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Locates Action No.: n/a

John Kieling, Bureau Chief
 Hazardous Waste Bureau
 New Mexico Environment Department
 2905 Rodeo Park Drive East, Building 1
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Subject: Monthly Notification of Groundwater Data Reviewed in September 2017

This letter is Los Alamos National Laboratory's (LANL's) written submission in accordance with Section XXVI of the 2016 Compliance Order on Consent (Consent Order). Members of LANL's Associate Directorate for Environmental Management met on September 14, 2017, to review groundwater data received in August 2017. This report was prepared by comparing the data against groundwater notification criteria as defined in Section IX of the 2016 Consent Order. These criteria consider New Mexico Water Quality Control Commission (NMWQCC) groundwater standards, U.S. Environmental Protection Agency (EPA) maximum contaminant levels (MCLs), New Mexico Environment Department (NMED) screening levels for tap water, EPA regional screening levels for tap water, and NMED-approved background values for hydrogeological zones as set forth in the "Groundwater Background Investigation Report, Revision 5." For comparison with EPA tap water standards, the standard's carcinogenic risk value was adjusted to 1×10^{-5} , as specified in the Consent Order. This report was prepared using the June 2017 EPA regional screening levels for tap water.

This report also includes analytical data from samples collected at locations within the Pueblo de San Ildefonso, which are subject to reporting at this time. These data have been reviewed by the Pueblo. This review is required under the Memorandum of Agreement dated May 28, 2014, between the U.S. Department of Energy, National Nuclear Security Administration, Los Alamos Field Office, and San Ildefonso Pueblo.

1-Day Notification

There were no instances of a contaminant detected at a concentration that exceeded the NMWQCC groundwater standard or federal maximum contaminant level at locations where contaminants have not been previously detected above the respective standard (based on samples collected since June 14, 2007).

One-day notification was not required because there were no cases of a contaminant detected in a well screen interval or spring at a concentration that exceeded a water quality standard for the first time.

15-Day Notification

The required information for the contaminants and other chemical parameters that meet the five reporting criteria requiring written notification within 15 days is given in the accompanying report and tables.

If you have questions, please contact Nita Patel at (505) 665-9273 (npatel@lanl.gov) or Hai Shen at (505) 665-5046 (hai.shen@em.doe.gov).

Sincerely,



Bruce Robinson, Program Director
Environmental Remediation Program
Los Alamos National Laboratory

Sincerely,



David S. Rhodes, Director
Office of Quality and Regulatory Compliance
Environmental Management
Los Alamos Field Office

BR/DR/NP:sm

Enclosure: Two hard copies with electronic files – Summary of Groundwater Data Reviewed in September 2017 That Meet Notification Requirements (EP2017-0128)

Cy: (date-stamped letter and attachment emailed)
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SUMMARY OF GROUNDWATER DATA REVIEWED IN SEPTEMBER 2017 THAT MEET NOTIFICATION REQUIREMENTS

INTRODUCTION

This report provides information to the New Mexico Environment Department (NMED) concerning recent groundwater monitoring data obtained by Los Alamos National Laboratory (the Laboratory) under its annual "Interim Facility-Wide Groundwater Monitoring Plan" for the 2017 Monitoring Year and contains results for contaminants and other chemical constituents that meet the five screening criteria described in Section XXVI of the 2016 Compliance Order on Consent modified February 2017 (2016 Consent Order). The report covers groundwater samples collected from wells or springs (listed in the accompanying tables) that provide surveillance of the hydrogeological zones indicated in the tables.

The report includes two tables. Table 1, NMED 08-17 Groundwater Report, presents results since June 14, 2007, that met the five reporting criteria as specified in the 2016 Consent Order. Table 2, NMED 08-17 Groundwater Report Addendum, presents results that are exceeding the 95th percentile of those results in the data set defined in the "Groundwater Background Investigation Report, Revision 5." Only contaminants and other chemical constituents lacking a calculated groundwater background value (i.e., the frequency of detections was too low to calculate a background value at the 95% upper tolerance level) are listed in this table. Table 2 is a voluntary submission by the Laboratory to NMED to identify the potential risk resulting from contaminants and other chemical constituents without defined background values.

These tables include the following:

- Comments on results that appear to be exceptional based on consideration of monitoring data acquired from previous analyses (using statistics described below)
- Supplemental information summarizing monitoring results obtained from previous analyses
- Sampling date, name of the well or spring, location of the well or spring, depth of the screened interval, groundwater zone sampled, analytical result, detection limit, values for regulatory standards or screening levels, and analytical and secondary validation qualifiers. Additional information describing the locations and analytical data is also included. All data have been through secondary validation.

