

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 2014 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 second quarter FFY 2014.

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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 2014. 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. Trichloroethylene (TCE) was detected above the method detection limit at monitoring well CWL-MW10 at concentration of 2.2 µg/L. Table-3 lists the laboratory method detection limits for the remaining VOCs.

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Table-1 NMED DOE OB FFY 2014 Q-2 Chemical Waste Landfill Groundwater Quality Results: Total TAL Metals

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Laboratory Detection Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
CWL-BW5 9-Jan-14	Aluminum	0.089	NE	0.2	0.026	JB	SW-846:6010B_3005A
	Antimony	0.0035	0.006	0.02	0.003	J	SW-846:6010B_3005A
	Arsenic	0.004	0.01	0.01	0.004	U	SW-846:6010B_3005A
	Barium	0.059	2	0.1	0.0012	J	SW-846:6010B_3005A
	Beryllium	0.00028	0.004	0.005	0.00028	U	SW-846:6010B_3005A
	Cadmium	0.0005	0.005	0.005	0.0005	U	SW-846:6010B_3005A
	Calcium	130	NE	1	0.06	B	SW-846:6010B_3005A
	Chromium	0.0006	0.1	0.01	0.0006	U	SW-846:6010B_3005A
	Cobalt	0.0006	NE	0.01	0.0006	U	SW-846:6010B_3005A
	Copper	0.001	1.3	0.01	0.001	U	SW-846:6010B_3005A
	Iron	0.032	NE	0.1	0.015	J	SW-846:6010B_3005A
	Lead	0.002	0.015	0.003	0.002	U	SW-846:6010B_3005A
	Magnesium	28	NE	1	0.06		SW-846:6010B_3005A
	Manganese	0.0075	NE	0.01	0.0003	J	SW-846:6010B_3005A
	Mercury	0.00006	0.002	0.0002	0.00006	U	SW-846:7470A
	Nickel	0.001	NE	0.02	0.001	U	SW-846:6010B_3005A
	Potassium	8.1	NE	1	0.2	B	SW-846:6010B_3005A
	Selenium	0.003	0.05	0.005	0.003	U	SW-846:6010B_3005A
	Silver	0.0024	NE	0.01	0.0024	U	SW-846:6010B_3005A
	Sodium	94	NE	1	0.09		SW-846:6010B_3005A
Thallium	0.004	0.002	0.01	0.004	U	SW-846:6010B_3005A	
Vanadium	0.0017	NE	0.01	0.0015	J	SW-846:6010B_3005A	
Zinc	0.0032	NE	0.02	0.0032	U	SW-846:6010B_3005A	

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 = Not Detected at or above the client requested detection limit.

Table-1 NMED DOE OB FFY 2014 Q-2 Chemical Waste Landfill Groundwater Quality Results: Total TAL Metals

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Laboratory Detection Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
CWL-MW9 10-Jan-14	Aluminum	0.067	NE	0.2	0.026	JB	SW-846:6010B_3005A
	Antimony	0.003	0.006	0.02	0.003	U	SW-846:6010B_3005A
	Arsenic	0.004	0.01	0.01	0.004	U	SW-846:6010B_3005A
	Barium	0.11	2	0.1	0.0012		SW-846:6010B_3005A
	Beryllium	0.00028	0.004	0.005	0.00028	U	SW-846:6010B_3005A
	Cadmium	0.0005	0.005	0.005	0.0005	U	SW-846:6010B_3005A
	Calcium	110	NE	1	0.06	B	SW-846:6010B_3005A
	Chromium	0.0006	0.1	0.01	0.0006	U	SW-846:6010B_3005A
	Cobalt	0.0006	NE	0.01	0.0006	U	SW-846:6010B_3005A
	Copper	0.001	1.3	0.01	0.001	U	SW-846:6010B_3005A
	Iron	0.044	NE	0.1	0.015	J	SW-846:6010B_3005A
	Lead	0.002	0.015	0.003	0.002	U	SW-846:6010B_3005A
	Magnesium	28	NE	1	0.06		SW-846:6010B_3005A
	Manganese	0.18	NE	0.01	0.0003		SW-846:6010B_3005A
	Mercury	0.00006	0.002	0.0002	0.00006	U	SW-846:7470A
	Nickel	0.001	NE	0.02	0.001	U	SW-846:6010B_3005A
	Potassium	9.5	NE	1	0.2	B	SW-846:6010B_3005A
	Selenium	0.003	0.05	0.005	0.003	U	SW-846:6010B_3005A
	Silver	0.0024	NE	0.01	0.0024	U	SW-846:6010B_3005A
	Sodium	77	NE	1	0.09		SW-846:6010B_3005A
Thallium	0.004	0.002	0.01	0.004	U	SW-846:6010B_3005A	
Vanadium	0.0015	NE	0.01	0.0015	U	SW-846:6010B_3005A	
Zinc	0.0073	NE	0.02	0.0032	J	SW-846:6010B_3005A	

