



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

NOV 22 2019

EMLA-2020-1135-02-001



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

Subject: Monthly Notification of Groundwater Data Reviewed in November 2019

This letter is the U.S. Department of Energy (DOE) 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 November 14, 2019, to review groundwater data received in October 2019 in accordance with Section XXVI.C of the 2016 Consent Order. The enclosed 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  $1 \times 10^{-5}$ , as specified in the Consent Order.

The enclosed report was prepared using the May 2019 EPA regional screening levels for tap water; the NMWQCC groundwater standards, published December 21, 2018; and the June 2019 Table A-1 of "Risk Assessment Guidance for Site Investigations and Remediation" for NMED tap water screening levels.

### **1-Day Notification**

There were no instances of a contaminant detected at a concentration that exceeded the NMWQCC groundwater standard or federal MCL at locations where contaminants have not previously been detected above the respective standard as defined in the Consent Order (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 Steve Veenis at (505) 309-1362 (steve.veenis@em-la.doe.gov) or Hai Shen at (505) 257-7943 (hai.shen@em.doe.gov).

Sincerely,



Arturo Q. Duran  
Compliance and Permitting Manager  
Environmental Management  
Los Alamos Field Office

Enclosure:

1. Two hard copies with electronic files – Summary of Groundwater Data Reviewed in November 2019 That Meet Notification Requirements (EM2019-0456)

CC (letter with CD/DVD enclosure[s]):

Harry Burgess, Los Alamos County, Los Alamos, NM (2 copies)

CC (letter and enclosure[s] emailed):

Laurie King, EPA Region 6, Dallas, TX  
Raymond Martinez, San Ildefonso Pueblo, NM  
Dino Chavarria, Santa Clara Pueblo, NM  
David Gomez, Los Alamos County, Los Alamos, NM  
David Cobrain, NMED  
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Leslie Dale, LANL  
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William Mairson, LANL  
Jacob Meadows, LANL  
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Lori Huntoon, N3B  
Danny Katzman, N3B  
Joseph Legare, N3B  
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Elizabeth Lowes, N3B  
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## **SUMMARY OF GROUNDWATER DATA REVIEWED IN NOVEMBER 2019 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 the annual "Interim Facility-Wide Groundwater Monitoring Plan" for the 2019 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 at Los Alamos National Laboratory as indicated in the tables.

The report includes two tables. Table 1, NMED 10-19 Groundwater Report, presents results since June 14, 2007, that met the five reporting criteria as specified in the 2016 Consent Order. Table 2, NMED 10-19 Groundwater Report Addendum, presents results that exceed the 95<sup>th</sup> percentile of those results in the data set defined in the "Groundwater Background Investigation Report, Revision 5." Only the contaminants and other chemical constituents that lack 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 that are 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  $1 \times 10^{-5}$ , as specified in the 2016 Consent Order. This report was prepared using the May 2019 EPA regional screening levels for tap water, the NMWQCC groundwater standards published December 21, 2018, and the NMED tap water screening levels specified in the June 2019 Table A-1 of "Risk Assessment Guidance for Site Investigations and Remediation."

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 95<sup>th</sup> percentile of the data set used to establish background as defined in the “Groundwater Background Investigation Report, Revision 5.”

## **DESCRIPTION OF TABLES**

### **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. In several cases, data met more than one of the notification criteria and therefore 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” (February 2019), 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 2 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 95<sup>th</sup> percentile in a spring or screened interval of a well if that contaminant has not previously exceeded the 95<sup>th</sup> 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 95<sup>th</sup> percentile of the data set used to establish background as defined in the “Groundwater Background Investigation Report, Revision 5.”

Columns 2 through 8 in both tables provide summary statistics for metals or organic/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 as follows:

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—date the sample was collected

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

Fld Prep Code—identifies whether samples are filtered (F) or unfiltered (UF)

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 Qualifier—analytical laboratory qualifier indicating analytical quality of the sample data

Validation Qualifier—the qualifier that indicates the effects of all processes associated with the sample (i.e., sample collection, additional quality control samples such as field duplicates, etc.) on the quality of the sample data

Validation Reason Code—an explanation of the reason for validation of the qualifiers

Anyl Meth Code—analytical method number

Lab Code—analytical laboratory name

Comment—N3B comment regarding the analytical result

The tables may include the following acronyms, abbreviations, and analytical laboratory codes and qualifiers.

