

**DOE Oversight Bureau, New Mexico Environment Department**

**Groundwater Monitoring at  
Sandia National Laboratories/New Mexico  
Chemical Waste Landfill**

**Conducted by the  
New Mexico Environment Department DOE Oversight Bureau  
for FFY 2013 Q-2**

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**Final Report**

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The purpose of this communication is to transmit groundwater data collected by the New Mexico Environment Department DOE Oversight Bureau from Chemical Waste Landfill groundwater monitoring wells during the second quarter of FFY 2013.

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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 January 2013. The Bureau collected groundwater samples from Chemical Waste Landfill (CWL) groundwater monitoring wells CWL-BW5, CWL-MW9, CWL-MW10, and CWL-MW11. Split samples were collected using standard Sandia sampling procedures and equipment. Bureau samples were submitted to an independent analytical laboratory, where they were analyzed for total metals and volatile organic compounds. No samples exceeded the U.S. Environmental Protection Agency (EPA) maximum contaminant level (MCL) during this sampling event.

### **Data Assessment**

All groundwater samples were collected and analyzed in accordance with EPA protocols. Data results are compared to applicable 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 total target analyte list (TAL) metals are listed in Table-1. All metal concentrations were below established MCLs.

Analytical results for volatile organic compounds (VOCs) detected above the method detection limit (MDL) are listed in Table-2. No compounds were detected above the EPA MCL. The trichloroethylene (TCE) concentration at CWL-MW10 approached the EPA MCL of 5 µg/L; the TCE level detected was 4.8 µg/L. Table-3 lists the laboratory method detection limits for the remaining VOCs.

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**Table-1 NMED DOE OB FFY 2013 Q-2 Chemical Waste Landfill Groundwater Quality Results: Total TAL Metals**

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Quantitation Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
CWL-BW5 8-Jan-13	Aluminum	0.025	NE	0.05	0.025	U	SW-846:6020
	Antimony	0.0002	0.006	0.002	0.0002	U	SW-846:6020
	Arsenic	0.001	0.01	0.002	0.001	U	SW-846:6020
	Barium	0.064	2	0.001	0.0005		SW-846:6020
	Beryllium	0.0001	0.004	0.001	0.0001	U	SW-846:6020
	Cadmium	0.0005	0.005	0.001	0.0005	U	SW-846:6020
	Calcium	130	NE	0.05	0.03		SW-846:6020
	Chromium	0.0013	0.1	0.002	0.001	J,B	SW-846:6020
	Cobalt	0.0006	NE	0.001	0.0006	U	SW-846:6020
	Copper	0.001	1.3	0.002	0.001	U	SW-846:6020
	Iron	0.025	NE	0.05	0.025	U	SW-846:6020
	Lead	0.0006	0.015	0.001	0.0006	U	SW-846:6020
	Magnesium	31	NE	0.05	0.025		SW-846:6020
	Manganese	0.0093	NE	0.001	0.0004	^	SW-846:6020
	Mercury	0.0001	0.002	0.0002	0.0001	U	SW-846:7470A
	Nickel	0.0001	NE	0.002	0.0001	U	SW-846:6020
	Potassium	7.2	NE	0.05	0.025		SW-846:6020
	Selenium	0.0032	0.05	0.002	0.001	*	SW-846:6020
	Silver	0.0003	NE	0.001	0.0003	U	SW-846:6020
	Sodium	100	NE	0.05	0.025		SW-846:6020
Thallium	0.0005	0.002	0.001	0.0005	U	SW-846:6020	
Tin	0.005	NE	0.02	0.005	U	SW-846:6010B	
Vanadium	0.003	NE	0.01	0.003	U	SW-846:6020	
Zinc	0.004	NE	0.005	0.004	U,*	SW-846:6020	

^ = ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC exceeds the control limits.

\* = LCS or LCSD exceeds the control limits

B = Compound was found in the blank and sample.

