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May 26, 2016

Karen Agogino, P.E.  
Point of Contact  
U.S. Department of Energy  
Sandia Site Office  
P.O Box 5400 MS 0184  
Albuquerque, New Mexico 87185-5400

**Subject: Groundwater Monitoring at Sandia National Laboratories/New Mexico  
Chemical Waste Landfill, Conducted by NMED/DOE OB for FFY 2009 Q-3**

Ms. Agogino:

This letter transmits the subject report as final.

The enclosed monitoring results were provided to DOE in draft form on June 16, 2009. The final monitoring results are provided to DOE, the State of New Mexico and federal agencies, the NMED website and interested members of the public. If you have any questions, or if you would like copies of the complete data set, please contact me at (505)383-2070, by email at [chris.armijo1@state.nm.us](mailto:chris.armijo1@state.nm.us), or by mail to the address in the above letterhead.

Sincerely,

Chris Armijo  
Geoscientist, Sandia Oversight Section  
DOE Oversight Bureau

Enclosure: (1) Groundwater Monitoring at Sandia National Laboratories/New Mexico  
Chemical Waste Landfill, Conducted by NMED/DOE OB for FFY 2009 Q-3  
(2) Table-1 Total TAL Metals Results  
(3) Table-2 Detected Volatile Organic Compounds

Distribution: David Rast, DOE/SSO  
Tim Jackson, SNL/NM Groundwater  
Michael Skelly, SNL/NM Groundwater  
Susan Lucas Kamat, Bureau Chief, DOE OB

File: SGE42.Groundwater Monitoring. CWL. FFY2009 Q-3



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### **Groundwater Monitoring at Sandia National Laboratories/New Mexico Chemical Waste Landfill Conducted by NMED/DOE OB for FFY 2009 Q-3**

The New Mexico Environment Department (NMED) DOE Oversight Bureau (Bureau) has compiled and assessed groundwater data collected in April 2009. The Bureau collected groundwater samples from Chemical Waste Landfill (CWL) monitoring wells CWL-MW2BL, CWL-MW4 and CWL-MW5U. Split samples were collected using standard Sandia National Laboratories/New Mexico (SNL/NM) sampling procedures and equipment. The samples were submitted for analysis to an independent analytical laboratory for Target Analyte List (TAL) metals plus uranium and volatile organic compounds (VOCs). No concentrations were detected above applicable drinking water standards.

#### Data Assessment

Data results are compared to applicable Maximum Allowable Concentrations (MACs) from the New Mexico Water Quality Control Commission (WQCC) (20.6.2.3103A NMAC Human Health Standards) and Maximum Contaminant Levels (MCLs) from the EPA National Primary Drinking Water Regulations (40 CFR 141).

#### Results

Analytical results for TAL metals are listed in Table-1. Samples were analyzed for total metals plus uranium at each of the three monitoring wells. Laboratory results did not detect any metal concentrations above established regulatory standards.

Volatile organic compounds (VOCs) detected above the method detection limit (MDL) are listed in Table-2. Chloroform was detected above the MDL at CWL-MW2BL at a concentration of 0.49 µg/L, but it was below the NMED MAC of 100 µg/L. The result was flagged with a "J" indicating that the concentration was an estimated value above the MDL but less than the reporting limit. Toluene was detected above the MDL at CWL-MW5U, but was detected below the regulatory standards and also flagged with a "J". Trichloroethylene (TCE) was also detected in the sample collected from CWL-MW5U at a concentration of 2.1 µg/L, but it was below the MCL of 5 µg/L.

## Conclusion

No parameters were detected above established regulatory standards. Analytical data from SNL/NM during these sampling events have not been received at this time, so there is no direct comparison of results. However, historical NMED and Sandia groundwater data compare well to recent data collected during 3<sup>rd</sup> quarter FFY 2009.

## Response

Questions or comments should be addressed to Chris Armijo by phone at (505)383-2070, by e-mail at [chris.armijo1@state.nm.us](mailto:chris.armijo1@state.nm.us), or to the address in the letterhead.