### **Acronyms and Abbreviations**

DNX—hexahydro-1,3-dinitro-5-nitro-1,3,5-triazine

EPA MCL—U.S. Environmental Protection Agency maximum contaminant level

GENINORG—General Inorganic

HMX—octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine

HEXP—high explosive

LANL Int BG LV—Los Alamos National Laboratory intermediate background level

LANL Reg BG LV—Los Alamos National Laboratory regional background level

LCMS/MS—liquid chromatography mass spectrometry/mass spectrometry

MDL—method detection limit

MNX—hexahydro-1-nitroso-3,5-dinitro-1,3,5-triazine

NM GW STD—New Mexico Water Quality Control Commission groundwater standard

NMED A1 TAP SCRNLVL—New Mexico Environment Department screening level for tap water

NTU—nephelometric turbidity unit

PQL—practical quantitation limit

RDX—Royal Demolition Explosive (hexahydro-1,3,5-trinitro-1,3,5-triazine)

SVOC—semivolatile organic compound

TDS—total dissolved solids

TNX—2,4,6-trinitroxylyene

UAL—upper acceptance limit

UOM—units of measurement

VOC—Volatile organic compound

### **Analytical Laboratory Codes and Qualifiers**

\* (lab qualifier) - (inorganic)—Duplicate analysis (relative percent difference) is not within control limits.

BJ (lab qualifier)—Analyte is present in the blank, and the associated numerical value is an estimated quantity.

F—filtered

FD—field duplicate

GELC—General Engineering Laboratories, Inc., Charleston, SC

GENINORG—general inorganic

H (lab qualifier)—The required extraction or analysis holding time for this result was exceeded.

HJ (lab qualifier)—The required extraction or analysis holding time for this result was exceeded. The associated numerical value is an estimated quantity.

I4a (validation reason code)—The affected analyte is considered estimated and biased high because this analyte was identified in the method blank but was greater than 5 times the concentration of the affected analyte in the sample.

I6b ((validation reason code)—The associated matrix spike recovery was above the UAL. Follow the external laboratory limits located within the associated data package.

I9b (validation reason code)—The affected analytes are regarded as rejected because the analytical holding time was exceeded.

INIT—primary sample

J (lab qualifier)—The associated numerical value is an estimated quantity.

J (validation qualifier)—The analyte is classified as detected, but the reported concentration value is expected to be more uncertain than usual.

J- (validation qualifier)—The analyte is classified as detected, but the reported concentration value is expected to be more uncertain than usual with a potential negative bias.



J+ (validation qualifier)—The analyte is classified as detected, but the reported concentration value is expected to be more uncertain than usual with a potential positive bias.

J\_LAB (validation reason code)—The analytical laboratory qualified the detected result as estimated (J) because the result was less than the PQL but greater than the MDL.

N (lab qualifier)—Spiked sample recovery is not within control limits.

NQ (validation qualifier)—No validation qualifier flag is associated with this result, and the analyte is classified as detected.

NQ (validation reason code)—The analytical laboratory did not qualify the analyte as not detected and/or with any other standard qualifier. The analyte is detected in the sample.

PE12e (validation reason code)—The MS/MSD percent recovery was >10% but <75%.

RE—reanalysis

REG—regular sample

UF—unfiltered

V9b (validation reason code)—The preserved sample was analyzed outside the 14-day holding time or the unpreserved sample was analyzed outside the 7-day holding time.

