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Date: May 29, 2020
Refer To: N3B-2020-0176

Michelle Hunter, Chief
 Ground Water Quality Bureau
 New Mexico Environment Department
 1190 S. St. Francis Drive
 Santa Fe, NM 87502-5469

Subject: Submittal of the Quarterly Report for the Discharge of Treated Groundwater to the Regional Aquifer under Discharge Permit 1835, Calendar Year 2020 Quarter 1, Class V Underground Injection Control Wells

Dear Ms. Hunter:

On August 31, 2016, the New Mexico Environment Department (NMED) issued Discharge Permit (DP) 1835 to the U.S. Department of Energy (DOE) and Los Alamos National Security, LLC (LANS) for the discharge of treated groundwater to the regional aquifer through up to six Class V underground injection control (UIC) wells. On July 21, 2017, NMED approved minor updates to DP-1835. During the second quarter of calendar year 2018, ownership of the discharge permit transferred to Newport News Nuclear BWXT-Los Alamos, LLC (N3B) from LANS. Pursuant to Condition No. 10 of the above-referenced discharge permit, DOE/N3B are required to submit quarterly reports for the previous quarter to document

1. influent and discharge volumes from the treatment systems,
2. quarterly groundwater and treated effluent sampling results, and
3. operations/maintenance activities.

Pursuant to Condition No. 11, 12, and 13 of DP-1835, the quarterly reports shall also contain general information, performance information, and monitoring data of treated effluent from each ion-exchange (IX) treatment system, respectively. During the reporting period for calendar year 2020, January 1 through March 31 (Quarter 1), discharge of treated groundwater to the regional aquifer continued under DP-1835. The attached "Quarterly Report for the Discharge of Treated Groundwater to the Regional Aquifer under Discharge Permit 1835, Calendar Year 2020 Quarter 1" provides the information required under DP-1835 for this reporting period.

If you have questions, please contact Christian Maupin at (505) 695-4281 (christian.maupin@em-la.doe.gov) or Cheryl Rodriguez at (505) 414-0450 (cheryl.rodriguez@em.doe.gov).

Sincerely,



Kim Lebak
Acting Program Manager
Environment, Safety and Health
N3B-Los Alamos

Sincerely,

Arturo Duran

Digitally signed by Arturo
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Date: 2020.05.26
07:22:53 -06'00'

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

Enclosure(s):

1. Two hard copies with electronic files – Quarterly Report for the Discharge of Treated Groundwater to the Regional Aquifer under Discharge Permit 1835, Calendar Year 2020 Quarter 1 (EM2020-0207)

cc (letter and enclosure[s] emailed):

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Pamela T. Maestas

From: Romero, Andrew C, NMENV <AndrewC.Romero@state.nm.us>
Sent: Friday, May 29, 2020 12:47 PM
To: Pamela T. Maestas
Cc: Hunter, Michelle, NMENV; Pullen, Steve, NMENV
Subject: Re: Submittal to NMED on 5/29/2020 of DP-1835 1QCY20 Qtrly Rpt

Good afternoon Pamelan,

NMED GWQB acknowledges receipt of this email.
Regards,

Andrew Romero, Environmental Scientist

New Mexico Environment Department
Ground Water Quality Bureau
1190 St. Francis Dr, Santa Fe, NM 87505

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From: Pamela T. Maestas <pamela.maestas@em-la.doe.gov>
Sent: Friday, May 29, 2020 12:26 PM
To: Hunter, Michelle, NMENV
Cc: Pullen, Steve, NMENV; Romero, Andrew C, NMENV; Emily M. Day; Regulatory Documentation; Martinez, Cynthia, NMENV; Christian T. Maupin; cheryl.rodriquez@em.doe.gov
Subject: [EXT] Submittal to NMED on 5/29/2020 of DP-1835 1QCY20 Qtrly Rpt

Attached for submittal is a pdf of the following:

- Submittal of the Quarterly Report for the Discharge of Treated Groundwater to the Regional Aquifer under Discharge Permit 1835, Calendar Year 2020 Quarter 1, Class V Underground Injection Control Wells

Please acknowledge receipt of this submittal by responding to this email.
Let me know if you have any questions.
Thank you.

Pamela T. Maestas

Regulatory Documentation Manager

Newport News Nuclear BWXT-Los Alamos, LLC

c. 505-927-7882 
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1200 Trinity Drive, Suite 150
Los Alamos, NM 87544

**Quarterly Report for the
Discharge of Treated
Groundwater to the
Regional Aquifer under
Discharge Permit 1835,
Calendar Year 2020 Quarter 1**

Newport News Nuclear BWXT-Los Alamos, LLC (N3B), under the U.S. Department of Energy Office of Environmental Management Contract No. 89303318CEM000007 (the Los Alamos Legacy Cleanup Contract), has prepared this document. The public may copy and use this document without charge, provided that this notice and any statement of authorship are reproduced on all copies.

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1.0 INTRODUCTION

On August 31, 2016, the New Mexico Environment Department (NMED) issued Discharge Permit 1835 (DP-1835) to the U.S. Department of Energy and Los Alamos National Security, LLC (DOE/LANS) for the discharge of treated groundwater to the regional aquifer through Class V underground injection control (UIC) wells. On July 21, 2017, NMED approved minor updates to DP-1835. During the third quarter of fiscal year 2018, ownership of the discharge permit transferred from LANS to Newport News Nuclear BWXT-Los Alamos, LLC (N3B). Pursuant to Condition No. 10 of the above-referenced discharge permit, DOE/N3B are required to submit quarterly reports.

During the January 1 through March 31, 2020, reporting period (Quarter 1) for DP-1835, discharge of treated groundwater to the regional aquifer occurred at five UIC wells: CrIN-1 through CrIN-5. Groundwater originated predominantly from four extraction wells: CrEX-1, CrEX-2, CrEX-4, and CrEX-5. The groundwater was treated by chromium treatment unit A (CTUA) and chromium treatment unit C (CTUC) before injection at the UIC wells.

Condition No. 10 of DP-1835 requires submission of a quarterly report to NMED by June 1 for the January 1 through March 31 discharge period. Several conditions within the permit identify information to be submitted in the quarterly report. The following information, with condition references, is required in the quarterly report:

1. Influent and discharge volumes for the ion exchange (IX) treatment systems (Condition No. 10)
2. Quarterly treated effluent sampling results from each IX treatment system (Condition Nos. 10 and 13)
3. Quarterly depth-to-groundwater and groundwater-quality sampling results (Condition Nos. 10 and 14)
4. Any operations/maintenance activities performed (Condition No. 10)
5. Any periodic test of mechanical integrity conducted (Condition No. 11)
6. Any replacement of primary or secondary IX vessels or associated treatment system infrastructure (Condition No. 11)
7. Any well workovers conducted (Condition No. 11)
8. Any additional operational changes with the potential to markedly affect the discharge (Condition No. 11)
9. Monthly average, maximum, and minimum values for flow rate and volume of treated effluent transferred to each UIC well (Condition No. 12)
10. Total monthly volume of treated effluent transferred to each UIC well (Condition No. 12)
11. Monthly average, maximum, and minimum values of injection water level (pressure head) above static level for each UIC well (Condition No. 12)
12. Daily volume injected at each UIC well (Condition No. 12)
13. Daily volume pumped from each extraction well (Condition No. 12)
14. Facility layout map (Condition No. 14)
15. Groundwater elevation contour map (Condition No. 15)

Each of the above requirements is addressed in this report.

2.0 REQUIREMENTS

2.1 Influent and Discharge Volumes for the IX Treatment Systems (Requirement 1)

Table 2.1-1 provides the influent and discharge volumes for IX treatment systems during 2020 Quarter 1 for activities completed under DP-1835. As previously identified, injection occurred at UIC wells CrIN-1 through CrIN-5 during the quarter. Treated discharge, which originated from extraction wells CrEX-1, CrEX-2, CrEX-4, and CrEX-5 was treated with treatment units CTUA and CTUC.

Table 2.1-1
Total Influent and Discharge Volumes
for IX Treatment Systems – 2020 Quarter 1, DP-1835

Treatment Unit	Influent Volume ^a (gal.)	Effluent Volume ^b (gal.)
CTUA	27,198,000	15,773,000
CTUC		11,435,000

Note: Individual flow meter accurate to $\pm 5\%$.

^a Influent volume based on CrEX-1, CrEX-2, CrEX-4, and CrEX-5 extraction volumes.

^b Effluent volume based on CTUA and CTUC flow meter reading.

2.2 Quarterly Treated Effluent Sampling Results from Each IX Treatment System (Requirement 2)

Treated effluent analytical results from samples collected during 2020 Quarter 1 for activities completed under DP-1835 are summarized in Table 2.2-1. No results for total chromium, nitrate, perchlorate, sulfate, fluoride, chloride, or total dissolved solids exceeded 90% of the numeric standards of 20.6.2.3103 New Mexico Administrative Code (NMAC) or 90% of the numeric screening levels established for tap water in Table A-1 of the 2019 NMED “Risk Assessment Guidance for Site Investigations and Remediation” for constituents not listed in 20.6.2.3103 NMAC. The 90% values for chromium, nitrate, perchlorate, sulfate, fluoride, chloride, and total dissolved solids are 45 $\mu\text{g/L}$, 9 mg/L , 12.4 $\mu\text{g/L}$, 540 mg/L , 1.44 mg/L , 225 mg/L , and 900 mg/L , respectively.

Table 2.2-1

Treated Effluent Analytical Results Summary Table – 2020 Quarter 1, DP-1835

Location ID	Sample ID	Sample Date*	Parameter Name	Result	Report Unit	90% of Standard or Screening Level	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CTUA	CTUA-20-188358	01/08/2020	Chloride	22.2	mg/L	225 mg/L		Y	Y	0.335
CTUA	CTUA-20-188361	01/15/2020	Chloride	21.4	mg/L	225 mg/L		Y	Y	0.335
CTUA	CTUA-20-188363	01/22/2020	Chloride	22.7	mg/L	225 mg/L		Y	Y	0.335
CTUA	CTUA-20-188362	01/29/2020	Chloride	69.0	mg/L	225 mg/L		Y	Y	0.670
CTUA	CTUA-20-193110	02/04/2020	Chloride	18.9	mg/L	225 mg/L		Y	Y	0.335
CTUA	CTUA-20-193109	02/12/2020	Chloride	17.9	mg/L	225 mg/L		Y	Y	0.268
CTUA	CTUA-20-188364	02/19/2020	Chloride	17.8	mg/L	225 mg/L		Y	Y	0.335
CTUA	CTUA-20-193108	02/26/2020	Chloride	17.8	mg/L	225 mg/L		Y	Y	0.335
CTUA	CTUA-20-193115	03/04/2020	Chloride	18.0	mg/L	225 mg/L		Y	Y	0.335
CTUA	CTUA-20-193111	03/10/2020	Chloride	16.7	mg/L	225 mg/L		Y	Y	0.335
CTUA	CTUA-20-193112	03/16/2020	Chloride	20.1	mg/L	225 mg/L		Y	Y	0.335
CTUA	CTUA-20-193113	03/23/2020	Chloride	18.1	mg/L	225 mg/L		Y	Y	0.335
CTUC	CTUC-20-192989	01/08/2020	Chloride	21.5	mg/L	225 mg/L		Y	Y	0.670
CTUC	CTUC-20-192991	01/15/2020	Chloride	85.6	mg/L	225 mg/L		Y	Y	1.34
CTUC	CTUC-20-192990	01/22/2020	Chloride	37.9	mg/L	225 mg/L		Y	Y	0.335
CTUC	CTUC-20-192992	01/29/2020	Chloride	17.6	mg/L	225 mg/L		Y	Y	0.335
CTUC	CTUC-20-192993	02/04/2020	Chloride	18.3	mg/L	225 mg/L		Y	Y	0.134
CTUC	CTUC-20-192994	02/12/2020	Chloride	18.4	mg/L	225 mg/L		Y	Y	0.268
CTUC	CTUC-20-192996	02/19/2020	Chloride	17.6	mg/L	225 mg/L		Y	Y	0.335
CTUC	CTUC-20-192995	02/26/2020	Chloride	85.3	mg/L	225 mg/L		Y	Y	1.34
CTUC	CTUC-20-193001	03/04/2020	Chloride	18.8	mg/L	225 mg/L		Y	Y	0.335
CTUC	CTUC-20-192999	03/10/2020	Chloride	18.7	mg/L	225 mg/L		Y	Y	0.335
CTUC	CTUC-20-192997	03/16/2020	Chloride	17.4	mg/L	225 mg/L		Y	Y	0.335
CTUC	CTUC-20-192998	03/23/2020	Chloride	18.1	mg/L	225 mg/L		Y	Y	0.335

Table 2.2-1 (continued)

