

DOE Oversight Bureau, New Mexico Environment Department

**Groundwater Monitoring at
Sandia National Laboratories/New Mexico
Tijeras Arroyo Groundwater Area of Concern**

**Conducted by the
New Mexico Environment Department DOE Oversight Bureau
for FFY 2017 Q-2**

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Final Report

6/12/2017

The purpose of this communication is to transmit groundwater quality data collected by the New Mexico Environment Department DOE Oversight Bureau from Tijeras Arroyo Groundwater Area of Concern monitoring wells during the second quarter of Federal Fiscal Year 2017.

Acknowledgment:

This material is based upon work supported by the Department of Energy Office of Environmental Management under Award Number *DE-EM0002420*.

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Introduction

The New Mexico Environment Department (NMED) DOE Oversight Bureau (DOE-OB or Bureau) has compiled and assessed groundwater data collected during March 2017. The Bureau collected groundwater samples from Tijeras Arroyo Groundwater (TAG) Area of Concern (AOC) monitoring wells TA2-W-19, TA2-W-28, TJA-2, TJA-4 (plus duplicate) and TJA-7. Split samples were collected using standard Sandia National Laboratories/New Mexico (SNL/NM) sampling procedures and equipment. Samples were analyzed for nitrate-nitrite as nitrogen and volatile organic compounds (VOCs). The Bureau used ALS Environmental Laboratory located in Fort Collins, Colorado to analyze and report data results from samples collected at TAG AOC. ALS Environmental is an independent analytical laboratory under contract with the NMED. Nitrate levels exceeded the U.S. Environmental Protection Agency (EPA) maximum contaminant level (MCL), or drinking water standard of 10 mg/L in samples collected from TAG monitoring wells TA2-W-19, TA2-W-28, TJA-2, TJA-4 and TJA-7.

Data Assessment

All groundwater samples were collected and analyzed in accordance with U.S. Environmental Protection Agency (EPA) protocols. Data results are compared to applicable maximum contaminant levels MCLs established by the U.S. EPA National Primary Drinking Water Regulations (40 CFR 141), National Primary Drinking Water Standards, EPA, July 2002.

Results

Analytical results for nitrate-nitrite as nitrogen are listed in Table-1. Nitrate-nitrite concentrations exceeded the EPA MCL of 10 mg/L from samples collected at monitoring wells TA2-W-19 (11 mg/L), TA2-W-28 (17 mg/L), TJA-2 (11 mg/L), TJA-4 (30 mg/L) and TJA-7 (23 mg/L).

Volatile organic compounds detected at concentrations above the method detection limits (MDLs) are presented in Table-2. The VOCs detected at low concentrations include: dichloroethane [1,1-], dichloroethene [cis-1,2-], tetrachloroethene (PCE) and trichloroethene (TCE). No VOCs were detected above their associated drinking water standards. Table-3 summarizes the laboratory MDLs for the remaining VOCs analyzed from the samples collected at TAG monitoring wells.

Conclusion

The DOE-OB collected split groundwater samples from a total of five (5) TAG AOC monitoring wells during FFY 2017 Q-2. No parameters were detected above EPA drinking water standards, except for nitrate-nitrite as nitrogen at

monitoring wells TA2-W-19, TA2-W-28, TJA-2, TJA-4 and TJA-7. Nitrate has been identified as a contaminant of concern and results detected during second quarter are similar to historical concentrations.

The DOE-OB will continue to collect split samples with SNL/NM from TAG groundwater monitoring wells and continue to independently monitor TAG wells for contaminants of concern and make the data reports available to the public.

References

Data Submittal for Groundwater Monitoring at Sandia National Laboratories/New Mexico Tijeras Arroyo Groundwater Area of Concern Conducted by the New Mexico Environment Department DOE Oversight Bureau for FFY 2016 Q-4

Sandia National Laboratories/New Mexico (SNL/NM). "Annual Groundwater Monitoring Report Calendar Year 2015." Sandia National Laboratories, Albuquerque, New Mexico.

U.S. EPA National Primary Drinking Water Regulations (40 CFR 141), National Primary Drinking Water Standards, EPA, July 2002.