This report was prepared by comparing the data against groundwater notification criteria as defined in Section IX of the 2016 Consent Order. These criteria consider New Mexico Water Quality Control Commission (NMWQCC) groundwater standards, U.S. Environmental Protection Agency (EPA) maximum contaminant levels (MCLs), NMED screening levels for tap water, EPA regional screening levels for tap water, and NMED-approved background values for hydrogeological zones as set forth in the "Groundwater Background Investigation Report, Revision 5." For comparison with EPA tap water standards, the standard's carcinogenic risk value was adjusted to 1×10^{-5} , as specified in the Consent Order. This report was prepared using the June 2017 EPA regional screening levels for tap water.

Background values applied in Table 1 notification criteria C2 and C4 are the background values for hydrogeological zones as set forth in the NMED-approved "Groundwater Background Investigation Report, Revision 5."

Screening values applied in Table 2 criteria XC2scr and XC4scr are the 95th percentile of the data set used to establish background as defined in the "Groundwater Background Investigation Report, Revision 5."

DESCRIPTION OF TABLE

15-Day Notification Requirement

Table 1 is divided into separate categories that correspond to the five screening criteria in Section XXVI of the 2016 Consent Order. Some data met more than one of the notification criteria and appear in the table multiple times.

The criteria are as follows:

- 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 (1) exceeds the lower of either one-half the NMWQCC water quality standard or one-half the federal MCL, or, if there is no such standard for the contaminant, (2) exceeds one-half the tap water screening levels in Table A-1 of NMED's "Risk Assessment Guidance for Site Investigations and Remediation" (March 2017 or updates, as appropriate), or, if there is no NMED tap water screening level available for a contaminant, (3) exceeds one-half the EPA regional 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 a contaminant that is a metal or other inorganic compound in a spring or screened interval of a well at a concentration that exceeds two times the background level for the third consecutive sampling of the spring or screened interval.
- C5. Detection of a contaminant in a spring or screened interval of a well at a concentration that exceeds either one-half the NMWQCC water quality standard or one-half the federal MCL, and which has increased for the third consecutive sampling of that spring or screened interval.

Table 2 is divided into two categories that correspond to two screening criteria. They mirror criteria C2 and C4 in Table 1, respectively.

The two criteria are as follows:

- XC2scr. Detection of a contaminant that is a metal or other inorganic compound at a concentration above the 95th percentile in a spring or screened interval of a well if that contaminant has not previously exceeded the 95th percentile of the data set used to establish background in the spring or screened interval as defined in the "Groundwater Background Investigation Report, Revision 5."
- XC4scr. 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 for the third consecutive sampling exceeds 2 times the 95th percentile of the data set used to establish background as defined in the "Groundwater Background Investigation Report, Revision 5."

Columns two through eight in both tables provide summary statistics for metals or inorganic compounds by field preparation code (e.g., filtered aluminum) for samples collected since January 1, 2000, including the currently reported data. The statistics include the date of the first sampling event; the number 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—hydrogeological zone from which the groundwater sample was collected (e.g., alluvial spring)

Location—monitoring location name

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

Start Date—sample date

Fld QC Type Code—identifies regular samples (REG) or field duplicates (FD)

Fld Prep Code—identifies whether samples are filtered or unfiltered

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

Anyl Suite Code—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—analytical result in standard measurement units

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

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

Screen Level—value of the LVL Type/Risk Code

Exceedance Ratio—ratio of Std Result to LVL Type/Risk Code. In earlier versions of this report, the ratio was divided by the basis for comparison in the criterion, but that is no longer the case. For example, for a criterion (such as C3) that compares the value with one-half the standard, a value equal to a standard previously had an exceedance ratio of 2. The current report shows this ratio as 1.

