

DEPARTMENT OF ENERGY
Environmental Management Los Alamos Field Office (EM-LA)
Los Alamos, New Mexico 87544

OCT 23 2018



Mr. John E. Kieling
Bureau Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6303

Dear Mr. Kieling:

Subject: Monthly Notification of Groundwater Data Reviewed in October 2018

This letter is the U.S. Department of Energy (DOE) Office of Environmental Management Los Alamos Field Office (EM-LA) and Newport News Nuclear BWXT – Los Alamos, LLC (N3B) written submission in accordance with Section XXVI.D of the 2016 Compliance Order on Consent (Consent Order). Members of EM-LA and N3B met on October 11, 2018, to review groundwater data received in September 2018 in accordance with Section XXVI.C of the 2016 Consent Order. 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 May 2018 EPA regional screening levels for tap water.

1-Day Notification

There was one instance of a contaminant detected at a concentration that exceeded the NMWQCC groundwater standard or federal MCL at locations where contaminants have not been previously detected above the respective standard (based on samples collected since June 14, 2007).

In a filtered sample collected on August 11, 2018, from intermediate spring Burning Ground Spring, barium was measured at 1030 $\mu\text{g/L}$, above the 1000- $\mu\text{g/L}$ NMWQCC groundwater standard.

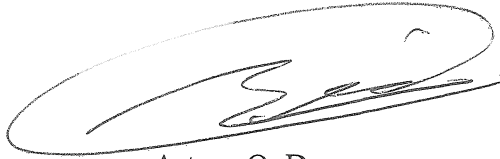
One-day notification of the above result by telephone and email to NMED occurred on October 12, 2018.

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 Steve Veenis at (505) 309-1362 (steve.veenis@em-la.doe.gov) or Hai Shen at (505) 665-5046 (hai.shen@em.doe.gov).

Sincerely,

A handwritten signature in black ink, appearing to read 'Arturo Q. Duran', enclosed within a large, loopy oval shape.

Arturo Q. Duran
Designated Agency Manager
Environmental Management
Los Alamos Field Office

Enclosures:

1. Summary of Groundwater Data Reviewed in October 2018 That Meet Notification Requirements (EM2018-0082)

cc (letter and enclosure[s] emailed):

L. King, EPA Region 6, Dallas, TX
R. Martinez, San Ildefonso Pueblo, NM
D. Chavarria, Santa Clara Pueblo, NM
W. Witten, Los Alamos County Utility Department, Los Alamos, NM
M. Hunter, NMED
S. Yanicak, NMED
J. Buckley, LANL
L. Dale, LANL
B. Iacona, LANL
C. Leasure, LANL
W. Mairson, LANL
J. Meadows, LANL
K. Torres, LANL
M. Ding, N3B
E. Evered, N3B
L. Huntoon, N3B
D. Katzman, N3B
J. Legare, N3B
F. Lockhart, N3B
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Public Reading Room (EPRR)
PRS Database

EM-LA-40AD-00323

SUMMARY OF GROUNDWATER DATA REVIEWED IN OCTOBER 2018 THAT MEET NOTIFICATION REQUIREMENTS

INTRODUCTION

This report provides information to the New Mexico Environment Department (NMED) concerning recent groundwater monitoring data obtained by Newport News Nuclear BWXT – Los Alamos, LLC (N3B) under Los Alamos National Laboratory's (the Laboratory's) annual "Interim Facility-Wide Groundwater Monitoring Plan" for the 2018 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 09-18 Groundwater Report, presents results since June 14, 2007, that met the five reporting criteria as specified in the 2016 Consent Order. Table 2, NMED 09-18 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 N3B 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 2016 Consent Order. This report was prepared using the May 2018 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 TABLES

1-Day Notification Requirement

The CA value is used in the Criteria Code column of Table 1. The CA value represents the date that shows 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 MCL in the well screen interval or spring. N3B, under the DOE Office of Environmental Management, notifies NMED orally within 1 business day after review of such analytical data and also includes the data in the 15-day notification 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 codes (the “C” stands for criterion) and their definitions 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:

Canyon—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 09-18 Groundwater Report

Criteria Code	Visits	Samples	First Event	Min Detect	Max Detect	Median Detect	Num Detect	Canyon	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
C1	11	14	1/25/2012	0.48	0.48	0.48	1	Water Canyon	Alluvial	CDV-16-611923	3.2	8/11/2018	REG	UF	INIT	VOC	Toluene	108-88-3	0.48	1	NM GW STD	750	0	0.3	µg/L	1	J	J	J_LAB	SW-846:8260B	GELC	J-flagged result, common solvent used in the analytical laboratory.
C1	12	12	4/15/2009	0.192	0.192	0.192	1	Water Canyon	Intermediate	R-26 PZ-2	150	8/7/2018	REG	UF	INIT	HEXP	PETN	78-11-5	0.192	1	EPA TAP SCRN LVL	190	0	0.114	µg/L	2	J	J	J_LAB	SW-846:8330B	GELC	J-flagged value, first detection of PETN out of 12 sampling events since 2009 at the location. Further sampling as planed in Interim Facility-Wide Groundwater Monitoring Plan will provide more info.
C2	46	53	1/3/2001	19.1	42.5	22.2	51	Water Canyon	Regional	CdV-R-15-3 S4	1235.1	8/23/2018	FD	F	INIT	METALS	Barium	Ba	42.5	1.9	LANL Reg BG LVL	38.1	1.1	1	µg/L	1		NQ	NQ	SW-846:6010C	GELC	
C2	46	53	1/3/2001	2.7	4.89	3.31	53	Water Canyon	Regional	CdV-R-15-3 S4	1235.1	8/23/2018	FD	F	INIT	GENINORG	Magnesium	Mg	4.89	1.5	LANL Reg BG LVL	4.18	1.2	0.11	mg/L	1		NQ	NQ	SW-846:6010C	GELC	
C2	46	53	1/3/2001	1.22	2.62	1.44	53	Water Canyon	Regional	CdV-R-15-3 S4	1235.1	8/23/2018	FD	F	INIT	GENINORG	Potassium	K	2.62	1.8	LANL Reg BG LVL	2.39	1.1	0.05	mg/L	1		NQ	NQ	SW-846:6010C	GELC	
C2	42	43	2/17/2009	1.99	2.87	2.34	43	Mortandad Canyon	Regional Top	R-44 S1	895	8/8/2018	REG	F	INIT	GENINORG	Chloride	Cl(-1)	2.87	1.2	LANL Reg BG LVL	2.7	1.1	0.067	mg/L	1		NQ	NQ	EPA:300.0	GELC	
C4	19	24	4/20/2010	15.2	38.7	19.85	24	Water Canyon	Intermediate Perched	16-26644	129	8/23/2018	REG	F	INIT	GENINORG	Chloride	Cl(-1)	21.9	1.1	LANL Int BG LVL	3.11	7	0.335	mg/L	5		NQ	NQ	EPA:300.0	GELC	
C4	26	32	6/1/2005	5.78	8.4	6.795	32	Water Canyon	Intermediate Perched	CdV-16-1(i)	624	8/13/2018	REG	F	INIT	GENINORG	Chloride	Cl(-1)	8.17	1.2	LANL Int BG LVL	3.11	2.6	0.067	mg/L	1		NQ	NQ	EPA:300.0	GELC	
C4	10	14	5/21/2015	9.11	66.5	12.45	14	Water Canyon	Intermediate Perched	CDV-9-1(i) S1	937.4	8/15/2018	REG	F	INIT	GENINORG	Chloride	Cl(-1)	12.1	1	LANL Int BG LVL	3.11	3.9	0.134	mg/L	2		NQ	NQ	EPA:300.0	GELC	
C4	10	14	5/21/2015	0.962	2.63	1.075	14	Water Canyon	Intermediate Perched	CDV-9-1(i) S1	937.4	8/15/2018	REG	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	1.17	1.1	LANL Int BG LVL	0.459	2.5	0.085	mg/L	5		NQ	NQ	EPA:353.2	GELC	
C4	30	35	9/9/2004	53.9	90	69.1	35	Pajarito Canyon	Intermediate Spring	Bulldog Spring	0	8/22/2018	REG	F	INIT	METALS	Barium	Ba	90	1.3	LANL Int BG LVL	13.5	6.7	1	µg/L	1		NQ	NQ	SW-846:6010C	GELC	
C4	29	34	9/9/2004	12.1	34.6	19.1	34	Pajarito Canyon	Intermediate Spring	Bulldog Spring	0	8/22/2018	REG	F	INIT	GENINORG	Chloride	Cl(-1)	32.5	1.7	LANL Int BG LVL	3.11	10.5	0.335	mg/L	5		NQ	NQ	EPA:300.0	GELC	
C4	28	33	9/9/2004	0.208	1.58	0.926	33	Pajarito Canyon	Intermediate Spring	Bulldog Spring	0	8/22/2018	REG	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	1.58	1.7	LANL Int BG LVL	0.459	3.4	0.17	mg/L	10		NQ	NQ	EPA:353.2	GELC	
C4	27	32	6/22/2005	0.537	1.11	0.7345	32	Pajarito Canyon	Intermediate Spring	Bulldog Spring	0	8/22/2018	REG	F	INIT	GENINORG	Perchlorate	ClO4	1.11	1.5	LANL Int BG LVL	0.27	4.1	0.05	µg/L	1		NQ	NQ	SW-846:6850	GELC	
C4	30	35	9/9/2004	91.8	159	113	35	Pajarito Canyon	Intermediate Spring	Bulldog Spring	0	8/22/2018	REG	F	INIT	METALS	Strontium	Sr	159	1.4	LANL Int BG LVL	59.6	2.7	1	µg/L	1		NQ	NQ	SW-846:6010C	GELC	