Location ID	Sample ID	Sample Date*	Parameter Name	Result	Report Unit	90% of Standard or Screening Level	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CTUA	CTUA-20-188358	01/08/2020	Chromium	3.56	µg/L	45 µg/L	J	Y	Y	3
CTUA	CTUA-20-188361	01/15/2020	Chromium	3.0	µg/L	45 µg/L	U	N	Y	3
CTUA	CTUA-20-188363	01/22/2020	Chromium	3.0	µg/L	45 µg/L	U	N	Y	3
CTUA	CTUA-20-188362	01/29/2020	Chromium	3.0	µg/L	45 µg/L	U	N	Y	3
CTUA	CTUA-20-193110	02/04/2020	Chromium	3.0	µg/L	45 µg/L	U	N	Y	3
CTUA	CTUA-20-193109	02/12/2020	Chromium	3.0	µg/L	45 µg/L	U	N	Y	3
CTUA	CTUA-20-188364	02/19/2020	Chromium	3.0	µg/L	45 µg/L	U	N	Y	3
CTUA	CTUA-20-193108	02/26/2020	Chromium	3.0	µg/L	45 µg/L	U	N	Y	3
CTUA	CTUA-20-193115	03/04/2020	Chromium	3.0	µg/L	45 µg/L	U	N	Y	3
CTUA	CTUA-20-193111	03/10/2020	Chromium	3.0	µg/L	45 µg/L	U	N	Y	3
CTUA	CTUA-20-193112	03/16/2020	Chromium	3.0	µg/L	45 µg/L	U	N	Y	3
CTUA	CTUA-20-193113	03/23/2020	Chromium	3.0	µg/L	45 µg/L	U	N	Y	3
CTUC	CTUC-20-192989	01/08/2020	Chromium	3.16	µg/L	45 µg/L	J	Y	Y	3
CTUC	CTUC-20-192991	01/15/2020	Chromium	3.0	µg/L	45 µg/L	U	N	Y	3
CTUC	CTUC-20-192990	01/22/2020	Chromium	4.06	µg/L	45 µg/L	J	Y	Y	3
CTUC	CTUC-20-192992	01/29/2020	Chromium	3.0	µg/L	45 µg/L	U	N	Y	3
CTUC	CTUC-20-192993	02/04/2020	Chromium	3.0	µg/L	45 µg/L	U	N	Y	3
CTUC	CTUC-20-192994	02/12/2020	Chromium	3.0	µg/L	45 µg/L	U	N	Y	3
CTUC	CTUC-20-192996	02/19/2020	Chromium	3.0	µg/L	45 µg/L	U	N	Y	3
CTUC	CTUC-20-192995	02/26/2020	Chromium	3.0	µg/L	45 µg/L	U	N	Y	3
CTUC	CTUC-20-193001	03/04/2020	Chromium	3.0	µg/L	45 µg/L	U	N	Y	3
CTUC	CTUC-20-192999	03/10/2020	Chromium	3.0	µg/L	45 µg/L	U	N	Y	3
CTUC	CTUC-20-192997	03/16/2020	Chromium	3.0	µg/L	45 µg/L	U	N	Y	3
CTUC	CTUC-20-192998	03/23/2020	Chromium	3.0	µg/L	45 µg/L	U	N	Y	3
CTUA	CTUA-20-188358	01/08/2020	Fluoride	0.318	mg/L	1.44 mg/L		Y	Y	0.033
CTUA	CTUA-20-188361	01/15/2020	Fluoride	0.308	mg/L	1.44 mg/L		Y	Y	0.033

Table 2.2-1 (continued)

Location ID	Sample ID	Sample Date*	Parameter Name	Result	Report Unit	90% of Standard or Screening Level	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CTUA	CTUA-20-188363	01/22/2020	Fluoride	0.255	mg/L	1.44 mg/L		Y	Y	0.033
CTUA	CTUA-20-188362	01/29/2020	Fluoride	0.289	mg/L	1.44 mg/L		Y	Y	0.033
CTUA	CTUA-20-193110	02/04/2020	Fluoride	0.358	mg/L	1.44 mg/L		Y	Y	0.033
CTUA	CTUA-20-193109	02/12/2020	Fluoride	0.254	mg/L	1.44 mg/L		Y	Y	0.033
CTUA	CTUA-20-188364	02/19/2020	Fluoride	0.260	mg/L	1.44 mg/L		Y	Y	0.033
CTUA	CTUA-20-193108	02/26/2020	Fluoride	0.359	mg/L	1.44 mg/L		Y	Y	0.033
CTUA	CTUA-20-193115	03/04/2020	Fluoride	0.282	mg/L	1.44 mg/L		Y	Y	0.033
CTUA	CTUA-20-193111	03/10/2020	Fluoride	0.230	mg/L	1.44 mg/L		Y	Y	0.033
CTUA	CTUA-20-193112	03/16/2020	Fluoride	0.281	mg/L	1.44 mg/L		Y	Y	0.033
CTUA	CTUA-20-193113	03/23/2020	Fluoride	0.307	mg/L	1.44 mg/L		Y	Y	0.033
CTUC	CTUC-20-192989	01/08/2020	Fluoride	0.307	mg/L	1.44 mg/L		Y	Y	0.033
CTUC	CTUC-20-192991	01/15/2020	Fluoride	0.328	mg/L	1.44 mg/L		Y	Y	0.033
CTUC	CTUC-20-192990	01/22/2020	Fluoride	0.269	mg/L	1.44 mg/L		Y	Y	0.033
CTUC	CTUC-20-192992	01/29/2020	Fluoride	0.313	mg/L	1.44 mg/L		Y	Y	0.033
CTUC	CTUC-20-192993	02/04/2020	Fluoride	0.353	mg/L	1.44 mg/L		Y	Y	0.033
CTUC	CTUC-20-192994	02/12/2020	Fluoride	0.284	mg/L	1.44 mg/L		Y	Y	0.033
CTUC	CTUC-20-192996	02/19/2020	Fluoride	0.266	mg/L	1.44 mg/L		Y	Y	0.033
CTUC	CTUC-20-192995	02/26/2020	Fluoride	0.033	mg/L	1.44 mg/L	U	N	Y	0.033
CTUC	CTUC-20-193001	03/04/2020	Fluoride	0.279	mg/L	1.44 mg/L		Y	Y	0.033
CTUC	CTUC-20-192999	03/10/2020	Fluoride	0.550	mg/L	1.44 mg/L		Y	Y	0.033
CTUC	CTUC-20-192997	03/16/2020	Fluoride	0.280	mg/L	1.44 mg/L		Y	Y	0.033
CTUC	CTUC-20-192998	03/23/2020	Fluoride	0.303	mg/L	1.44 mg/L		Y	Y	0.033
CTUA	CTUA-20-188358	01/08/2020	Nitrate-nitrite as nitrogen	3.54	mg/L	9 mg/L		Y	Y	0.170
CTUA	CTUA-20-188361	01/15/2020	Nitrate-nitrite as nitrogen	3.96	mg/L	9 mg/L		Y	Y	0.0850
CTUA	CTUA-20-188363	01/22/2020	Nitrate-nitrite as nitrogen	3.36	mg/L	9 mg/L		Y	Y	0.170
CTUA	CTUA-20-188362	01/29/2020	Nitrate-nitrite as nitrogen	0.0707	mg/L	9 mg/L		Y	Y	0.0170

Table 2.2-1 (continued)

Location ID	Sample ID	Sample Date*	Parameter Name	Result	Report Unit	90% of Standard or Screening Level	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CTUA	CTUA-20-193110	02/04/2020	Nitrate-nitrite as nitrogen	4.97	mg/L	9 mg/L		Y	Y	0.170
CTUA	CTUA-20-193109	02/12/2020	Nitrate-nitrite as nitrogen	3.40	mg/L	9 mg/L		Y	Y	0.170
CTUA	CTUA-20-188364	02/19/2020	Nitrate-nitrite as nitrogen	3.10	mg/L	9 mg/L		Y	Y	0.170
CTUA	CTUA-20-193108	02/26/2020	Nitrate-nitrite as nitrogen	3.14	mg/L	9 mg/L		Y	Y	0.170
CTUA	CTUA-20-193115	03/04/2020	Nitrate-nitrite as nitrogen	3.23	mg/L	9 mg/L		Y	Y	0.170
CTUA	CTUA-20-193111	03/10/2020	Nitrate-nitrite as nitrogen	3.18	mg/L	9 mg/L		Y	Y	0.170
CTUA	CTUA-20-193112	03/16/2020	Nitrate-nitrite as nitrogen	5.26	mg/L	9 mg/L		Y	Y	0.170
CTUA	CTUA-20-193113	03/23/2020	Nitrate-nitrite as nitrogen	3.33	mg/L	9 mg/L		Y	Y	0.170
CTUC	CTUC-20-192989	01/08/2020	Nitrate-nitrite as nitrogen	3.59	mg/L	9 mg/L		Y	Y	0.170
CTUC	CTUC-20-192991	01/15/2020	Nitrate-nitrite as nitrogen	0.0638	mg/L	9 mg/L		Y	Y	0.0170
CTUC	CTUC-20-192990	01/22/2020	Nitrate-nitrite as nitrogen	3.08	mg/L	9 mg/L		Y	Y	0.170
CTUC	CTUC-20-192992	01/29/2020	Nitrate-nitrite as nitrogen	3.03	mg/L	9 mg/L		Y	Y	0.170
CTUC	CTUC-20-192993	02/04/2020	Nitrate-nitrite as nitrogen	3.36	mg/L	9 mg/L		Y	Y	0.170
CTUC	CTUC-20-192994	02/12/2020	Nitrate-nitrite as nitrogen	3.20	mg/L	9 mg/L		Y	Y	0.170
CTUC	CTUC-20-192996	02/19/2020	Nitrate-nitrite as nitrogen	3.18	mg/L	9 mg/L		Y	Y	0.170
CTUC	CTUC-20-192995	02/26/2020	Nitrate-nitrite as nitrogen	0.0626	mg/L	9 mg/L		Y	Y	0.017
CTUC	CTUC-20-193001	03/04/2020	Nitrate-nitrite as nitrogen	3.78	mg/L	9 mg/L		Y	Y	0.170
CTUC	CTUC-20-192999	03/10/2020	Nitrate-nitrite as nitrogen	3.21	mg/L	9 mg/L		Y	Y	0.170
CTUC	CTUC-20-192997	03/16/2020	Nitrate-nitrite as nitrogen	3.21	mg/L	9 mg/L		Y	Y	0.170
CTUC	CTUC-20-192998	03/23/2020	Nitrate-nitrite as nitrogen	3.30	mg/L	9 mg/L		Y	Y	0.170
CTUA	CTUA-20-188358	01/08/2020	Perchlorate	0.151	µg/L	12.4 µg/L	J	Y	Y	0.05
CTUA	CTUA-20-188361	01/15/2020	Perchlorate	0.162	µg/L	12.4 µg/L	J	Y	Y	0.05
CTUA	CTUA-20-188363	01/22/2020	Perchlorate	0.162	µg/L	12.4 µg/L	J	Y	Y	0.05
CTUA	CTUA-20-188362	01/29/2020	Perchlorate	0.05	µg/L	12.4 µg/L	U	N	Y	0.05
CTUA	CTUA-20-193110	02/04/2020	Perchlorate	0.081	µg/L	12.4 µg/L	J	Y	Y	0.05
CTUA	CTUA-20-193109	02/12/2020	Perchlorate	0.05	µg/L	12.4 µg/L	U	N	Y	0.05

Table 2.2-1 (continued)

Location ID	Sample ID	Sample Date*	Parameter Name	Result	Report Unit	90% of Standard or Screening Level	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CTUA	CTUA-20-188364	02/19/2020	Perchlorate	0.133	µg/L	12.4 µg/L	J	Y	Y	0.05
CTUA	CTUA-20-193108	02/26/2020	Perchlorate	0.134	µg/L	12.4 µg/L	J	Y	Y	0.05
CTUA	CTUA-20-193115	03/04/2020	Perchlorate	0.126	µg/L	12.4 µg/L	J	Y	Y	0.05
CTUA	CTUA-20-193111	03/10/2020	Perchlorate	0.134	µg/L	12.4 µg/L	J	Y	Y	0.05
CTUA	CTUA-20-193112	03/16/2020	Perchlorate	0.231	µg/L	12.4 µg/L		Y	Y	0.05
CTUA	CTUA-20-193113	03/23/2020	Perchlorate	0.439	µg/L	12.4 µg/L		Y	Y	0.05
CTUC	CTUC-20-192989	01/08/2020	Perchlorate	0.686	µg/L	12.4 µg/L		Y	Y	0.05
CTUC	CTUC-20-192991	01/15/2020	Perchlorate	0.05	µg/L	12.4 µg/L	U	N	Y	0.05
CTUC	CTUC-20-192990	01/22/2020	Perchlorate	0.0751	µg/L	12.4 µg/L	J	Y	Y	0.05
CTUC	CTUC-20-192992	01/29/2020	Perchlorate	0.155	µg/L	12.4 µg/L	J	Y	Y	0.05
CTUC	CTUC-20-192993	02/04/2020	Perchlorate	0.158	µg/L	12.4 µg/L	J	Y	Y	0.05
CTUC	CTUC-20-192994	02/12/2020	Perchlorate	0.124	µg/L	12.4 µg/L	J	Y	Y	0.05
CTUC	CTUC-20-192996	02/19/2020	Perchlorate	0.123	µg/L	12.4 µg/L	J	Y	Y	0.05
CTUC	CTUC-20-192995	02/26/2020	Perchlorate	0.196	µg/L	12.4 µg/L	J	Y	Y	0.05
CTUC	CTUC-20-193001	03/04/2020	Perchlorate	0.539	µg/L	12.4 µg/L		Y	Y	0.05
CTUC	CTUC-20-192999	03/10/2020	Perchlorate	0.655	µg/L	12.4 µg/L		Y	Y	0.05
CTUC	CTUC-20-192997	03/16/2020	Perchlorate	0.821	µg/L	12.4 µg/L		Y	Y	0.05
CTUC	CTUC-20-192998	03/23/2020	Perchlorate	0.891	µg/L	12.4 µg/L		Y	Y	0.05
CTUA	CTUA-20-188358	01/08/2020	Sulfate	32.7	mg/L	540 mg/L		Y	Y	0.665
CTUA	CTUA-20-188361	01/15/2020	Sulfate	30.8	mg/L	540 mg/L		Y	Y	0.665
CTUA	CTUA-20-188363	01/22/2020	Sulfate	32.4	mg/L	540 mg/L		Y	Y	0.665
CTUA	CTUA-20-188362	01/29/2020	Sulfate	0.494	mg/L	540 mg/L		Y	Y	0.133
CTUA	CTUA-20-193110	02/04/2020	Sulfate	6.61	mg/L	540 mg/L		Y	Y	0.665
CTUA	CTUA-20-193109	02/12/2020	Sulfate	25.3	mg/L	540 mg/L		Y	Y	0.665
CTUA	CTUA-20-188364	02/19/2020	Sulfate	25.5	mg/L	540 mg/L		Y	Y	0.665
CTUA	CTUA-20-193108	02/26/2020	Sulfate	25.7	mg/L	540 mg/L		Y	Y	0.665

Table 2.2-1 (continued)

