section IV.A.3.d of the Consent Order.

Criteria 5 and 6 involve conclusions based on four consecutive samples. No results are included for these criteria in the table because few locations have been sampled a sufficient number of times since June 14, 2007, to meet the criteria.

DESCRIPTION OF TABLE

The table is divided into separate categories that correspond to the seven screening criteria in the Consent Order: these are labeled (in the first column) C1 through C6 for the numbered criteria and CA for cases where the concentration of a constituent in a well screen or spring has not previously exceeded either the New Mexico Water Quality Control Commission (NMWQCC) standard or the federal MCLs. Some data meet more than one criterion and appear in the table multiple times. The criteria are as follows:

- CA. The Respondents shall notify the Department orally within one business day after review of the analytical data if such data show detection of a contaminant in a well screen interval or spring at a concentration that exceeds either the NMWQCC water quality standard or the federal MCL if that contaminant has not previously exceeded such water quality standard or maximum contaminant level in such well screen interval or spring.
- C1. Detection of a contaminant that is an organic compound in a spring or screened interval of a well if that contaminant has not previously been detected in the spring or screened interval.
- C2. Detection of a contaminant that is a metal or other inorganic compound at a concentration above the background level in a spring or screened interval of a well if that contaminant has not previously exceeded the background level in the spring or screened interval.
- C3. Detection of a contaminant in a spring or screened interval of a well at a concentration that exceeds either one-half the New Mexico water quality standard or one-half the federal maximum contaminant level, or if there is no such standard for the contaminant, one-half the EPA Region 6 human health medium-specific screening level for tap water, if that contaminant has not previously exceeded one-half such standard or screening level in the spring or screened interval.
- C4. Detection of perchlorate in a spring or screened interval of a well at a concentration of 2 µg/L or greater if perchlorate at such concentration has not previously been detected in the spring or screened interval.
- C5. Detection of a contaminant that is a metal or other inorganic compound in a spring or screened interval of a well at a concentration that exceeds 2 times the background level for the third consecutive sampling of the spring or screened interval.
- C6. Detection of a contaminant in a spring or screened interval of a well at a concentration that exceeds either one-half the New Mexico water quality standard or one-half the federal MCL, and that has increased for the third consecutive sampling of that spring or screened interval.

The next seven columns of the table give information on monitoring results obtained over a longer time frame than samples collected after June 14, 2007. The columns provide summary statistics on for the samples collected since January 1, 2000, for the same analyte and field preparation (for example, filtered samples). The information includes the date of first sampling event included in the statistics, the numbers of sampling events and samples analyzed, the number of detections, and the minimum, maximum, and median concentration for detections. This information indicates whether the new result is consistent with the range of earlier data.

The subsequent columns contain location and sampling information:

Hdr 1—canyon where monitoring location is found

Zone—groundwater zone sampled by monitoring location (such as alluvial spring)

Location—monitoring location name

Port Depth—depth of top of well screen in feet (0 for springs, -1 if unknown)

Start Date—sample date

Fld QC Type Code—identifies samples that are field duplicates (definitions for these and other abbreviations may be found at <http://wqdbworld.lanl.gov/>)

Fld Prep—identifies whether samples are filtered or unfiltered

Lab Sample Type Code—indicates whether result is a primary (customer) sample or reanalysis

Anyl Suite—gives analytical suite (such as volatile organic compounds) for analyzed compound

Analyte Desc—name of analyte

Analyte—chemical symbol for analyte or CAS (Chemical Abstracts Service) number for organic compounds

Std Result—the analytical result in standard measurement units

Result/Median—the ratio of the Std Result to the median of all detections since 2000

LVL Type/Risk Code—the type of regulatory standard, screening level, or background value (indicating groundwater zone) used for comparison

Screen Level—the value of the LVL Type/Risk Code

Exceedance Ratio—the ratio of Std Result to LVL Type/Risk Code

Std Mdl—the method detection limit in standard measurement units

Std UOM—the standard units of measurement

Dilution Factor—amount by which the sample was diluted to measure the concentration

Lab Qual Code—the analytical laboratory qualifiers indicating analytical quality of the sample