Enclosure: (1) Table-1 Total TAL Metals Results  
(2) Table-2 Detected Volatile Organic Compounds

Distribution: David Rast, DOE/SSO  
Tim Jackson, SNL/NM Groundwater  
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File: SGE42.Groundwater Monitoring. CWL. FFY2009 Q-3

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**Table 1- NMED DOE Oversight Bureau FFY 2009 Q-3 Chemical Waste Landfill Groundwater Quality Results: Total TAL Metals**

Monitoring Well/ Sample Date	Analyte	Result	EPA MCL	NMED MAC	MDL	Quantitation Limit	Units	Lab Qualifier	Analytical Method
CWL-MW2BL 27-Apr-09	Aluminum	0.032	NE	NE	0.0082	0.1	mg/L	B	SW-846:6010
	Antimony	0.000024	0.006	NE	0.000079	0.0003	mg/L	U	SW-846:6020
	Arsenic	0.00052	0.01	0.1	0.00016	0.002	mg/L	B	SW-846:6020
	Barium	0.059	2	1	0.00014	0.002	mg/L		SW-846:6010
	Beryllium	0.00016	0.004	NE	0.0001	0.001	mg/L	B	SW-846:6010
	Cadmium	0.00005	0.005	0.01	0.00003	0.0003	mg/L	B	SW-846:6020
	Calcium	130	NE	NE	0.014	0.5	mg/L		SW-846:6010
	Chromium	0.00055	0.1	0.05	0.00073	0.005	mg/L	U	SW-846:6010
	Cobalt	0.00065	NE	NE	0.00068	0.002	mg/L	U	SW-846:6010
	Copper	0.0014	1.3	NE	0.00055	0.002	mg/L	U	SW-846:6010
	Iron	0.0013	NE	NE	0.0036	0.05	mg/L	U	SW-846:6010
	Lead	0.00021	0.015	0.05	0.000024	0.0005	mg/L	B	SW-846:6020
	Magnesium	36	NE	NE	0.0052	0.5	mg/L		SW-846:6010
	Manganese	0.00012	NE	NE	0.00013	0.002	mg/L	U	SW-846:6010
	Mercury	0.000008	0.002	0.002	0.000008	0.0001	mg/L	U	SW-846:7470
	Nickel	0.00095	NE	NE	0.0009	0.005	mg/L	U	SW-846:6010
	Potassium	7.8	NE	NE	0.03	0.5	mg/L		SW-846:6010
	Selenium	0.0014	0.05	0.05	0.00018	0.001	mg/L		SW-846:6020
	Silver	0.000027	NE	0.05	0.0000085	0.0001	mg/L	B	SW-846:6020
	Sodium	84	NE	NE	0.006	0.5	mg/L		SW-846:6010
Thallium	0.000032	0.002	NE	0.000018	0.0002	mg/L	U	SW-846:6020	
Uranium	0.014	0.03	0.03	0.0000041	0.0001	mg/L		SW-846:6020	
Vanadium	0.0031	NE	NE	0.0006	0.005	mg/L	B	SW-846:6010	
Zinc	0.001	NE	NE	0.0039	0.005	mg/L	U	SW-846:6010	

Notes:

- B = Result is an estimated value above MDL/IDL but less than reporting limit.
- E = Reported value is estimated due to interferences
- NE = Not established
- U = Analyte was analyzed for but was not detected

**Table 1- NMED DOE Oversight Bureau FFY 2009 Q-3 Chemical Waste Landfill Groundwater Quality Results: Total TAL Metals**