Location ID	Sample ID	Sample Date*	Parameter Name	Result	Report Unit	90% of Standard or Screening Level	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CTUA	CTUA-20-193115	03/04/2020	Sulfate	26.2	mg/L	540 mg/L		Y	Y	0.665
CTUA	CTUA-20-193111	03/10/2020	Sulfate	24.6	mg/L	540 mg/L		Y	Y	0.665
CTUA	CTUA-20-193112	03/16/2020	Sulfate	1.96	mg/L	540 mg/L		Y	Y	0.665
CTUA	CTUA-20-193113	03/23/2020	Sulfate	25.5	mg/L	540 mg/L		Y	Y	0.665
CTUC	CTUC-20-192989	01/08/2020	Sulfate	32.5	mg/L	540 mg/L		Y	Y	1.33
CTUC	CTUC-20-192991	01/15/2020	Sulfate	0.133	mg/L	540 mg/L	U	N	Y	0.133
CTUC	CTUC-20-192990	01/22/2020	Sulfate	0.133	mg/L	540 mg/L	U	N	Y	0.133
CTUC	CTUC-20-192992	01/29/2020	Sulfate	24.5	mg/L	540 mg/L		Y	Y	0.665
CTUC	CTUC-20-192993	02/04/2020	Sulfate	25.5	mg/L	540 mg/L		Y	Y	0.266
CTUC	CTUC-20-192994	02/12/2020	Sulfate	26.1	mg/L	540 mg/L		Y	Y	0.532
CTUC	CTUC-20-192996	02/19/2020	Sulfate	25.3	mg/L	540 mg/L		Y	Y	0.665
CTUC	CTUC-20-192995	02/26/2020	Sulfate	0.163	mg/L	540 mg/L	J	Y	Y	0.133
CTUC	CTUC-20-193001	03/04/2020	Sulfate	16.2	mg/L	540 mg/L		Y	Y	0.133
CTUC	CTUC-20-192999	03/10/2020	Sulfate	26.5	mg/L	540 mg/L		Y	Y	0.665
CTUC	CTUC-20-192997	03/16/2020	Sulfate	24.9	mg/L	540 mg/L		Y	Y	0.665
CTUC	CTUC-20-192998	03/23/2020	Sulfate	25.8	mg/L	540 mg/L		Y	Y	0.665
CTUA	CTUA-20-188358	01/08/2020	Total dissolved solids	246	mg/L	900 mg/L		Y	Y	3.4
CTUA	CTUA-20-188361	01/15/2020	Total dissolved solids	267	mg/L	900 mg/L		Y	Y	3.4
CTUA	CTUA-20-188363	01/22/2020	Total dissolved solids	250	mg/L	900 mg/L		Y	Y	3.4
CTUA	CTUA-20-188362	01/29/2020	Total dissolved solids	197	mg/L	900 mg/L		Y	Y	3.4
CTUA	CTUA-20-193110	02/04/2020	Total dissolved solids	219	mg/L	900 mg/L		Y	Y	3.4
CTUA	CTUA-20-193109	02/12/2020	Total dissolved solids	159	mg/L	900 mg/L		Y	Y	3.4
CTUA	CTUA-20-188364	02/19/2020	Total dissolved solids	97.1	mg/L	900 mg/L		Y	Y	3.4
CTUA	CTUA-20-193108	02/26/2020	Total dissolved solids	230	mg/L	900 mg/L		Y	Y	3.4
CTUA	CTUA-20-193115	03/04/2020	Total dissolved solids	159	mg/L	900 mg/L		Y	Y	3.4
CTUA	CTUA-20-193111	03/10/2020	Total dissolved solids	224	mg/L	900 mg/L		Y	Y	3.4

Table 2.2-1 (continued)

Location ID	Sample ID	Sample Date*	Parameter Name	Result	Report Unit	90% of Standard or Screening Level	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CTUA	CTUA-20-193112	03/16/2020	Total dissolved solids	157	mg/L	900 mg/L		Y	Y	3.4
CTUA	CTUA-20-193113	03/23/2020	Total dissolved solids	234	mg/L	900 mg/L		Y	Y	3.4
CTUC	CTUC-20-192989	01/08/2020	Total dissolved solids	246	mg/L	900 mg/L		Y	Y	3.4
CTUC	CTUC-20-192991	01/15/2020	Total dissolved solids	236	mg/L	900 mg/L		Y	Y	3.4
CTUC	CTUC-20-192990	01/22/2020	Total dissolved solids	219	mg/L	900 mg/L		Y	Y	3.4
CTUC	CTUC-20-192992	01/29/2020	Total dissolved solids	241	mg/L	900 mg/L		Y	Y	3.4
CTUC	CTUC-20-192993	02/04/2020	Total dissolved solids	223	mg/L	900 mg/L		Y	Y	3.4
CTUC	CTUC-20-192994	02/12/2020	Total dissolved solids	151	mg/L	900 mg/L		Y	Y	3.4
CTUC	CTUC-20-192996	02/19/2020	Total dissolved solids	179	mg/L	900 mg/L		Y	Y	3.4
CTUC	CTUC-20-192995	02/26/2020	Total dissolved solids	247	mg/L	900 mg/L		Y	Y	3.4
CTUC	CTUC-20-193001	03/04/2020	Total dissolved solids	161	mg/L	900 mg/L		Y	Y	3.4
CTUC	CTUC-20-192999	03/10/2020	Total dissolved solids	256	mg/L	900 mg/L		Y	Y	3.4
CTUC	CTUC-20-192997	03/16/2020	Total dissolved solids	329	mg/L	900 mg/L		Y	Y	3.4
CTUC	CTUC-20-192998	03/23/2020	Total dissolved solids	229	mg/L	900 mg/L		Y	Y	3.4

Notes:

U in the Lab Qualifier column means analyte is classified as not detected.

J in the Lab Qualifier column means the analyte is classified as estimated.

Y in the Detect Flag column means the analyte was detected.

N in the Detect Flag column means the analyte was not detected.

Y in the Filtered column means the sample was filtered.

N in the Filtered column means the sample was not filtered.

A blank cell in the Lab Qualifier column indicates the corresponding parameter was detected and no qualifier is applicable to the result.

* In accordance with condition 13 of DP-1835, analysis of the treated effluent from each IX unit is required only once every month for the 2020 Quarter 1 reporting period.

The pilot scale molasses and sodium dithionite amendment studies continued during 2020 Quarter 1. NMED determined that no permit was required for the deployment of these amendments, and these studies began with NMED conditional approvals during 2017 Quarter 4 (NMED 2017a, NMED 2017b). In accordance with the NMED conditional approvals, iron, manganese, and arsenic sampling in the treated water from extraction wells was completed, and the results were submitted in the quarterly monitoring reports under DP-1835. These results for 2020 Quarter 1 are provided in Table 2.2-2. No results for iron, manganese, or arsenic exceeded 90% of the numeric standards of 20.6.2.3103 NMAC. The 90% values for iron, manganese, and arsenic are 900 µg/L, 180 µg/L, and 9 µg/L, respectively.

DP-1835 Permit Condition #13 requires treated effluent to be analyzed annually for all water contaminants listed in 20.6.2.3103 NMAC and all toxic pollutants defined in 20.6.2.7.T(2) NMAC. The annual sample for calendar year 2020 was not obtained during 2020 Quarter 1. The annual sample is expected to be obtained during 2020 Quarter 4.

2.3 Quarterly Depth-to-Groundwater and Groundwater-Quality Sampling Results (Requirement 3)

Depth-to-groundwater is expressed as the elevation of the groundwater above sea level. Figure 2.3-1 is the groundwater elevation map, and Table 2.3-1 provides the quarterly groundwater elevation measurements. An explanation of how the groundwater elevation map was generated is provided below. Quarterly groundwater analytical results from samples collected during 2020 Quarter 1 for the monitoring wells listed in Condition No. 14 are summarized in Table 2.3-2.

The regional aquifer beneath Los Alamos National Laboratory (LANL or the Laboratory) is a complex hydrogeological system. The shape of the regional water table beneath the Pajarito Plateau is predominantly controlled by the areas of recharge to the west (i.e., the flanks of the Sierra de los Valles and the Pajarito fault zone) and discharge to the east (i.e., the Rio Grande and the White Rock Canyon Springs). At a more local scale, such as the chromium plume area, the structure of the regional water table and groundwater flow is also expected to be influenced by (1) local infiltration zones and recharge areas (e.g., beneath canyons), (2) heterogeneity and anisotropy in the aquifer properties, and (3) extraction and injection locations (municipal water-supply wells and chromium interim measure extraction/injection wells).

Long-term water-level data, contaminant transport observations (travel times and direction of migration), and calibrated model results are all lines of evidence that suggest that the water table was relatively flat in the area of the chromium plume before the implementation of CrEX extraction and CrIN injection wells. Steeper gradients are found to the west because of the mountain-front recharge and to the east towards the Rio Grande. The low ambient gradient in the chromium plume area could be related to the relatively high permeability of the Puye Formation and Miocene pumiceous sediments, anisotropy of the regional aquifer, localized recharge along the canyons above the regional aquifer, faults or other lineaments that affect regional-scale hydraulic conductivity, and nearby water-supply pumping. Although it is difficult to infer absolute groundwater flow directions from the relatively flat contours in the chromium plume area, groundwater elevation data and contaminant transport observations indicate that flow direction is generally towards the east-southeast.

Table 2.2-2
Treated Effluent Analytical Results Summary Table Related to Molasses and
Sodium Dithionite Pilot Studies under NMED Conditional Approval – 2020 Quarter 1, DP-1835

Location ID	Sample ID	Sample Date*	Parameter Name	Result	Report Unit	90% of Standard or Screening Level	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CTUA	CTUA-20-188358	01/08/2020	Arsenic	2.0	µg/L	9 µg/L	U	N	Y	2
CTUA	CTUA-20-188361	01/15/2020	Arsenic	2.3	µg/L	9 µg/L	J	Y	Y	2
CTUA	CTUA-20-188363	01/22/2020	Arsenic	2.48	µg/L	9 µg/L	J	Y	Y	2
CTUA	CTUA-20-188362	01/29/2020	Arsenic	2.35	µg/L	9 µg/L	J	Y	Y	2
CTUA	CTUA-20-193110	02/04/2020	Arsenic	5.27	µg/L	9 µg/L		Y	Y	2
CTUA	CTUA-20-193109	02/12/2020	Arsenic	2.90	µg/L	9 µg/L	J	Y	Y	2
CTUA	CTUA-20-188364	02/19/2020	Arsenic	3.23	µg/L	9 µg/L	J	Y	Y	2
CTUA	CTUA-20-193108	02/26/2020	Arsenic	5.68	µg/L	9 µg/L		Y	Y	2
CTUA	CTUA-20-193115	03/04/2020	Arsenic	2.64	µg/L	9 µg/L	J	Y	Y	2
CTUA	CTUA-20-193111	03/10/2020	Arsenic	3.16	µg/L	9 µg/L	J	Y	Y	2
CTUA	CTUA-20-193112	03/16/2020	Arsenic	2.0	µg/L	9 µg/L	U	N	Y	2
CTUA	CTUA-20-193113	03/23/2020	Arsenic	2.0	µg/L	9 µg/L	J	Y	Y	2
CTUC	CTUC-20-192989	01/08/2020	Arsenic	2.0	µg/L	9 µg/L	U	N	Y	2
CTUC	CTUC-20-192991	01/15/2020	Arsenic	2.0	µg/L	9 µg/L	U	N	Y	2
CTUC	CTUC-20-192990	01/22/2020	Arsenic	2.15	µg/L	9 µg/L	J	Y	Y	2
CTUC	CTUC-20-192992	01/29/2020	Arsenic	3.05	µg/L	9 µg/L	J	Y	Y	2
CTUC	CTUC-20-192993	02/04/2020	Arsenic	4.41	µg/L	9 µg/L	J	Y	Y	2
CTUC	CTUC-20-192994	02/12/2020	Arsenic	2.48	µg/L	9 µg/L	J	Y	Y	2
CTUC	CTUC-20-192996	02/19/2020	Arsenic	3.21	µg/L	9 µg/L	J	Y	Y	2
CTUC	CTUC-20-192995	02/26/2020	Arsenic	5.34	µg/L	9 µg/L		Y	Y	2
CTUC	CTUC-20-193001	03/04/2020	Arsenic	3.78	µg/L	9 µg/L	J	Y	Y	2
CTUC	CTUC-20-192999	03/10/2020	Arsenic	2.77	µg/L	9 µg/L	J	Y	Y	2
CTUC	CTUC-20-192997	03/16/2020	Arsenic	2.0	µg/L	9 µg/L	U	N	Y	2
CTUC	CTUC-20-192998	03/23/2020	Arsenic	2.0	µg/L	9 µg/L	U	N	Y	2
CTUA	CTUA-20-188358	01/08/2020	Iron	30.0	µg/L	900 µg/L	U	N	Y	30
CTUA	CTUA-20-188361	01/15/2020	Iron	30.0	µg/L	900 µg/L	U	N	Y	30

2020 Quarter 1, Discharge of Treated Groundwater to the Regional Aquifer under DP-1835

Table 2.2-2 (continued)

