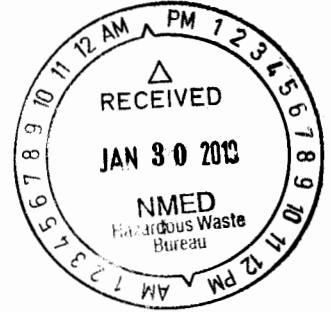




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National Nuclear Security Administration  
Sandia Field Office  
P.O. Box 5400  
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ENTERED



JAN 25 2019

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

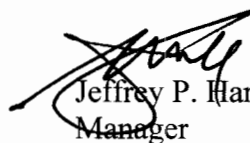
Subject: Department of Energy, National Nuclear Security Administration, Sandia National Laboratories, New Mexico Environmental Restoration Operations Consolidated Quarterly Report, January 2019

Dear Mr. Kieling:

Enclosed is the *Environmental Restoration Operations Consolidated Quarterly Report, January 2019*, for the Department of Energy, National Nuclear Security Administration, Sandia National Laboratories, New Mexico, Environmental Protection Agency identification number NM5890110518. This report addresses all quarterly reporting (July through September 2018) set forth in the *Compliance Order on Consent* for Sandia National Laboratories, New Mexico.

If you have questions contact me at (505) 845-6036 or David Rast of our staff at (505) 845-5349.

Sincerely,

  
Jeffrey P. Harrell  
Manager

Enclosure

cc: See Page 2

Mr. John E. Kieling

**JAN 25 2019**

2

cc w/enclosure:

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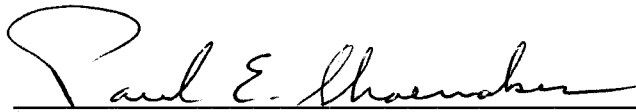
David Rast, SFO/ENG

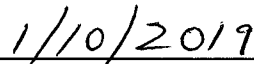
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ENVIRONMENTAL RESTORATION OPERATIONS  
CONSOLIDATED QUARTERLY REPORT, JANUARY 2019

CERTIFICATION STATEMENT

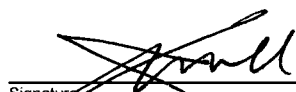
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.

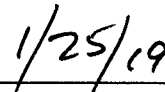
  
\_\_\_\_\_  
Signature

  
\_\_\_\_\_  
Date

**Paul E. Shoemaker**  
Defense Waste Management Programs  
Sandia National Laboratories/New Mexico  
Albuquerque, New Mexico 87185  
Operator

and

  
\_\_\_\_\_  
Signature

  
\_\_\_\_\_  
Date

**Jeffrey P. Harrell, Manager**  
U.S. Department of Energy  
National Nuclear Security Administration  
Sandia Field Office  
Owner

Sandia National Laboratories, New Mexico

## Environmental Restoration Operations

A U.S. Department of Energy Environmental Cleanup Program

### Consolidated Quarterly Report

July – September 2018



**January 2019**



United States Department of Energy  
Sandia Field Office

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# CONSOLIDATED QUARTERLY REPORT

January 2019

SANDIA NATIONAL LABORATORIES, NEW MEXICO

## ENVIRONMENTAL RESTORATION OPERATIONS

U.S. DEPARTMENT OF ENERGY:  
CONTRACTOR:

SANDIA FIELD OFFICE  
NATIONAL TECHNOLOGY AND  
ENGINEERING SOLUTIONS OF SANDIA  
John R. Cochran

PROJECT MANAGER:

**NUMBER OF POTENTIAL RELEASE SITES SUBJECT TO CORRECTIVE ACTION: 6**

**SUSPECT WASTE:** Radionuclides, metals, organic compounds, and explosives

**REPORTING PERIOD:** July – September 2018

### OVERVIEW

This Sandia National Laboratories, New Mexico Environmental Restoration Operations (ER) Consolidated Quarterly Report (ER Quarterly Report) fulfills all quarterly reporting requirements set forth in the Compliance Order on Consent. Table I-1 lists the six sites remaining in the corrective action process. This ER Quarterly Report presents activities and data as follows:

SECTION I: Environmental Restoration Operations Consolidated Quarterly Report,  
July – September 2018

This edition of the ER Quarterly Report does not include Section II “*Perchlorate Screening Quarterly Groundwater Monitoring Report*” because no groundwater samples were analyzed for perchlorate during this reporting period. Additionally, Section III is not included in this edition of the ER Quarterly Report because there is no detailed Technical Area-V Groundwater information to present.