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U = Not Detected at or above the client requested detection limit.

Table-1 NMED DOE OB FFY 2014 Q-2 Chemical Waste Landfill Groundwater Quality Results: Total TAL Metals

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Laboratory Detection Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
CWL-MW10 15-Jan-14	Aluminum	0.13	NE	0.2	0.026	JB	SW-846:6010B_3005A
	Antimony	0.003	0.006	0.02	0.003	U	SW-846:6010B_3005A
	Arsenic	0.004	0.01	0.01	0.004	U	SW-846:6010B_3005A
	Barium	0.39	2	0.1	0.0012		SW-846:6010B_3005A
	Beryllium	0.00028	0.004	0.005	0.00028	U	SW-846:6010B_3005A
	Cadmium	0.0005	0.005	0.005	0.0005	U	SW-846:6010B_3005A
	Calcium	100	NE	1	0.06	B	SW-846:6010B_3005A
	Chromium	0.00062	0.1	0.01	0.0006	J	SW-846:6010B_3005A
	Cobalt	0.0006	NE	0.01	0.0006	U	SW-846:6010B_3005A
	Copper	0.001	1.3	0.01	0.001	U	SW-846:6010B_3005A
	Iron	0.3	NE	0.1	0.015		SW-846:6010B_3005A
	Lead	0.002	0.015	0.003	0.002	U	SW-846:6010B_3005A
	Magnesium	27	NE	1	0.06		SW-846:6010B_3005A
	Manganese	0.72	NE	0.01	0.0003		SW-846:6010B_3005A
	Mercury	0.00006	0.002	0.0002	0.00006	U	SW-846:7470A
	Nickel	0.001	NE	0.02	0.001	U	SW-846:6010B_3005A
	Potassium	9	NE	1	0.2	B	SW-846:6010B_3005A
	Selenium	0.003	0.05	0.005	0.003	U	SW-846:6010B_3005A
	Silver	0.0024	NE	0.01	0.0024	U	SW-846:6010B_3005A
	Sodium	77	NE	1	0.09		SW-846:6010B_3005A
Thallium	0.004	0.002	0.01	0.004	U	SW-846:6010B_3005A	
Vanadium	0.0015	NE	0.01	0.0015	U	SW-846:6010B_3005A	
Zinc	0.066	NE	0.02	0.0032		SW-846:6010B_3005A	

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U = Not Detected at or above the client requested detection limit.