Std Mdl—method detection limit in standard measurement units

Std Uom—standard units of measurement

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

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

Validation Flag—secondary validation qualifier

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

Anyl Meth Code—analytical method number

Lab Code—analytical laboratory name

Comment—comment on the analytical result

Table 1: NMED 08-17 Groundwater Report

Criteria Code	Visits	Samples	First Event	Min Detect	Max Detect	Median Detect	Num Detect	Hdr 1	Zone	Location	Screen Depth	Start Date	Fid QC Type Code	Fid Prep Code	Lab Sample Type Code	Anyl Suite Code	Analyte Desc	Analyte	Std Result	Result/Median	LVL Type/Risk Code	Screen Level	Exceedance Ratio	Std MDL	Std UOM	Dilution Factor	Lab Qual Code	Validation Flag	Validation Reason Code	Anyl Meth Code	Lab Code	Comment
C2	13	16	6/14/2005	61.4	204	138	16	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-16 S4	1237	7/27/2017	REG	F	INIT	GENINORG	Total Dissolved Solids	TDS	204	1.5	LANL Reg BG LVL	161	1.3	3.4	mg/L	1		NQ	NQ	EPA:160.1	GELC	
C4	42	47	6/9/2005	16.7	32.2	20.4	47	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Intermediate	MCOI-5	689.04	7/31/2017	REG	F	INIT	GENINORG	Calcium	Ca	31	1.5	LANL Int BG LVL	10.7	2.9	0.05	mg/L	1		NQ	NQ	SW-846:6010C	GELC	
C4	42	47	6/9/2005	4.89	13.7	6.82	47	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Intermediate	MCOI-5	689.04	7/31/2017	REG	F	INIT	GENINORG	Chloride	Cl(-1)	12.9	1.9	LANL Int BG LVL	3.11	4.1	0.134	mg/L	2		NQ	NQ	EPA:300.0	GELC	
C4	42	47	6/9/2005	54.4	105	66.8	47	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Intermediate	MCOI-5	689.04	7/31/2017	REG	F	INIT	GENINORG	Hardness	HARDNESS	99.8	1.5	LANL Int BG LVL	37.8	2.6	0.453	mg/L	1		NQ	NQ	SM:A2340B	GELC	
C4	42	47	6/9/2005	3.17	11.4	4.81	47	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Intermediate	MCOI-5	689.04	7/31/2017	REG	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	11.2	2.3	LANL Int BG LVL	0.459	24.4	0.17	mg/L	10		NQ	NQ	EPA:353.2	GELC	
C4	42	47	6/9/2005	68.7	196	93.7	47	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Intermediate	MCOI-5	689.04	7/31/2017	REG	F	INIT	GENINORG	Perchlorate	ClO4	196	2.1	LANL Int BG LVL	0.27	725.9	10	µg/L	200		NQ	NQ	SW-846:6850	GELC	The perchlorate concentration is the highest value so far and has increased for the third consecutive time. The perchlorate concentration increased as the groundwater elevation decreased.
C4	42	47	6/9/2005	68.6	145	92.9	47	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Intermediate	MCOI-5	689.04	7/31/2017	REG	F	INIT	METALS	Strontium	Sr	142	1.5	LANL Int BG LVL	59.6	2.4	1	µg/L	1		NQ	NQ	SW-846:6010C	GELC	
C4	42	47	6/9/2005	10.1	25.7	14	47	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Intermediate	MCOI-5	689.04	7/31/2017	REG	F	INIT	GENINORG	Sulfate	SO4(-2)	25.7	1.8	LANL Int BG LVL	7.1	3.6	0.266	mg/L	2		NQ	NQ	EPA:300.0	GELC	Highest so far. Concentration increased as the groundwater elevation decreased.
C4	22	26	9/19/2000	2.23	7.35	6.355	26	Sandia Canyon	Intermediate	R-12 S2	504.5	7/27/2017	REG	F	INIT	GENINORG	Chloride	Cl(-1)	7.35	1.2	LANL Int BG LVL	3.11	2.4	0.067	mg/L	1		NQ	NQ	EPA:300.0	GELC	
C4	21	23	9/19/2000	0.051	1.55	1.17	22	Sandia Canyon	Intermediate	R-12 S2	504.5	7/27/2017	REG	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	1.33	1.1	LANL Int BG LVL	0.459	2.9	0.017	mg/L	1		NQ	NQ	EPA:353.2	GELC	