Location ID	Sample ID	Sample Date*	Parameter Name	Result	Report Unit	90% of Standard or Screening Level	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CTUA	CTUA-20-188363	01/22/2020	Iron	30.0	µg/L	900 µg/L	U	N	Y	30
CTUA	CTUA-20-188362	01/29/2020	Iron	30.0	µg/L	900 µg/L	U	N	Y	30
CTUA	CTUA-20-193110	02/04/2020	Iron	30.0	µg/L	900 µg/L	U	N	Y	30
CTUA	CTUA-20-193109	02/12/2020	Iron	30.0	µg/L	900 µg/L	U	N	Y	30
CTUA	CTUA-20-188364	02/19/2020	Iron	30.0	µg/L	900 µg/L	U	N	Y	30
CTUA	CTUA-20-193108	02/26/2020	Iron	30.0	µg/L	900 µg/L	U	N	Y	30
CTUA	CTUA-20-193115	03/04/2020	Iron	30.0	µg/L	900 µg/L	U	N	Y	30
CTUA	CTUA-20-193111	03/10/2020	Iron	30.0	µg/L	900 µg/L	U	N	Y	30
CTUA	CTUA-20-193112	03/16/2020	Iron	30.0	µg/L	900 µg/L	U	N	Y	30
CTUA	CTUA-20-193113	03/23/2020	Iron	30.0	µg/L	900 µg/L	U	N	Y	30
CTUC	CTUC-20-192989	01/08/2020	Iron	30.0	µg/L	900 µg/L	U	N	Y	30
CTUC	CTUC-20-192991	01/15/2020	Iron	30.0	µg/L	900 µg/L	U	N	Y	30
CTUC	CTUC-20-192990	01/22/2020	Iron	30.0	µg/L	900 µg/L	U	N	Y	30
CTUC	CTUC-20-192992	01/29/2020	Iron	30.0	µg/L	900 µg/L	U	N	Y	30
CTUC	CTUC-20-192993	02/04/2020	Iron	30.0	µg/L	900 µg/L	U	N	Y	30
CTUC	CTUC-20-192994	02/12/2020	Iron	30.0	µg/L	900 µg/L	U	N	Y	30
CTUC	CTUC-20-192996	02/19/2020	Iron	30.0	µg/L	900 µg/L	U	N	Y	30
CTUC	CTUC-20-192995	02/26/2020	Iron	30.0	µg/L	900 µg/L	U	N	Y	30
CTUC	CTUC-20-193001	03/04/2020	Iron	30.0	µg/L	900 µg/L	U	N	Y	30
CTUC	CTUC-20-192999	03/10/2020	Iron	30.0	µg/L	900 µg/L	U	N	Y	30
CTUC	CTUC-20-192997	03/16/2020	Iron	30.0	µg/L	900 µg/L	U	N	Y	30
CTUC	CTUC-20-192998	03/23/2020	Iron	30.0	µg/L	900 µg/L	U	N	Y	30
CTUA	CTUA-20-188358	01/08/2020	Manganese	2.0	µg/L	180 µg/L	U	N	Y	2
CTUA	CTUA-20-188361	01/15/2020	Manganese	2.0	µg/L	180 µg/L	U	N	Y	2
CTUA	CTUA-20-188363	01/22/2020	Manganese	2.0	µg/L	180 µg/L	U	N	Y	2
CTUA	CTUA-20-188362	01/29/2020	Manganese	2.0	µg/L	180 µg/L	U	N	Y	2
CTUA	CTUA-20-193110	02/04/2020	Manganese	2.0	µg/L	180 µg/L	U	N	Y	2

Table 2.2-2 (continued)

Location ID	Sample ID	Sample Date*	Parameter Name	Result	Report Unit	90% of Standard or Screening Level	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CTUA	CTUA-20-193109	02/12/2020	Manganese	2.0	µg/L	180 µg/L	U	N	Y	2
CTUA	CTUA-20-188364	02/19/2020	Manganese	2.0	µg/L	180 µg/L	U	N	Y	2
CTUA	CTUA-20-193108	02/26/2020	Manganese	2.0	µg/L	180 µg/L	U	N	Y	2
CTUA	CTUA-20-193115	03/04/2020	Manganese	2.0	µg/L	180 µg/L	U	N	Y	2
CTUA	CTUA-20-193111	03/10/2020	Manganese	2.0	µg/L	180 µg/L	U	N	Y	2
CTUA	CTUA-20-193112	03/16/2020	Manganese	2.0	µg/L	180 µg/L	U	N	Y	2
CTUA	CTUA-20-193113	03/23/2020	Manganese	2.0	µg/L	180 µg/L	U	N	Y	2
CTUC	CTUC-20-192989	01/08/2020	Manganese	2.0	µg/L	180 µg/L	U	N	Y	2
CTUC	CTUC-20-192991	01/15/2020	Manganese	2.0	µg/L	180 µg/L	U	N	Y	2
CTUC	CTUC-20-192990	01/22/2020	Manganese	2.0	µg/L	180 µg/L	U	N	Y	2
CTUC	CTUC-20-192992	01/29/2020	Manganese	2.0	µg/L	180 µg/L	U	N	Y	2
CTUC	CTUC-20-192993	02/04/2020	Manganese	2.0	µg/L	180 µg/L	U	N	Y	2
CTUC	CTUC-20-192994	02/12/2020	Manganese	2.0	µg/L	180 µg/L	U	N	Y	2
CTUC	CTUC-20-192996	02/19/2020	Manganese	2.0	µg/L	180 µg/L	U	N	Y	2
CTUC	CTUC-20-192995	02/26/2020	Manganese	8.42	µg/L	180 µg/L	J	N	Y	2
CTUC	CTUC-20-193001	03/04/2020	Manganese	2.0	µg/L	180 µg/L	U	N	Y	2
CTUC	CTUC-20-192999	03/10/2020	Manganese	2.0	µg/L	180 µg/L	U	N	Y	2
CTUC	CTUC-20-192997	03/16/2020	Manganese	2.0	µg/L	180 µg/L	U	N	Y	2
CTUC	CTUC-20-192998	03/23/2020	Manganese	2.0	µg/L	180 µg/L	U	N	Y	2

Notes:

U in the Lab Qualifier column means analyte is classified as not detected.

J in the Lab Qualifier column means the analyte is classified as estimated.

Y in the Detect Flag column means the analyte was detected.

N in the Detect Flag column means the analyte was not detected.

Y in the Filtered column means the sample was filtered.

N in the Filtered column means the sample was not filtered.

A blank cell in the Lab Qualifier column indicates the corresponding parameter was detected and no qualifier is applicable to the result.

* In accordance with condition 13 of DP-1835, analysis of the treated effluent from each IX unit is required only once every month for the 2020 Quarter 1 reporting period.

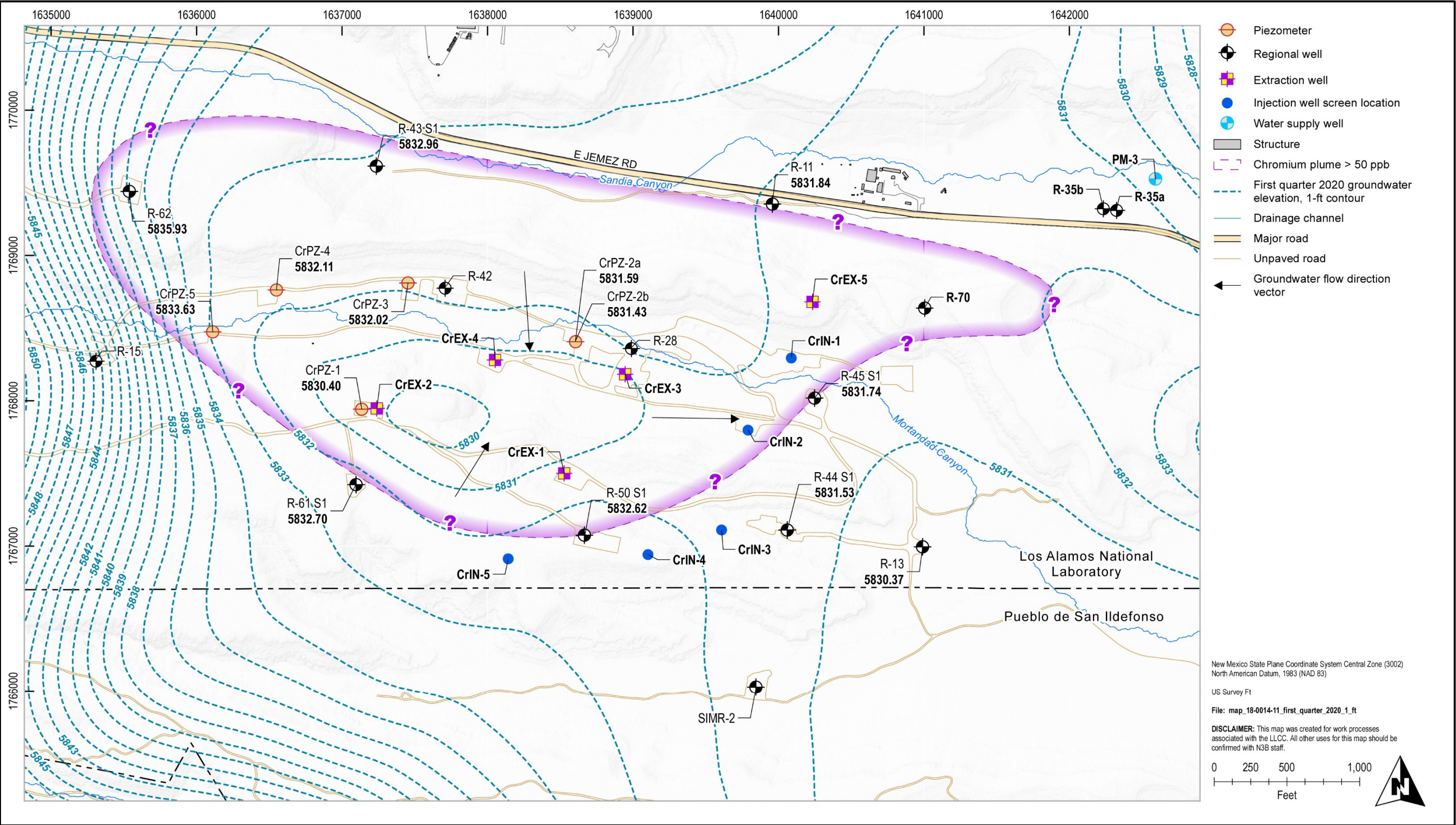


Figure 2.3-1 Groundwater elevation contour map – 2020 Quarter 1, DP-1835

**Table 2.3-1
Groundwater Elevations Summary
for Groundwater Monitoring Wells – 2020 Quarter 1, DP-1835**

Monitoring Well	Groundwater Elevation^a (ft)
CrPZ-1 (CrCH-1)	5830.40
CrPZ-2a (CrCH-2a)	5831.59
CrPZ-2b (CrCH-2b)	5831.43
CrPZ-3 (CrCH-3)	5832.02
CrPZ-4 (CrCH-4)	5832.11
CrPZ-5 (CrCH-5)	5833.63
R-11	5831.84
R-13	5830.37
R-43 S1 ^b	5832.96
R-43 S2 ^c	5832.33
R-44 S1	5831.53
R-44 S2	5831.10
R-45 S1	5831.74
R-45 S2	5830.99
R-50 S1	5832.62
R-50 S2	5831.86
R-61 S1	5832.70
R-61 S2	5832.58
R-62	5835.93
SIMR-2 ^d	5831.53

^a Groundwater elevations provided are based on average February 2020 values from transducers.

^b S1 = Screen 1.

^c S2 = Screen 2.

^d Fourth-quarter average August 2019 SIMR-2 data are reported here in accordance with the DP-1835 2019 Quarter 4 report (N3B 2020). Data were unavailable at the time of that report's preparation in accordance with the memorandum of agreement between San Ildefonso Pueblo and DOE. Data from the current quarter are not available at this time and will be presented in the next quarterly report.

Table 2.3-2

Groundwater Monitoring Wells Analytical Results Summary Table – 2020 Quarter 1, DP-1835

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Report Unit	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CASA-20-192771	R-11	01/08/2020	Chloride	4.03	mg/L	J+	Y	Y	0.067
CASA-20-192771	R-11	01/08/2020	Perchlorate	0.722	µg/L		Y	Y	0.050
CASA-20-192771	R-11	01/08/2020	Chromium	14.6	µg/L		Y	Y	3.00
CASA-20-192771	R-11	01/08/2020	Fluoride	0.452	mg/L		Y	Y	0.033
CASA-20-192771	R-11	01/08/2020	Nitrate-nitrite as nitrogen	5.22	mg/L		Y	Y	0.170
CASA-20-192771	R-11	01/08/2020	Sulfate	8.99	mg/L		Y	Y	0.133
CASA-20-192771	R-11	01/08/2020	Total dissolved solids	204	mg/L	J+	Y	Y	3.40
CASA-20-193860	R-11	02/13/2020	Chloride	4.09	mg/L		Y	Y	0.067
CASA-20-193860	R-11	02/13/2020	Perchlorate	0.821	µg/L		Y	Y	0.050
CASA-20-193860	R-11	02/13/2020	Chromium	14.2	µg/L		Y	Y	3.00
CASA-20-193860	R-11	02/13/2020	Fluoride	0.397	mg/L		Y	Y	0.033
CASA-20-193860	R-11	02/13/2020	Nitrate-nitrite as nitrogen	5.7	mg/L		Y	Y	0.170
CASA-20-193860	R-11	02/13/2020	Sulfate	9.35	mg/L		Y	Y	0.133
CASA-20-193860	R-11	02/13/2020	Total dissolved solids	179	mg/L		Y	Y	3.40
CASA-20-196225	R-11	03/16/2020	Chloride	4.26	mg/L		Y	Y	0.067
CASA-20-196225	R-11	03/16/2020	Perchlorate	0.813	µg/L		Y	Y	0.050
CASA-20-196225	R-11	03/16/2020	Chromium	14.2	µg/L		Y	Y	3.00
CASA-20-196225	R-11	03/16/2020	Fluoride	0.493	mg/L		Y	Y	0.033
CASA-20-196225	R-11	03/16/2020	Nitrate-nitrite as nitrogen	5.27	mg/L		Y	Y	0.170
CASA-20-196225	R-11	03/16/2020	Sulfate	9.54	mg/L		Y	Y	0.133
CASA-20-196225	R-11	03/16/2020	Total dissolved solids	193	mg/L	J+	Y	Y	3.40
CAMO-20-192614	R-13	01/21/2020	Chloride	2.59	mg/L		Y	Y	0.067
CAMO-20-192614	R-13	01/21/2020	Perchlorate	0.422	µg/L		Y	Y	0.050
CAMO-20-192614	R-13	01/21/2020	Chromium	5.69	µg/L	J	Y	Y	3.00

Table 2.3-2 (continued)