Table 1: NMED 10-19 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 Qualifier	Validation Qualifier	Validation Reason Code	Anyl Meth Code	Lab Code	Comment
C1	16	21	9/6/2011	5.04	5.04	5.04	1	Upper Los Alamos Canyon	Regional Top	R-64	1285	9/4/2019	REG	UF	INIT	VOC	Acetone	67-64-1	5.04	1	NMED A1 TAP SCRNL LVL	14100	0	1.5	µg/L	1	J	J	J_LAB	SW-846:8260B	GELC	
C2	54	60	3/11/2010	13.4	13.4	13.4	60	Mortandad Canyon	Regional Deep	R-50 S2	1185	9/19/2019	REG	F	INIT	INORGANIC	Vanadium	V	13.4	1	LANL Reg BG LVL	11.4	1.2	3.3	µg/L	1	J	J	J_LAB	SW-846:6020B	GELC	
C2	18	29	1/16/2012	0.239	0.532	0.299	29	Upper Los Alamos Canyon	Regional Top	R-66	819.4	9/12/2019	FD	F	INIT	GENINORG	Fluoride	F(-1)	0.531	1.8	LANL Reg BG LVL	0.377	1.4	0.033	mg/L	1		NQ	NQ	EPA:300.0	GELC	
C2	18	29	1/16/2012	0.24	0.532	0.299	29	Upper Los Alamos Canyon	Regional Top	R-66	819	9/12/2019	REG	F	INIT	GENINORG	Fluoride	F(-1)	0.53	1.8	LANL Reg BG LVL	0.377	1.4	0.033	mg/L	1		NQ	NQ	EPA:300.0	GELC	
C4	17	17	1/20/2000	3.69	21.9	5.4	17	Upper Los Alamos Canyon	Intermediate Perched	LAOI(a)-1.1	295	9/10/2019	REG	F	INIT	GENINORG	Potassium	K	5.64	1	LANL Int BG LVL	2.35	2.4	0.05	mg/L	1		NQ	NQ	SW-846:6010C	GELC	
C4	19	20	11/15/2005	36.70	49.3	42.55	20	Upper Los Alamos Canyon	Intermediate Perched	LAOI-3.2	153	9/5/2019	REG	F	INIT	METALS	Barium	Ba	37.50	0.9	LANL Int BG LVL	13.5	2.8	1	µg/L	1		NQ	NQ	SW-846:6010C	GELC	
C4	19	20	11/15/2005	17.80	27.4	23.25	20	Upper Los Alamos Canyon	Intermediate Perched	LAOI-3.2	153	9/5/2019	REG	F	INIT	GENINORG	Calcium	Ca	26.80	1.2	LANL Int BG LVL	10.7	2.5	0.05	mg/L	1		NQ	NQ	SW-846:6010C	GELC	
C4	21	22	11/15/2005	5.15	32.8	19.2	22	Upper Los Alamos Canyon	Intermediate Perched	LAOI-3.2	153	9/5/2019	REG	F	INIT	GENINORG	Chloride	Cl(-1)	32.80	1.7	LANL Int BG LVL	3.11	10.5	0.335	mg/L	5		NQ	NQ	EPA:300.0	GELC	
C4	19	20	11/15/2005	64.00	98.9	83.95	20	Upper Los Alamos Canyon	Intermediate Perched	LAOI-3.2	153	9/5/2019	REG	F	INIT	GENINORG	Hardness	HARDNESS	98.90	1.2	LANL Int BG LVL	37.8	2.6	0.453	mg/L	1		NQ	NQ	SM:A2340B	GELC	
