

DOE Oversight Bureau, New Mexico Environment Department

**Wastewater Monitoring at
Sandia National Laboratories/New Mexico**

**Conducted by the
New Mexico Environment Department DOE Oversight Bureau
for FFY 2017 Q-1**

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Presentation of wastewater data results collected as a component of NMED/DOE Oversight Bureau Monitoring at Sandia National Laboratories/New Mexico. Sample collection conducted by bureau staff in parallel with Sandia National Laboratories/New Mexico, Albuquerque Bernalillo County Water Utility Authority, and NMED/DOE Oversight Bureau on October 5, 2016.

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Introduction

The New Mexico Environment Department (NMED) DOE Oversight Bureau (DOE-OB or the Bureau) has compiled and assessed wastewater data from samples during the first quarter of Federal Fiscal Year (FFY) 2017. Samples were collected on October 5, 2016. Bureau staff collected split wastewater samples with Sandia National Laboratories/New Mexico (SNL/NM) and Albuquerque Bernalillo County Water Utility Authority (ABCWUA) using standard SNL/NM sampling procedures and equipment. Samples were obtained as a 24-hour composite using an ISCO automated sampler. The ISCO sampler is programmed to collect 100ml every 15 minutes during the 24-hour sampling period.

Samples were collected from wastewater monitoring stations WW001 (ABCWUA permit number 2069A), WW006 (ABCWUA permit number 2069F), WW008 (ABCWUA permit number 2069I), and WW0011 (ABCWUA permit number 2069K). Samples were submitted for analysis to ALS Laboratory Group in Fort Collins, CO for total metals, fluoride, total cyanide, volatile organic compounds (VOCs), gross alpha, gross beta, gamma-emitting isotopes, and tritium. A set of trip blanks were also analyzed for VOCs.

Data Assessment

Results are compared to applicable New Mexico Administrative Code (NMAC) Sewer Release Limits (SRL), and the ABCWUA Sewer Use and Wastewater Control Ordinance (SUWCO) requirements, Limitations on Pollutant Concentration.

Results

Analytical results for total (unfiltered) target analyte list (TAL) metals are listed in Table 1. All results were well below the ABCWUA Daily Maximum Composite Sample Concentration Limits.

Analytical results for inorganic compounds are listed in Table 2. All samples were analyzed for fluoride. Samples for total cyanide were collected from monitoring stations WW006 and WW008. Fluoride concentrations from all samples collected were below the pollutant concentration limit of 22.7 mg/L. Total cyanide concentrations were below the pollution concentration limit of 0.45 mg/L.

VOCs detected at concentrations above the method detection limit (MDL) are presented in Table 3. Compounds detected above the MDL include acetone, bromoform, chlorodibromomethane, chloroform, methyl-2-pentanone[4-], methylene chloride, and butylbenzene[n-]. No wastewater regulatory standards exist for VOCs. Table 4 summarizes the laboratory MDLs for the remaining VOCs, not listed in Table 3.

Analytical results for radionuclides are listed in Tables 5. Samples were analyzed for gamma-emitting isotopes, gross alpha, gross beta, and tritium. It is important to note that the NMAC limit is a monthly average and the samples were obtained as a 24-hour composite. As such, it is not possible to directly correlate the values to the limits. However, it is possible to use the limit as a potential indicator for compliance. The data collected does not suggest any of the isotopes would exceed the effluent limit.

Conclusions

Evaluation of the analytical results demonstrates that TAL metals plus uranium, total cyanide and fluoride, gamma-emitting isotopes, gross alpha, gross beta, tritium, and VOCs from samples collected at SNL wastewater stations were below the NMAC Sewer Release Limits and the ABCWUA Daily Maximum Composite Sample Concentration Limits.

References

Albuquerque Bernalillo County Water Utility Authority, Sewer Use and Wastewater Control Ordinance, Adopted 12/21/05 (O-05-6), Amended 12/16/2009 (O-09-8), Amended 1/29/2014 (O-13-3);

20 NMAC 3.1 § 4, Appendix B, Table III, April 15, 2004 “Annual Limits on Intake (Ali) and Derived Air Concentrations (DAC) of Radionuclides for Occupational Exposure; Effluent Concentrations; Concentrations for Release to Sanitary Sewerage.”