Table 1: NMED 08-17 Groundwater Report

Criteria Code	Visits	Samples	First Event	Min Detect	Max Detect	Median Detect	Num Detect	Hdr 1	Zone	Location	Screen Depth	Start Date	Fid QC Type Code	Fid Prep Code	Lab Sample Type Code	Anyl Suite Code	Analyte Desc	Analyte	Std Result	Result/Median	LVL Type/Risk Code	Screen Level	Exceedance Ratio	Std MDL	Std UOM	Dilution Factor	Lab Qual Code	Validation Flag	Validation Reason Code	Anyl Meth Code	Lab Code	Comment
C4	18	20	2/1/2006	0.817	1.16	0.943	19	Sandia Canyon	Intermediate	R-12 S2	504.5	7/27/2017	REG	F	INIT	GENINORG	Perchlorate	CIO4	0.838	0.9	LANL Int BG LVL	0.27	3.1	0.05	µg/L	1		NQ	NQ	SW-846:6850	GELC	
C4	35	47	10/21/2008	56.1	76.7	65.5	47	Sandia Canyon	Intermediate	SCI-2	548	7/31/2017	REG	F	INIT	METALS	Barium	Ba	70.1	1.1	LANL Int BG LVL	13.5	5.2	1	µg/L	1		NQ	NQ	SW-846:6010C	GELC	
C4	35	47	10/21/2008	59.5	73.6	67.5	47	Sandia Canyon	Intermediate	SCI-2	548	7/31/2017	REG	F	INIT	GENINORG	Calcium	Ca	66.7	1	LANL Int BG LVL	10.7	6.2	0.05	mg/L	1		NQ	NQ	SW-846:6010C	GELC	
C4	35	45	10/21/2008	53.4	93	63.5	45	Sandia Canyon	Intermediate	SCI-2	548	7/31/2017	REG	F	INIT	GENINORG	Chloride	Cl(-1)	69.7	1.1	LANL Int BG LVL	3.11	22.4	0.67	mg/L	10		NQ	NQ	EPA:300.0	GELC	
C4	35	47	10/21/2008	204	255	232	47	Sandia Canyon	Intermediate	SCI-2	548	7/31/2017	REG	F	INIT	GENINORG	Hardness	HARDNESS	230	1	LANL Int BG LVL	37.8	6.1	0.453	mg/L	1		NQ	NQ	SM:A2340B	GELC	
C4	34	45	10/21/2008	13.1	17.3	15.6	45	Sandia Canyon	Intermediate	SCI-2	548	7/31/2017	REG	F	INIT	GENINORG	Magnesium	Mg	15.5	1	LANL Int BG LVL	3.14	4.9	0.11	mg/L	1		NQ	NQ	SW-846:6010C	GELC	
C4	35	47	10/21/2008	14.5	19.6	16.9	47	Sandia Canyon	Intermediate	SCI-2	548	7/31/2017	REG	F	INIT	METALS	Nickel	Ni	16.3	1	LANL Int BG LVL	3.65	4.5	0.6	µg/L	1		NQ	NQ	SW-846:6020	GELC	
C4	35	45	10/21/2008	2.89	5.1	4.28	45	Sandia Canyon	Intermediate	SCI-2	548	7/31/2017	REG	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	3.84	0.9	LANL Int BG LVL	0.459	8.4	0.085	mg/L	5		NQ	NQ	EPA:353.2	GELC	
C4	35	45	10/21/2008	0.899	1.12	0.972	45	Sandia Canyon	Intermediate	SCI-2	548	7/31/2017	REG	F	INIT	GENINORG	Perchlorate	CIO4	0.936	1	LANL Int BG LVL	0.27	3.5	0.05	µg/L	1		NQ	NQ	SW-846:6850	GELC	
C4	35	47	10/21/2008	264	353	325	47	Sandia Canyon	Intermediate	SCI-2	548	7/31/2017	REG	F	INIT	METALS	Strontium	Sr	326	1	LANL Int BG LVL	59.6	5.5	1	µg/L	1		NQ	NQ	SW-846:6010C	GELC	
C4	35	45	10/21/2008	77.9	103	88.7	45	Sandia Canyon	Intermediate	SCI-2	548	7/31/2017	REG	F	INIT	GENINORG	Sulfate	SO4(-2)	86.7	1	LANL Int BG LVL	7.1	12.2	1.33	mg/L	10	J+	I4a	EPA:300.0	GELC		
C4	31	36	11/30/2005	5.62	7.09	6.015	36	Sandia Canyon	Regional	R-10a	690	5/12/2017	FD	F	INIT	GENINORG	Chloride	Cl(-1)	7.09	1.2	LANL Reg BG LVL	2.7	2.6	0.067	mg/L	1		NQ	NQ	EPA:300.0	GELC	
C4	31	36	11/30/2005	5.62	7.09	6.015	36	Sandia Canyon	Regional	R-10a	690	5/12/2017	REG	F	INIT	GENINORG	Chloride	Cl(-1)	7.09	1.2	LANL Reg BG LVL	2.7	2.6	0.067	mg/L	1		NQ	NQ	EPA:300.0	GELC	
C4	31	36	11/30/2005	0.528	14.2	1.4	34	Sandia Canyon	Regional	R-10a	690	5/12/2017	FD	F	INIT	METALS	Nickel	Ni	13.3	9.5	LANL Reg BG LVL	2.9	4.6	0.6	µg/L	1		NQ	NQ	SW-846:6020	GELC	
C4	31	36	11/30/2005	0.528	14.2	1.4	34	Sandia Canyon	Regional	R-10a	690	5/12/2017	REG	F	INIT	METALS	Nickel	Ni	12.6	9	LANL Reg BG LVL	2.9	4.3	0.6	µg/L	1		NQ	NQ	SW-846:6020	GELC	
C4	31	36	11/30/2005	9.36	12.9	10.2	36	Sandia Canyon	Regional	R-10a	690	5/12/2017	FD	F	INIT	GENINORG	Sulfate	SO4(-2)	11.4	1.1	LANL Reg BG LVL	4.59	2.5	0.133	mg/L	1		NQ	NQ	EPA:300.0	GELC	
C4	31	36	11/30/2005	9.36	12.9	10.2	36	Sandia Canyon	Regional	R-10a	690	5/12/2017	REG	F	INIT	GENINORG	Sulfate	SO4(-2)	11.5	1.1	LANL Reg BG LVL	4.59	2.5	0.133	mg/L	1		NQ	NQ	EPA:300.0	GELC	

