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July 28, 2015

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

Subject: **Soil Vapor Monitoring at Sandia National Laboratories/New Mexico Mixed Waste Landfill Conducted by New Mexico Environment Department DOE Oversight Bureau for FFY 2015 Q-3**

Ms. Agogino:

This letter transmits the subject report as final. The report shows groundwater data results at the Mixed Waste Landfill collected by the DOE Oversight Bureau on April 14, 2015.

The enclosed monitoring results were provided to DOE in draft form on June 10, 2015, for 30-day comment and review. 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 by phone at (505) 845-5933, by email at susan.lucaskamat@state.nm.us, or by mail to the address in the above letterhead.

Sincerely,

Susan A. Lucas Kamat
Staff Manager
Sandia Oversight Section

Enclosure: (1) Groundwater Monitoring at Sandia National Laboratories/New Mexico Mixed Waste Landfill Conducted by NMED/DOE OB for FFY 2015 Q-1
(2) Table 1 Volatile Organic Compound Results MWL-SV03, 300ft
(3) Table 2 Volatile Organic Compound Results MWL-SV03, 400ft
(4) Table 3 Volatile Organic Compound Results MWL-SV04, 300ft
(5) Table 4 Volatile Organic Compound Results MWL-SV04, 400ft
(6) Table 5 Volatile Organic Compound Results MWL-SV05, 300ft
(7) Table 6 Volatile Organic Compound Results MWL-SV05, 400ft

cc: David Rast, DOE/SFO
Michael Skelly, SNL/NM Groundwater
Tim Jackson, SNL/NM Groundwater
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File: SGE42. Soil Vapor. MWL. FFY 2015 Q-3

DOE Oversight Bureau, New Mexico Environment Department

Soil Vapor Monitoring at Sandia National Laboratories/New Mexico Mixed Waste Landfill

Conducted by the New Mexico Environment Department DOE Oversight Bureau for FFY 2015 Q-3

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Final Report

7/28/2015

The purpose of this communication is to transmit soil-vapor data collected by NMED DOE Oversight Bureau from Sandia National Laboratories/New Mexico Mixed Waste Landfill soil-vapor monitoring wells MWL-SV03, MWL-SV04 and MWL-SV05 during third quarter FFY 2015.

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

Introduction

The New Mexico Environment Department (NMED) DOE Oversight Bureau has compiled and assessed soil-vapor data collected on April 14, 2015. The Bureau collected soil-vapor samples from Solid Waste Management Unit (SWMU) 76 at the Mixed Waste Landfill (MWL) soil-vapor monitoring wells MWL-SV03, MWL-SV04, and MWL-SV05. (See Figure 1.) Samples were collected using standard Sandia National Laborites/New Mexico (SNL/NM or Sandia) sampling procedures and equipment. Samples were collected in 6-liter SUMMA canisters at various depths and were shipped to an independent analytical laboratory for volatile organic compounds (VOCs) analysis. Samples were collected using a specifically designed manifold sampling system that allowed simultaneous collection of environmental and duplicate samples. Samples that were collected during the September 2014 event were collected consecutively, rather than using the manifold sampling system. All samples from April 2015 were below established trigger levels for VOCs in soil vapor, as outlined in the SNL/NM Long-Term Monitoring and Maintenance Plan (LTMMP) for the Mixed Waste Landfill, March 2012.

Soil-vapor monitoring wells MWL-SV03, MWL-SV04, and MWL-SV05 are constructed of Flexible Liner Underground Technologies (FLUTe™). Each soil-vapor well was constructed with multi-ports at sampling depths of approximately 50ft, 100ft, 200ft 300ft, and 400ft below ground surface (bgs). Bureau staff collected split samples at depths of 300ft and 400ft from each well. Bureau staff also collected a field blank during sampling at MWL-SV04 and a duplicate sample from MWL soil-vapor monitoring well MWL-SV05 400ft bgs. Note that the duplicate sample from MWL-SV05 400ft was not collected using the manifold system. It was collected consecutively after the original split sample was collected with SNL/NM.