Concat Flag Code—concatenated secondary validation qualifiers produced by an independent contractor who reviews data packages, verifying, for example, that holding times were met, that all documentation is present, and that analytical laboratory quality control measures were applied, documented, and kept within contract requirements

Concat Reason Code—concatenated secondary validation codes explaining assignment of qualifiers

Anyl Meth Code—analytical method number

Lab Code—analytical laboratory name

Comment—a comment on the analytical result

Table 1: NMED 9-08 Groundwater Report

Criteria Code	Visits	Samples	First Event	Min Detect	Max Detect	Median Detect	Num Detect	Hdr 1	Zone	Location	Port Depth	Start Date	Fid QC Type Code	Fid Prep Code	Lab Sample Type Code	Anyl Suite Code	Analyte Desc	Analyte	Symbol	Std Result	Result/Median	LVL Type/Risk Code	Screen Level	Exceedance Ratio	Std Mdl	Std Uom	Dilution Factor	Lab Qual Code	Concat Flag Code	Concat Reason Code	Anyl Meth Code	Lab Code	Comment
C1	4	4	05/19/04	1.28	3	2.14	2	Guaje Canyon (includes Barrancas and Rendija Canyons)	Water Supply	G-1A	272	05/20/08		UF	CS	VOA	Acetone	67-64-1		1.28	0.60	EPA TAP SCRNLVL N	5475	0.0	1.3	ug/L	1	J	J	V7c	SW-846:8260B	GELC	
C1	5	5	05/19/04	1.47	1.47	1.47	1	Guaje Canyon (includes Barrancas and Rendija Canyons)	Water Supply	G-2A	565	05/20/08		UF	CS	VOA	Acetone	67-64-1		1.47	1.00	EPA TAP SCRNLVL N	5475	0.0	1.3	ug/L	1	J	J	V7c	SW-846:8260B	GELC	
C1	4	5	02/13/07	2.97	2.97	2.97	1	Sandia Canyon	Alluvial	SCA-2	10.3	08/11/08		UF	CS	SVOA	Dioxane[1,4-]	123-91-1		2.97	1.00	EPA TAP SCRNLVL C-5	61.12	0.1	1.1	ug/L	1	J	J	J_LAB	SW-846:8270C	GELC	Only detection, near MDL
C1	6	7	11/07/01	1.6	3.29	2.445	2	Mortadad Canyon (includes Ten Site Canyon and Canada del Buey)	Alluvial	CDBO-6	34	08/18/08		UF	CS	VOA	Acetone	67-64-1		1.6	0.65	EPA TAP SCRNLVL N	5475	0.0	1.3	ug/L	1	J	J	J_LAB	SW-846:8260B	GELC	
C1	4	5	06/27/05	2.7	4.2	3.45	2	Mortadad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-33	995.5	08/14/08		UF	CS	SVOA	Bis(2-ethylhexyl)phthalate	117-81-7		2.7	0.78	EPA PRIM DW STD	6	0.5	2.4	ug/L	1	J	J	J_LAB	SW-846:8270C	GELC	
C1	5	5	06/27/05	2.83	2.83	2.83	1	Mortadad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-33	995.5	08/14/08		UF	CS	VOA	Acetone	67-64-1		2.83	1.00	EPA TAP SCRNLVL N	5475	0.0	1.3	ug/L	1	J	J	J_LAB	SW-846:8260B	GELC	
C2	5	5	02/09/04	0.25	0.308	0.285	5	Guaje Canyon (includes Barrancas and Rendija Canyons)	Water Supply	G-1A	272	05/20/08		UF	CS	GENINORG	Perchlorate	ClO4		0.308	1.08	LANL Reg BG LVL	0.05	6.2	0.05	ug/L	1				SW-846:6850	GELC	
C2	1	1	05/20/08	0.534	0.534	0.534	1	Guaje Canyon (includes Barrancas and Rendija Canyons)	Water Supply	G-1A	272	05/20/08		UF	CS	GENINORG	Total Organic Carbon	TOC		0.534	1.00	LANL Reg BG LVL	0.33	1.6	0.33	mg/L	1	J	J	J_LAB	SW-846:9060	GELC	
C2	3	4	02/22/06	5.5	15.4	7.75	4	Guaje Canyon (includes Barrancas and Rendija Canyons)	Water Supply	G-1A	272	05/20/08		F	CS	METALS	Chromium	Cr		9.9	1.28	LANL Reg BG LVL	5.75	1.7	2.5	ug/L	1	J	J	J_LAB	SW-846:6020	GELC	