F = MS or MSD exceeds the control limits

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Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Quantitation Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
CWL-BW5 8-Jan-13 Dup	Aluminum	0.025	NE	0.05	0.025	U	SW-846:6020
	Antimony	0.0002	0.006	0.002	0.0002	U	SW-846:6020
	Arsenic	0.001	0.01	0.002	0.001	U	SW-846:6020
	Barium	0.063	2	0.001	0.0005		SW-846:6020
	Beryllium	0.0001	0.004	0.001	0.0001	U	SW-846:6020
	Cadmium	0.0005	0.005	0.001	0.0005	U	SW-846:6020
	Calcium	130	NE	0.05	0.03		SW-846:6020
	Chromium	0.0011	0.1	0.002	0.001	J,B	SW-846:6020
	Cobalt	0.0006	NE	0.001	0.0006	U	SW-846:6020
	Copper	0.001	1.3	0.002	0.001	U	SW-846:6020
	Iron	0.025	NE	0.05	0.025	U	SW-846:6020
	Lead	0.0006	0.015	0.001	0.0006	U	SW-846:6020
	Magnesium	30	NE	0.05	0.025		SW-846:6020
	Manganese	0.0055	NE	0.001	0.0004	^	SW-846:6020
	Mercury	0.0001	0.002	0.0002	0.0001	U	SW-846:7470A
	Nickel	0.0001	NE	0.002	0.0001	U	SW-846:6020
	Potassium	7.2	NE	0.05	0.025		SW-846:6020
	Selenium	0.0024	0.05	0.002	0.001	*	SW-846:6020
	Silver	0.0003	NE	0.001	0.0003	U	SW-846:6020
	Sodium	99	NE	0.05	0.025		SW-846:6020
Thallium	0.0005	0.002	0.001	0.0005	U	SW-846:6020	
Tin	0.005	NE	0.02	0.005	U	SW-846:6010B	
Vanadium	0.003	NE	0.01	0.003	U	SW-846:6020	
Zinc	0.004	NE	0.005	0.004	U,*	SW-846:6020	

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Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Quantitation Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
CWL-MW9 9-Jan-13	Aluminum	0.025	NE	0.05	0.025	U	SW-846:6020
	Antimony	0.0002	0.006	0.002	0.0002	U	SW-846:6020
	Arsenic	0.001	0.01	0.002	0.001	U	SW-846:6020
	Barium	0.13	2	0.001	0.0005		SW-846:6020
	Beryllium	0.0001	0.004	0.001	0.0001	U	SW-846:6020
	Cadmium	0.0005	0.005	0.001	0.0005	U	SW-846:6020
	Calcium	110	NE	0.05	0.03		SW-846:6020
	Chromium	0.001	0.1	0.002	0.001	U	SW-846:6020
	Cobalt	0.0006	NE	0.001	0.0006	U	SW-846:6020
	Copper	0.001	1.3	0.002	0.001	U	SW-846:6020
	Iron	0.28	NE	0.05	0.025		SW-846:6020
	Lead	0.0006	0.015	0.001	0.0006	U	SW-846:6020
	Magnesium	29	NE	0.05	0.025		SW-846:6020
	Manganese	0.35	NE	0.001	0.0004	^	SW-846:6020
	Mercury	0.0001	0.002	0.0002	0.0001	U	SW-846:7470A
	Nickel	0.0001	NE	0.002	0.0001	U	SW-846:6020
	Potassium	8.3	NE	0.05	0.025		SW-846:6020
	Selenium	0.0016	0.05	0.002	0.001	J,*	SW-846:6020
	Silver	0.0003	NE	0.001	0.0003	U	SW-846:6020
	Sodium	79	NE	0.05	0.025		SW-846:6020
	Thallium	0.0005	0.002	0.001	0.0005	U	SW-846:6020
Tin	0.005	NE	0.02	0.005	U	SW-846:6010B	
Vanadium	0.003	NE	0.01	0.003	U	SW-846:6020	
Zinc	0.004	NE	0.005	0.004	U,*	SW-846:6020	