Table 1: NMED 08-17 Groundwater Report

Criteria Code	Visits	Samples	First Event	Min Detect	Max Detect	Median Detect	Num Detect	Hdr 1	Zone	Location	Screen Depth	Start Date	Fid QC Type Code	Fid Prep Code	Lab Sample Type Code	Anyl Suite Code	Analyte Desc	Analyte	Std Result	Result/Median	LVL Type/Risk Code	Screen Level	Exceedance Ratio	Std MDL	Std UOM	Dilution Factor	Lab Qual Code	Validation Flag	Validation Reason Code	Anyl Meth Code	Lab Code	Comment
C4	49	58	5/17/2005	2.27	7.43	5.2	58	Sandia Canyon	Regional	R-11	855	8/1/2017	REG	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	5.35	1	LANL Reg BG LVL	0.769	7	0.17	mg/L	10	NQ	NQ	EPA:353.2	GELC		
C4	49	58	5/17/2005	5.95	15.4	9.38	58	Sandia Canyon	Regional	R-11	855	8/1/2017	REG	F	INIT	GENINORG	Sulfate	SO4(-2)	10.5	1.1	LANL Reg BG LVL	4.59	2.3	0.133	mg/L	1	J+	I4a	EPA:300.0	GELC		
C4	46	50	5/20/2005	34.5	51.7	44.25	50	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-28	934.3	8/2/2017	REG	F	INIT	GENINORG	Calcium	Ca	47.2	1.1	LANL Reg BG LVL	17.03	2.8	0.05	mg/L	1	NQ	NQ	SW-846:6010C	GELC		
C4	46	50	5/20/2005	21.1	43.8	30.85	50	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-28	934.3	8/2/2017	REG	F	INIT	GENINORG	Chloride	Cl(-1)	38.9	1.3	LANL Reg BG LVL	2.7	14.4	0.335	mg/L	5	NQ	NQ	EPA:300.0	GELC		
C4	47	52	5/20/2005	310	550	404	52	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-28	934.3	8/2/2017	REG	F	INIT	METALS	Chromium	Cr	466	1.2	LANL Reg BG LVL	7.48	62.3	3	µg/L	1	NQ	NQ	SW-846:6020	GELC		
C4	44	48	9/1/2005	125	183	157	48	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-28	934.3	8/2/2017	REG	F	INIT	GENINORG	Hardness	HARDNESS	167	1.1	LANL Reg BG LVL	67.1	2.5	0.453	mg/L	1	NQ	NQ	SM:A2340B	GELC		
C4	46	50	5/20/2005	8.68	13.1	11.1	50	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-28	934.3	8/2/2017	REG	F	INIT	GENINORG	Magnesium	Mg	11.8	1.1	LANL Reg BG LVL	4.18	2.8	0.11	mg/L	1	NQ	NQ	SW-846:6010C	GELC		
C4	46	50	5/20/2005	6.1	34	14.6	48	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-28	934.3	8/2/2017	REG	F	INIT	METALS	Nickel	Ni	14.5	1	LANL Reg BG LVL	2.9	5	0.6	µg/L	1	NQ	NQ	SW-846:6020	GELC		
C4	44	47	5/20/2005	3.1	5.39	4.03	47	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-28	934.3	8/2/2017	REG	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	4.2	1	LANL Reg BG LVL	0.769	5.5	0.17	mg/L	10	NQ	NQ	EPA:353.2	GELC		
C4	44	47	9/1/2005	0.802	1.13	0.979	47	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-28	934.3	8/2/2017	REG	F	INIT	GENINORG	Perchlorate	ClO4	1.05	1.1	LANL Reg BG LVL	0.414	2.5	0.05	µg/L	1	NQ	NQ	SW-846:6850	GELC		
C4	46	50	5/20/2005	38.1	64.5	46.65	50	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-28	934.3	8/2/2017	REG	F	INIT	GENINORG	Sulfate	SO4(-2)	55.9	1.2	LANL Reg BG LVL	4.59	12.2	0.665	mg/L	5	NQ	NQ	EPA:300.0	GELC		