Table-1 NMED DOE Oversight Bureau FFY 2017 Q-1 Semi-Annual Wastewater Quality Results: Total TAL Metals plus Uranium

SNL/NM Wastewater Station	Analyte	Result (mg/L)	ABCWUA Daily Maximum Composite Sample (mg/L)	Quantitation Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
WW001 10/5/16	Aluminum	0.061	900	0.1	0.014	JB	SW-846:6020
	Antimony	0.0035	NE	0.001	0.000084	B	SW-846:6020
	Arsenic	0.0056	0.051	0.002	0.00018		SW-846:6020
	Barium	0.18	NE	0.005	0.00023	B	SW-846:6020
	Beryllium	0.00027	NE	0.0005	0.00027	U	SW-846:6020
	Cadmium	0.00012	0.5	0.002	0.000099	J	SW-846:6020
	Calcium	65	NE	1	0.061	B	SW-846:6020
	Chromium	0.0038	4.1	0.01	0.0011	J	SW-846:6020
	Cobalt	0.00036	NE	0.005	0.00007	J	SW-846:6020
	Copper	0.03	3.2	0.02	0.0011	B	SW-846:6020
	Iron	0.23	NE	0.1	0.0053	B	SW-846:6020
	Lead	0.1	1	0.002	0.00016		SW-846:6020
	Magnesium	10	NE	0.1	0.02	B	SW-846:6020
	Manganese	0.013	NE	0.005	0.0003	B	SW-846:6020
	Mercury	0.00006	0.004	0.0001	0.00006	U	SW-846:7470A
	Nickel	0.0042	2	0.02	0.0042	U	SW-846:6020
	Potassium	15	NE	1	0.32		SW-846:6020
	Selenium	0.0023	0.25	0.01	0.00066	J	SW-846:6020
	Silver	0.00012	5	0.0005	0.000039	J	SW-846:6020
	Sodium	170	NE	1	0.19		SW-846:6020
	Thallium	0.00006	NE	0.0001	0.000014	J	SW-846:6020
Uranium	0.0039	NE	0.0001	0.000027	B	SW-846:6020	
Vanadium	0.014	NE	0.005	0.00058		SW-846:6020	
Zinc	0.14	2.2	0.1	0.0091	B	SW-846:6020	

B = Compound was found in the blank and sample.

J = the reported value was obtained from a reading that was less than the Reporting Limit but greater than or equal to the Method Detection Limit (MDL).

NE = Not Established

U = the analyte was analyzed for but not detected

Table-1 NMED DOE Oversight Bureau FFY 2017 Q-1 Semi-Annual Wastewater Quality Results: Total TAL Metals plus Uranium

SNL/NM Wastewater Station	Analyte	Result (mg/L)	ABCWUA Daily Maximum Composite Sample (mg/L)	Quantitation Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
WW006 10/5/16	Aluminum	0.047	900	0.1	0.014	JB	SW-846:6020
	Antimony	0.00033	NE	0.001	0.000084	JB	SW-846:6020
	Arsenic	0.0035	0.051	0.002	0.00018		SW-846:6020
	Barium	0.12	NE	0.005	0.00023	B	SW-846:6020
	Beryllium	0.00027	NE	0.0005	0.00027	U	SW-846:6020
	Cadmium	0.00019	0.5	0.002	0.000099	J	SW-846:6020
	Calcium	44	NE	1	0.061	B	SW-846:6020
	Chromium	0.0011	4.1	0.01	0.0011	U	SW-846:6020
	Cobalt	0.00007	NE	0.005	0.00007	U	SW-846:6020
	Copper	0.015	3.2	0.02	0.0011	JB	SW-846:6020
	Iron	0.22	NE	0.1	0.0053	B	SW-846:6020
	Lead	0.0013	1	0.002	0.00016	J	SW-846:6020
	Magnesium	7.9	NE	0.1	0.02	B	SW-846:6020
	Manganese	0.014	NE	0.005	0.0003	B	SW-846:6020
	Mercury	0.00006	0.004	0.0001	0.00006	U	SW-846:7470A
	Nickel	0.0042	2	0.02	0.0042	U	SW-846:6020
	Potassium	14	NE	1	0.32		SW-846:6020
	Selenium	0.0011	0.25	0.01	0.00066	J	SW-846:6020
	Silver	0.00017	5	0.0005	0.000039	J	SW-846:6020
	Sodium	73	NE	1	0.19		SW-846:6020
	Thallium	0.000014	NE	0.0001	0.000014	U	SW-846:6020
Uranium	0.0022	NE	0.0001	0.000027	B	SW-846:6020	
Vanadium	0.0058	NE	0.005	0.00058		SW-846:6020	
Zinc	0.014	2.2	0.1	0.0091	JB	SW-846:6020	