C4	19	20	11/15/2005	3.81	7.78	5.715	20	Upper Los Alamos Canyon	Intermediate Perched	LAOI-3.2	153	9/5/2019	REG	F	INIT	GENINORG	Magnesium	Mg	7.78	1.4	LANL Int BG LVL	3.14	2.5	0.11	mg/L	1		NQ	NQ	SW-846:6010C	GELC	
C4	21	22	11/15/2005	1.42	4.48	2.255	22	Upper Los Alamos Canyon	Intermediate Perched	LAOI-3.2	153	9/5/2019	REG	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	1.85	0.8	LANL Int BG LVL	0.459	4	0.085	mg/L	5		NQ	NQ	EPA:353.2	GELC	
C4	19	20	7/25/2006	3.01	7.63	4.69	20	Upper Los Alamos Canyon	Intermediate Perched	LAOI-3.2	153	9/5/2019	REG	F	INIT	GENINORG	Perchlorate	ClO4	3.64	0.8	LANL Int BG LVL	0.27	13.5	0.2	µg/L	4		NQ	NQ	SW-846:6850	GELC	
C4	19	20	11/15/2005	5.36	8.33	7.255	20	Upper Los Alamos Canyon	Intermediate Perched	LAOI-3.2	153	9/5/2019	REG	F	INIT	GENINORG	Potassium	K	8.33	1.1	LANL Int BG LVL	2.35	3.5	0.05	mg/L	1		NQ	NQ	SW-846:6010C	GELC	
C4	19	20	11/15/2005	98.10	247	124	20	Upper Los Alamos Canyon	Intermediate Perched	LAOI-3.2	153	9/5/2019	REG	F	INIT	METALS	Strontium	Sr	137.00	1.1	LANL Int BG LVL	59.6	2.3	1	µg/L	1		NQ	NQ	SW-846:6010C	GELC	
C4	19	19	7/26/2006	21.20	26.4	24.3	19	Upper Los Alamos Canyon	Intermediate Perched	LAOI-3.2a	181	9/11/2019	REG	F	INIT	GENINORG	Calcium	Ca	26.40	1.1	LANL Int BG LVL	10.7	2.5	0.05	mg/L	1		NQ	NQ	SW-846:6010C	GELC	
C4	20	20	7/26/2006	19.10	25.8	21.35	20	Upper Los Alamos Canyon	Intermediate Perched	LAOI-3.2a	181	9/11/2019	REG	F	INIT	GENINORG	Chloride	Cl(-1)	25.80	1.2	LANL Int BG LVL	3.11	8.3	0.335	mg/L	5		NQ	NQ	EPA:300.0	GELC	
C4	19	19	7/26/2006	72.50	88.1	81.6	19	Upper Los Alamos Canyon	Intermediate Perched	LAOI-3.2a	181	9/11/2019	REG	F	INIT	GENINORG	Hardness	HARDNESS	88.10	1.1	LANL Int BG LVL	37.8	2.3	0.453	mg/L	1		NQ	NQ	SM:A2340B	GELC	
C4	20	20	7/26/2006	1.46	3.03	1.815	20	Upper Los Alamos Canyon	Intermediate Perched	LAOI-3.2a	181	9/11/2019	REG	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	1.54	0.8	LANL Int BG LVL	0.459	3.4	0.085	mg/L	5		NQ	NQ	EPA:353.2	GELC	
C4	20	20	7/26/2006	1.74	4.65	2.845	20	Upper Los Alamos Canyon	Intermediate Perched	LAOI-3.2a	181.4	9/11/2019	REG	F	INIT	GENINORG	Perchlorate	ClO4	1.74	0.6	LANL Int BG LVL	0.27	6.4	0.05	µg/L	1	J	PE12e	SW-846:6850	GELC		