## ABBREVIATIONS AND ACRONYMS

AGMR	Annual Groundwater Monitoring Report
AOC	Area of Concern
AVN	Area-V (North) (acronym used for well identification numbers in tables only)
BSG	Burn Site Groundwater
CAC	corrective action complete
CCM	Current Conceptual Model
CME	Corrective Measures Evaluation
COC	constituent of concern
CY	Calendar Year
CYN	Canyons (acronym used for well identification numbers in tables only at Burn Site Groundwater Area of Concern)
DOE	U.S. Department of Energy
DP	Discharge Permit
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration Operations
ER Quarterly Report	Environmental Restoration Operations Consolidated Quarterly Report
GWQB	Ground Water Quality Bureau
HWB	Hazardous Waste Bureau
INJ	injection (acronym used for well identification only)
ISB	in-situ bioremediation
LWDS	liquid waste disposal system (acronym used for well identification only)
MCL	maximum contaminant level
mg/L	milligrams per liter
µg/L	microgram(s) per liter
MW	monitoring well (acronym used for well identification only)
NA	not applicable (acronym used in tables only)
NMED	New Mexico Environment Department
NNSA	National Nuclear Security Administration
Permit	Resource Conservation and Recovery Act Facility Operating Permit
PGS	Parade Ground South (acronym used for well identification only)
SNL/NM	Sandia National Laboratories, New Mexico
SWMU	Solid Waste Management Unit
TA	Technical Area
TA1-W	Technical Area-I (Well) (acronym used for well identification only)
TA2-NW	Technical Area-II (Northwest) (acronym used for well identification only)
TA2-W	Technical Area-II (Well) (acronym used for well identification only)
TAG	Tijeras Arroyo Groundwater

TAV	Technical Area-V (acronym used for well identification only)
TA-V	Technical Area-V
TAVG	Technical Area-V Groundwater
TCE	trichloroethene
TJA	Tijeras Arroyo (acronym used for well identification only)
TS/IM	Treatability Study/Interim Measure
TSWP	Treatability Study Work Plan
WYO	Wyoming (acronym used for well identification only)

**SECTION I**  
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REPORT, July– September 2018

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# **SECTION I**

## **ENVIRONMENTAL RESTORATION OPERATIONS CONSOLIDATED**

### **QUARTERLY REPORT, July– September 2018**

#### **1.0 Introduction**

This Environmental Restoration Operations (ER) Consolidated Quarterly Report (ER Quarterly Report) provides the status of ongoing corrective action activities being implemented at Sandia National Laboratories, New Mexico (SNL/NM) during the July, August, and September 2018 quarterly reporting period.

Table I-1 lists the Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) identified for corrective action at SNL/NM. Section I.2.1 summarizes the work completed during this quarter at sites undergoing corrective action *field* activities. Field activities are conducted at the three groundwater AOCs (Burn Site Groundwater [BSG AOC], Technical Area [TA]-V [TA-V] Groundwater [TAVG AOC], and Tijeras Arroyo Groundwater [TAG AOC]).

Corrective action activities are deferred at the Long Sled Track (SWMU 83), the Gun Facilities (SWMU 84), and the Short Sled Track (SWMU 240) because these three sites are active mission facilities. These three active mission sites are located in TA-III.

During the third quarter of 2018, there were no SWMUs or AOCs in the corrective action complete (CAC) regulatory process.

#### **2.0 Environmental Restoration Operations Work Completed**

The following subsections describe the ER work completed during the third quarter 2018.