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Report Unit	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CAMO-20-192614	R-13	01/21/2020	Fluoride	0.276	mg/L		Y	Y	0.033
CAMO-20-192614	R-13	01/21/2020	Nitrate-nitrite as nitrogen	0.759	mg/L		Y	Y	0.017
CAMO-20-192614	R-13	01/21/2020	Sulfate	3.36	mg/L	J+	Y	Y	0.133
CAMO-20-192614	R-13	01/21/2020	Total dissolved solids	151	mg/L		Y	Y	3.40
CASA-20-192782	R-43 S1 ^a	01/09/2020	Chloride	8.58	mg/L		Y	Y	0.067
CASA-20-192782	R-43 S1	01/09/2020	Perchlorate	0.849	µg/L		Y	Y	0.050
CASA-20-192782	R-43 S1	01/09/2020	Chromium	215	µg/L		Y	Y	3.0
CASA-20-192782	R-43 S1	01/09/2020	Fluoride	0.313	mg/L		Y	Y	0.033
CASA-20-192782	R-43 S1	01/09/2020	Nitrate-nitrite as nitrogen	5.91	mg/L	J+	Y	Y	0.170
CASA-20-192782	R-43 S1	01/09/2020	Sulfate	17.8	mg/L		Y	Y	0.133
CASA-20-192782	R-43 S1	01/09/2020	Total dissolved solids	139	mg/L		Y	Y	3.40
CASA-20-192787	R-43 S2 ^b	01/09/2020	Chloride	6.99	mg/L		Y	Y	0.067
CASA-20-192787	R-43 S2	01/09/2020	Perchlorate	0.933	µg/L		Y	Y	0.050
CASA-20-192787	R-43 S2	01/09/2020	Chromium	35.2	µg/L		Y	Y	3.00
CASA-20-192787	R-43 S2	01/09/2020	Fluoride	0.271	mg/L		Y	Y	0.033
CASA-20-192787	R-43 S2	01/09/2020	Nitrate-nitrite as nitrogen	4.14	mg/L	J+	Y	Y	0.170
CASA-20-192787	R-43 S2	01/09/2020	Sulfate	10.1	mg/L		Y	Y	0.133
CASA-20-192787	R-43 S2	01/09/2020	Total dissolved solids	151	mg/L		Y	Y	3.40
CAMO-20-192922	R-44 S1	01/21/2020	Chloride	18.2	mg/L		Y	Y	0.335
CAMO-20-192922	R-44 S1	01/21/2020	Perchlorate	0.312	µg/L		Y	Y	0.050
CAMO-20-192922	R-44 S1	01/21/2020	Chromium	6.36	µg/L	J	Y	Y	3.00
CAMO-20-192922	R-44 S1	01/21/2020	Fluoride	0.301	mg/L		Y	Y	0.033
CAMO-20-192922	R-44 S1	01/21/2020	Nitrate-nitrite as nitrogen	2.39	mg/L		Y	Y	0.085
CAMO-20-192922	R-44 S1	01/21/2020	Sulfate	18.6	mg/L		Y	Y	0.133
CAMO-20-192922	R-44 S1	01/21/2020	Total dissolved solids	183	mg/L		Y	Y	3.40
CAMO-20-193943	R-44 S1	02/20/2020	Chloride	19.3	mg/L		Y	Y	0.335

Table 2.3-2 (continued)

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Report Unit	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CAMO-20-193943	R-44 S1	02/20/2020	Perchlorate	0.316	µg/L		Y	Y	0.050
CAMO-20-193943	R-44 S1	02/20/2020	Chromium	5.13	µg/L	J	Y	Y	3.00
CAMO-20-193943	R-44 S1	02/20/2020	Fluoride	0.157	mg/L		Y	Y	0.033
CAMO-20-193943	R-44 S1	02/20/2020	Nitrate-nitrite as nitrogen	2.33	mg/L		Y	Y	0.170
CAMO-20-193943	R-44 S1	02/20/2020	Sulfate	19.5	mg/L		Y	Y	0.133
CAMO-20-193943	R-44 S1	02/20/2020	Total dissolved solids	197	mg/L	J+	Y	Y	3.40
CAMO-20-196234	R-44 S1	03/12/2020	Chloride	19.5	mg/L		Y	Y	0.335
CAMO-20-196234	R-44 S1	03/12/2020	Perchlorate	0.315	µg/L		Y	Y	0.050
CAMO-20-196234	R-44 S1	03/12/2020	Chromium	7.38	µg/L	J	Y	Y	3.00
CAMO-20-196234	R-44 S1	03/12/2020	Fluoride	0.274	mg/L		Y	Y	0.033
CAMO-20-196234	R-44 S1	03/12/2020	Nitrate-nitrite as nitrogen	2.23	mg/L		Y	Y	0.170
CAMO-20-196234	R-44 S1	03/12/2020	Sulfate	19.2	mg/L		Y	Y	0.133
CAMO-20-196234	R-44 S1	03/12/2020	Total dissolved solids	206	mg/L		Y	Y	3.40
CAMO-20-192727	R-44 S2	01/21/2020	Chloride	2.13	mg/L		Y	Y	0.067
CAMO-20-192727	R-44 S2	01/21/2020	Perchlorate	0.338	µg/L		Y	Y	0.050
CAMO-20-192727	R-44 S2	01/21/2020	Chromium	7.39	µg/L	J	Y	Y	3.00
CAMO-20-192727	R-44 S2	01/21/2020	Fluoride	0.422	mg/L		Y	Y	0.033
CAMO-20-192727	R-44 S2	01/21/2020	Nitrate-nitrite as nitrogen	0.66	mg/L		Y	Y	0.085
CAMO-20-192727	R-44 S2	01/21/2020	Sulfate	2.4	mg/L		Y	Y	0.133
CAMO-20-192727	R-44 S2	01/21/2020	Total dissolved solids	171	mg/L		Y	Y	3.40
CAMO-20-193954	R-44 S2	02/20/2020	Chloride	2.2	mg/L		Y	Y	0.067
CAMO-20-193954	R-44 S2	02/20/2020	Perchlorate	0.338	µg/L		Y	Y	0.050
CAMO-20-193954	R-44 S2	02/20/2020	Chromium	5.52	µg/L	J	Y	Y	3.00
CAMO-20-193954	R-44 S2	02/20/2020	Fluoride	0.305	mg/L		Y	Y	0.033
CAMO-20-193954	R-44 S2	02/20/2020	Nitrate-nitrite as nitrogen	0.65	mg/L		Y	Y	0.085
CAMO-20-193954	R-44 S2	02/20/2020	Sulfate	2.48	mg/L		Y	Y	0.133

Table 2.3-2 (continued)

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Report Unit	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CAMO-20-193954	R-44 S2	02/20/2020	Total dissolved solids	133	mg/L	J+	Y	Y	3.40
CAMO-20-196237	R-44 S2	03/12/2020	Chloride	2.22	mg/L		Y	Y	0.067
CAMO-20-196237	R-44 S2	03/12/2020	Perchlorate	0.313	µg/L		Y	Y	0.050
CAMO-20-196237	R-44 S2	03/12/2020	Chromium	8.04	µg/L	J	Y	Y	3.00
CAMO-20-196237	R-44 S2	03/12/2020	Fluoride	0.43	mg/L		Y	Y	0.033
CAMO-20-196237	R-44 S2	03/12/2020	Nitrate-nitrite as nitrogen	0.67	mg/L		Y	Y	0.085
CAMO-20-196237	R-44 S2	03/12/2020	Sulfate	2.5	mg/L		Y	Y	0.133
CAMO-20-196237	R-44 S2	03/12/2020	Total dissolved solids	166	mg/L		Y	Y	3.40
CAMO-20-192730	R-45 S1	01/22/2020	Chloride	6.15	mg/L		Y	Y	0.067
CAMO-20-192730	R-45 S1	01/22/2020	Perchlorate	0.541	µg/L		Y	Y	0.050
CAMO-20-192730	R-45 S1	01/22/2020	Chromium	38.7	µg/L		Y	Y	3.00
CAMO-20-192730	R-45 S1	01/22/2020	Fluoride	0.28	mg/L		Y	Y	0.033
CAMO-20-192730	R-45 S1	01/22/2020	Nitrate-nitrite as nitrogen	2.45	mg/L		Y	Y	0.170
CAMO-20-192730	R-45 S1	01/22/2020	Sulfate	7.84	mg/L		Y	Y	0.133
CAMO-20-192730	R-45 S1	01/22/2020	Total dissolved solids	194	mg/L		Y	Y	3.40
CAMO-20-193957	R-45 S1	02/28/2020	Chloride	9.74	mg/L	J+	Y	Y	0.067
CAMO-20-193957	R-45 S1	02/28/2020	Perchlorate	0.538	µg/L		Y	Y	0.050
CAMO-20-193957	R-45 S1	02/28/2020	Chromium	23.8	µg/L		Y	Y	3.00
CAMO-20-193957	R-45 S1	02/28/2020	Fluoride	0.288	mg/L		Y	Y	0.033
CAMO-20-193957	R-45 S1	02/28/2020	Nitrate-nitrite as nitrogen	2.45	mg/L		Y	Y	0.170
CAMO-20-193957	R-45 S1	02/28/2020	Sulfate	10.4	mg/L	J+	Y	Y	0.133
CAMO-20-193957	R-45 S1	02/28/2020	Total dissolved solids	166	mg/L		Y	Y	3.40
CAMO-20-196240	R-45 S1	03/13/2020	Chloride	10.2	mg/L		Y	Y	0.134
CAMO-20-196240	R-45 S1	03/13/2020	Perchlorate	0.505	µg/L		Y	Y	0.050
CAMO-20-196240	R-45 S1	03/13/2020	Chromium	25.7	µg/L		Y	Y	3.00
CAMO-20-196240	R-45 S1	03/13/2020	Fluoride	0.278	mg/L		Y	Y	0.033

Table 2.3-2 (continued)

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Report Unit	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CAMO-20-196240	R-45 S1	03/13/2020	Nitrate-nitrite as nitrogen	2.52	mg/L		Y	Y	0.170
CAMO-20-196240	R-45 S1	03/13/2020	Sulfate	11.5	mg/L		Y	Y	0.133
CAMO-20-196240	R-45 S1	03/13/2020	Total dissolved solids	221	mg/L		Y	Y	3.40
CAMO-20-192733	R-45 S2	01/22/2020	Chloride	5.45	mg/L		Y	Y	0.067
CAMO-20-192733	R-45 S2	01/22/2020	Perchlorate	0.464	µg/L		Y	Y	0.050
CAMO-20-192733	R-45 S2	01/22/2020	Chromium	42.1	µg/L		Y	Y	3.00
CAMO-20-192733	R-45 S2	01/22/2020	Fluoride	0.339	mg/L		Y	Y	0.033
CAMO-20-192733	R-45 S2	01/22/2020	Nitrate-nitrite as nitrogen	0.96	mg/L		Y	Y	0.085
CAMO-20-192733	R-45 S2	01/22/2020	Sulfate	6.47	mg/L		Y	Y	0.133
CAMO-20-192733	R-45 S2	01/22/2020	Total dissolved solids	176	mg/L		Y	Y	3.40
CAMO-20-193960	R-45 S2	02/28/2020	Chloride	5.64	mg/L	J+	Y	Y	0.067
CAMO-20-193960	R-45 S2	02/28/2020	Perchlorate	0.49	µg/L		Y	Y	0.050
CAMO-20-193960	R-45 S2	02/28/2020	Chromium	38.1	µg/L		Y	Y	3.00
CAMO-20-193960	R-45 S2	02/28/2020	Fluoride	0.404	mg/L		Y	Y	0.033
CAMO-20-193960	R-45 S2	02/28/2020	Nitrate-nitrite as nitrogen	1.04	mg/L		Y	Y	0.085
CAMO-20-193960	R-45 S2	02/28/2020	Sulfate	6.9	mg/L	J+	Y	Y	0.133
CAMO-20-193960	R-45 S2	02/28/2020	Total dissolved solids	151	mg/L		Y	Y	3.40
CAMO-20-196243	R-45 S2	03/13/2020	Chloride	5.37	mg/L		Y	Y	0.067
CAMO-20-196243	R-45 S2	03/13/2020	Perchlorate	0.467	µg/L		Y	Y	0.050
CAMO-20-196243	R-45 S2	03/13/2020	Chromium	47.6	µg/L		Y	Y	3.00
CAMO-20-196243	R-45 S2	03/13/2020	Fluoride	0.46	mg/L		Y	Y	0.033
CAMO-20-196243	R-45 S2	03/13/2020	Nitrate-nitrite as nitrogen	1.04	mg/L		Y	Y	0.085
CAMO-20-196243	R-45 S2	03/13/2020	Sulfate	6.52	mg/L		Y	Y	0.133
CAMO-20-196243	R-45 S2	03/13/2020	Total dissolved solids	190	mg/L	J+	Y	Y	3.40
CAMO-20-192736	R-50 S1	01/14/2020	Chloride	17.4	mg/L		Y	Y	0.335
CAMO-20-192736	R-50 S1	01/14/2020	Perchlorate	0.401	µg/L		Y	Y	0.050

Table 2.3-2 (continued)

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Report Unit	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CAMO-20-192736	R-50 S1	01/14/2020	Chromium	26.3	µg/L		Y	Y	3.00
CAMO-20-192736	R-50 S1	01/14/2020	Fluoride	0.214	mg/L		Y	Y	0.033
CAMO-20-192736	R-50 S1	01/14/2020	Nitrate-nitrite as nitrogen	2.44	mg/L		Y	Y	0.085
CAMO-20-192736	R-50 S1	01/14/2020	Sulfate	18	mg/L		Y	Y	0.133
CAMO-20-192736	R-50 S1	01/14/2020	Total dissolved solids	183	mg/L	J+	Y	Y	3.40
CAMO-20-193963	R-50 S1	02/12/2020	Chloride	20	mg/L		Y	Y	0.268
CAMO-20-193963	R-50 S1	02/12/2020	Perchlorate	0.405	µg/L		Y	Y	0.050
CAMO-20-193963	R-50 S1	02/12/2020	Chromium	30.2	µg/L		Y	Y	3.00
CAMO-20-193963	R-50 S1	02/12/2020	Fluoride	0.234	mg/L		Y	Y	0.033
CAMO-20-193963	R-50 S1	02/12/2020	Nitrate-nitrite as nitrogen	2.64	mg/L		Y	Y	0.170
CAMO-20-193963	R-50 S1	02/12/2020	Sulfate	19	mg/L		Y	Y	0.532
CAMO-20-193963	R-50 S1	02/12/2020	Total dissolved solids	174	mg/L		Y	Y	3.40
CAMO-20-196246	R-50 S1	03/04/2020	Chloride	19.8	mg/L		Y	Y	0.335
CAMO-20-196246	R-50 S1	03/04/2020	Perchlorate	0.375	µg/L		Y	Y	0.050
CAMO-20-196246	R-50 S1	03/04/2020	Chromium	26.4	µg/L		Y	Y	3.0
CAMO-20-196246	R-50 S1	03/04/2020	Fluoride	0.24	mg/L		Y	Y	0.033
CAMO-20-196246	R-50 S1	03/04/2020	Nitrate-nitrite as nitrogen	2.52	mg/L		Y	Y	0.085
CAMO-20-196246	R-50 S1	03/04/2020	Sulfate	19.5	mg/L		Y	Y	0.665
CAMO-20-196246	R-50 S1	03/04/2020	Total dissolved solids	133	mg/L		Y	Y	3.40
CAMO-20-192739	R-50 S2	01/10/2020	Chloride	2.13	mg/L		Y	Y	0.067
CAMO-20-192739	R-50 S2	01/10/2020	Perchlorate	0.362	µg/L		Y	Y	0.050
CAMO-20-192739	R-50 S2	01/10/2020	Chromium	4.32	µg/L	J	Y	Y	3.00
CAMO-20-192739	R-50 S2	01/10/2020	Fluoride	0.379	mg/L		Y	Y	0.033
CAMO-20-192739	R-50 S2	01/10/2020	Nitrate-nitrite as nitrogen	0.533	mg/L	J+	Y	Y	0.017
CAMO-20-192739	R-50 S2	01/10/2020	Sulfate	2.47	mg/L		Y	Y	0.133
CAMO-20-192739	R-50 S2	01/10/2020	Total dissolved solids	28.6	mg/L		Y	Y	3.40