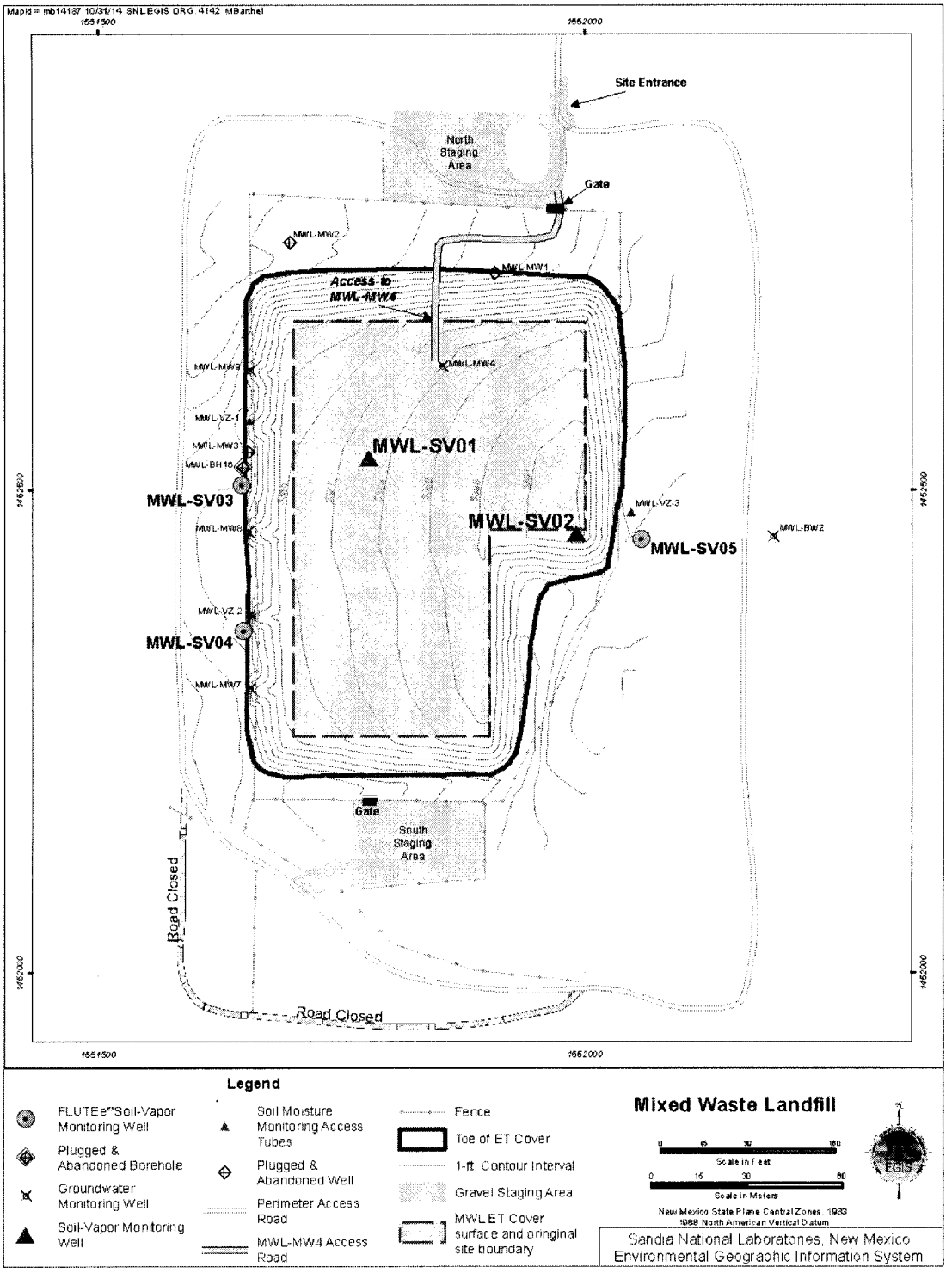

Figure 1.Soil-Vapor Monitoring Well Locations at the Mixed Waste Landfill

Data Assessment

Data results are compared to VOC trigger levels listed in the SNL/NM LTMMP for the MWL, March 2012. Trigger levels for tetrachloroethylene (PCE), trichloroethylene (TCE), and total VOCs in soil vapor at the MWL are 20 parts per million by volume (ppmv) for PCE and TCE, and 25 ppmv for total VOCs. These trigger levels are equivalent to 20,000 parts per billion by volume (ppbv) and 25,000 ppbv, respectively. All trigger levels apply only to samples collected from the deepest sampling port (i.e., 400 feet bgs) in each of the three FLUTe™ or equivalent soil-vapor monitoring wells.