Table 1: NMED 10-19 Groundwater Report

Criteria Code	Visits	Samples	First Event	Min Detect	Max Detect	Median Detect	Num Detect	Canyon	Zone	Location	Screen Depth	Start Date	Fid OC 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 Qualifier	Validation Qualifier	Validation Reason Code	Anyl Meth Code	Lab Code	Comment
C4	19	19	7/26/2006	9.09	10.6	9.99	19	Upper Los Alamos Canyon	Intermediate Perched	LAOI-3.2a	181.4	9/11/2019	REG	F	INIT	GENINORG	Potassium	K	10.5	1.1	LANL Int BG LVL	2.35	4.5	0.05	mg/L	1		NQ	NQ	SW-846:6010C	GELC	
C4	19	19	7/26/2006	127	161	152	19	Upper Los Alamos Canyon	Intermediate Perched	LAOI-3.2a	181.4	9/11/2019	REG	F	INIT	METALS	Strontium	Sr	161	1.1	LANL Int BG LVL	59.6	2.7	1	µg/L	1		NQ	NQ	SW-846:6010C	GELC	
C4	20	25	5/9/2006	3.56	38.3	20.1	25	Upper Los Alamos Canyon	Intermediate Perched	LAOI-7	240	9/17/2019	REG	F	INIT	GENINORG	Chloride	Cl(-1)	23.7	1.2	LANL Int BG LVL	3.11	7.6	0.335	mg/L	5		J+	I6b	EPA:300.0	GELC	
C4	20	24	5/9/2006	0.522	0.877	0.757	24	Upper Los Alamos Canyon	Intermediate Perched	LAOI-7	240	9/17/2019	REG	F	INIT	GENINORG	Perchlorate	ClO4	0.639	0.8	LANL Int BG LVL	0.27	2.4	0.05	µg/L	1		NQ	NQ	SW-846:6850	GELC	
C4	22	29	8/24/2005	12.7	18	16.6	29	Upper Los Alamos Canyon	Intermediate Perched	R-6i	602	9/9/2019	FD	F	INIT	GENINORG	Chloride	Cl(-1)	12.7	0.8	LANL Int BG LVL	3.11	4.1	0.134	mg/L	2		J+	I6b	EPA:300.0	GELC	
C4	22	29	8/24/2005	12.70	18	16.6	29	Upper Los Alamos Canyon	Intermediate Perched	R-6i	602	9/9/2019	REG	F	INIT	GENINORG	Chloride	Cl(-1)	12.80	0.8	LANL Int BG LVL	3.11	4.1	0.134	mg/L	2		J+	I6b	EPA:300.0	GELC	
C4	22	29	8/24/2005	0.58	1.04	0.695	29	Upper Los Alamos Canyon	Intermediate Perched	R-6i	602	9/9/2019	FD	F	INIT	GENINORG	Fluoride	F(-1)	1.04	1.5	LANL Int BG LVL	0.234	4.4	0.033	mg/L	1		NQ	NQ	EPA:300.0	GELC	
C4	22	29	8/24/2005	0.58	1.04	0.695	29	Upper Los Alamos Canyon	Intermediate Perched	R-6i	602	9/9/2019	REG	F	INIT	GENINORG	Fluoride	F(-1)	1.04	1.5	LANL Int BG LVL	0.234	4.4	0.033	mg/L	1		NQ	NQ	EPA:300.0	GELC	
C4	22	29	8/24/2005	2.35	5.06	3.77	29	Upper Los Alamos Canyon	Intermediate Perched	R-6i	602	9/9/2019	FD	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	2.41	0.6	LANL Int BG LVL	0.459	5.3	0.17	mg/L	10		NQ	NQ	EPA:353.2	GELC	