Table 2.3-2 (continued)

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Report Unit	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CAMO-20-193966	R-50 S2	02/12/2020	Chloride	2.3	mg/L		Y	Y	0.067
CAMO-20-193966	R-50 S2	02/12/2020	Perchlorate	0.358	µg/L		Y	Y	0.050
CAMO-20-193966	R-50 S2	02/12/2020	Chromium	4.46	µg/L	J	Y	Y	3.00
CAMO-20-193966	R-50 S2	02/12/2020	Fluoride	0.366	mg/L		Y	Y	0.033
CAMO-20-193966	R-50 S2	02/12/2020	Nitrate-nitrite as nitrogen	0.529	mg/L		Y	Y	0.017
CAMO-20-193966	R-50 S2	02/12/2020	Sulfate	2.52	mg/L		Y	Y	0.133
CAMO-20-193966	R-50 S2	02/12/2020	Total dissolved solids	143	mg/L		Y	Y	3.40
CAMO-20-196249	R-50 S2	03/05/2020	Chloride	2.19	mg/L		Y	Y	0.067
CAMO-20-196249	R-50 S2	03/05/2020	Perchlorate	0.324	µg/L		Y	Y	0.050
CAMO-20-196249	R-50 S2	03/05/2020	Chromium	4.36	µg/L	J	Y	Y	3.00
CAMO-20-196249	R-50 S2	03/05/2020	Fluoride	0.394	mg/L		Y	Y	0.033
CAMO-20-196249	R-50 S2	03/05/2020	Nitrate-nitrite as nitrogen	0.54	mg/L		Y	Y	0.017
CAMO-20-196249	R-50 S2	03/05/2020	Sulfate	2.67	mg/L		Y	Y	0.133
CAMO-20-196249	R-50 S2	03/05/2020	Total dissolved solids	144	mg/L	J+	Y	Y	3.40
CAMO-20-192957	R-62	01/22/2020	Chloride	21.1	mg/L		Y	Y	0.335
CAMO-20-192957	R-62	01/22/2020	Perchlorate	0.936	µg/L		Y	Y	0.050
CAMO-20-192957	R-62	01/22/2020	Chromium	321	µg/L		Y	Y	3.00
CAMO-20-192957	R-62	01/22/2020	Fluoride	0.126	mg/L		Y	Y	0.033
CAMO-20-192957	R-62	01/22/2020	Nitrate-nitrite as nitrogen	2.11	mg/L		Y	Y	0.085
CAMO-20-192957	R-62	01/22/2020	Sulfate	35.8	mg/L		Y	Y	0.665
CAMO-20-192957	R-62	01/22/2020	Total dissolved solids	229	mg/L		Y	Y	3.40
CAMO-20-188268	SIMR-2	10/15/2019	Chloride	2.36	mg/L		Y	Y	0.067
CAMO-20-188268	SIMR-2	10/15/2019	Perchlorate	0.447	µg/L		Y	Y	0.050
CAMO-20-188268	SIMR-2	10/15/2019	Chromium	4.64	µg/L	J	Y	Y	3.00
CAMO-20-188268	SIMR-2	10/15/2019	Fluoride	0.46	mg/L		Y	Y	0.033
CAMO-20-188268	SIMR-2	10/15/2019	Nitrate-nitrite as nitrogen	0.732	mg/L	J+	Y	Y	0.017

Table 2.3-2 (continued)

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Report Unit	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CAMO-20-188268	SIMR-2	10/15/2019	Sulfate	2.83	mg/L		Y	Y	0.133
CAMO-20-188268	SIMR-2	10/15/2019	Total dissolved solids	88.6	mg/L		Y	Y	3.40
CAMO-20-189197	SIMR-2	11/13/2019	Chloride	2.4	mg/L		Y	Y	0.067
CAMO-20-189197	SIMR-2	11/13/2019	Perchlorate	0.447	µg/L		Y	Y	0.050
CAMO-20-189197	SIMR-2	11/13/2019	Chromium	4.93	µg/L	J	Y	Y	3.00
CAMO-20-189197	SIMR-2	11/13/2019	Fluoride	0.427	mg/L		Y	Y	0.033
CAMO-20-189197	SIMR-2	11/13/2019	Nitrate-nitrite as nitrogen	0.717	mg/L		Y	Y	0.017
CAMO-20-189197	SIMR-2	11/13/2019	Sulfate	2.98	mg/L		Y	Y	0.133
CAMO-20-189197	SIMR-2	11/13/2019	Total dissolved solids	127	mg/L		Y	Y	3.40
CAMO-20-190698	SIMR-2	12/19/2019	Chloride	2.19	mg/L	J+	Y	Y	0.067
CAMO-20-190698	SIMR-2	12/19/2019	Perchlorate	0.46	µg/L		Y	Y	0.050
CAMO-20-190698	SIMR-2	12/19/2019	Chromium	5.18	µg/L	J	Y	Y	3.00
CAMO-20-190698	SIMR-2	12/19/2019	Fluoride	0.247	mg/L		Y	Y	0.033
CAMO-20-190698	SIMR-2	12/19/2019	Nitrate-nitrite as nitrogen	0.711	mg/L		Y	Y	0.017
CAMO-20-190698	SIMR-2	12/19/2019	Sulfate	2.72	mg/L		Y	Y	0.133
CAMO-20-190698	SIMR-2	12/19/2019	Total dissolved solids	111	mg/L	J+	Y	Y	3.40

Notes:

SIMR-2 data are reported here in accordance with the memorandum of agreement and protocol agreement between San Ildefonso Pueblo and DOE.

J+ in the Lab Qualifier column means that the analyte is considered estimated and biased high because the analyte was detected in the method blank.

J in the Lab Qualifier column means the analyte is classified as estimated.

Y in the Detect Flag column means the analyte was detected.

N in the Detect Flag column means the analyte was not detected.

Y in the Filtered column means the sample was filtered.

N in the Filtered column means the sample was not filtered.

A blank cell under the Lab Qualifier column indicates the corresponding parameter was detected and no qualifier is applicable to the result.

^a S1 = Screen 1.

^b S2 = Screen 2.

Water table elevations in the chromium plume area can vary temporally as a result of transient effects that include injection into and extraction from the chromium interim measure infrastructure wells and pumping of Los Alamos County's water-supply wells. This is discussed for the case of 2020 Quarter 1 below.

Effects on flow direction from water-supply pumping are small compared with the local effects caused by extraction and injection at chromium interim measure wells. Observations of transients in the water levels observed at the monitoring wells within the plume area do not appear to be substantially affected by the water-supply pumping at the nearby production wells (PM-2, PM-3, PM-4, PM-5, and O-4) (LANL 2009).

A long-term decline of approximately 0.5 to 1 ft/yr has been observed in the regional water levels throughout the aquifer beneath the Pajarito Plateau. The decline could be caused by long-term changes in the aquifer recharge and discharge conditions. Because of the long-term declines and pumping transients described above, the water-level data and the respective water table contour maps are variable over time; therefore, each map is representative of specific periods of time. Figure 2.3-1 depicts the average water-level data and water table contour map for February 2020. General flow direction is indicated by vectors on Figure 2.3-1.

To generate this contour map, average water levels are calculated using values from the middle month of the 3-mo reporting period. Monitoring wells within and surrounding the plume are used, including wells not presented on the map (i.e., R-21, R-31, R-32, R-37, and R-40). Water levels in wells surrounding the plume provide useful control points for contouring along the edges of the area of interest for this report. Only well screens near the water table are used for contouring. At locations with a history of water-level data but with no data for the present quarter, values can be estimated using linear regression based on relationships with other nearby wells. For 2020 Quarter 1, the well levels data set was complete and therefore imputation was not required for any well.

During the current reporting period (2020 Quarter 1), transient groundwater elevation changes were observed because of injection and extraction at the chromium interim measure infrastructure wells. Regular pumping at wells CrEX-1, CrEX-2, CrEX-3, CrIN-4, and CrIN-5 began on May 23, 2018, and therefore may have started to have a minor influence upon water levels as early as 2018 Quarter 2. During 2018 Quarter 3, an influence was readily recognized and was demonstrated by a cone of depression in the area of the extraction wells. In 2018 Quarter 4, the trend continued, with the cone of depression expanding slightly since the previous quarter. The cone of depression continued to expand in north and west/upstream directions, possibly in response to pumping at CrEX-2, and south and east/downstream directions, likely because of pumping at CrEX-1. Also, increased water levels were observed to the southwest of the cone of depression, possibly in response to injection at CrIN-4 and CrIN-5 (Figure 2.3-1). In 2019 Quarter 3, regular injection occurred at CrIN-3, CrIN-4, and CrIN-5, with regular extraction occurring at CrEX-1 and CrEX-2. The water table elevation appeared to respond strongly to extraction activities with a decrease in the center of the cone of depression near CrEX-2 and an extension of the cone further downstream from CrEX-1 as compared with the previous quarter. During 2019 Quarter 4, the cone of depression continued to expand, likely in response to regular pumping at CrEX-1 and CrEX-2. The largest injection rates occurred at CrIN-4 and CrIN-5, and an increase in water level at the nearest monitoring well (R-50) was observed (Figure 2.3-1). CrEX-5 (which was converted from CrIN-6), CrIN-1, and CrIN-2 began sustained pumping in November 2019, and effects on water levels were not yet detectable in 2019 Quarter 4. In the current 2020 Quarter 1 reporting period, injection occurred regularly at CrIN-2, CrIN-4, and CrIN-5. A northward shift in the 5832-ft contour near CrIN-4 and CrIN-5 is evident, as is a westward shift in the 5831-ft contour around the cone of depression, west of CrIN-2. The water table also appears to have responded to extraction at CrEX-1, CrEX-2, and CrEX-5. The cone of depression expanded toward CrEX-2, and the 5832-ft contour migrated toward CrEX-5.

Simple interpolation methods for water table data from a complex heterogeneous site could produce maps that do not represent physically realistic hydrological systems. This water table map is contoured by incorporating process knowledge of groundwater hydraulics (e.g., flownet conformity rules) as well as conceptual models of groundwater flow in the project area, as described above. Key inputs to the conceptual model include knowledge of long-term operations of extraction and injection wells, water-level elevations in monitoring wells near extraction and injection points, and cross-hole tracer data between injection wells and monitoring wells.

Because of the spatial coverage of wells and piezometers available as control points and because of the regional structure of significantly steeper gradients to the east and west of the chromium plume area, the surrounding control points (i.e., R-21, R-31, R-32, R-37, and R-40) are used to provide estimated water-level elevations in areas that do not have sufficient data to provide constraints. As additional analysis is performed using historical and developing data sets from both existing wells and data from anticipated proposed wells, the use of these control points will be reanalyzed, adjusted, or discontinued based on additional supporting data and contouring methods.

2.4 Any Operations/Maintenance Activities Performed (Requirement 4)

Extraction, treatment, and injection operations continued during 2020 Quarter 1. During 2020 Quarter 1, CrEX-3 was not operated because of plugging of the treatment system influent filters after approximately 3–4 days of operation. An evaluation of the water quality in CrEX-3 is underway to assess filter plugging.

Operations and maintenance activities completed during 2020 Quarter 1 are listed in Table 2.4-1 for the extraction, treatment, and injection system.

Table 2.4-1
Operations and Maintenance Activity Summary Table – 2020 Quarter 1, DP-1835

Maintenance Date	Elements Impacted	Operation/Maintenance Description
1/1/20 through 1/16/20	CrEX-1, CrEX-2, CrEX-5, CTUA, CTUC, CrIN-1, CrIN-2, CrIN-3, CrIN-4, CrIN-5	Extraction, treatment, and injection of treated groundwater occurred per operational plan.
1/6/20 through 1/16/20	CrEX-4	Added CrEX-4 to operations in a temporary test phase.
1/16/20	CTUC	IX vessel exchanges were completed as follows because of an increase in the amount of hexavalent chromium at the primary IX vessel effluent as determined via Hach instrument analysis: • Treatment train A – replaced primary IX vessel with the secondary IX vessel; new secondary IX vessel installed. • Treatment train B – replaced primary IX vessel with the secondary IX vessel; new secondary IX vessel installed. Both influent and all three effluent filter bags replaced.
1/16/20 through 1/20/20	CrEX-1, CrEX-2, CrEX-5, CTUA, CTUC, CrIN-1, CrIN-2, CrIN-3, CrIN-4, CrIN-5	System shut down for issues related to remote control connectivity. Weather and road closure prevented immediate restart.
1/21/20 through 1/28/20	CrEX-1, CrEX-2, CrEX-4, CTUA, CTUC, CrIN-1, CrIN-2, CrIN-3, CrIN-4	Extraction, treatment, and injection of treated groundwater occurred per operational plan.