##### **2.1 Sites Undergoing Corrective Action**

In a letter dated April 14, 2016, the New Mexico Environment Department (NMED) Hazardous Waste Bureau (HWB) defined the scope and milestones for corrective action at three groundwater AOCs (BSG AOC, TAVG AOC, and TAG AOC) (NMED April 2016). Sections 2.1.1 through 2.1.3 discuss the specific milestones from this letter.

### 2.1.1 **Burn Site Groundwater Area of Concern**

Nitrate has been identified as a constituent of concern (COC) in groundwater at the BSG AOC based on detections above the U.S. Environmental Protection Agency (EPA) maximum contaminant level (MCL) in samples collected from monitoring wells. The EPA MCL and State of New Mexico drinking water standard for nitrate (as nitrogen) is 10 milligrams per liter (mg/L).

The U.S. Department of Energy/National Nuclear Security Administration (DOE/NNSA) and SNL/NM personnel met with the NMED HWB on July 20, 2015 to discuss the status of sites currently undergoing corrective action. For the BSG AOC, all parties agreed to a weight-of-evidence characterization program: (1) to conduct additional isotopic analyses/nitrate fingerprinting and age-dating of the groundwater; (2) to conduct a transducer study using existing wells to determine whether the groundwater is unconfined, semi-confined, or confined; and (3) to conduct an aquifer pumping test to help determine the origin of the elevated nitrates in the groundwater.

The groundwater sampling and analysis program for the BSG AOC currently includes perchlorate analyses of water from one groundwater monitoring well. Due to the semiannual nature of the sampling, no groundwater samples were collected for perchlorate analysis during this reporting period. Therefore, this edition of the ER Quarterly Report does not include Section II “*Perchlorate Screening Quarterly Groundwater Monitoring Report.*”

The following activities occurred at BSG AOC during July, August, and September 2018:

- No groundwater sampling was conducted during this reporting period. Table I-2 presents the identification and the sampling frequency for BSG AOC monitoring wells.
- Began preparing a monitoring well installation work plan per the requirements set forth in the letter received from NMED HWB titled “Disapproval: Recommendations for Additional Characterization Activities at the Burn Site Groundwater Area of Concern (AOC), June 2018” (NMED June 2018). NMED HWB requires installation of a minimum of four new groundwater monitoring wells to further characterize the AOC.

### 2.1.2 **Technical Area-V Groundwater Area of Concern**

Trichloroethene (TCE) and nitrate have been identified as COCs in groundwater at the TAVG AOC based on detections above the EPA MCLs in samples collected from monitoring wells. The EPA MCLs and the State of New Mexico drinking water standards

for TCE and nitrate (as nitrogen) are 5 micrograms per liter ( $\mu\text{g/L}$ ) and 10 mg/L, respectively.

Personnel from the DOE/NNSA, DOE Headquarters Office of Environmental Management, SNL/NM, and NMED HWB worked together to address the groundwater contamination at TAVG AOC. A meeting was held with the NMED HWB on July 20, 2015 and all parties agreed on a phased Treatability Study/Interim Measure (TS/IM) of in-situ bioremediation (ISB) to evaluate the effectiveness of ISB as a potential technology to treat the groundwater contamination at the TAVG AOC.

For the TS/IM, SNL/NM personnel plan to install up to three injection wells (TAV-INJ1, TAV-INJ2, and TAV-INJ3) at TA-V near the highest contaminant concentrations in groundwater detected in monitoring wells LWDS-MW1, TAV-MW6, and TAV-MW10. The proposed injection wells will be used to deliver substrate solution and biodegradation bacteria to groundwater. The substrate solution containing essential food and nutrients for biostimulation will be prepared in aboveground tanks. This substrate solution, along with the biodegradation bacteria, will be gravity-injected to groundwater via injection wells.

The NMED HWB approved the Revised Treatability Study Work Plan (TSWP) (SNL/NM March 2016) on May 10, 2016 (NMED May 2016). In accordance with the Revised TSWP, the Treatability Study will be conducted in two phases. Phase I includes a pilot test followed by full-scale injection at the first injection well (TAV-INJ1); Phase II includes full-scale injections at the second and third injection wells (TAV-INJ2 and TAV-INJ3). A decision to install the Phase II wells is dependent upon the findings of the Phase I operation.