C2	6	6	02/09/04	0.315	0.385	0.352	6	Guaje Canyon (includes Barrancas and Rendija Canyons)	Water Supply	G-2A	565	05/20/08		UF	CS	GENINORG	Perchlorate	ClO4		0.385	1.09	LANL Reg BG LVL	0.05	7.7	0.05	ug/L	1				SW-846:6850	GELC	
C2	1	1	05/20/08	0.485	0.485	0.485	1	Guaje Canyon (includes Barrancas and Rendija Canyons)	Water Supply	G-2A	565	05/20/08		UF	CS	GENINORG	Total Organic Carbon	TOC		0.485	1.00	LANL Reg BG LVL	0.33	1.5	0.33	mg/L	1	J	J	J_LAB	SW-846:9060	GELC	
C2	3	4	05/17/06	5.3	6.9	6	3	Guaje Canyon (includes Barrancas and Rendija Canyons)	Water Supply	G-2A	565	05/20/08		F	CS	METALS	Chromium	Cr		6.9	1.15	LANL Reg BG LVL	5.75	1.2	2.5	ug/L	1	J	J	J_LAB	SW-846:6020	GELC	
C2	6	6	02/09/04	0.377	0.451	0.436	6	Guaje Canyon (includes Barrancas and Rendija Canyons)	Water Supply	G-3A	590	05/20/08		UF	CS	GENINORG	Perchlorate	ClO4		0.446	1.02	LANL Reg BG LVL	0.05	8.9	0.05	ug/L	1				SW-846:6850	GELC	
C2	1	1	05/20/08	0.552	0.552	0.552	1	Guaje Canyon (includes Barrancas and Rendija Canyons)	Water Supply	G-3A	590	05/20/08		UF	CS	GENINORG	Total Organic Carbon	TOC		0.552	1.00	LANL Reg BG LVL	0.33	1.7	0.33	mg/L	1	J	J	J_LAB	SW-846:9060	GELC	
C2	3	4	05/17/06	3.9	6.6	4.4	3	Guaje Canyon (includes Barrancas and Rendija Canyons)	Water Supply	G-3A	590	05/20/08		F	CS	METALS	Chromium	Cr		6.6	1.50	LANL Reg BG LVL	5.75	1.2	2.5	ug/L	1	J	J	J_LAB	SW-846:6020	GELC	
C2	6	6	02/09/04	0.364	0.442	0.4195	6	Guaje Canyon (includes Barrancas and Rendija Canyons)	Water Supply	G-4A	655	05/20/08		UF	CS	GENINORG	Perchlorate	ClO4		0.442	1.05	LANL Reg BG LVL	0.05	8.8	0.05	ug/L	1				SW-846:6850	GELC	
C2	1	1	05/20/08	0.552	0.552	0.552	1	Guaje Canyon (includes Barrancas and Rendija Canyons)	Water Supply	G-4A	655	05/20/08		UF	CS	GENINORG	Total Organic Carbon	TOC		0.552	1.00	LANL Reg BG LVL	0.33	1.7	0.33	mg/L	1	J	J	J_LAB	SW-846:9060	GELC	
C2	1	1	05/20/08	0.436	0.436	0.436	1	Pueblo Canyon (includes Acid Canyon)	Water Supply	O-1	1017	05/20/08		UF	CS	GENINORG	Total Organic Carbon	TOC		0.436	1.00	LANL Reg BG LVL	0.33	1.3	0.33	mg/L	1	J	J	J_LAB	SW-846:9060	GELC	
C2	1	1	05/20/08	0.456	0.456	0.456	1	Upper Los Alamos Canyon (includes DP Canyon)	Water Supply	O-4	1115	05/20/08		UF	CS	GENINORG	Total Organic Carbon	TOC		0.456	1.00	LANL Reg BG LVL	0.33	1.4	0.33	mg/L	1	J	J	J_LAB	SW-846:9060	GELC	
C2	5	7	02/13/07	0.69	0.69	0.69	1	Sandia Canyon	Alluvial	SCA-2	10.3	08/11/08		F	CS	METALS	Antimony	Sb		0.69	1.00	LANL Avl BG LVL	0.5	1.4	0.5	ug/L	1	J	J	J_LAB	SW-846:6020	GELC	
C2	5	5	06/18/07	5.87	123	52.4	5	Sandia Canyon	Alluvial	SCA-4	37	08/11/08		F	CS	GENINORG	Chloride	Cl(-1)		123	2.35	LANL Avl BG LVL	69.76	1.8	0.66	mg/L	10				EPA:300.0	GELC	Highest result and twice previous value
C2	1	1	05/20/08	0.525	0.525	0.525	1	Sandia Canyon	Water Supply	PM-1	945	05/20/08		UF	CS	GENINORG	Total Organic Carbon	TOC		0.525	1.00	LANL Reg BG LVL	0.33	1.6	0.33	mg/L	1	J	J	J_LAB	SW-846:9060	GELC	
C2	1	2	05/20/08	0.418	0.618	0.518	2	Sandia Canyon	Water Supply	PM-3	956	05/20/08	FD	UF	CS	GENINORG	Total Organic Carbon	TOC		0.418	0.81	LANL Reg BG LVL	0.33	1.3	0.33	mg/L	1	J	J	J_LAB	SW-846:9060	GELC	