Monitoring Well/ Sample Date	Analyte	Result	EPA MCL	NMED MAC	MDL	Quantitation Limit	Units	Lab Qualifier	Analytical Method
CWL-MW4 24-Apr-09	Aluminum	0.031	NE	NE	0.0082	0.1	mg/L	B	SW-846:6010
	Antimony	0.000024	0.006	NE	0.000079	0.0003	mg/L	U	SW-846:6020
	Arsenic	0.00036	0.01	0.1	0.00016	0.002	mg/L	B	SW-846:6020
	Barium	0.061	2	1	0.00014	0.002	mg/L		SW-846:6010
	Beryllium	0.00017	0.004	NE	0.0001	0.001	mg/L	B	SW-846:6010
	Cadmium	0.000081	0.005	0.01	0.00003	0.0003	mg/L	B	SW-846:6020
	Calcium	110	NE	NE	0.014	0.5	mg/L		SW-846:6010
	Chromium	0.017	0.1	0.05	0.00073	0.005	mg/L		SW-846:6010
	Cobalt	0.0015	NE	NE	0.00068	0.002	mg/L	B	SW-846:6010
	Copper	0.0014	1.3	NE	0.00055	0.002	mg/L	U	SW-846:6010
	Iron	0.57	NE	NE	0.0036	0.05	mg/L		SW-846:6010
	Lead	0.00012	0.015	0.05	0.000024	0.0005	mg/L	B	SW-846:6020
	Magnesium	28	NE	NE	0.0052	0.5	mg/L		SW-846:6010
	Manganese	0.023	NE	NE	0.00013	0.002	mg/L		SW-846:6010
	Mercury	0.000008	0.002	0.002	0.000008	0.0001	mg/L	U	SW-846:7470
	Nickel	0.2	NE	NE	0.0009	0.005	mg/L		SW-846:6010
	Potassium	10	NE	NE	0.03	0.5	mg/L	E	SW-846:6010
	Selenium	0.0013	0.05	0.05	0.00018	0.001	mg/L		SW-846:6020
	Silver	0.000029	NE	0.05	0.0000085	0.0001	mg/L	B	SW-846:6020
	Sodium	71	NE	NE	0.006	0.5	mg/L	E	SW-846:6010
Thallium	0.000036	0.002	NE	0.000018	0.0002	mg/L	B	SW-846:6020	
Uranium	0.012	0.03	0.03	0.0000041	0.0001	mg/L		SW-846:6020	
Vanadium	0.0016	NE	NE	0.0006	0.005	mg/L	B	SW-846:6010	
Zinc	0.001	NE	NE	0.0039	0.005	mg/L	U	SW-846:6010	

Notes:

- B = Result is an estimated value above MDL/IDL but less than reporting limit.
- E = Reported value is estimated due to interferences
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**Table 1- NMED DOE Oversight Bureau FFY 2009 Q-3 Chemical Waste Landfill Groundwater Quality Results: Total TAL Metals**

Monitoring Well/ Sample Date	Analyte	Result	EPA MCL	NMED MAC	MDL	Quantitation Limit	Units	Lab Qualifier	Analytical Method
CWL-MW4 24-Apr-09 DUP	Aluminum	0.035	NE	NE	0.0082	0.1	mg/L	B	SW-846:6010
	Antimony	0.00011	0.006	NE	0.000079	0.0003	mg/L	B	SW-846:6020
	Arsenic	0.0004	0.01	0.1	0.00016	0.002	mg/L	B	SW-846:6020
	Barium	0.061	2	1	0.00014	0.002	mg/L		SW-846:6010
	Beryllium	0.00015	0.004	NE	0.0001	0.001	mg/L	U	SW-846:6010
	Cadmium	0.000093	0.005	0.01	0.00003	0.0003	mg/L	B	SW-846:6020
	Calcium	110	NE	NE	0.014	0.5	mg/L		SW-846:6010
	Chromium	0.015	0.1	0.05	0.00073	0.005	mg/L		SW-846:6010
	Cobalt	0.002	NE	NE	0.00068	0.002	mg/L	B	SW-846:6010
	Copper	0.0014	1.3	NE	0.00055	0.002	mg/L	U	SW-846:6010
	Iron	0.53	NE	NE	0.0036	0.05	mg/L		SW-846:6010
	Lead	0.000055	0.015	0.05	0.000024	0.0005	mg/L	B	SW-846:6020
	Magnesium	28	NE	NE	0.0052	0.5	mg/L		SW-846:6010
	Manganese	0.024	NE	NE	0.00013	0.002	mg/L		SW-846:6010
	Mercury	0.000008	0.002	0.002	0.000008	0.0001	mg/L	U	SW-846:7470
	Nickel	0.21	NE	NE	0.0009	0.005	mg/L		SW-846:6010
	Potassium	10	NE	NE	0.03	0.5	mg/L		SW-846:6010
	Selenium	0.0013	0.05	0.05	0.00018	0.001	mg/L		SW-846:6020
	Silver	0.00003	NE	0.05	0.0000085	0.0001	mg/L	B	SW-846:6020
	Sodium	71	NE	NE	0.006	0.5	mg/L		SW-846:6010
Thallium	0.000036	0.002	NE	0.000018	0.0002	mg/L	B	SW-846:6020	
Uranium	0.012	0.03	0.03	0.0000041	0.0001	mg/L		SW-846:6020	
Vanadium	0.0015	NE	NE	0.0006	0.005	mg/L	B	SW-846:6010	
Zinc	0.0032	NE	NE	0.0039	0.005	mg/L	B	SW-846:6010	