In addition to the Revised TSWP approved by the NMED HWB, the NMED Ground Water Quality Bureau (GWQB) requires a groundwater Discharge Permit (DP) for the operation of injection wells. NMED GWQB issued DP-1845 to DOE/NNSA for the SNL/NM TA-V Treatability Study injection wells on May 26, 2017 (NMED May 2017a). The DP-1845 term starts on May 30, 2017 and ends on May 30, 2022. DOE/NNSA and SNL/NM personnel submit quarterly reports for DP-1845 to the NMED GWQB as required by the DP.

The following activities occurred at TAVG AOC during July, August, and September 2018:

- The pilot test of the TS/IM began in November 2017 at injection well TAV-INJ1 and two nearby monitoring wells, TAV-MW6 and TAV-MW7. Performance monitoring of the

pilot test was completed in June 2018. Pilot test results were presented in Section III of the October 2018 ER Quarterly Report (SNL/NM October 2018).

- SNL/NM personnel presented the results of the pilot test and the decision to proceed with the full-scale operation of the TS/IM at injection well TAV-INJ1 to the NMED HWB in June 2018. DOE/NNSA submitted the decision to proceed, along with several modifications to the full-scale operation based on the pilot test results on July 20, 2018 (DOE July 2018). The NMED HWB approved the modifications for full-scale operation and concurred with the decision to proceed with the full-scale operation at injection well TAV-INJ1 on August 13, 2018 (NMED August 2018).
- One modification for the full-scale operation is to exclude well TAV-MW7 as a monitoring well for the performance of ISB. This is because TAV-MW7 is a deep well with the top of screen set at 90 feet below the water table, while the screens of wells TAV-INJ1 and TAV-MW6 are set across the water table. The pilot test injections at well TAV-INJ1 showed that there is no hydrogeological connection between TAV-INJ1 and TAV-MW7. Also, the results of performance monitoring after the injections showed no indication of any injected ingredient in well TAV-MW7. Consequently, well TAV-MW7 will revert back to the TA-V groundwater monitoring network in the fourth quarter of Calendar Year (CY) 2018.
- Baseline sampling for the full-scale operation was conducted in September 2018 at wells TAV-INJ1, TAV-MW6, and TAV-MW7. Even though TAV-MW7 will revert back to the TA-V groundwater monitoring network in the fourth quarter of CY 2018, baseline sampling was conducted in case any impact of the full-scale injections on deeper groundwater is observed in the future. Baseline sampling results will be presented in the next ER Quarterly Report.
- The TA-V groundwater monitoring network comprises 18 active wells, which includes the two wells used for the Treatability Study. Table I-2 presents the sampling frequency for the monitoring wells at TAVG AOC for the remaining 16 wells in the TA-V groundwater monitoring network. Groundwater sampling was conducted in July and August 2018. The SNL/NM CY 2018 Annual Groundwater Monitoring Report (AGMR) will present the analytical results for CY 2018 groundwater monitoring, which is scheduled for submittal to the NMED HWB in the summer of 2019.

- Preparation for the full-scale operation of Phase 1 of the TS/IM is underway with an anticipated start in October 2018. The status of the full-scale operation will be presented in the next ER Quarterly Report; along with Section III which will present the detailed groundwater monitoring results for the quarter.

### 2.1.3 Tijeras Arroyo Groundwater Area of Concern

Nitrate has been identified as a COC in groundwater for the TAG AOC based on exceedances of the EPA MCL in samples collected from monitoring wells completed in the Perched Groundwater System and in the Regional Aquifer. TCE has been identified as a COC for the Perched Groundwater System. However, the area where TCE exceedances occurred has naturally dewatered and the last reported TCE concentration was 3.82 µg/L, occurring in November 2015, which is less than the EPA MCL of 5 µg/L (SNL/NM June 2016). No TCE concentrations in Regional Aquifer samples have exceeded the EPA MCL. The EPA MCLs and State of New Mexico drinking water standards for TCE and nitrate (as nitrogen) are 5 µg/L and 10 mg/L, respectively.