Table 1: NMED 08-17 Groundwater Report

Criteria Code	Visits	Samples	First Event	Min Detect	Max Detect	Median Detect	Num Detect	Hdr 1	Zone	Location	Screen Depth	Start Date	Fid QC Type Code	Fid Prep Code	Lab Sample Type Code	Anyl Suite Code	Analyte Desc	Analyte	Std Result	Result/Median	LVL Type/Risk Code	Screen Level	Exceedance Ratio	Std MDL	Std UOM	Dilution Factor	Lab Qual Code	Validation Flag	Validation Reason Code	Anyl Meth Code	Lab Code	Comment
C4	44	49	9/1/2005	249	720	296	49	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-28	934.3	8/2/2017	REG	F	INIT	GENINORG	Total Dissolved Solids	TDS	337	1.1	LANL Reg BG LVL	161	2.1	3.4	mg/L	1		NQ	NQ	EPA:160.1	GELC	
C4	37	38	8/30/2007	68	389	345.5	38	Sandia Canyon	Regional	R-35a	1013.1	7/26/2017	REG	F	INIT	METALS	Barium	Ba	361	1	LANL Reg BG LVL	38.1	9.5	1	µg/L	1		NQ	NQ	SW-846:6010C	GELC	
C4	36	37	8/30/2007	5.97	6.92	6.42	37	Sandia Canyon	Regional	R-35a	1013.1	7/26/2017	REG	F	INIT	GENINORG	Chloride	Cl(-1)	6.42	1	LANL Reg BG LVL	2.7	2.4	0.067	mg/L	1		NQ	NQ	EPA:300.0	GELC	
C4	34	39	3/12/2008	4.05	6.63	5.95	39	Sandia Canyon	Regional	R-36	766.9	7/26/2017	FD	F	INIT	GENINORG	Chloride	Cl(-1)	6.12	1	LANL Reg BG LVL	2.7	2.3	0.067	mg/L	1		NQ	NQ	EPA:300.0	GELC	
C4	34	39	3/12/2008	4.05	6.63	5.95	39	Sandia Canyon	Regional	R-36	766.9	7/26/2017	REG	F	INIT	GENINORG	Chloride	Cl(-1)	6.12	1	LANL Reg BG LVL	2.7	2.3	0.067	mg/L	1		NQ	NQ	EPA:300.0	GELC	
C4	34	40	3/12/2008	1.25	6.8	2.375	40	Sandia Canyon	Regional	R-36	766.9	7/26/2017	FD	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	2.47	1	LANL Reg BG LVL	0.769	3.2	0.085	mg/L	5		NQ	NQ	EPA:353.2	GELC	
C4	34	40	3/12/2008	1.25	6.8	2.375	40	Sandia Canyon	Regional	R-36	766.9	7/26/2017	REG	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	2.35	1	LANL Reg BG LVL	0.769	3.1	0.085	mg/L	5		NQ	NQ	EPA:353.2	GELC	
C4	33	38	3/12/2008	0.845	1.74	1.55	38	Sandia Canyon	Regional	R-36	766.9	7/26/2017	FD	F	INIT	GENINORG	Perchlorate	ClO4	1.46	0.9	LANL Reg BG LVL	0.414	3.5	0.05	µg/L	1		NQ	NQ	SW-846:6850	GELC	
C4	33	38	3/12/2008	0.845	1.74	1.55	38	Sandia Canyon	Regional	R-36	766.9	7/26/2017	REG	F	INIT	GENINORG	Perchlorate	ClO4	1.46	0.9	LANL Reg BG LVL	0.414	3.5	0.05	µg/L	1		NQ	NQ	SW-846:6850	GELC	
C4	31	33	10/9/2008	28.7	52.4	39.1	33	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-42	931.8	7/28/2017	REG	F	INIT	GENINORG	Chloride	Cl(-1)	48.9	1.3	LANL Reg BG LVL	2.7	18.1	0.67	mg/L	10		NQ	NQ	EPA:300.0	GELC	
C4	31	42	10/9/2008	718	1240	890.5	42	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-42	931.8	7/28/2017	REG	F	INIT	METALS	Chromium	Cr	793	0.9	LANL Reg BG LVL	7.48	106	3	µg/L	1	J-	l6a	SW-846:6020	GELC		
C4	31	33	10/9/2008	9.45	16.1	14.3	33	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-42	931.8	7/28/2017	REG	F	INIT	GENINORG	Magnesium	Mg	12.1	0.8	LANL Reg BG LVL	4.18	2.9	0.11	mg/L	1		NQ	NQ	SW-846:6010C	GELC	