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**Table-1 NMED DOE OB FFY 2013 Q-2 Chemical Waste Landfill Groundwater Quality Results: Total TAL Metals**

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Quantitation Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
CWL-MW10 14-Jan-13	Aluminum	0.038	NE	0.05	0.025	J	SW-846:6020
	Antimony	0.0002	0.006	0.002	0.0002	U	SW-846:6020
	Arsenic	0.001	0.01	0.002	0.001	U	SW-846:6020
	Barium	0.24	2	0.001	0.0005		SW-846:6020
	Beryllium	0.0001	0.004	0.001	0.0001	U	SW-846:6020
	Cadmium	0.0005	0.005	0.001	0.0005	U	SW-846:6020
	Calcium	90	NE	0.05	0.03		SW-846:6020
	Chromium	0.001	0.1	0.002	0.001	J,B	SW-846:6020
	Cobalt	0.0006	NE	0.001	0.0006	U	SW-846:6020
	Copper	0.001	1.3	0.002	0.001	J	SW-846:6020
	Iron	0.22	NE	0.05	0.025		SW-846:6020
	Lead	0.0006	0.015	0.001	0.0006	U	SW-846:6020
	Magnesium	26	NE	0.05	0.025		SW-846:6020
	Manganese	0.59	NE	0.001	0.0004	^	SW-846:6020
	Mercury	0.0001	0.002	0.0002	0.0001	U	SW-846:7470A
	Nickel	0.00066	NE	0.002	0.0001	J	SW-846:6020
	Potassium	7.7	NE	0.05	0.025		SW-846:6020
	Selenium	0.001	0.05	0.002	0.001	J,*	SW-846:6020
	Silver	0.0003	NE	0.001	0.0003	U	SW-846:6020
	Sodium	76	NE	0.05	0.025		SW-846:6020
Thallium	0.0005	0.002	0.001	0.0005	U	SW-846:6020	
Tin	0.005	NE	0.02	0.005	U	SW-846:6010B	
Vanadium	0.003	NE	0.01	0.003	U	SW-846:6020	
Zinc	0.099	NE	0.005	0.004	*	SW-846:6020	

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**Table-1 NMED DOE OB FFY 2013 Q-2 Chemical Waste Landfill Groundwater Quality Results: Total TAL Metals**

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Quantitation Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
CWL-MW11 11-Jan-13	Aluminum	0.025	NE	0.05	0.025	U	SW-846:6020
	Antimony	0.0002	0.006	0.002	0.0002	U	SW-846:6020
	Arsenic	0.001	0.01	0.002	0.001	U	SW-846:6020
	Barium	0.083	2	0.001	0.0005		SW-846:6020
	Beryllium	0.0001	0.004	0.001	0.0001	U	SW-846:6020
	Cadmium	0.0005	0.005	0.001	0.0005	U	SW-846:6020
	Calcium	110	NE	0.05	0.03		SW-846:6020
	Chromium	0.0025	0.1	0.002	0.001	B	SW-846:6020
	Cobalt	0.0006	NE	0.001	0.0006	U	SW-846:6020
	Copper	0.0011	1.3	0.002	0.001	J	SW-846:6020
	Iron	0.025	NE	0.05	0.025	U	SW-846:6020
	Lead	0.0006	0.015	0.001	0.0006	U	SW-846:6020
	Magnesium	30	NE	0.05	0.025		SW-846:6020
	Manganese	0.018	NE	0.001	0.0004	^	SW-846:6020
	Mercury	0.0001	0.002	0.0002	0.0001	U	SW-846:7470A
	Nickel	0.0001	NE	0.002	0.0001	U	SW-846:6020
	Potassium	9.9	NE	0.05	0.025		SW-846:6020
	Selenium	0.0021	0.05	0.002	0.001	*	SW-846:6020
	Silver	0.0003	NE	0.001	0.0003	U	SW-846:6020
	Sodium	83	NE	0.05	0.025		SW-846:6020
Thallium	0.0005	0.002	0.001	0.0005	U	SW-846:6020	
Tin	0.005	NE	0.02	0.005	U	SW-846:6010B	
Vanadium	0.003	NE	0.01	0.003	U	SW-846:6020	
Zinc	0.004	NE	0.005	0.004	U,*	SW-846:6020	