B = Compound was found in the blank and sample.

J = the reported value was obtained from a reading that was less than the Reporting Limit but greater than or equal to the Method Detection Limit (MDL).

NE = Not Established

U = the analyte was analyzed for but not detected

Table-1 NMED DOE Oversight Bureau FFY 2017 Q-1 Semi-Annual Wastewater Quality Results: Total TAL Metals plus Uranium

SNL/NM Wastewater Station	Analyte	Result (mg/L)	ABCWUA Daily Maximum Composite Sample (mg/L)	Quantitation Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
WW008 10/5/16	Aluminum	0.24	900	0.1	0.014	B	SW-846:6020
	Antimony	0.0043	NE	0.001	0.000084	B	SW-846:6020
	Arsenic	0.0035	0.051	0.002	0.00018		SW-846:6020
	Barium	0.12	NE	0.005	0.00023	B	SW-846:6020
	Beryllium	0.00027	NE	0.0005	0.00027	U	SW-846:6020
	Cadmium	0.00011	0.5	0.002	0.000099	J	SW-846:6020
	Calcium	48	NE	1	0.061	B	SW-846:6020
	Chromium	0.0011	4.1	0.01	0.0011	U	SW-846:6020
	Cobalt	0.0013	NE	0.005	0.00007	J	SW-846:6020
	Copper	0.036	3.2	0.02	0.0011	B	SW-846:6020
	Iron	0.21	NE	0.1	0.0053	B	SW-846:6020
	Lead	0.00091	1	0.002	0.00016	J	SW-846:6020
	Magnesium	11	NE	0.1	0.02	B	SW-846:6020
	Manganese	0.02	NE	0.005	0.0003	B	SW-846:6020
	Mercury	0.00006	0.004	0.0001	0.00006	U	SW-846:7470A
	Nickel	0.0047	2	0.02	0.0042	JB	SW-846:6020
	Potassium	21	NE	1	0.32		SW-846:6020
	Selenium	0.0016	0.25	0.01	0.00066	J	SW-846:6020
	Silver	0.000039	5	0.0005	0.000039	U	SW-846:6020
	Sodium	54	NE	1	0.19		SW-846:6020
Thallium	0.000014	NE	0.0001	0.000014	U	SW-846:6020	
Uranium	0.0026	NE	0.0001	0.000027	B	SW-846:6020	
Vanadium	0.0051	NE	0.005	0.00058		SW-846:6020	
Zinc	0.13	2.2	0.1	0.0091	B	SW-846:6020	

B = Compound was found in the blank and sample.

J = the reported value was obtained from a reading that was less than the Reporting Limit but greater than or equal to the Method Detection Limit (MDL).