Table 1: NMED 09-18 Groundwater Report

Criteria Code	Visits	Samples	First Event	Min Detect	Max Detect	Median Detect	Num Detect	Canyon	Zone	Location	Screen Depth	Start Date	Fld QC Type Code	Fld 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	73	88	1/10/2000	145	1030	186	82	Water Canyon	Intermediate Spring	Burning Ground Spring	0	8/11/2018	REG	F	INIT	METALS	Barium	Ba	1030	5.5	LANL Int BG LVL	13.5	76.3	1	µg/L	1		NQ	NQ	SW-846:6010C	GELC	First time Ba concentration at this location is greater than New Mexico Water Quality Control Commission (NMWQCC) groundwater standard, and concentration has increased for the third consecutive sampling event. Total dissolved solids (TDS) and most of major cations and anions also have increased since 6/6/2017.
C4	25	30	1/29/2007	13.8	42	19.4	30	Water Canyon	Intermediate Spring	Burning Ground Spring	0	8/11/2018	REG	F	INIT	GENINORG	Chloride	Cl(-1)	21.6	1.1	LANL Int BG LVL	3.11	6.9	0.268	mg/L	4		NQ	NQ	EPA:300.0	GELC	
C4	25	30	1/29/2007	0.319	2.12	1.01	29	Water Canyon	Intermediate Spring	Burning Ground Spring	0	8/11/2018	REG	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	2.12	2.1	LANL Int BG LVL	0.459	4.6	0.17	mg/L	10		NQ	NQ	EPA:353.2	GELC	
C4	69	78	1/10/2000	122	243	166	71	Water Canyon	Intermediate Spring	Martin Spring	0	8/22/2018	FD	F	INIT	METALS	Barium	Ba	149	0.9	LANL Int BG LVL	13.5	11	1	µg/L	1		NQ	NQ	SW-846:6010C	GELC	
C4	69	78	1/10/2000	122	243	166	71	Water Canyon	Intermediate Spring	Martin Spring	0	8/22/2018	REG	F	INIT	METALS	Barium	Ba	153	0.9	LANL Int BG LVL	13.5	11.3	1	µg/L	1		NQ	NQ	SW-846:6010C	GELC	
C4	69	78	1/10/2000	15.5	42.8	28.5	78	Water Canyon	Intermediate Spring	Martin Spring	0	8/22/2018	FD	F	INIT	GENINORG	Calcium	Ca	26.6	0.9	LANL Int BG LVL	10.7	2.5	0.05	mg/L	1		NQ	NQ	SW-846:6010C	GELC	
C4	69	78	1/10/2000	15.5	42.8	28.5	78	Water Canyon	Intermediate Spring	Martin Spring	0	8/22/2018	REG	F	INIT	GENINORG	Calcium	Ca	27.4	1	LANL Int BG LVL	10.7	2.6	0.05	mg/L	1		NQ	NQ	SW-846:6010C	GELC	
C4	25	32	1/30/2007	18	44.2	22.15	32	Water Canyon	Intermediate Spring	Martin Spring	0	8/22/2018	FD	F	INIT	GENINORG	Chloride	Cl(-1)	21.2	1	LANL Int BG LVL	3.11	6.8	0.335	mg/L	5		NQ	NQ	EPA:300.0	GELC	
C4	25	32	1/30/2007	18	44.2	22.15	32	Water Canyon	Intermediate Spring	Martin Spring	0	8/22/2018	REG	F	INIT	GENINORG	Chloride	Cl(-1)	21.2	1	LANL Int BG LVL	3.11	6.8	0.335	mg/L	5		NQ	NQ	EPA:300.0	GELC	
C4	33	41	8/25/2005	65.7	112	94.3	41	Water Canyon	Intermediate Spring	Martin Spring	0	8/22/2018	FD	F	INIT	GENINORG	Hardness	HARDNESS	91.7	1	LANL Int BG LVL	37.8	2.4	0.453	mg/L	1		NQ	NQ	SM:A2340B	GELC	
C4	33	41	8/25/2005	65.7	112	94.3	41	Water Canyon	Intermediate Spring	Martin Spring	0	8/22/2018	REG	F	INIT	GENINORG	Hardness	HARDNESS	94.5	1	LANL Int BG LVL	37.8	2.5	0.453	mg/L	1		NQ	NQ	SM:A2340B	GELC	
C4	25	32	1/30/2007	1.69	4.88	2.685	32	Water Canyon	Intermediate Spring	Martin Spring	0	8/22/2018	FD	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	2.68	1	LANL Int BG LVL	0.459	5.8	0.17	mg/L	10		NQ	NQ	EPA:353.2	GELC	
C4	25	32	1/30/2007	1.69	4.88	2.685	32	Water Canyon	Intermediate Spring	Martin Spring	0	8/22/2018	REG	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	2.62	1	LANL Int BG LVL	0.459	5.7	0.17	mg/L	10		NQ	NQ	EPA:353.2	GELC	
C4	33	41	8/25/2005	93.8	155	133	41	Water Canyon	Intermediate Spring	Martin Spring	0	8/22/2018	FD	F	INIT	METALS	Strontium	Sr	121	0.9	LANL Int BG LVL	59.6	2	1	µg/L	1		NQ	NQ	SW-846:6010C	GELC	
C4	33	41	8/25/2005	93.8	155	133	41	Water Canyon	Intermediate Spring	Martin Spring	0	8/22/2018	REG	F	INIT	METALS	Strontium	Sr	125	0.9	LANL Int BG LVL	59.6	2.1	1	µg/L	1		NQ	NQ	SW-846:6010C	GELC	
C4	25	32	1/30/2007	13.1	20	16.75	32	Water Canyon	Intermediate Spring	Martin Spring	0	8/22/2018	FD	F	INIT	GENINORG	Sulfate	SO4(-2)	15.8	0.9	LANL Int BG LVL	7.1	2.2	0.133	mg/L	1		NQ	NQ	EPA:300.0	GELC	