**Table-1 NMED DOE Oversight Bureau FFY 2017 Q-2 Tijeras Arroyo Groundwater Area of Concern Quality Results:
Nitrate-Nitrite as Nitrogen**

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Laboratory Detection Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
TA2-W-19 27-Mar-17	Nitrate-Nitrite as Nitrogen	11	10	0.5	0.031		EPA:353.2
TA2-W-28 28-Mar-17	Nitrate-Nitrite as Nitrogen	17	10	1	0.062		EPA:353.2
TJA-2 29-Mar-17	Nitrate-Nitrite as Nitrogen	11	10	0.5	0.031		EPA:353.2
TJA-4 31-Mar-17	Nitrate-Nitrite as Nitrogen	30	10	1	0.062		EPA:353.2
TJA-4 31-Mar-17 DUP	Nitrate-Nitrite as Nitrogen	30	10	1	0.062		EPA:353.2
TJA-7 30-Mar-17	Nitrate-Nitrite as Nitrogen	23	10	1	0.062		EPA:353.2

Bold = Value exceed the established EPA MCL.

**Table-2 NMED DOE Oversight Bureau FFY 2017 Q-2 Tijeras Arroyo Groundwater Area of Concern Quality Results:
Detected Volatile Organic Compounds**

Monitoring Well/ Sample Date	Analyte	Result (µg/L)	EPA MCL (µg/L)	Laboratory Detection Limit (µg/L)	MDL (µg/L)	Laboratory Qualifier	Analytical Method
TA2-W-19 27-Mar-17	Dichloroethane[1,1-]	0.27	NE	1	0.1	J	SW-846:8260B
	Dichloroethene[cis-1,2-]	0.27	70	1	0.1	J	SW-846:8260B
	Tetrachloroethene	0.16	5	1	0.1	J	SW-846:8260B
	Trichloroethene	1.7	5	1	0.13		SW-846:8260B
TJA-2 29-Mar-17	Dichloroethane[1,1-]	0.45	NE	1	0.1	J	SW-846:8260B
	Dichloroethene[cis-1,2-]	0.52	70	1	0.1	J	SW-846:8260B
	Tetrachloroethene	0.12	5	1	0.1	J	SW-846:8260B
	Trichloroethene	4	5	1	0.13		SW-846:8260B
TJA-7 30-Mar-17	Trichloroethene	2	5	1	0.13		SW-846:8260B

J = Result is less than the reporting limit (RL) or Laboratory Detection Limit but greater than or equal to the method detection limit (MDL) and the concentration is an approximate value.

NE = Not Established

Table-3 NMED DOE Oversight Bureau FFY 2017 Q-2 Tijeras Arroyo Groundwater Area of Concern Quality Results: Method Detection Limits for Volatile Organic Compounds by Method SW-846:8260B

Analyte	MDL (µg/L)
Acetone	2.1
Benzene	0.13
Bromodichloromethane	0.14
Bromoform	0.1
Bromomethane	0.29
Butanone[2-]	0.35
Carbon Disulfide	0.16
Carbon Tetrachloride	0.15
Chlorobenzene	0.12
Chlorodibromomethane	0.13
Chloroethane	0.34
Chloroform	0.12
Chloromethane	0.25
Dichloroethane[1,1-]	0.1
Dichloroethane[1,2-]	0.22
Dichloroethene[1,1-]	0.14
Dichloroethene[cis-1,2-]	0.1
Dichloroethene[trans-1,2-]	0.11
Dichloropropane[1,2-]	0.15
Dichloropropene[cis-1,3-]	0.22
Dichloropropene[trans-1,3-]	0.08
Ethylbenzene	0.1
Hexanone[2-]	0.17
Methyl-2-pentanone[4-]	0.18
Methylene Chloride	0.35
Styrene	0.15
Tetrachloroethane[1,1,2,2-]	0.09
Tetrachloroethene	0.1
Toluene	0.25
Trichloroethane[1,1,1-]	0.19
Trichloroethane[1,1,2-]	0.31
Trichloroethene	0.13
Vinyl acetate	0.21
Vinyl Chloride	0.22
Xylene (Total)	0.18