Notes:

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**Table 1- NMED DOE Oversight Bureau FFY 2009 Q-3 Chemical Waste Landfill Groundwater Quality Results: Total TAL Metals**

Monitoring Well/ Sample Date	Analyte	Result	EPA MCL	NMED MAC	MDL	Quantitation Limit	Units	Lab Qualifier	Analytical Method
CWL-MW5U 21-Apr-09	Aluminum	0.032	NE	NE	0.0082	0.1	mg/L	B	SW-846:6010
	Antimony	0.00016	0.006	NE	0.000079	0.0003	mg/L	B	SW-846:6020
	Arsenic	0.0018	0.01	0.1	0.00016	0.002	mg/L	B	SW-846:6020
	Barium	0.07	2	1	0.00014	0.002	mg/L		SW-846:6010
	Beryllium	0.00015	0.004	NE	0.0001	0.001	mg/L	U	SW-846:6010
	Cadmium	0.000051	0.005	0.01	0.00003	0.0003	mg/L	B	SW-846:6020
	Calcium	97	NE	NE	0.014	0.5	mg/L		SW-846:6010
	Chromium	0.00055	0.1	0.05	0.00073	0.005	mg/L	U	SW-846:6010
	Cobalt	0.00065	NE	NE	0.00068	0.002	mg/L	U	SW-846:6010
	Copper	0.0014	1.3	NE	0.00055	0.002	mg/L	U	SW-846:6010
	Iron	0.0013	NE	NE	0.0036	0.05	mg/L	U	SW-846:6010
	Lead	0.00043	0.015	0.05	0.000024	0.0005	mg/L	B	SW-846:6020
	Magnesium	25	NE	NE	0.0052	0.5	mg/L		SW-846:6010
	Manganese	0.0055	NE	NE	0.00013	0.002	mg/L		SW-846:6010
	Mercury	0.000008	0.002	0.002	0.000008	0.0001	mg/L	U	SW-846:7470
	Nickel	0.00095	NE	NE	0.0009	0.005	mg/L	U	SW-846:6010
	Potassium	10	NE	NE	0.03	0.5	mg/L		SW-846:6010
	Selenium	0.0013	0.05	0.05	0.00018	0.001	mg/L		SW-846:6020
	Silver	0.000045	NE	0.05	0.0000085	0.0001	mg/L	B	SW-846:6020
	Sodium	76	NE	NE	0.006	0.5	mg/L		SW-846:6010
Thallium	0.000051	0.002	NE	0.000018	0.0002	mg/L	B	SW-846:6020	
Uranium	0.0054	0.03	0.03	0.0000041	0.0001	mg/L		SW-846:6020	
Vanadium	0.0019	NE	NE	0.0006	0.005	mg/L	B	SW-846:6010	
Zinc	0.025	NE	NE	0.0039	0.005	mg/L		SW-846:6010	

Notes:

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**Table 2- NMED DOE Oversight Bureau FFY 2009 Q-3 Chemical Waste Landfill Groundwater Quality Results: Detected Volatile Organic Compounds**

Monitoring Well/ Sample Date	Analyte	Result	EPA MCL	NMED MAC	MDL	Quantitation Limit	Units	Lab Qualifier	Analytical Method
CWL-MW2BL 27-Apr-09	Chloroform	0.49	NE	100	0.17	1	µg/L	J	SW8260_25
CWL-MW5U 21-Apr-09	Toluene	0.74	1000	750	0.17	1	µg/L	J	SW8260_25
	Trichloroethylene	2.1	5	100	0.17	1	µg/L		SW8260_25

Notes:

NE = Not established

J = Result is an estimated value