Table 1: NMED 09-18 Groundwater Report

Criteria Code	Visits	Samples	First Event	Min Detect	Max Detect	Median Detect	Num Detect	Canyon	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	25	32	1/30/2007	13.1	20	16.75	32	Water Canyon	Intermediate Spring	Martin Spring	0	8/22/2018	REG	F	INIT	GENINORG	Sulfate	SO4(-2)	15.8	0.9	LANL Int BG LVL	7.1	2.2	0.133	mg/L	1		NQ	NQ	EPA:300.0	GELC	
C4	39	46	3/5/2009	6.1	47.4	16.6	45	Mortandad Canyon	Regional Deep	R-45 S2	974.9	8/8/2018	REG	F	INIT	METALS	Chromium	Cr	27.8	1.7	LANL Reg BG LVL	7.48	3.7	3	µg/L	1		NQ	NQ	SW-846:6020	GELC	
C4	40	42	2/28/2009	3	6.7	4.885	42	Mortandad Canyon	Regional Top	R-45 S1	880	8/8/2018	REG	F	INIT	GENINORG	Chloride	Cl(-1)	5.54	1.1	LANL Reg BG LVL	2.7	2.1	0.067	mg/L	1		NQ	NQ	EPA:300.0	GELC	
C4	40	46	2/28/2009	8.4	50.7	34.3	46	Mortandad Canyon	Regional Top	R-45 S1	880	8/8/2018	REG	F	INIT	METALS	Chromium	Cr	43.2	1.3	LANL Reg BG LVL	7.48	5.8	3	µg/L	1		NQ	NQ	SW-846:6020	GELC	
C4	40	42	2/28/2009	0.256	3.47	2.88	42	Mortandad Canyon	Regional Top	R-45 S1	880	8/8/2018	REG	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	3.06	1.1	LANL Reg BG LVL	0.769	4	0.17	mg/L	10		NQ	NQ	EPA:353.2	GELC	
C4	42	48	3/6/2010	4.68	10.1	8.375	48	Mortandad Canyon	Regional Top	R-50 S1	1077	8/9/2018	REG	F	INIT	GENINORG	Chloride	Cl(-1)	9.5	1.1	LANL Reg BG LVL	2.7	3.5	0.134	mg/L	2		NQ	NQ	EPA:300.0	GELC	
C4	42	50	3/6/2010	49.8	150	104.5	50	Mortandad Canyon	Regional Top	R-50 S1	1077	8/9/2018	REG	F	INIT	METALS	Chromium	Cr	135	1.3	LANL Reg BG LVL	7.48	18	3	µg/L	1		NQ	NQ	SW-846:6020	GELC	
C4	42	49	3/6/2010	0.398	2.72	1.81	49	Mortandad Canyon	Regional Top	R-50 S1	1077	8/9/2018	REG	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	2.2	1.2	LANL Reg BG LVL	0.769	2.9	0.17	mg/L	10		NQ	NQ	EPA:353.2	GELC	