In May 2017, NMED HWB completed its review of the Current Conceptual Model (CCM) and Corrective Measures Evaluation (CME) Report for the TAG AOC (SNL/NM December 2016), which was submitted to the NMED HWB on November 23, 2016 (DOE November 2016). The report was submitted in accordance with NMED's "Agreements and Proposed Milestones" letter of April 14, 2016 (NMED April 2016). The subsequent disapproval letter issued by the NMED HWB (NMED May 2017b) requested additional information with a revised report to be submitted on or before November 30, 2017. However, NMED, DOE/NNSA, and SNL/NM personnel identified additional issues during an August 2017 meeting. In order to address the additional issues, DOE/NNSA and SNL/NM personnel requested extending the submittal date to February 15, 2018 (DOE September 2017). NMED HWB approved this extension request on October 13, 2017 (NMED October 2017). The Revised TAG CCM/CME Report was submitted to the NMED HWB in February 2018 and addresses the issues discussed in the August 2017 meeting, including the status of monitoring well WYO-4 (SNL/NM February 2018). This well is screened in the Perched Groundwater System in a location upgradient of SNL/NM operations. In the meeting, NMED HWB management stated that DOE/NNSA personnel and its prime contractor for SNL/NM no longer have responsibility for monitoring well WYO-4 and the surrounding area.

The following events occurred at TAG AOC during July, August, and September 2018:

- Groundwater sampling at the TAG AOC was conducted in August and September 2018. Samples were collected from all seven monitoring wells (TA2-W-19, TA2-W-26, TA2-W-28, TJA-2, TJA-3, TJA-4, and TJA-7) scheduled for quarterly sampling. Samples were also collected from all four wells (TA1-W-06, TA2-W-01, TA2-W-27, and TJA-6) scheduled for semiannual sampling. Samples were also collected from seven (TA1-W-01, TA1-W-02, TA1-W-04, TA1-W-05, TA1-W-08, TA2-NW1-595, and WYO-3) of the nine wells scheduled for annual sampling. No samples were collected at well PGS-2 (due to grout intrusion) and well TA1-W-03 (due to insufficient water in the well screen). Samples were also collected from monitoring wells TA2-W-24 and TA2-W-25 in anticipation of a revised sampling schedule. Table I-2 presents the CY 2018 sampling frequency for the TAG monitoring wells. The analytical results for the TAG CY 2018 groundwater monitoring will be included in the SNL/NM CY 2018 AGMR, which is scheduled for submittal to the NMED HWB in the summer of 2019.
- The Revised TAG CCM/CME Report was submitted to the NMED HWB on February 13, 2018 (SNL/NM February 2018). During a June 20, 2018 meeting, NMED HWB personnel stated that they will complete their review of the report in 2019.

## 2.2 **Sites in Corrective Action Complete Regulatory Process**

There are currently no SWMUs or AOCs in the Corrective Action Complete regulatory process.

### 3.0 References

DOE, see U.S. Department of Energy

New Mexico Environment Department (NMED), April 2016. Letter to J.P. Harrell (U.S. Department of Energy, NNSA/Sandia Field Office) and M. W. Hazen (Sandia National Laboratories, New Mexico), “Summary of Agreements and Proposed Milestones Pursuant to the Meeting of July 20, 2015, March 30, 2016, Sandia National Laboratories, EPA ID# NM5890110518, HWB-SNL-16-MISC,” NMED, Hazardous Waste Bureau, Santa Fe, New Mexico, April 14, 2016.

New Mexico Environment Department (NMED), May 2016. Letter to J. Harrell (U.S. Department of Energy NNSA/Sandia Field Office) and P. Davies (Sandia National Laboratories, New Mexico), “Approval Revised Treatability Study Work Plan for In-Situ Bioremediation at the Technical Area-V Groundwater Area of Concern, Sandia National Laboratories, EPA ID# NM5890110518, HWB-SNL-15-020,” NMED, Hazardous Waste Bureau, Santa Fe, New Mexico, May 10, 2016.

New Mexico Environment Department (NMED), May 2017a. Ground Water Discharge Permit, Sandia National Laboratories/New Mexico, Discharge Permit-1845, NMED, Ground Water Quality Bureau, Santa Fe, New Mexico, May 26, 2017.