NE = Not Established

U = the analyte was analyzed for but not detected

Table-1 NMED DOE Oversight Bureau FFY 2017 Q-1 Semi-Annual Wastewater Quality Results: Total TAL Metals plus Uranium

SNL/NM Wastewater Station	Analyte	Result (mg/L)	ABCWUA Daily Maximum Composite Sample (mg/L)	Quantitation Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
WW011 10/5/16	Aluminum	0.049	900	0.1	0.014	JB	SW-846:6020
	Antimony	0.00039	NE	0.001	0.000084	JB	SW-846:6020
	Arsenic	0.0027	0.051	0.002	0.00018		SW-846:6020
	Barium	0.15	NE	0.005	0.00023	B	SW-846:6020
	Beryllium	0.00027	NE	0.0005	0.00027	U	SW-846:6020
	Cadmium	0.000099	0.5	0.002	0.000099	U	SW-846:6020
	Calcium	62	NE	1	0.061	B	SW-846:6020
	Chromium	0.0018	4.1	0.01	0.0011	J	SW-846:6020
	Cobalt	0.00028	NE	0.005	0.00007	J	SW-846:6020
	Copper	0.019	3.2	0.02	0.0011	JB	SW-846:6020
	Iron	0.3	NE	0.1	0.0053	B	SW-846:6020
	Lead	0.0013	1	0.002	0.00016	J	SW-846:6020
	Magnesium	11	NE	0.1	0.02	B	SW-846:6020
	Manganese	0.031	NE	0.005	0.0003	B	SW-846:6020
	Mercury	0.00006	0.004	0.0001	0.00006	U	SW-846:7470A
	Nickel	0.0044	2	0.02	0.0042	JB	SW-846:6020
	Potassium	28	NE	1	0.32		SW-846:6020
	Selenium	0.0013	0.25	0.01	0.00066	J	SW-846:6020
	Silver	0.00023	5	0.0005	0.000039	J	SW-846:6020
	Sodium	190	NE	1	0.19		SW-846:6020
Thallium	0.000014	NE	0.0001	0.000014	U	SW-846:6020	
Uranium	0.0026	NE	0.0001	0.000027	B	SW-846:6020	
Vanadium	0.0056	NE	0.005	0.00058		SW-846:6020	
Zinc	0.019	2.2	0.1	0.0091	JB	SW-846:6020	

B = Compound was found in the blank and sample.

J = the reported value was obtained from a reading that was less than the Reporting Limit but greater than or equal to the Method Detection Limit (MDL).

NE = Not Established

U = the analyte was analyzed for but not detected

Table-2 NMED DOE Oversight Bureau FFY 2017 Q-1 Semi-Annual Wastewater Quality Results: Total Cyanide and Fluoride

SNL/NM Wastewater Station	Analyte	Result (mg/L)	ABCWUA Daily Maximum Composite Sample (mg/L)	Quantitation Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
WW001 10/5/16	Fluoride	6	22.7	0.1	0.03		EPA:300.0
WW006 10/5/16	Cyanide (Total)	0.0036	0.45	0.01	0.0036	U	SW-846:9014
	Fluoride	0.66	22.7	0.1	0.03		EPA:300.0
WW008 10/5/16	Cyanide (Total)	0.026	0.45	0.01	0.0036		SW-846:9014
	Fluoride	0.58	22.7	0.1	0.03		EPA:300.0
WW011 10/5/16	Fluoride	0.8	22.7	0.1	0.03		EPA:300.0

H = The samples were analyzed outside of the established hold time

N = Spiked sample recovery not within control limits.

U = Analyte not detected at or above the reporting limit or MDL

**Table-3 NMED DOE Oversight Bureau FFY 2017 Q-1 Semi-Annual Wastewater Quality Results:
Detected Volatile Organic Compounds**

SNL/NM Wastewater Station	Analyte	Result (µg/L)	Quantitation Limit (µg/L)	MDL (µg/L)	Laboratory Qualifier	Analytical Method
WW001 10/5/16	Acetone	230	10	3		SW- 846:8260B_2 5
	Bromoform	1.5	1	0.3		
	Chlorodibromomethane	0.54	1	0.3	J	
	Chloroform	0.89	1	0.3	J	
	Methyl-2-pentanone[4-]	3.1	10	3	J	
	Methylene Chloride	4.1	1	0.44		
WW006 10/5/16	Acetone	17	10	3		
WW008 10/5/16	Acetone	32	10	3		
WW011 10/5/16	Butylbenzene[n-]	53	10	3		

J = The reported value was obtained from the reading that was less than the Reporting Limit but greater than or equal to the Method Detection Limit (MDL).