C4	42	48	3/6/2010	7.22	15.3	12	48	Mortandad Canyon	Regional Top	R-50 S1	1077	8/9/2018	REG	F	INIT	GENINORG	Sulfate	SO4(-2)	14	1.2	LANL Reg BG LVL	4.59	3.1	0.133	mg/L	1		NQ	NQ	EPA:300.0	GELC	
C4	26	31	5/20/2011	2.03	23.3	19.15	30	Mortandad Canyon	Regional Top	R-61 S1	1125	8/9/2018	FD	F	INIT	METALS	Chromium	Cr	19.1	1	LANL Reg BG LVL	7.48	2.6	3	µg/L	1		NQ	NQ	SW-846:6020	GELC	
C4	26	31	5/20/2011	2.03	23.3	19.15	30	Mortandad Canyon	Regional Top	R-61 S1	1125	8/9/2018	REG	F	INIT	METALS	Chromium	Cr	19.2	1	LANL Reg BG LVL	7.48	2.6	3	µg/L	1		NQ	NQ	SW-846:6020	GELC	
C4	26	31	5/20/2011	0.427	2.39	1.9	31	Mortandad Canyon	Regional Top	R-61 S1	1125	8/9/2018	FD	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	2.22	1.2	LANL Reg BG LVL	0.769	2.9	0.17	mg/L	10		NQ	NQ	EPA:353.2	GELC	
C4	26	31	5/20/2011	0.427	2.39	1.9	31	Mortandad Canyon	Regional Top	R-61 S1	1125	8/9/2018	REG	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	2.22	1.2	LANL Reg BG LVL	0.769	2.9	0.17	mg/L	10		NQ	NQ	EPA:353.2	GELC	
C4	25	30	5/20/2011	2.96	15	8.725	30	Mortandad Canyon	Regional Top	R-61 S1	1125	8/9/2018	FD	F	INIT	GENINORG	Perchlorate	ClO4	14.7	1.7	LANL Reg BG LVL	0.414	35.5	0.5	µg/L	10		NQ	NQ	SW-846:6850	GELC	
C4	25	30	5/20/2011	2.96	15	8.725	30	Mortandad Canyon	Regional Top	R-61 S1	1125	8/9/2018	REG	F	INIT	GENINORG	Perchlorate	ClO4	14.8	1.7	LANL Reg BG LVL	0.414	35.7	0.5	µg/L	10		NQ	NQ	SW-846:6850	GELC	
C5	12	13	4/1/2010	609	3880	2620	13	Water Canyon	Alluvial	CDV-16-611937	3	8/11/2018	REG	F	INIT	METALS	Manganese	Mn	2100	0.8	NM GW STD	200	10.5	2	µg/L	1		NQ	NQ	SW-846:6010C	GELC	
C5	26	31	12/7/2005	22.2	37.4	28	31	Water Canyon	Intermediate Perched	CdV-16-1(i)	624	8/13/2018	REG	UF	DL	HEXP	RDX	121-82-4	32.9	1.2	NMED A1 TAP SCRNLVL	7.02	4.7	0.879	µg/L	20		NQ	NQ	SW-846:8330B	GELC	