Criteria Code	Visits	Samples	First Event	Min Detect	Max Detect	Median Detect	Num Detect	Hdr 1	Zone	Location	Port Depth	Start Date	Fid QC Type Code	Fid Prep Code	Lab Sample Type Code	Anyl Suite Code	Analyte Desc	Analyte	Symbol	Std Result	Result/Median	LVL Type/Risk Code	Screen Level	Exceedance Ratio	Std Mdl	Std Uom	Dilution Factor	Lab Qual Code	Concat Flag Code	Concat Reason Code	Anyl Meth Code	Lab Code	Comment
C2	1	2	05/20/08	0.418	0.618	0.518	2	Sandia Canyon	Water Supply	PM-3	956	05/20/08		UF	CS	GENINORG	Total Organic Carbon	TOC		0.618	1.19	LANL Reg BG LVL	0.33	1.9	0.33	mg/L	1	J	J	J_LAB	SW-846:9060	GELC	
C2	5	7	07/17/00	2.7	17	5.15	6	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Alluvial	MCO-2	2	08/13/08	FD	F	CS	METALS	Arsenic	As		6.6	1.28	LANL Avl BG LVL	6	1.1	1.5	ug/L	1				SW-846:6020	GELC	
C2	14	18	08/06/01	19	102	41.65	18	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Alluvial	MCO-6	27	08/19/08		F	CS	GENINORG	Chloride	Cl(-1)		102	2.45	LANL Avl BG LVL	69.76	1.5	0.66	mg/L	10				EPA:300.0	GELC	2nd highest result in 47 years, TDS normal at 351 mg/L
C2	13	16	08/06/01	1	1	1	1	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Alluvial	MCO-6	27	08/19/08		F	CS	METALS	Beryllium	Be		1	1.00	LANL Avl BG LVL	1	1.0	1	ug/L	1	J	J	J_LAB	SW-846:6010B	GELC	
C2	12	16	05/29/02	0.13	0.13	0.13	1	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Alluvial	MCO-6	27	08/19/08		UF	CS	METALS	Mercury	Hg		0.13	1.00	LANL Avl BG LVL	0.06	2.2	0.03	ug/L	1	J	J	J_LAB	EPA:245.2	GELC	This and next two mercury samples gave same result value
C2	12	14	06/06/02	0.13	4.9	0.245	3	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Alluvial	MCO-7	39	08/19/08		UF	CS	METALS	Mercury	Hg		0.13	0.53	LANL Avl BG LVL	0.06	2.2	0.03	ug/L	1	J	J	J_LAB	EPA:245.2	GELC	3 detects in 14 UF samples since 2000; only 1 in F samples
C2	10	10	08/07/01	0.13	0.13	0.13	1	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Alluvial	MCO-7	39	08/19/08		F	CS	METALS	Mercury	Hg		0.13	1.00	LANL Avl BG LVL	0.06	2.2	0.03	ug/L	1	J	J	J_LAB	EPA:245.2	GELC	3 detects in 14 UF samples since 2000; only 1 in F samples
C2	12	19	06/15/05	0.044	2.45	0.182	7	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Intermediate	MCOI-6	686	05/20/08		F	CS	GENINORG	Total Phosphate as Phosphorus	PO4-P		2.45	13.46	LANL Int BG LVL	0.08	30.6	0.024	mg/L	1				EPA:365.4	GELC	Result about 12 times prior high value
C2	11	16	09/01/05	0.32	0.78	0.4	16	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Intermediate	MCOI-6	686	05/20/08		F	CS	METALS	Uranium	U		0.76	1.90	LANL Int BG LVL	0.72	1.1	0.05	ug/L	1				SW-846:6020	GELC	