Table-4 NMED DOE Oversight Bureau FFY 2017 Q-1 Semi-Annual Wastewater Quality Results: Method Detection Limits for Volatile Organic Compounds by Method SW-846:8260B_25

Analyte	MDL (µg/L)
Acetone	3
Benzene	0.3
Bromobenzene	0.3
Bromochloromethane	0.3
Bromodichloromethane	0.3
Bromoform	0.3
Bromomethane	0.3
Butanone[2-]	3
Butylbenzene[n-]	0.3
Butylbenzene[sec-]	0.3
Butylbenzene[tert-]	0.3
Carbon Disulfide	0.3
Carbon Tetrachloride	0.3
Chlorobenzene	0.3
Chlorodibromomethane	0.3
Chloroethane	0.3
Chloroform	0.3
Chlorohexane[1-]	0.3
Chloromethane	0.3
Chlorotoluene[2-]	0.3
Chlorotoluene[4-]	0.3
Dibromo-3-Chloropropane[1,2-]	0.3
Dibromoethane[1,2-]	0.3
Dibromomethane	0.3
Dichlorobenzene[1,2-]	0.3
Dichlorobenzene[1,3-]	0.3
Dichlorobenzene[1,4-]	0.3
Dichlorodifluoromethane	0.3
Dichloroethane[1,1-]	0.3
Dichloroethane[1,2-]	0.3
Dichloroethene[1,1-]	0.3
Dichloroethene[cis-1,2-]	0.3
Dichloroethene[trans-1,2-]	0.3
Dichloropropane[1,2-]	0.3
Dichloropropane[1,3-]	0.3
Dichloropropane[2,2-]	0.3
Dichloropropene[1,1-]	0.3
Dichloropropene[cis-1,3-]	0.3
Dichloropropene[trans-1,3-]	0.3
Ethylbenzene	0.3
Hexachlorobutadiene	0.3

Analyte	MDL (µg/L)
Hexanone[2-]	3
Iodomethane	0.38
Isopropylbenzene	0.3
Isopropyltoluene[4-]	0.3
Methyl tert-Butyl Ether	0.3
Methyl-2-pentanone[4-]	3
Methylene Chloride	0.44
Naphthalene	0.3
Propylbenzene[1-]	0.3
Styrene	0.3
Tetrachloroethane[1,1,1,2-]	0.3
Tetrachloroethane[1,1,2,2-]	0.3
Tetrachloroethene	0.2
Toluene	0.3
Trichloro-1,2,2-trifluoroethane[1,1,2-]	0.3
Trichlorobenzene[1,2,3-]	0.3
Trichlorobenzene[1,2,4-]	0.3
Trichloroethane[1,1,1-]	0.3
Trichloroethane[1,1,2-]	0.3
Trichloroethene	0.3
Trichlorofluoromethane	0.3
Trichloropropane[1,2,3-]	0.3
Trimethylbenzene[1,2,4-]	0.3
Trimethylbenzene[1,3,5-]	0.3
Vinyl acetate	0.3
Vinyl Chloride	0.3
Xylene[1,2-]	0.3
Xylene[1,3-]+Xylene[1,4-]	0.3

Table-5 NMED DOE Oversight Bureau FFY 2017 Q-1 Semi-Annual Waste Water Quality Results: Gross Alpha, Gross Beta, Gamma Spectroscopy, and Tritium