Table-1 NMED DOE OB FFY 2014 Q-2 Chemical Waste Landfill Groundwater Quality Results: Total TAL Metals

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Laboratory Detection Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
CWL-MW11 13-Jan-14	Aluminum	0.093	NE	0.2	0.026	JB	SW-846:6010B_3005A
	Antimony	0.003	0.006	0.02	0.003	U	SW-846:6010B_3005A
	Arsenic	0.004	0.01	0.01	0.004	U	SW-846:6010B_3005A
	Barium	0.08	2	0.1	0.0012	J	SW-846:6010B_3005A
	Beryllium	0.00038	0.004	0.005	0.00028	J	SW-846:6010B_3005A
	Cadmium	0.0005	0.005	0.005	0.0005	U	SW-846:6010B_3005A
	Calcium	120	NE	1	0.06	B	SW-846:6010B_3005A
	Chromium	0.0013	0.1	0.01	0.0006	J	SW-846:6010B_3005A
	Cobalt	0.0006	NE	0.01	0.0006	U	SW-846:6010B_3005A
	Copper	0.001	1.3	0.01	0.001	U	SW-846:6010B_3005A
	Iron	0.028	NE	0.1	0.015	J	SW-846:6010B_3005A
	Lead	0.002	0.015	0.003	0.002	U	SW-846:6010B_3005A
	Magnesium	30	NE	1	0.06		SW-846:6010B_3005A
	Manganese	0.014	NE	0.01	0.0003		SW-846:6010B_3005A
	Mercury	0.00006	0.002	0.0002	0.00006	U	SW-846:7470A
	Nickel	0.001	NE	0.02	0.001	U	SW-846:6010B_3005A
	Potassium	11	NE	1	0.2	B	SW-846:6010B_3005A
	Selenium	0.003	0.05	0.005	0.003	U	SW-846:6010B_3005A
	Silver	0.0024	NE	0.01	0.0024	U	SW-846:6010B_3005A
	Sodium	81	NE	1	0.09		SW-846:6010B_3005A
Thallium	0.004	0.002	0.01	0.004	U	SW-846:6010B_3005A	
Vanadium	0.0015	NE	0.01	0.0015	U	SW-846:6010B_3005A	
Zinc	0.0032	NE	0.02	0.0032	U	SW-846:6010B_3005A	

B = Compound was found in the blank and sample.

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Table-2 NMED DOE OB FFY 2014 Q-2 Chemical Waste Landfill Groundwater 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
CWL-MW10 15-Jan-14	Trichloroethene	2.2	5	1	0.3		SW-846:8260B_25

Table-3 NMED DOE OB FFY 2014 Q-2 Chemical Waste Landfill Groundwater Quality Results: Method Detection Limits for Volatile Organic Compounds

Analyte	MDL (µg/L)	Laboratory Detection Limit (µg/L)	Analytical Method
Acetone	3	10	SW-846:8260B_25
Benzene	0.3	1	SW-846:8260B_25
Bromobenzene	0.3	1	SW-846:8260B_25
Bromochloromethane	0.3	1	SW-846:8260B_25
Bromodichloromethane	0.3	1	SW-846:8260B_25
Bromoform	0.3	1	SW-846:8260B_25
Bromomethane	0.3	1	SW-846:8260B_25
Butanone[2-]	3	10	SW-846:8260B_25
Butylbenzene[n-]	0.3	1	SW-846:8260B_25
Butylbenzene[sec-]	0.3	1	SW-846:8260B_25
Butylbenzene[tert-]	0.3	1	SW-846:8260B_25
Carbon Disulfide	0.3	1	SW-846:8260B_25
Carbon Tetrachloride	0.3	1	SW-846:8260B_25
Chlorobenzene	0.3	1	SW-846:8260B_25
Chlorodibromomethane	0.3	1	SW-846:8260B_25
Chloroethane	0.3	1	SW-846:8260B_25
Chloroform	0.3	1	SW-846:8260B_25
Chlorohexane[1-]	0.3	1	SW-846:8260B_25
Chloromethane	0.3	1	SW-846:8260B_25
Chlorotoluene[2-]	0.3	1	SW-846:8260B_25
Chlorotoluene[4-]	0.3	1	SW-846:8260B_25
Dibromo-3-Chloropropane[1,2-]	0.6	2	SW-846:8260B_25
Dibromoethane[1,2-]	0.3	1	SW-846:8260B_25
Dibromomethane	0.3	1	SW-846:8260B_25
Dichlorobenzene[1,2-]	0.3	1	SW-846:8260B_25
Dichlorobenzene[1,3-]	0.3	1	SW-846:8260B_25
Dichlorobenzene[1,4-]	0.3	1	SW-846:8260B_25
Dichlorodifluoromethane	0.3	1	SW-846:8260B_25
Dichloroethane[1,1-]	0.3	1	SW-846:8260B_25
Dichloroethane[1,2-]	0.3	1	SW-846:8260B_25
Dichloroethene[1,1-]	0.3	1	SW-846:8260B_25
Dichloroethene[cis-1,2-]	0.3	1	SW-846:8260B_25
Dichloroethene[trans-1,2-]	0.3	1	SW-846:8260B_25
Dichloropropane[1,2-]	0.3	1	SW-846:8260B_25
Dichloropropane[1,3-]	0.3	1	SW-846:8260B_25
Dichloropropane[2,2-]	0.3	1	SW-846:8260B_25
Dichloropropene[1,1-]	0.3	1	SW-846:8260B_25
Dichloropropene[cis-1,3-]	0.3	1	SW-846:8260B_25
Dichloropropene[trans-1,3-]	0.3	1	SW-846:8260B_25
Ethylbenzene	0.3	1	SW-846:8260B_25
Hexachlorobutadiene	0.3	1	SW-846:8260B_25