C4	22	29	8/24/2005	2.35	5.06	3.77	29	Upper Los Alamos Canyon	Intermediate Perched	R-6i	602	9/9/2019	REG	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	2.35	0.6	LANL Int BG LVL	0.459	5.1	0.17	mg/L	10		NQ	NQ	EPA:353.2	GELC	
C4	18	25	7/26/2006	4.12	8.32	6.38	25	Upper Los Alamos Canyon	Intermediate Perched	R-6i	602	9/9/2019	FD	F	INIT	GENINORG	Perchlorate	ClO4	4.22	0.7	LANL Int BG LVL	0.27	15.6	0.2	µg/L	4		NQ	NQ	SW-846:6850	GELC	
C4	18	25	7/26/2006	4.12	8.32	6.38	25	Upper Los Alamos Canyon	Intermediate Perched	R-6i	602	9/9/2019	REG	F	INIT	GENINORG	Perchlorate	ClO4	4.12	0.6	LANL Int BG LVL	0.27	15.3	0.2	µg/L	4		NQ	NQ	SW-846:6850	GELC	
C4	53	57	8/30/2007	68.00	389	346	57	Sandia Canyon	Regional Deep	R-35a	1013	9/25/2019	REG	F	INIT	METALS	Barium	Ba	332.00	1	LANL Reg BG LVL	38.1	8.7	1	µg/L	1		NQ	NQ	SW-846:6010C	GELC	
C4	52	56	8/30/2007	5.97	7.31	6.435	56	Sandia Canyon	Regional Deep	R-35a	1013	9/25/2019	REG	F	INIT	GENINORG	Chloride	Cl(-1)	6.57	1	LANL Reg BG LVL	2.7	2.4	0.067	mg/L	1		NQ	NQ	EPA:300.0	GELC	
C4	51	59	3/5/2009	6.10	47.4	19.5	58	Mortandad Canyon	Regional Deep	R-45 S2	975	8/23/2019	FD	F	INIT	METALS	Chromium	Cr	34.80	1.8	LANL Reg BG LVL	7.48	4.7	3	µg/L	1		NQ	NQ	SW-846:6020	GELC	
C4	51	59	3/5/2009	6.10	47.4	19.5	58	Mortandad Canyon	Regional Deep	R-45 S2	975	8/23/2019	REG	F	INIT	METALS	Chromium	Cr	36.10	1.9	LANL Reg BG LVL	7.48	4.8	3	µg/L	1		NQ	NQ	SW-846:6020	GELC	
C4	52	60	3/5/2009	36.4	36.4	36.4	59	Mortandad Canyon	Regional Deep	R-45 S2	974.9	9/26/2019	REG	F	INIT	INORGANIC	Chromium	Cr	36.4	1	LANL Reg BG LVL	7.48	4.9	3	µg/L	1		NQ	NQ	SW-846:6020B	GELC	
C4	65	77	5/17/2005	2.27	7.43	5.38	77	Sandia Canyon	Regional Top	R-11	855	9/16/2019	FD	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	5.63	1	LANL Reg BG LVL	0.769	7.3	0.17	mg/L	10		NQ	NQ	EPA:353.2	GELC	
C4	65	77	5/17/2005	2.27	7.43	5.38	77	Sandia Canyon	Regional Top	R-11	855	9/16/2019	REG	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	5.67	1.1	LANL Reg BG LVL	0.769	7.4	0.17	mg/L	10		NQ	NQ	EPA:353.2	GELC	