New Mexico Environment Department (NMED), May 2017b. Letter to J.P. Harrell (U.S. Department of Energy NNSA/Sandia Field Office) and Carol Adkins (Sandia National Laboratories), “Disapproval Tijeras Arroyo Groundwater Current Conceptual Model and Corrective Measures Evaluation Report, December 2016, Sandia National Laboratories [*sic*] New Mexico, EPA ID#NM5890110518, HWB-SNL-16-020,” May 18, 2017.

New Mexico Environment Department (NMED), October 2017. Letter to J.P. Harrell (U.S. Department of Energy NNSA/Sandia Field Office) and Richard O. Griffith (Sandia National Laboratories), “Approval Request for Extension for Submittal of a Revised Tijeras Arroyo Groundwater Current Conceptual Model and Corrective Measure Evaluation Report, Sandia National Laboratories/New Mexico, EPA ID#NM5890110518, HWB-SNL-16-020,” October 13, 2017.

New Mexico Environment Department (NMED), June 2018. Letter to J.P. Harrell (U.S. Department of Energy NNSA/Sandia Field Office) and R.O. Griffith (Sandia National Laboratories), “Disapproval: Recommendations for Additional Characterization Activities at the Burn Site Groundwater Area of Concern (AOC), June 2018 Sandia National Laboratory EPA ID#NM5890110518 HWB-SNL-17-015,” June 29, 2018.

New Mexico Environment Department (NMED), August 2018. Letter to J.P. Harrell (U.S. Department of Energy NNSA/Sandia Field Office) and R.O. Griffith (Sandia National Laboratories), “Approval: Technical Area-V (TA-V) Treatability Study Notification of Full-Scale Operation at Well TAV-INJ1, Sandia National Laboratory, EPA ID#NM5890110518, HWB-SNL-15-020,” August 13, 2018.

NMED, see New Mexico Environment Department



Sandia National Laboratories, New Mexico (SNL/NM), March 2016. *Revised Treatability Study Work Plan for In-Situ Bioremediation at the Technical Area-V Groundwater Area of Concern, Sandia National Laboratories, Albuquerque, New Mexico.*

Sandia National Laboratories, New Mexico (SNL/NM), June 2016. *Annual Groundwater Monitoring Report, Calendar Year 2015, June 2016, Sandia National Laboratories, Environmental Restoration Operations, Sandia National Laboratories, Albuquerque, New Mexico.*

Sandia National Laboratories, New Mexico (SNL/NM), December 2016. *Tijeras Arroyo Groundwater Current Conceptual Model and Corrective Measures Evaluation Report, Environmental Restoration Operations, Sandia National Laboratories, Albuquerque, New Mexico.*

Sandia National Laboratories, New Mexico (SNL/NM), February 2018. *Revised Tijeras Arroyo Groundwater Current Conceptual Model and Corrective Measures Evaluation Report, Environmental Restoration Operations, Sandia National Laboratories, Albuquerque, New Mexico.*

Sandia National Laboratories, New Mexico (SNL/NM), October 2018. *Environmental Restoration Operations Consolidated Quarterly Report April – June 2018, Sandia National Laboratories, Albuquerque, New Mexico.*

SNL/NM, see Sandia National Laboratories, New Mexico.

U.S. Department of Energy (DOE), November 2016. Letter to J.E. Kieling (New Mexico Environment Department), “Tijeras Arroyo Groundwater Current Conceptual Model and Corrective Measures Evaluation Report, December 2016,” November 23, 2016.

U.S. Department of Energy (DOE), September 2017. Letter to J.E. Kieling (New Mexico Environment Department), “Request for Extension for Submittal of the Revised Tijeras Arroyo Groundwater Current Conceptual Model and Corrective Measures Evaluation Report in Response to the NMED Disapproval Letter dated May 18, 2017”, September 25, 2017.

U.S. Department of Energy (DOE), July 2018. Letter to J. E. Kieling (New Mexico Environment Department), “Technical Area-V (TA-V) Treatability Study Notification of Full-Scale Operation at Well TAV-INJ1”, July 20, 2018.