SNL/NM Wastewater Station	Analyte	Activity (pCi/L)	Sewer Release Limit (Monthly Avg) (pCi/L)	MDA (pCi/L)	Laboratory Qualifier	Analytical Method
WW001 10/5/16	Actinium-228	15 ± 5.1	300,000	16	U	EPA:901.1
	Americium-241	3.6 ± 10	200	33	U	EPA:901.1
	Beryllium-7	2.8 ± 16	6,000,000	55	U	EPA:901.1
	Bismuth-212	44 ± 27	700,000	88	U	EPA:901.1
	Bismuth-214	4.5 ± 8.8	3,000,000	29	U	EPA:901.1
	Cesium-134	-5.6 ± 2	9,000	7	U	EPA:901.1
	Cesium-137	1.2 ± 2	10,000	6.7	U	EPA:901.1
	Cobalt-60	-1 ± 2.5	30,000	8.7	U	EPA:901.1
	Gross alpha	4.3 ± 1.1	NE	3.1		EPA:900
	Gross beta	15 ± 1.7	NE	3.5		EPA:900
	Iodine-131	9.7 ± 8.3	10,000	28	U	EPA:901.1
	Lead-212	4.1 ± 3.6	20,000	12	U	EPA:901.1
	Lead-214	-1.5 ± 6.8	1,000,000	23	U	EPA:901.1
	Potassium-40	-46 ± 54	40,000	180	U	EPA:901.1
	Protactinium-234m	520 ± 350	NE	1200	U	EPA:901.1
	Sodium-22	0.077 ± 2.4	60,000	8.2	U	EPA:901.1
	Thallium-208	5.9 ± 2	NE	6.2	U	EPA:901.1
	Thorium-234	-50 ± 52	50,000	170	U	EPA:901.1
	Tritium	-90 ± 180	10,000,000	300	U	EPA:906.0

NE = Not Established

U = Result is less than the sample specific MDC or less than the associated TPU.

Table-5 NMED DOE Oversight Bureau FFY 2017 Q-1 Semi-Annual Waste Water Quality Results: Gross Alpha, Gross Beta, Gamma Spectroscopy, and Tritium

SNL/NM Wastewater Station	Analyte	Activity (pCi/L)	Sewer Release Limit (Monthly Avg) (pCi/L)	MDA (pCi/L)	Laboratory Qualifier	Analytical Method
WW006 10/5/16	Actinium-228	17 ± 4.8	300,000	17	U	EPA:901.1
	Americium-241	-13 ± 14	200	46	U	EPA:901.1
	Beryllium-7	11 ± 13	6,000,000	43	U	EPA:901.1
	Bismuth-212	-26 ± 19	700,000	66	U	EPA:901.1
	Bismuth-214	3.9 ± 7.5	3,000,000	25	U	EPA:901.1
	Cesium-134	-2.4 ± 5	9,000	16	U	EPA:901.1
	Cesium-137	0.17 ± 1.4	10,000	4.9	U	EPA:901.1
	Cobalt-60	0.92 ± 1.7	30,000	5.7	U	EPA:901.1
	Gross alpha	1.8 ± 0.44	NE	1.3		EPA:900
	Gross beta	11 ± 1	NE	1.2		EPA:900
	Iodine-131	-4.1 ± 7	10,000	24	U	EPA:901.1
	Lead-212	4.7 ± 3.6	20,000	12	U	EPA:901.1
	Lead-214	-6.3 ± 6	1,000,000	20	U	EPA:901.1
	Potassium-40	-68 ± 43	40,000	150	U	EPA:901.1
	Protactinium-234m	210 ± 230	NE	770	U	EPA:901.1
	Sodium-22	0.037 ± 1.5	60,000	5.1	U	EPA:901.1
	Thallium-208	0.48 ± 3.3	NE	11	U	EPA:901.1
	Thorium-234	18 ± 40	50,000	130	U	EPA:901.1
Tritium	-47 ± 180	10,000,000	300	U	EPA:906.0	

NE = Not Established

U = Result is less than the sample specific MDC or less than the associated TPU.