Table 1: NMED 09-18 Groundwater Report

Criteria Code	Visits	Samples	First Event	Min Detect	Max Detect	Median Detect	Num Detect	Canyon	Zone	Location	Screen Depth	Start Date	Fld QC Type Code	Fld 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
C5	73	88	1/10/2000	145	1030	186	82	Water Canyon	Intermediate Spring	Burning Ground Spring	0	8/11/2018	REG	F	INIT	METALS	Barium	Ba	1030	5.5	NM GW STD	1000	1	1	µg/L	1		NQ	NQ	SW-846:6010C	GELC	First time Ba concentration at this location is greater than NMWQCC groundwater standard, and concentration has increased for the third consecutive sampling event. TDS and most of major cations and anions also have increased since 6/6/2017.
C5	36	47	12/4/2003	4.59	51.3	18	47	Water Canyon	Intermediate Spring	Burning Ground Spring	0	8/11/2018	REG	UF	DL	HEXP	RDX	121-82-4	20.2	1.1	NMED A1 TAP SCRNLVL	7.02	2.9	0.215	µg/L	5		NQ	NQ	SW-846:8330B	GELC	
C5	65	74	1/10/2000	570	2840	1310	74	Water Canyon	Intermediate Spring	Martin Spring	0	8/22/2018	REG	F	INIT	METALS	Boron	B	1140	0.9	NM GW STD	750	1.5	15	µg/L	1		NQ	NQ	SW-846:6010C	GELC	
CA	73	88	1/10/2000	145	1030	186	82	Water Canyon	Intermediate Spring	Burning Ground Spring	0	8/11/2018	REG	F	INIT	METALS	Barium	Ba	1030	5.5	NM GW STD	1000	1	1	µg/L	1		NQ	NQ	SW-846:6010C	GELC	First time Ba concentration at this location is greater than NMWQCC groundwater standard, and concentration has increased for the third consecutive sampling event. TDS and most of major cations and anions also have increased since 6/6/2017.