# Tables

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**Table I-1**  
**Solid Waste Management Units and Areas of Concern**  
**Where Corrective Action is Not Complete**

<b>Solid Waste Management Units and Areas of Concern</b>	
<b>Site Number</b>	<b>Site Description</b>
83	Long Sled Track
84	Gun Facilities
240	Short Sled Track
NA	Tijeras Arroyo Groundwater Investigation (TAG AOC)
NA	TA-V Groundwater Investigation (TAVG AOC)
NA	Burn Site Groundwater Investigation (BSG AOC)

**Notes:**

- AOC = Area of Concern.
- BSG = Burn Site Groundwater.
- NA = Not applicable. A site number was not assigned.
- TAG = Tijeras Arroyo Groundwater.
- TA-V = Technical Area-V.
- TAVG = Technical Area-V Groundwater.

**Table I-2  
Groundwater Sampling and Analysis**

Investigation Site	Sampling Frequency in CY 2018	Quarter of Sampling in CY 2018	Location of Analytical Results	Location of Perchlorate Analytical Results	Monitoring Wells in Network
TAVG AOC <sup>a</sup>	Quarterly	1,2,3,4	AGMR	NA	LWDS-MW1, TAV-MW2, TAV-MW4, TAV-MW8, TAV-MW10, TAV-MW11, TAV-MW12, TAV-MW14, TAV-MW15, TAV-MW16
	Annually	2	AGMR	NA	AVN-1, LWDS-MW2, TAV-MW3, TAV-MW5, TAV-MW9, TAV-MW13
BSG AOC	Semiannually	2,4	AGMR	NA	CYN-MW4, CYN-MW7, CYN-MW8, CYN-MW9, CYN-MW10, CYN-MW11, CYN-MW12, CYN-MW13, CYN-MW14A, CYN-MW15
TAG AOC <sup>b</sup>	Quarterly	1,2,3,4	AGMR	NA	TA2-W-19, TA2-W-26, TA2-W-28, TJA-2, TJA-3, TJA-4, TJA-7
	Semiannually	1,3	AGMR	NA	TA1-W-06, TA2-W-01, TA2-W-27, TJA-6
	Annually	3	AGMR	NA	PGS-2, TA1-W-01, TA1-W-02, TA1-W-03, TA1-W-04, TA1-W-05, TA1-W-08, TA2-NW1-595, WYO-3

**Notes:**

<sup>a</sup>TAVG AOC monitoring network comprises 18 active wells: 16 wells are listed here; wells TAV-MW6 and TAV-MW7 currently are part of the Treatability Study and follow a separate monitoring plan (see Section 2.1.2).

<sup>b</sup> Monitoring well WYO-4 was deleted from the sampling schedule in response to the August 2017 meeting with NMED HWB personnel.

- AGMR = Annual Groundwater Monitoring Report.
- AOC = Area of Concern.
- AVN = Area-V (North) (acronym used for well identification only).
- BSG = Burn Site Groundwater (Area of Concern).
- CY = Calendar Year.
- CYN = Canyons (Burn Site Groundwater Area of Concern; acronym used for well identification only).
- HWB = Hazardous Waste Bureau.
- LWDS = Liquid waste disposal system (acronym used for well identification only).
- MW = Monitoring well.
- NA = Not applicable. No wells in the site network are currently being sampled and analyzed for perchlorate.
- NMED = New Mexico Environment Department.
- PGS = Parade Ground South (acronym used for well identification only).
- TA1-W = Technical Area-I (Well) (acronym used for well identification only).
- TA2-NW = Technical Area-II (Northwest) (acronym used for well identification only).
- TA2-W = Technical Area-II (Well) (acronym used for well identification only).
- TAG = Tijeras Arroyo Groundwater (Area of Concern).
- TAV = Technical Area-V (acronym used for well identification only).
- TAVG = Technical Area-V Groundwater (Area of Concern).
- TJA = Tijeras Arroyo (acronym used for well identification only).
- WYO = Wyoming (acronym used for well identification only).