Table-5 NMED DOE Oversight Bureau FFY 2017 Q-1 Semi-Annual Waste Water Quality Results: Gross Alpha, Gross Beta, Gamma Spectroscopy, and Tritium

SNL/NM Wastewater Station	Analyte	Activity (pCi/L)	Sewer Release Limit (Monthly Avg) (pCi/L)	MDA (pCi/L)	Laboratory Qualifier	Analytical Method
WW008 10/5/16	Actinium-228	23 ± 4.5	300,000	17		EPA:901.1
	Americium-241	-3.2 ± 1.5	200	5.2	U	EPA:901.1
	Beryllium-7	-1.5 ± 10	6,000,000	35	U	EPA:901.1
	Bismuth-212	46 ± 19	700,000	60	U	EPA:901.1
	Bismuth-214	6.7 ± 4.3	3,000,000	18	U	EPA:901.1
	Cesium-134	-1.1 ± 1.3	9,000	4.4	U	EPA:901.1
	Cesium-137	1 ± 1.3	10,000	4.2	U	EPA:901.1
	Cobalt-60	-0.053 ± 1.4	30,000	4.9	U	EPA:901.1
	Gross alpha	0.82 ± 0.45	NE	1.5	U	EPA:900
	Gross beta	18 ± 1.5	NE	1.2		EPA:900
	Iodine-131	-4.4 ± 6	10,000	21	U	EPA:901.1
	Lead-212	-0.72 ± 3.5	20,000	12	U	EPA:901.1
	Lead-214	3.4 ± 5.8	1,000,000	19	U	EPA:901.1
	Potassium-40	35 ± 34	40,000	110	U	EPA:901.1
	Protactinium-234m	0.0002 ± 220	NE	750	U	EPA:901.1
	Sodium-22	0.044 ± 1.5	60,000	5.3	U	EPA:901.1
	Thallium-208	1.5 ± 2.3	NE	7.8	U	EPA:901.1
	Thorium-234	-13 ± 22	50,000	75	U	EPA:901.1
Tritium	-300 ± 180	10,000,000	300	U	EPA:906.0	

NE = Not Established

U = Result is less than the sample specific MDC or less than the associated TPU.

Table-5 NMED DOE Oversight Bureau FFY 2017 Q-1 Semi-Annual Waste Water Quality Results: Gross Alpha, Gross Beta, Gamma Spectroscopy, and Tritium

SNL/NM Wastewater Station	Analyte	Activity (pCi/L)	Sewer Release Limit (Monthly Avg) (pCi/L)	MDA (pCi/L)	Laboratory Qualifier	Analytical Method
WW011 10/5/16	Actinium-228	18 ± 4.7	300,000	18		EPA:901.1
	Americium-241	2.5 ± 1.6	200	5.1	U	EPA:901.1
	Beryllium-7	6.4 ± 12	6,000,000	39	U	EPA:901.1
	Bismuth-212	17 ± 20	700,000	67	U	EPA:901.1
	Bismuth-214	0.32 ± 6.1	3,000,000	20	U	EPA:901.1
	Cesium-134	-1 ± 1.3	9,000	4.5	U	EPA:901.1
	Cesium-137	-2 ± 1.3	10,000	4.7	U	EPA:901.1
	Cobalt-60	-0.27 ± 1.5	30,000	5.3	U	EPA:901.1
	Gross alpha	2 ± 0.88	NE	2.8	U	EPA:900
	Gross beta	24 ± 2.1	NE	2.1		EPA:900
	Iodine-131	-3 ± 7.1	10,000	24	U	EPA:901.1
	Lead-212	2.2 ± 3.9	20,000	13	U	EPA:901.1
	Lead-214	10 ± 2.6	1,000,000	8.2		EPA:901.1
	Potassium-40	30 ± 37	40,000	120	U	EPA:901.1
	Protactinium-234m	-50 ± 240	NE	820	U	EPA:901.1
	Sodium-22	-0.34 ± 1.6	60,000	5.5	U	EPA:901.1
	Thallium-208	0.41 ± 2.5	NE	8.3	U	EPA:901.1
	Thorium-234	-0.84 ± 24	50,000	80	U	EPA:901.1
	Tritium	-38 ± 180	10,000,000	300	U	EPA:906.0

NE = Not Established

U = Result is less than the sample specific MDC or less than the associated TPU.