C2	3	3	06/27/05	0.255	1.26	1.17	3	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-33	995.5	08/14/08		UF	CS	GENINORG	Total Organic Carbon	TOC		1.26	1.08	LANL Reg BG LVL	0.33	3.8	0.33	mg/L	1				SW-846:9060	GELC	
C2	6	6	06/24/05	0.035	0.34	0.1875	2	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-33	1112.4	08/14/08		F	CS	GENINORG	Total Phosphate as Phosphorus	PO4-P		0.34	1.81	LANL Reg BG LVL	0.16	2.1	0.024	mg/L	1		J	I4a	EPA:365.4	GELC	
C2	16	19	02/24/00	2.1	17.2	7.099999905	3	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-15	958.6	08/15/08		F	CS	METALS	Zinc	Zn		17.2	2.42	LANL Reg BG LVL	3.89	4.4	2	ug/L	1	E			SW-846:6010B	GELC	UF result was 2.8 ug/L
C2	17	20	04/18/02	0.484	1.32	0.727	20	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-13	958.3	08/14/08		F	CS	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N		0.9	1.24	LANL Reg BG LVL	0.89	1.0	0.05	mg/L	5		J-	I6a	EPA:353.2	GELC	
C2	13	16	06/07/05	1.2	1.2	1.2	1	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-34	895.15	05/28/08		F	CS	METALS	Cobalt	Co		1.2	1.00	LANL Reg BG LVL	0.5	2.4	1	ug/L	1	J	J	J_LAB	SW-846:6010B	GELC	
C2	1	1	05/20/08	0.485	0.485	0.485	1	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Water Supply	PM-5	1440	05/20/08		UF	CS	GENINORG	Total Organic Carbon	TOC		0.485	1.00	LANL Reg BG LVL	0.33	1.5	0.33	mg/L	1	J	J	J_LAB	SW-846:9060	GELC	
C3	12	19	06/15/05	0.044	2.45	0.182	7	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Intermediate	MCOI-6	686	05/20/08		F	CS	GENINORG	Total Phosphate as Phosphorus	PO4-P		2.45	13.46	EPA TAP SCR N LVL	0.73	6.7	0.024	mg/L	1				EPA:365.4	GELC	Result about 12 times prior high value
CA	13	18	06/14/05	1.26	4.15	2.55	18	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Alluvial	MCO-3	2	08/15/08		F	CS	GENINORG	Perchlorate	ClO4		4.15	1.63	NMED GW CONS	4	1.0	0.25	ug/L	5				SW-846:6850	GELC	
CA	5	7	07/17/00	3.8	52.8	18.2	7	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Alluvial	MCO-2	2	08/13/08	FD	F	CS	METALS	Chromium	Cr		52.8	2.90	NM GW Std	50	1.1	1.5	ug/L	1		J	I4a	SW-846:6020	GELC	This and duplicate primary sample result of 44.2 both estimated; prior high of 41.8 in June 2007
CA	12	19	06/15/05	0.044	2.45	0.182	7	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Intermediate	MCOI-6	686	05/20/08		F	CS	GENINORG	Total Phosphate as Phosphorus	PO4-P		2.45	13.46	EPA TAP SCR N LVL	0.73	3.4	0.024	mg/L	1				EPA:365.4	GELC	Result about 12 times prior high value