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**Table-2 NMED DOE OB FFY 2013 Q-2 Chemical Waste Landfill Groundwater Quality Results: Detected Volatile Organic Compounds**

Monitoring Well/ Sample Date	Analyte	Result (µg/L)	EPA MCL (µg/L)	Quantitation Limit (µg/L)	MDL (µg/L)	Laboratory Qualifier	Analytical Method
CWL-BW5 8-Jan-13	Chloroform	0.18	NE	1	0.12	J	SW-846:8260B
	Toluene	0.36	1000	1	0.25	J	SW-846:8260B
CWL-BW5 8-Jan-13 Dup	Chloroform	0.16	NE	1	0.12	J	SW-846:8260B
	Toluene	0.37	1000	1	0.25	J	SW-846:8260B
CWL-MW10 14-Jan-13	Dichloroethene[1,1-]	0.14	7	1	0.14	J	SW-846:8260B
	Tetrachloroethene	0.1	5	1	0.1	J	SW-846:8260B
	Trichloroethene	4.8	5	1	0.13		SW-846:8260B

J = Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

NE = Not Established

**Table-3 NMED DOE OB FFY 2013 Q-2 Chemical Waste Landfill Groundwater Quality Results: Method Detection Limits for Volatile Organic Compounds**

<b>Analyte</b>	<b>MDL (µg/L)</b>	<b>Analytical Method</b>
4-Methyl-2-pentanone (MIBK)	0.18	SW-846:8260B
Acetone	2.1	SW-846:8260B
Benzene	0.13	SW-846:8260B
Bromodichloromethane	0.14	SW-846:8260B
Bromoform	0.1	SW-846:8260B
Bromomethane	0.29	SW-846:8260B
Butanone[2-]	0.35	SW-846:8260B
Carbon Disulfide	0.16	SW-846:8260B
Carbon Tetrachloride	0.15	SW-846:8260B
Chlorobenzene	0.12	SW-846:8260B
Chloroethane	0.34	SW-846:8260B
Chloroform	0.12	SW-846:8260B
Chloromethane	0.25	SW-846:8260B
Dibromochloromethane	0.13	SW-846:8260B
Dichloroethane[1,1-]	0.1	SW-846:8260B
Dichloroethane[1,2-]	0.22	SW-846:8260B
Dichloroethene[1,1-]	0.14	SW-846:8260B
Dichloroethene[cis-1,2-]	0.1	SW-846:8260B
Dichloroethene[trans-1,2-]	0.11	SW-846:8260B
Dichloropropane[1,2-]	0.15	SW-846:8260B
Dichloropropene[cis-1,3-]	0.22	SW-846:8260B
Dichloropropene[trans-1,3-]	0.08	SW-846:8260B
Ethylbenzene	0.1	SW-846:8260B
Hexanone[2-]	0.17	SW-846:8260B
Methylene Chloride	0.35	SW-846:8260B
Styrene	0.15	SW-846:8260B
Tetrachloroethane[1,1,2,2-]	0.09	SW-846:8260B
Tetrachloroethene	0.1	SW-846:8260B
Toluene	0.25	SW-846:8260B
Trichloroethane[1,1,1-]	0.19	SW-846:8260B
Trichloroethane[1,1,2-]	0.31	SW-846:8260B
Trichloroethene	0.13	SW-846:8260B
Vinyl acetate	0.21	SW-846:8260B
Vinyl Chloride	0.22	SW-846:8260B
Xylenes, Total	0.18	SW-846:8260B