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Criteria Code	Visits	Samples	First Event	Min Detect	Max Detect	Median Detect	Num Detect	Hdr 1	Zone	Location	Screen Depth	Start Date	Fid QC Type Code	Fid Prep Code	Lab Sample Type Code	Anyl Suite Code	Analyte Desc	Analyte	Std Result	Result/Median	LVL Type/Risk Code	Screen Level	Exceedance Ratio	Std MDL	Std UOM	Dilution Factor	Lab Qual Code	Validation Flag	Validation Reason Code	Anyl Meth Code	Lab Code	Comment
C4	31	33	10/9/2008	8.8	34	23.8	33	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-42	931.8	7/28/2017	REG	F	INIT	METALS	Nickel	Ni	19.6	0.8	LANL Reg BG LVL	2.9	6.8	0.6	µg/L	1		NQ	NQ	SW-846:6020	GELC	
C4	31	33	10/9/2008	0.057	7.03	5.83	33	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-42	931.8	7/28/2017	REG	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	5.35	0.9	LANL Reg BG LVL	0.769	7	0.085	mg/L	5		NQ	NQ	EPA:353.2	GELC	
C4	31	33	10/9/2008	1.08	1.46	1.26	33	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-42	931.8	7/28/2017	REG	F	INIT	GENINORG	Perchlorate	ClO4	1.13	0.9	LANL Reg BG LVL	0.414	2.7	0.05	µg/L	1		NQ	NQ	SW-846:6850	GELC	
C4	31	33	10/9/2008	60.6	84.3	75.1	33	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-42	931.8	7/28/2017	REG	F	INIT	GENINORG	Sulfate	SO4(-2)	79.6	1.1	LANL Reg BG LVL	4.59	17.3	1.33	mg/L	10		NQ	NQ	EPA:300.0	GELC	
C4	31	33	10/9/2008	180	394	340	33	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-42	931.8	7/28/2017	REG	F	INIT	GENINORG	Total Dissolved Solids	TDS	379	1.1	LANL Reg BG LVL	161	2.4	3.4	mg/L	1		NQ	NQ	EPA:160.1	GELC	
C4	29	35	2/28/2009	8.4	43.4	23	35	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-45 S1	880	8/2/2017	FD	F	INIT	METALS	Chromium	Cr	43	1.9	LANL Reg BG LVL	7.48	5.7	3	µg/L	1		NQ	NQ	SW-846:6020	GELC	Was 43.3 µg/L in 2/13/2017, increasing trend.
C4	29	35	2/28/2009	8.4	43.4	23	35	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-45 S1	880	8/2/2017	REG	F	INIT	METALS	Chromium	Cr	42.7	1.9	LANL Reg BG LVL	7.48	5.7	3	µg/L	1		NQ	NQ	SW-846:6020	GELC	
C4	29	31	2/28/2009	0.256	3.47	2.65	31	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-45 S1	880	8/2/2017	FD	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	3.03	1.1	LANL Reg BG LVL	0.769	3.9	0.085	mg/L	5		NQ	NQ	EPA:353.2	GELC	
C4	29	31	2/28/2009	0.256	3.47	2.65	31	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-45 S1	880	8/2/2017	REG	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	3.06	1.2	LANL Reg BG LVL	0.769	4	0.085	mg/L	5		NQ	NQ	EPA:353.2	GELC	
C4	29	34	3/5/2009	6.1	21.6	11.5	33	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-45 S2	974.9	8/2/2017	REG	F	INIT	METALS	Chromium	Cr	21.6	1.9	LANL Reg BG LVL	7.48	2.9	3	µg/L	1		NQ	NQ	SW-846:6020	GELC	Highest so far, increasing trend.
C4	31	36	3/6/2010	4.68	10.1	7.61	36	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-50 S1	1077	7/28/2017	REG	F	INIT	GENINORG	Chloride	Cl(-1)	9.15	1.2	LANL Reg BG LVL	2.7	3.4	0.067	mg/L	1		NQ	NQ	EPA:300.0	GELC	

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C4	31	38	3/6/2010	49.8	146	96	38	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-50 S1	1077	7/28/2017	REG	F	INIT	METALS	Chromium	Cr	131	1.4	LANL Reg BG LVL	7.48	17.5	3	µg/L	1		NQ	NQ	SW-846:6020	GELC	Was 146 µg/L on 5/12/2016.
C4	31	37	3/6/2010	0.398	2.72	1.59	37	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-50 S1	1077	7/28/2017	REG	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	1.99	1.3	LANL Reg BG LVL	0.769	2.6	0.085	mg/L	5		NQ	NQ	EPA:353.2	GELC	
C4	31	36	3/6/2010	7.22	14.9	11.5	36	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-50 S1	1077	7/28/2017	REG	F	INIT	GENINORG	Sulfate	SO4(-2)	13.1	1.1	LANL Reg BG LVL	4.59	2.9	0.133	mg/L	1		NQ	NQ	EPA:300.0	GELC	
C5	42	47	6/9/2005	68.7	196	93.7	47	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Intermediate	MCOI-5	689.04	7/31/2017	REG	F	INIT	GENINORG	Perchlorate	ClO4	196	2.1	NMED A1 TAP SCRNLVL	13.8	14.2	10	µg/L	200		NQ	NQ	SW-846:6850	GELC	The perchlorate concentration is the highest value so far and has increased for the third consecutive time. The perchlorate concentration increased as the groundwater elevation decreased.