Table 2.4-1 (continued)

Maintenance Date	Elements Impacted	Operation/Maintenance Description
1/28/20	CTUA	IX vessel exchanges were completed as follows because of an increase in the amount of hexavalent chromium at the primary IX vessel effluent as determined via Hach instrument analysis: • Treatment train A – replaced primary IX vessel with the secondary IX vessel; new secondary IX vessel installed. • Treatment train B – replaced primary IX vessel with the secondary IX vessel; new secondary IX vessel installed. • Treatment train C – replaced primary IX vessel with the secondary IX vessel; new secondary IX vessel installed. Both influent and all three effluent filter bags replaced.
1/28/20 through 2/26/20	CrEX-1, CrEX-2, CrEX-5, CTUA, CTUC, CrIN-1, CrIN-2, CrIN-4, CrIN-5	Extraction, treatment, and injection of treated groundwater occurred per operational plan.
2/26/20	CTUC	IX vessel exchanges were completed as follows because of an increase in the amount of hexavalent chromium at the primary IX vessel effluent as determined via Hach instrument analysis: • Treatment train A – replaced primary IX vessel with the secondary IX vessel; new secondary IX vessel installed. • Treatment train B – replaced primary IX vessel with the secondary IX vessel; new secondary IX vessel installed. Both influent and all three effluent filter bags replaced.
2/26/20 through 3/11/20	CrEX-1, CrEX-2, CrEX-5, CTUA, CTUC, CrIN-1, CrIN-2, CrIN-4, CrIN-5	Extraction, treatment, and injection of treated groundwater occurred per operational plan.
3/11/20	CTUA	IX vessel exchanges were completed as follows because of an increase in the amount of hexavalent chromium at the primary IX vessel effluent as determined via Hach instrument analysis: • Treatment train A – replaced primary IX vessel with the secondary IX vessel; new secondary IX vessel installed. • Treatment train B – replaced primary IX vessel with the secondary IX vessel; new secondary IX vessel installed. • Treatment train C – replaced primary IX vessel with the secondary IX vessel; new secondary IX vessel installed. Both influent and all three effluent filter bags replaced.
3/11/20 through 3/31/20	CrEX-1, CrEX-2, CrEX-5, CTUA, CTUC, CrIN-1, CrIN-2, CrIN-4, CrIN-5	System shut down on 3/25/20 in response to the COVID-19 situation in New Mexico. DOE Environmental Management Los Alamos Field Office (EM-LA) transitioned to Essential Mission Critical Activities (EMCA) status on 3/24/2020. EM-LA notified NMED of transition to EMCA on 3/31/2020 (DOE 2020).

2.5 Any Periodic Test of Mechanical Integrity Conducted (Requirement 5)

Periodic testing of mechanical integrity was not conducted or reported to NMED during 2020 Quarter 1. Mechanical integrity testing was performed and reported to NMED during the 2019 Quarter 2 reporting period. In accordance with Condition No. 3, mechanical integrity testing will occur at least once every 5 yr unless a UIC well is reconfigured. Under this scenario, a mechanical integrity test before reinjection of treated effluent at a specific reconfigured well will be completed pursuant to Condition No. 3.

2.6 Any Replacement of Primary or Secondary IX Vessels or Associated Treatment System Infrastructure (Requirement 6)

Installation of new primary and secondary IX vessels occurred at various times for treatment unit CTUA (all three treatment trains) and at CTUC (both treatment trains) during the reporting period as cited in section 2.4.

2.7 Any Well Workovers Conducted (Requirement 7)

Well workovers did not occur during 2020 Quarter 1.

2.8 Any Additional Operational Changes with the Potential to Markedly Affect the Discharge (Requirement 8)

During the reporting period, the pilot-scale molasses amendment and sodium dithionite amendment studies continued. In accordance with NMED's conditional approval for these studies, analytical results from iron, manganese, and arsenic testing of the treated water from the extraction wells during the study are being provided in the quarterly monitoring reports under DP-1835. These results for 2020 Quarter 1 are provided in Table 2.2-2.

No results for arsenic, iron, or manganese exceeded 90% of the numeric standards of 20.6.2.3103 NMAC or 90% of the numeric standards established for tap water in Table A-1 for constituents not listed in 20.6.2.3103 NMAC. The 90% values for arsenic, iron, and manganese are 9 µg/L, 900 µg/L, and 180 µg/L, respectively.

Other than the activities cited in section 2.4, no additional operational changes occurred during the reporting period.

2.9 Monthly Average, Maximum, and Minimum Values for Flow Rate and Volume of Treated Effluent Transferred to Each UIC Well (Requirement 9)

Table 2.9-1 provides the monthly average, maximum, and minimum values for flow rate and volume of treated effluent transferred to each well in 2020 Quarter 1.

Table 2.9-1
Flows and Volumes of Treated Effluent Injected – 2020 Quarter 1, DP-1835

Injection Well	Flow rate (gpm ^a)			Daily Volume (gal.)			Total Volume (gal.)
	Average ^b	Maximum	Minimum ^c	Average ^b	Maximum	Minimum ^c	
January 2020							
CrIN-1	54.7	64.0	34.3	78,776	92,136	49,420	2,126,959
CrIN-2	55.8	64.0	31.2	80,332	92,208	44,938	2,168,966
CrIN-3	34.1	52.7	16.1	49,037	75,817	23,201	1,176,891
CrIN-4	56.5	63.6	31.6	81,392	91,525	45,554	2,197,585
CrIN-5	52.1	64.9	0.0	75,072	93,439	29	1,576,520
February 2020							
CrIN-1	56.6	60.0	51.6	81,480	86,404	74,285	2,362,914
CrIN-2	61.0	65.1	56.0	87,768	93,692	80,602	2,545,275
CrIN-3	0.0	0.0	0.0	0	0	0	0
CrIN-4	59.2	64.0	57.0	85,287	92,163	82,064	2,473,331
CrIN-5	57.3	58.0	55.7	82,521	83,542	80,177	2,393,096
March 2020							
CrIN-1	57.8	63.0	22.2	83,203	90,713	32,012	2,080,072
CrIN-2	58.5	61.0	21.2	84,261	87,818	30,521	2,106,533
CrIN-3	0.0	0.0	0.0	0	0	0	0
CrIN-4	57.7	60.2	21.6	83,045	86,656	31,037	2,076,137
CrIN-5	57.0	60.0	21.2	82,147	86,423	30,541	2,053,681

^a gpm = Gallons per minute.

^b Average flow rate and daily volume represent arithmetic mean values of results provided during periods when injection of treated groundwater was occurring.

^c Minimum values represent the minimum daily value that occurred during days when pumping occurred.

2.10 Total Monthly Volume of Treated Effluent Transferred to Each UIC Well (Requirement 10)

Table 2.9-1 provides total monthly volumes of treated effluent transferred to each well. As previously identified, injection occurred at UIC wells CrIN-1, CrIN-2, CrIN-3, CrIN-4, and CrIN-5 during 2020 Quarter 1.

2.11 Monthly Average, Maximum, and Minimum Values of Injection Water Level (Pressure Head) Above Static Level for Each UIC Well (Requirement 11)

Table 2.11-1 provides the monthly average, maximum, and minimum values for injection water level above static level for each UIC well.

Table 2.11-1
Water-Level Values Above Static Level by UIC Well – 2020 Quarter 1, DP-1835

UIC Well	January 2020			February 2020			March 2020		
	Average ^a (ft)	Maximum (ft)	Minimum (ft)	Average ^a (ft)	Maximum (ft)	Minimum (ft)	Average ^a (ft)	Maximum (ft)	Minimum (ft)
CrIN-1	4.8	6.1	0.6	5.0	6.7	0.7	5.4	5.9	0.6
CrIN-2	7.3	8.4	5.7	7.6	8.3	6.9	7.4	7.8	7.0
CrIN-3	14.5	26.5	0.5	n/a ^b	n/a	n/a	n/a	n/a	n/a
CrIN-4	8.0	10.1	0.1	8.8	10.0	8.2	9.3	9.9	8.7
CrIN-5	11.5	13.5	7.8	12.2	12.9	10.9	13.1	13.8	12.4

^a Average values provided represent arithmetic mean values of maximum daily values during periods when injection of treated groundwater was occurring.

^b n/a = Not applicable. Treated groundwater not injected during the month at this location.

2.12 Daily Volume Injected at Each UIC Well (Requirement 12)

Daily volumes of groundwater injected (following treatment) during 2020 Quarter 1 are presented in Table 2.12-1.

Table 2.12-1
Daily Injection Summary Table – 2020 Quarter 1, DP-1835

Date	CrIN-1 (gal.)	CrIN-2 (gal.)	CrIN-3 (gal.)	CrIN-4 (gal.)	CrIN-5 (gal.)	Total (gal.)
1/1/2020	66,244	67,625	67,599	67,670	68,431	337,570
1/2/2020	66,242	67,612	67,558	67,596	69,010	338,017
1/3/2020	66,222	67,521	67,462	68,438	68,381	338,024
1/4/2020	66,244	67,661	67,588	70,236	68,123	339,852
1/5/2020	66,233	69,790	66,978	69,887	67,865	340,753
1/6/2020	75,288	77,488	75,337	75,693	75,792	379,599
1/7/2020	84,668	80,625	75,817	82,467	82,665	406,243
1/8/2020	86,018	86,965	49,527	86,301	87,747	396,557
1/9/2020	86,721	91,186	40,302	89,210	91,219	398,639
1/10/2020	86,498	92,041	40,311	89,596	91,403	399,848
1/11/2020	86,478	92,156	40,314	90,007	92,002	400,957
1/12/2020	86,603	92,208	40,105	90,158	92,173	401,248
1/13/2020	86,950	92,130	40,227	90,725	92,186	402,219
1/14/2020	84,703	91,764	40,078	90,535	92,899	399,979

Table 2.12-1 (continued)

Date	CrIN-1 (gal.)	CrIN-2 (gal.)	CrIN-3 (gal.)	CrIN-4 (gal.)	CrIN-5 (gal.)	Total (gal.)
1/15/2020	80,627	91,863	40,303	90,964	93,439	397,196
1/16/2020	61,016	66,711	23,201	66,374	66,866	284,168
1/17/2020	0	0	0	0	0	0
1/18/2020	0	0	0	0	0	0
1/19/2020	0	0	0	0	0	0
1/20/2020	0	0	0	0	0	0
1/21/2020	49,420	44,938	26,117	45,554	29	166,057
1/22/2020	83,615	86,343	46,814	90,148	0	306,919
1/23/2020	83,796	86,390	47,496	86,357	0	304,040
1/24/2020	89,600	84,420	47,519	86,464	0	308,004
1/25/2020	90,786	83,497	47,525	86,341	0	308,150
1/26/2020	91,008	83,533	47,510	86,381	0	308,431
1/27/2020	92,136	83,522	47,519	86,399	0	309,576
1/28/2020	77,841	81,425	23,684	83,708	36,265	302,923
1/29/2020	73,423	79,181	0	81,572	73,452	307,628
1/30/2020	78,681	79,125	0	87,278	83,045	328,130
1/31/2020	79,897	81,246	0	91,525	83,527	336,196
2/1/2020	79,207	82,869	0	92,068	80,605	334,750
2/2/2020	79,189	83,220	0	92,162	80,631	335,202
2/3/2020	79,200	82,913	0	92,163	80,641	334,917
2/4/2020	79,200	82,401	0	92,144	80,615	334,359
2/5/2020	75,312	80,700	0	90,760	80,177	326,950
2/6/2020	74,882	80,646	0	90,719	80,641	326,888
2/7/2020	74,875	80,602	0	89,369	81,135	325,981
2/8/2020	74,285	80,638	0	86,266	81,915	323,105
2/9/2020	74,516	80,632	0	86,375	82,103	323,625
2/10/2020	74,888	80,649	0	86,301	82,053	323,892
2/11/2020	74,862	80,619	0	86,415	82,095	323,991
2/12/2020	81,208	83,219	0	85,646	82,374	332,447
2/13/2020	86,377	87,553	0	83,645	83,531	341,106
2/14/2020	86,404	89,250	0	83,457	83,491	342,602
2/15/2020	85,390	90,344	0	83,493	83,542	342,769
2/16/2020	84,951	92,150	0	82,951	83,510	343,563
2/17/2020	84,957	92,235	0	82,727	83,518	343,437
2/18/2020	84,960	92,084	0	82,491	83,520	343,055
2/19/2020	84,989	92,888	0	82,279	83,512	343,668
2/20/2020	84,948	92,853	0	82,223	83,515	343,539
2/21/2020	84,967	92,527	0	82,064	83,533	343,090

Table 2.12-1 (continued)

Date	CrIN-1 (gal.)	CrIN-2 (gal.)	CrIN-3 (gal.)	CrIN-4 (gal.)	CrIN-5 (gal.)	Total (gal.)
2/22/2020	84,925	93,319	0	82,109	83,509	343,862
2/23/2020	84,794	93,140	0	82,067	83,536	343,537
2/24/2020	84,155	92,935	0	82,083	83,523	342,696
2/25/2020	83,571	93,692	0	82,088	83,509	342,860
2/26/2020	83,544	93,007	0	82,071	83,141	341,762
2/27/2020	83,631	92,790	0	82,106	82,972	341,500
2/28/2020	84,962	93,442	0	82,315	82,890	343,608
2/29/2020	83,764	91,958	0	82,776	83,358	341,856
3/1/2020	82,092	87,818	0	83,530	83,530	336,970
3/2/2020	83,417	87,244	0	83,988	83,581	338,231
3/3/2020	83,499	86,481	0	84,973	83,533	338,486
3/4/2020	83,533	86,421	0	84,971	83,499	338,423
3/5/2020	84,630	86,422	0	84,948	83,546	339,546
3/6/2020	82,334	86,358	0	84,990	83,800	337,483
3/7/2020	82,103	86,457	0	85,321	84,059	337,940
3/8/2020	82,064	86,350	0	86,267	84,048	338,729
3/9/2020	84,658	86,404	0	85,459	83,791	340,311
3/10/2020	86,411	86,414	0	84,903	83,494	341,222
3/11/2020	86,051	86,404	0	84,928	83,528	340,910
3/12/2020	85,755	86,571	0	84,991	83,515	340,833
3/13/2020	85,390	86,251	0	84,952	83,594	340,188
3/14/2020	85,281	86,349	0	84,943	83,777	340,350
3/15/2020	85,743	86,401	0	84,967	84,066	341,178
3/16/2020	85,506	86,434	0	84,994	84,233	341,168
3/17/2020	85,754	86,467	0	85,093	84,397	341,711
3/18/2020	83,260	86,401	0	86,043	84,958	340,663
3/19/2020	80,177	86,344	0	84,761	84,400	335,681
3/20/2020	87,678	86,363	0	84,515	84,462	343,019
3/21/2020	90,609	86,473	0	86,096	86,095	349,273
3/22/2020	90,713	86,397	0	86,392	86,392	349,893
3/23/2020	90,700	86,416	0	86,416	86,418	349,950
3/24/2020	90,704	86,372	0	86,656	86,423	350,156
3/25/2020	32,012	30,521	0	31,037	30,541	124,110
3/26/2020	0	0	0	0	0	0
3/27/2020	0	0	0	0	0	0
3/28/2020	0	0	0	0	0	0
3/29/2020	0	0	0	0	0	0
3/30/2020	0	0	0	0	0	0

Table 2.12-1 (continued)

Date	CrIN-1 (gal.)	CrIN-2 (gal.)	CrIN-3 (gal.)	CrIN-4 (gal.)	CrIN-5 (gal.)	Total (gal.)
3/31/2020	0	0	0	0	0	0
Subtotal 27,337,961						

2.13 Daily Volume Pumped from Each Extraction Well (Requirement 13)

Daily volumes of groundwater pumped from extraction wells during 2020 Quarter 1, are presented in Table 2.13-1.