Table-3 NMED DOE OB FFY 2014 Q-2 Chemical Waste Landfill Groundwater Quality Results: Method Detection Limits for Volatile Organic Compounds

Analyte	MDL (µg/L)	Laboratory Detection Limit (µg/L)	Analytical Method
Hexanone[2-]	3	10	SW-846:8260B_25
Iodomethane	0.3	1	SW-846:8260B_25
Isopropylbenzene	0.3	1	SW-846:8260B_25
Isopropyltoluene[4-]	0.3	1	SW-846:8260B_25
Methyl tert-Butyl Ether	0.3	1	SW-846:8260B_25
Methyl-2-pentanone[4-]	3	10	SW-846:8260B_25
Methylene Chloride	0.34	1	SW-846:8260B_25
Naphthalene	0.3	1	SW-846:8260B_25
Propylbenzene[1-]	0.3	1	SW-846:8260B_25
Styrene	0.3	1	SW-846:8260B_25
Tetrachloroethane[1,1,1,2-]	0.3	1	SW-846:8260B_25
Tetrachloroethane[1,1,2,2-]	0.3	1	SW-846:8260B_25
Tetrachloroethene	0.21	1	SW-846:8260B_25
Toluene	0.3	1	SW-846:8260B_25
Trichloro-1,2,2-trifluoroethane[1,1,2-]	0.3	1	SW-846:8260B_25
Trichlorobenzene[1,2,3-]	0.3	1	SW-846:8260B_25
Trichlorobenzene[1,2,4-]	0.3	1	SW-846:8260B_25
Trichloroethane[1,1,1-]	0.3	1	SW-846:8260B_25
Trichloroethane[1,1,2-]	0.3	1	SW-846:8260B_25
Trichloroethene	0.3	1	SW-846:8260B_25
Trichlorofluoromethane	0.3	1	SW-846:8260B_25
Trichloropropane[1,2,3-]	0.3	1	SW-846:8260B_25
Trimethylbenzene[1,2,4-]	0.3	1	SW-846:8260B_25
Trimethylbenzene[1,3,5-]	0.3	1	SW-846:8260B_25
Vinyl acetate	0.6	2	SW-846:8260B_25
Vinyl Chloride	0.3	1	SW-846:8260B_25
Xylene[1,2-]	0.3	1	SW-846:8260B_25
Xylene[1,3-]+Xylene[1,4-]	0.3	1	SW-846:8260B_25