Table 2: NMED 08-17 Groundwater Report Addendum

Criteria Code	Visits	Samples	First Event	Min Detect	Max Detect	Median Detect	Num Detect	Hdr 1	Zone	Location	Screen Depth	Start Date	Fid QC Type Code	Fid Prep Code	Lab Sample Type Code	Anyl Suite Code	Analyte Desc	Analyte	Std Result	Result/Median	LVL Type/Risk Code	Screen Level	Exceedance Ratio	Std MDL	Std UOM	Dilution Factor	Lab Qual Code	Validation Flag	Validation Reason Code	Anyl Meth Code	Lab Code	Comment
XC2scr	3	3	3/20/2017	37.1	165	47	3	Water Canyon (includes Canon de Valle, Potrillo, and Fence Canyons)	Regional	R-68	1340	7/13/2017	REG	F	INIT	METALS	Iron	Fe	165	3.5	Reg-Scr_95	53.8	3.1	30	µg/L	1		NQ	NQ	SW-846:6010C	GELC	The elevated iron is interpreted to be related to high turbidity in the sample based on a review of key redox indicators (e.g., nitrate and perchlorate) and dissolved oxygen, which appear representative. The conditions in the well are not expected to affect representativeness of RDX concentrations.
XC2scr	3	3	3/20/2017	0.545	0.545	0.545	1	Water Canyon (includes Canon de Valle, Potrillo, and Fence Canyons)	Regional	R-68	1340	7/13/2017	REG	F	INIT	METALS	Lead	Pb	0.545	1	Reg-Scr_95	0.5	1.1	0.5	µg/L	1	J	J	J_LAB	SW-846:6020	GELC	
XC4scr	42	47	6/9/2005	0.083	0.214	0.137	41	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Intermediate	MCOI-5	689.04	7/31/2017	REG	F	INIT	GENINORG	Bromide	Br(-1)	0.197	1.4	Int-Scr_95	0.0716	2.8	0.067	mg/L	1	J	J	J_LAB	EPA:300.0	GELC	
XC4scr	22	24	9/19/2000	23.6	180	36.9	24	Sandia Canyon	Intermediate	R-12 S2	504.5	7/27/2017	REG	F	INIT	METALS	Manganese	Mn	31.8	0.9	Int-Scr_95	8.39	3.8	2	µg/L	1		NQ	NQ	SW-846:6010C	GELC	
XC4scr	35	45	10/21/2008	0.194	0.683	0.579	44	Sandia Canyon	Intermediate	SCI-2	548	7/31/2017	REG	F	INIT	GENINORG	Bromide	Br(-1)	0.664	1.1	Int-Scr_95	0.0716	9.3	0.067	mg/L	1		NQ	NQ	EPA:300.0	GELC	
XC4scr	35	52	10/21/2008	354	658	451.5	52	Sandia Canyon	Intermediate	SCI-2	548	7/31/2017	REG	F	INIT	METALS	Chromium	Cr	363	0.8	Int-Scr_95	2.72	133.5	3	µg/L	1		NQ	NQ	SW-846:6020	GELC	
XC4scr	25	31	10/21/2008	0.00449	0.304	0.00697	31	Sandia Canyon	Intermediate	SCI-2	548	7/31/2017	REG	UF	INIT	GENINORG	Cyanide (Total)	CN (Total)	0.00687	1	Int-Scr_95	0.0017	4	0.0017	mg/L	1		NQ	NQ	EPA:335.4	GELC	
XC4scr	35	46	10/21/2008	354	796	424	46	Sandia Canyon	Intermediate	SCI-2	548	7/31/2017	REG	F	INIT	GENINORG	Total Dissolved Solids	TDS	447	1.1	Int-Scr_95	135	3.3	3.4	mg/L	1		NQ	NQ	EPA:160.1	GELC	
XC4scr	17	20	3/19/2004	3.74	68	34.4	20	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-16 S4	1237	7/27/2017	REG	F	INIT	METALS	Manganese	Mn	54.1	1.6	Reg-Scr_95	12.1	4.5	2	µg/L	1		NQ	NQ	SW-846:6010C	GELC	
XC4scr	46	50	5/20/2005	0.113	0.33	0.232	47	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-28	934.3	8/2/2017	REG	F	INIT	GENINORG	Bromide	Br(-1)	0.274	1.2	Reg-Scr_95	0.067	4.1	0.067	mg/L	1		NQ	NQ	EPA:300.0	GELC	

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Criteria Code	Visits	Samples	First Event	Min Detect	Max Detect	Median Detect	Num Detect	Hdr 1	Zone	Location	Screen Depth	Start Date	Fid QC Type Code	Fid Prep Code	Lab Sample Type Code	AnyI Suite Code	Analyte Desc	Analyte	Std Result	Result/Median	LVL Type/Risk Code	Screen Level	Exceedance Ratio	Std MDL	Std UOM	Dilution Factor	Lab Qual Code	Validation Flag	Validation Reason Code	AnyI Meth Code	Lab Code	Comment
XC4scr	34	37	5/20/2005	0.00239	0.00623	0.004145	30	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-28	934.3	8/2/2017	REG	UF	INIT	GENINORG	Cyanide (Total)	CN (Total)	0.00481	1.2	Reg-Scr_95	0.0017	2.8	0.0017	mg/L	1	J	J	J_LAB	EPA:335.4	GELC	
XC4scr	31	33	10/9/2008	0.102	0.364	0.219	32	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-42	931.8	7/28/2017	REG	F	INIT	GENINORG	Bromide	Br(-1)	0.306	1.4	Reg-Scr_95	0.067	4.6	0.067	mg/L	1		NQ	NQ	EPA:300.0	GELC	
XC4scr	22	22	10/9/2008	0.00188	0.00814	0.00657	17	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-42	931.8	7/28/2017	REG	UF	INIT	GENINORG	Cyanide (Total)	CN (Total)	0.00637	1	Reg-Scr_95	0.0017	3.7	0.0017	mg/L	1		NQ	NQ	EPA:335.4	GELC	