Table 2.13-1
Daily Extraction Summary Table – 2020 Quarter 1, DP-1835

Date	CrEX-1 (gal.)	CrEX-2 (gal.)	CrEX-3 (gal.)	CrEX-4 (gal.)	CrEX-5 (gal.)	Total (gal.)
1/1/2020	123,464	96,472	0	0	117,888	337,824
1/2/2020	123,849	96,486	0	0	116,654	336,988
1/3/2020	123,861	96,495	0	0	116,621	336,977
1/4/2020	123,846	96,488	0	0	113,931	334,265
1/5/2020	123,826	96,472	0	0	112,723	333,021
1/6/2020	118,870	94,486	0	48,077	113,143	374,576
1/7/2020	115,200	93,027	0	84,958	112,320	405,504
1/8/2020	103,878	95,549	0	87,038	102,004	388,470
1/9/2020	97,031	95,962	0	88,726	107,252	388,971
1/10/2020	95,055	95,063	0	95,059	113,762	398,939
1/11/2020	92,572	95,671	0	95,033	113,756	397,033
1/12/2020	91,700	95,528	0	98,141	113,650	399,019
1/13/2020	102,377	93,540	0	102,602	112,604	411,123
1/14/2020	99,385	85,984	0	94,518	106,216	386,104
1/15/2020	106,364	92,435	0	91,318	111,289	401,406
1/16/2020	61,635	53,171	0	51,814	65,458	232,077
1/17/2020	0	0	0	0	0	0
1/18/2020	0	0	0	0	0	0
1/19/2020	0	0	0	0	0	0
1/20/2020	0	0	0	0	0	0
1/21/2020	79,632	61,330	0	58,621	21,666	221,249
1/22/2020	130,530	100,024	0	80,070	0	310,624
1/23/2020	130,812	99,346	0	74,212	0	304,369
1/24/2020	141,684	63,417	0	76,434	0	281,535
1/25/2020	129,602	99,297	0	81,251	0	310,149

Table 2.13-1 (continued)

Date	CrEX-1 (gal.)	CrEX-2 (gal.)	CrEX-3 (gal.)	CrEX-4 (gal.)	CrEX-5 (gal.)	Total (gal.)
1/26/2020	129,568	99,220	0	83,537	0	312,326
1/27/2020	128,947	99,159	0	83,518	0	311,624
1/28/2020	115,612	87,085	0	33,132	51,862	287,692
1/29/2020	129,652	98,291	0	0	96,370	324,313
1/30/2020	129,056	98,656	0	0	98,315	326,027
1/31/2020	128,207	98,102	0	0	105,277	331,587
2/1/2020	128,224	97,934	0	0	106,562	332,719
2/2/2020	128,087	97,919	0	0	106,537	332,543
2/3/2020	128,163	97,949	0	0	106,560	332,672
2/4/2020	128,161	97,939	0	0	106,559	332,660
2/5/2020	128,153	97,921	0	0	106,567	332,641
2/6/2020	128,567	98,214	0	0	103,984	330,765
2/7/2020	131,946	91,336	0	0	95,526	318,808
2/8/2020	139,291	66,881	0	0	99,052	305,224
2/9/2020	128,624	98,141	0	0	102,232	328,997
2/10/2020	128,597	98,225	0	0	102,253	329,075
2/11/2020	128,802	98,125	0	0	101,173	328,100
2/12/2020	128,151	97,854	0	0	106,904	332,909
2/13/2020	126,731	97,545	0	0	117,322	341,598
2/14/2020	126,827	97,774	0	0	114,049	338,650
2/15/2020	126,889	97,716	0	0	113,938	338,544
2/16/2020	126,286	97,814	0	0	114,153	338,253
2/17/2020	124,824	97,915	0	0	114,461	337,200
2/18/2020	124,667	97,921	0	0	114,530	337,118
2/19/2020	123,925	97,774	0	0	119,311	341,010
2/20/2020	123,815	97,659	0	0	122,183	343,657
2/21/2020	123,854	97,659	0	0	122,253	343,766
2/22/2020	123,824	97,633	0	0	122,218	343,676
2/23/2020	123,863	97,724	0	0	122,289	343,876
2/24/2020	123,843	97,712	0	0	122,276	343,831
2/25/2020	123,841	97,631	0	0	122,318	343,790
2/26/2020	120,945	92,879	0	0	122,344	336,168
2/27/2020	118,087	97,945	0	0	122,356	338,388
2/28/2020	115,201	96,976	0	0	126,217	338,394
2/29/2020	113,828	96,518	0	0	128,195	338,542
3/1/2020	114,138	96,512	0	0	128,124	338,774
3/2/2020	113,891	96,588	0	0	128,188	338,668
3/3/2020	114,029	96,642	0	0	128,130	338,802

Table 2.13-1 (continued)

Date	CrEX-1 (gal.)	CrEX-2 (gal.)	CrEX-3 (gal.)	CrEX-4 (gal.)	CrEX-5 (gal.)	Total (gal.)
3/4/2020	113,854	96,538	0	0	128,176	338,567
3/5/2020	113,825	96,579	0	0	128,139	338,543
3/6/2020	113,778	96,481	0	0	128,205	338,463
3/7/2020	113,848	96,482	0	0	128,139	338,470
3/8/2020	113,963	96,507	0	0	128,136	338,606
3/9/2020	115,014	97,031	0	0	128,569	340,613
3/10/2020	116,598	97,666	0	0	129,219	343,483
3/11/2020	110,329	91,924	0	0	122,130	324,383
3/12/2020	116,663	97,095	0	0	128,763	342,522
3/13/2020	116,679	97,490	0	0	128,866	343,034
3/14/2020	116,617	97,426	0	0	128,784	342,827
3/15/2020	116,643	97,466	0	0	128,777	342,886
3/16/2020	116,637	97,462	0	0	128,741	342,841
3/17/2020	116,654	97,691	0	0	127,005	341,349
3/18/2020	117,666	97,881	0	0	125,287	340,834
3/19/2020	113,617	90,697	0	0	131,482	335,797
3/20/2020	113,432	94,609	0	0	133,291	341,332
3/21/2020	116,629	96,527	0	0	129,481	342,636
3/22/2020	116,628	96,520	0	0	129,405	342,553
3/23/2020	119,918	96,247	0	0	128,760	344,926
3/24/2020	122,113	95,949	0	0	130,894	348,955
3/25/2020	42,113	33,109	0	0	45,826	121,048
3/26/2020	0	0	0	0	0	0
3/27/2020	0	0	0	0	0	0
3/28/2020	0	0	0	0	0	0
3/29/2020	0	0	0	0	0	0
3/30/2020	0	0	0	0	0	0
3/31/2020	0	0	0	0	0	0
Subtotal 27,198,274						

2.14 Facility Layout Map (Requirement 14)

Figure 2.14-1 is the facility layout map for 2020 Quarter 1, showing the location and number of each well.

2.15 Groundwater Elevation Contour Map (Requirement 15)

Figure 2.3-1 provides the groundwater elevation contour map and section 2.3 provides an explanation of how this map was generated.

3.0 REFERENCES

- DOE (U.S. Department of Energy) 2020. "U.S. Department of Energy Environmental Management Los Alamos Field Office Transition to Essential Mission Critical Activities Notification," Environmental Management Los Alamos Field Office letter EMLA-2020-1393-02-001 to K. Pierard (NMED-HWB) from C. Rodriguez (DOE EM-LA), Los Alamos, New Mexico (March 31, 2020).
- LANL (Los Alamos National Laboratory) 2009. "Investigation Report for Sandia Canyon," Los Alamos National Laboratory document LA-UR-09-6450, Los Alamos, New Mexico (October 2009).
- N3B (Newport News Nuclear BWXT-Los Alamos, LLC) 2020. (Quarterly Report for the Discharge of Treated Groundwater to the Regional Aquifer under Discharge Permit 1835, Calendar Year 2019 Quarter 4," Newport News Nuclear BWXT-Los Alamos, LLC, document number EM2020-0035, Los Alamos, New Mexico (February 2020)
- NMED (New Mexico Environment Department) 2017a. "Response to Notice of Intent to Discharge; Discharge Permit Not Required for Los Alamos National Laboratory Pilot Scale Molasses Amendment Study in Regional Aquifer Monitoring Well R-28," New Mexico Environment Department letter to J.C. Bretzke (LANL) and A.Q. Duran (DOE EM-LA) from M. Hunter (NMED-GWQB), Santa Fe, New Mexico (June 27, 2017).
- NMED (New Mexico Environment Department) 2017b. "Response to Notice of Intent to Discharge; Discharge Permit Not Required for Los Alamos National Laboratory Pilot Scale Sodium Dithionite Amendment Study in Regional Aquifer Monitoring Well R-42," New Mexico Environment Department letter to J.C. Bretzke (LANL) and A.Q. Duran (DOE EM-LA) from M. Hunter (NMED-GWQB), Santa Fe, New Mexico (July 18, 2017).

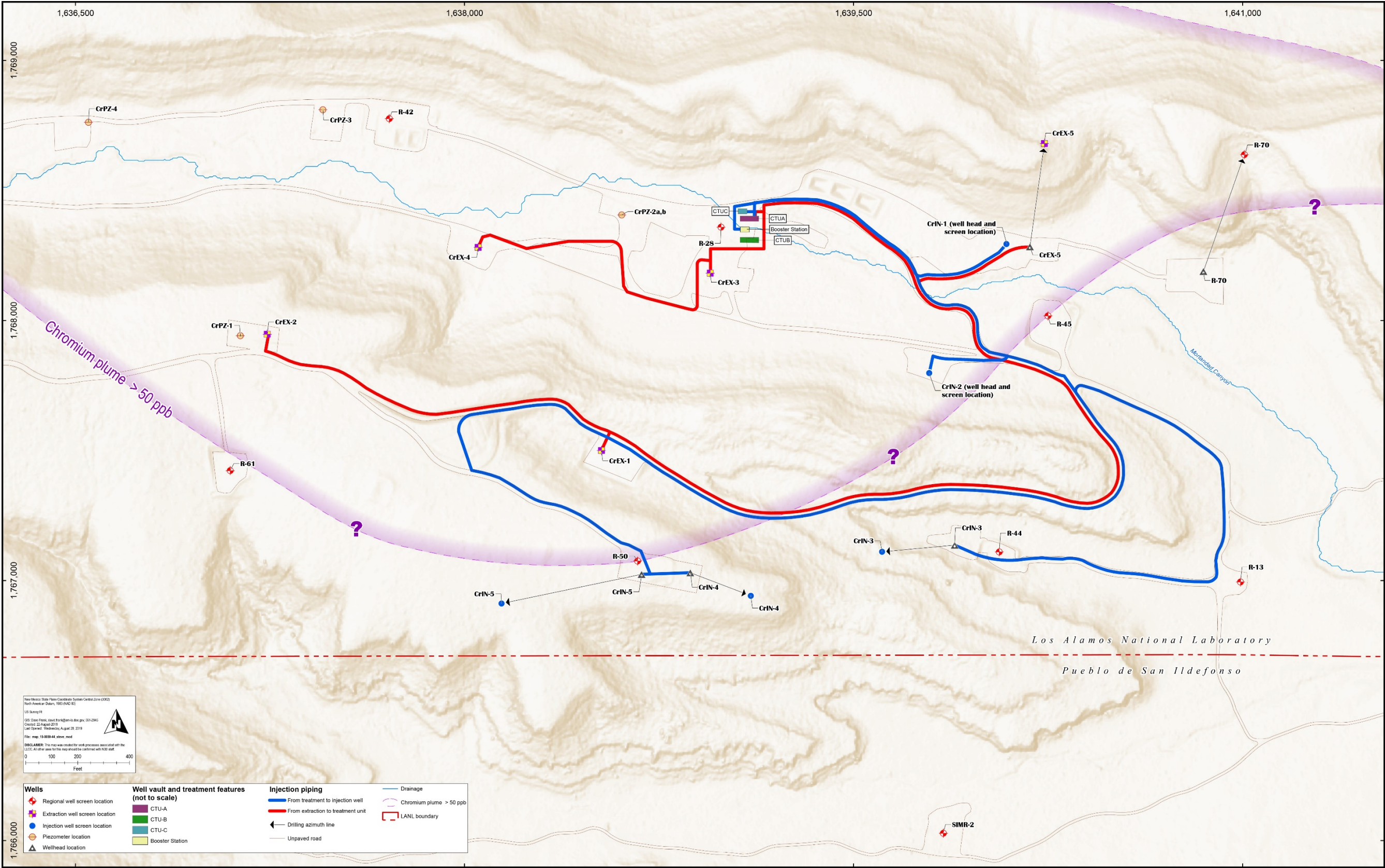


Figure 2.14-1 Facility layout map – 2020 Quarter 1, DP-1835