Table 1: NMED 10-19 Groundwater Report

Criteria Code	Visits	Samples	First Event	Min Detect	Max Detect	Median Detect	Num Detect	Canyon	Zone	Location	Screen Depth	Start Date	Fid OC 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 Qualifier	Validation Qualifier	Validation Reason Code	Anyl Meth Code	Lab Code	Comment
C4	65	77	5/17/2005	5.95	20.2	10.3	77	Sandia Canyon	Regional Top	R-11	855	9/16/2019	FD	F	INIT	GENINORG	Sulfate	SO4(-2)	10.60	1	LANL Reg BG LVL	4.59	2.3	0.133	mg/L	1		NQ	NQ	EPA:300.0	GELC	
C4	65	77	5/17/2005	5.95	20.2	10.3	77	Sandia Canyon	Regional Top	R-11	855	9/16/2019	REG	F	INIT	GENINORG	Sulfate	SO4(-2)	10.50	1	LANL Reg BG LVL	4.59	2.3	0.133	mg/L	1		NQ	NQ	EPA:300.0	GELC	
C4	54	56	2/17/2009	1.99	18.2	2.385	56	Mortandad Canyon	Regional Top	R-44 S1	895	8/27/2019	REG	F	INIT	GENINORG	Chloride	Cl(-1)	18.2	7.6	LANL Reg BG LVL	2.7	6.7	0.335	mg/L	5		NQ	NQ	EPA:300.0	GELC	
C4	54	56	2/17/2009	0.536	32.5	1.96	29	Mortandad Canyon	Regional Top	R-44 S1	895	8/27/2019	REG	F	INIT	METALS	Nickel	Ni	32.5	16.6	LANL Reg BG LVL	2.9	11.2	0.6	µg/L	1		NQ	NQ	SW-846:6020	GELC	
C4	54	56	2/17/2009	0.12	2.57	1.16	55	Mortandad Canyon	Regional Top	R-44 S1	895	8/27/2019	REG	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	2.32	2	LANL Reg BG LVL	0.769	3	0.085	mg/L	5		NQ	NQ	EPA:353.2	GELC	
C4	54	56	2/17/2009	2.76	19.4	3.45	56	Mortandad Canyon	Regional Top	R-44 S1	895	8/27/2019	REG	F	INIT	GENINORG	Sulfate	SO4(-2)	19.40	5.6	LANL Reg BG LVL	4.59	4.2	0.133	mg/L	1		NQ	NQ	EPA:300.0	GELC	
C4	52	59	2/28/2009	8.40	50.7	35	59	Mortandad Canyon	Regional Top	R-45 S1	880	8/23/2019	REG	F	INIT	METALS	Chromium	Cr	33.60	1	LANL Reg BG LVL	7.48	4.5	3	µg/L	1		NQ	NQ	SW-846:6020	GELC	
C4	53	60	2/28/2009	33.00	33	33	60	Mortandad Canyon	Regional Top	R-45 S1	880	9/26/2019	REG	F	INIT	INORGANIC	Chromium	Cr	33.00	1	LANL Reg BG LVL	7.48	4.4	3	µg/L	1		NQ	NQ	SW-846:6020B	GELC	
C4	52	55	2/28/2009	0.26	3.47	2.82	55	Mortandad Canyon	Regional Top	R-45 S1	880	9/26/2019	REG	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	2.82	1	LANL Reg BG LVL	0.769	3.7	0.085	mg/L	5		NQ	NQ	EPA:353.2	GELC	
C4	52	55	2/28/2009	0.26	3.47	2.82	55	Mortandad Canyon	Regional Top	R-45 S1	880	8/23/2019	REG	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	2.46	0.9	LANL Reg BG LVL	0.769	3.2	0.085	mg/L	5		NQ	NQ	EPA:353.2	GELC	
C4	54	60	3/6/2010	4.68	18.3	8.915	60	Mortandad Canyon	Regional Top	R-50 S1	1077	9/20/2019	FD	F	INIT	GENINORG	Chloride	Cl(-1)	17.60	2	LANL Reg BG LVL	2.7	6.5	0.134	mg/L	2		J+	I4a	EPA:300.0	GELC	
C4	54	60	3/6/2010	4.68	18.3	8.915	60	Mortandad Canyon	Regional Top	R-50 S1	1077	9/20/2019	REG	F	INIT	GENINORG	Chloride	Cl(-1)	18.20	2	LANL Reg BG LVL	2.7	6.7	0.134	mg/L	2		J+	I4a	EPA:300.0	GELC	
C4	54	60	3/6/2010	4.68	18.3	8.915	60	Mortandad Canyon	Regional Top	R-50 S1	1077	8/22/2019	REG	F	INIT	GENINORG	Chloride	Cl(-1)	15.80	1.8	LANL Reg BG LVL	2.7	5.9	0.335	mg/L	5	H	J-	I9b	EPA:300.0	GELC	
C4	56	64	3/6/2010	43.1	44.1	43.6	64	Mortandad Canyon	Regional Top	R-50 S1	1077	9/20/2019	FD	F	INIT	INORGANIC	Chromium	Cr	43.1	1	LANL Reg BG LVL	7.48	5.8	3	µg/L	1		NQ	NQ	SW-846:6020B	GELC	
C4	56	64	3/6/2010	43.10	44.1	43.6	64	Mortandad Canyon	Regional Top	R-50 S1	1077	9/20/2019	REG	F	INIT	INORGANIC	Chromium	Cr	44.10	1	LANL Reg BG LVL	7.48	5.9	3	µg/L	1		NQ	NQ	SW-846:6020B	GELC	
C4	55	63	3/6/2010	0.40	2.77	1.94	63	Mortandad Canyon	Regional Top	R-50 S1	1077	9/20/2019	FD	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	2.29	1.2	LANL Reg BG LVL	0.769	3	0.085	mg/L	5		NQ	NQ	EPA:353.2	GELC	
C4	55	63	3/6/2010	0.398	2.77	1.94	63	Mortandad Canyon	Regional Top	R-50 S1	1077	9/20/2019	REG	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	2.25	1.2	LANL Reg BG LVL	0.769	2.9	0.085	mg/L	5		NQ	NQ	EPA:353.2	GELC	
C4	54	60	3/6/2010	7.22	19.6	13.2	60	Mortandad Canyon	Regional Top	R-50 S1	1077	9/20/2019	FD	F	INIT	GENINORG	Sulfate	SO4(-2)	18.10	1.4	LANL Reg BG LVL	4.59	3.9	0.133	mg/L	1		J+	I6b	EPA:300.0	GELC	
C4	54	60	3/6/2010	7.22	19.6	13.2	60	Mortandad Canyon	Regional Top	R-50 S1	1077	9/20/2019	REG	F	INIT	GENINORG	Sulfate	SO4(-2)	18.10	1.4	LANL Reg BG LVL	4.59	3.9	0.133	mg/L	1		J+	I6b	EPA:300.0	GELC	