Table 2: NMED 09-18 Groundwater Report Addendum

Criteria Code	Visits	Samples	First Event	Min Detect	Max Detect	Median Detect	Num Detect	Canyon	Zone	Location	Screen Depth	Start Date	Fld QC Type Code	Fld 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	29	35	6/1/2005	2.01	3.02	2.57	4	Water Canyon	Intermediate Perched	CdV-16-1(i)	624	8/13/2018	REG	F	INIT	METALS	Arsenic	As	3.02	1.2	Int-Scr_95	2.82	1.1	2	µg/L	1	J	J	J_LAB	SW-846:6020	GELC	
XC2scr	41	60	8/25/2005	1.7	3.51	2.1	5	Pajarito Canyon	Regional Top	R-18	1358	8/14/2018	REG	F	INIT	METALS	Arsenic	As	3.51	1.7	Reg-Scr_95	2.7	1.3	2	µg/L	1	J	J	J_LAB	SW-846:6020	GELC	
XC4scr	29	35	6/1/2005	33	78.9	60.5	35	Water Canyon	Intermediate Perched	CdV-16-1(i)	624	8/13/2018	REG	F	INIT	METALS	Boron	B	33	0.5	Int-Scr_95	16.2	2	15	µg/L	1	J	J	J_LAB	SW-846:6010C	GELC	
XC4scr	29	35	6/1/2005	3.4	24.8	9.7	33	Water Canyon	Intermediate Perched	CdV-16-1(i)	624	8/13/2018	REG	F	INIT	METALS	Copper	Cu	13.8	1.4	Int-Scr_95	3	4.6	3	µg/L	1		NQ	NQ	SW-846:6010C	GELC	
XC4scr	69	78	1/10/2000	51	5130	303.5	50	Water Canyon	Intermediate Spring	Martin Spring	0	8/22/2018	FD	F	INIT	METALS	Aluminum	Al	320	1.1	Int-Scr_95	68	4.7	68	µg/L	1		NQ	NQ	SW-846:6010C	GELC	
XC4scr	69	78	1/10/2000	51	5130	303.5	50	Water Canyon	Intermediate Spring	Martin Spring	0	8/22/2018	REG	F	INIT	METALS	Aluminum	Al	268	0.9	Int-Scr_95	68	3.9	68	µg/L	1		NQ	NQ	SW-846:6010C	GELC	
XC4scr	65	74	1/10/2000	570	2840	1310	74	Water Canyon	Intermediate Spring	Martin Spring	0	8/22/2018	FD	F	INIT	METALS	Boron	B	1110	0.8	Int-Scr_95	16.2	69	15	µg/L	1		NQ	NQ	SW-846:6010C	GELC	
XC4scr	65	74	1/10/2000	570	2840	1310	74	Water Canyon	Intermediate Spring	Martin Spring	0	8/22/2018	REG	F	INIT	METALS	Boron	B	1140	0.9	Int-Scr_95	16.2	70	15	µg/L	1		NQ	NQ	SW-846:6010C	GELC	
XC4scr	26	31	5/20/2011	0.0531	11.8	0.9945	28	Mortandad Canyon	Regional Top	R-61 S1	1125	8/9/2018	FD	F	INIT	GENINORG	Total Phosphate as Phosphorus	PO4-P	0.706	0.7	Reg-Scr_95	0.0822	8.6	0.02	mg/L	1		J+	I4a	EPA:365.4	GELC	
XC4scr	26	31	5/20/2011	0.0531	11.8	0.9945	28	Mortandad Canyon	Regional Top	R-61 S1	1125	8/9/2018	REG	F	INIT	GENINORG	Total Phosphate as Phosphorus	PO4-P	0.686	0.7	Reg-Scr_95	0.0822	8.3	0.02	mg/L	1		J+	I4a	EPA:365.4	GELC	