Table 1: NMED 10-19 Groundwater Report

Criteria Code	Visits	Samples	First Event	Min Detect	Max Detect	Median Detect	Num Detect	Canyon	Zone	Location	Screen Depth	Start Date	Fid OC 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 Qualifier	Validation Qualifier	Validation Reason Code	Anyl Meth Code	Lab Code	Comment
C4	54	60	3/6/2010	7.22	19.6	13.2	60	Mortandad Canyon	Regional Top	R-50 S1	1077	8/22/2019	REG	F	INIT	GENINORG	Sulfate	SO4(-2)	18.50	1.4	LANL Reg BG LVL	4.59	4	0.133	mg/L	1	H	J-	I9b	EPA:300.0	GELC	
C4	39	45	5/20/2011	28.90	28.9	28.9	44	Mortandad Canyon	Regional Top	R-61 S1	1125	9/23/2019	REG	F	INIT	INORGANIC	Chromium	Cr	28.90	1	LANL Reg BG LVL	7.48	3.9	3	µg/L	1		NQ	NQ	SW-846:6020B	GELC	
C4	39	45	5/20/2011	0.43	2.64	2.03	45	Mortandad Canyon	Regional Top	R-61 S1	1125	9/23/2019	REG	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	2.59	1.3	LANL Reg BG LVL	0.769	3.4	0.085	mg/L	5		J+	I6b	EPA:353.2	GELC	
C4	38	44	5/20/2011	2.96	16.2	11.05	44	Mortandad Canyon	Regional Top	R-61 S1	1125	9/23/2019	REG	F	INIT	GENINORG	Perchlorate	ClO4	12.8	1.2	LANL Reg BG LVL	0.414	30.9	0.5	µg/L	10		NQ	NQ	SW-846:6850	GELC	
C5	22	29	8/24/2005	0.575	1.04	0.695	29	Upper Los Alamos Canyon	Intermediate Perched	R-6i	602	9/9/2019	FD	F	INIT	GENINORG	Fluoride	F(-1)	1.04	1.5	NM GW STD	1.6	0.7	0.033	mg/L	1		NQ	NQ	EPA:300.0	GELC	
C5	22	29	8/24/2005	0.575	1.04	0.695	29	Upper Los Alamos Canyon	Intermediate Perched	R-6i	602	9/9/2019	REG	F	INIT	GENINORG	Fluoride	F(-1)	1.04	1.5	NM GW STD	1.6	0.7	0.033	mg/L	1		NQ	NQ	EPA:300.0	GELC	
C5	51	59	3/5/2009	6.1	47.4	19.5	58	Mortandad Canyon	Regional Deep	R-45 S2	974.9	8/23/2019	REG	F	INIT	METALS	Chromium	Cr	36.1	1.9	NM GW STD	50	0.7	3	µg/L	1		NQ	NQ	SW-846:6020	GELC	

Table 2: NMED 10-19 Groundwater Report Addendum

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 Qualifier	Validation Qualifier	Validation Reason Code	Anyl Meth Code	Lab Code	Comment
XC2scr	21	23	8/23/2005	49.4	114	52	5	Upper Los Alamos Canyon	Regional	R-6	1205	9/9/2019	REG	F	INIT	METALS	Iron	Fe	54.8	1.1	Reg-Scr_95	53.8	1	30	µg/L	1	J	J	J_LAB	SW-846:6010C	GELC	
XC2scr	55	57	3/11/2010	0	0	0.2	1	Mortandad Canyon	Regional Deep	R-50 S2	1185.000	9/19/2019	REG	F	INIT	METALS	Mercury	Hg	0	1.0	Reg-Scr_95	0.1	3.5	0.07	µg/L	1.00		NQ	NQ	SW-846:7470A	GELC	
XC2scr	54	56	2/17/2009	0.4	0.8	0.60	2	Mortandad Canyon	Regional Top	R-44 S1	895.000	8/27/2019	REG	F	INIT	METALS	Thallium	Tl	0.8	1.3	Reg-Scr_95	0.45	1.7	0.60	µg/L	1.0	J	J	J_LAB	SW-846:6020	GELC	
XC4scr	21	22	11/15/2005	0	2	1	13	Upper Los Alamos Canyon	Intermediate Perched	LAOI-3.2	153.300	9/5/2019	REG	F	INIT	GENINORG	Bromide	Br(-1)	1.600	3.0	Int-Scr_95	0.0716	22.3	0.07	mg/L	1.00		NQ	NQ	EPA:300.0	GELC	
XC4scr	20	20	7/26/2006	0.162	1.28	0.375	20	Upper Los Alamos Canyon	Intermediate Perched	LAOI-3.2a	181.4	9/11/2019	REG	F	INIT	GENINORG	Bromide	Br(-1)	1.28	3.4	Int-Scr_95	0.0716	17.9	0.067	mg/L	1		NQ	NQ	EPA:300.0	GELC	
XC4scr	39	45	5/20/2011	0.0531	11.8	0.6535	42	Mortandad Canyon	Regional Top	R-61 S1	1125	9/23/2019	REG	F	INIT	GENINORG	Total Phosphate as Phosphorus	PO4-P	0.397	0.6	Reg-Scr_95	0.0822	4.8	0.02	mg/L	1		J+	I4a	EPA:365.4	GELC	