The Oversight Bureau collected samples from the following soil vapor monitoring wells and depths measured as feet below ground surface:

Soil Vapor Monitoring Well	First Sampling Depth (ft bgs)	Second Sampling Depth (ft bgs)
MWL-SV03	300	400
MWL-SV04	300	400
MWL-SV05	300	400
MWL-SV05 Dup	NA	400

Results

Analytical results for VOCs are presented in Tables 1 through 6. All samples were analyzed for VOCs using analytical method TO-15. Sample results are presented in units of part per billion per volume (ppbv). Tetrachlorethene (PCE) ranged from 35 ppbv at MWL-SV05 400ft (duplicate sample) to 330 ppbv at MWL-SV03 400ft. Trichloroethene (TCE) ranged from 34 ppbv at monitoring well MWL-SV05 400ft (duplicate sample) to 210 ppbv at MWL-SV03 400ft. Total VOCs ranged from 194.5 ppbv at MWL-SV05-400ft (duplicate sample) to 685.3 ppbv at MWL-SV03 400ft.

Below are the sample results for TCE and PCE only as well as total VOCs in units of part per billion per volume directly measured by the analytical laboratory.

Soil Vapor Monitoring Well	Tetrachlorethene (PCE) (ppbv)	Trichloroethene (TCE) (ppbv)	Total VOCs (ppbv)
MWL-SV03-300ft	270	150	554.9
MWL-SV03-400ft	330	210	685.3
MWL-SV04-300ft	86	58	237.9
MWL-SV04-400ft	93	58	228.9
MWL-SV05-300ft	76	72	289.88
MWL-SV05-400ft	74	62	235.84
MWL-SV05-400ft (Dup)	35	34	194.5
Trigger Level[a]	20,000	20,000	25,000

Note: [a]= The trigger levels only apply to samples collected at the 400ft depth (SNL/NM March 2012).

Conclusions

The Oversight Bureau collected soil-vapor samples from monitoring wells MWL-SV03, MWL-SV04, and MWL-SV05. Samples were collected at depths of 300ft and 400 ft bgs at each well. A duplicate sample was collected at MWL-SV05 400ft bgs. The soil-vapor samples collected by DOE-OB during April 2015 were measured at levels well below the trigger levels listed in the SNL/NM Long-Term Monitoring and Maintenance Plan for the Mixed Waste Landfill.

Data results provided by the analytical laboratories are shown below for the two (2) sampling events where the DOE Oversight Bureau collected samples from the MWL since the installation of the FLUTe™ wells. The September 2014 samples were analyzed by ALS - Salt Lake City, Utah, and the April 2015 samples were sent to eurofins Air Toxics - Folsom, California. During both events the soil-vapor concentrations measured by the laboratories were well below the trigger levels. Although, different labs were used, the data results are comparable and do not vary significantly. The biggest difference is in the total VOCs measured at monitoring well MWL-SV05 400ft bgs. This was a result of the toluene concentration being much higher during the September 2014 sampling event.

Soil Vapor Monitoring Well	Tetrachlorethene (PCE) (ppbv)		Trichloroethene (TCE) (ppbv)		Total VOCs (ppbv)	
	Sep 2014	Apr 2015	Sep 2014	Apr 2015	Sep 2014	Apr 2015
MWL-SV03-300ft	200	270	120	150	460.6	554.9
MWL-SV03-400ft	350	330	200	210	825.4	685.3
MWL-SV04-300ft	61	86	33	58	158.7	237.9
MWL-SV04-400ft	67	93	40	58	147.5	228.9
MWL-SV05-300ft	73	76	70	72	282.8	289.88
MWL-SV05-400ft	71	74	56	62	802	235.84
Trigger Level	20,000		20,000		25,000	

References

Sandia National Laboratories, New Mexico Environmental Restoration Operations. Long-Term Monitoring and Maintenance Plan for the Mixed Waste Landfill, March 2012.

Sandia National Laboratories, New Mexico Environmental Restoration Operations. Installation of Three FLUTe™ Soil-Vapor Monitoring Wells (MWL-SV03, MWL-SV04, and MWL-SV05) at the Mixed Waste Landfill, September 2014.

Table-1 NMED DOE OB FFY 2015 Q-3 Mixed Waste Landfill Soil Vapor Quality Results: Volatile Organic Compounds by Method TO-15, April, 14 2015

MWL-SV03 sampled at a depth of 300 feet below ground surface

Trigger levels are 20 ppmv for PCE and TCE and 25 ppmv for total VOCs at samples collected from 400ft ports.

Monitoring Well/ Sample Depth	Analyte	Result (ppbv)	Reporting Limit (ppbv)	MDL (ppbv)	Laboratory Qualifier
MWL-SV03 300 ft	1,1,1-TRICHLOROETHANE	0.11	0.81	0.11	U
	1,1,2,2-TETRACHLOROETHANE	0.078	0.81	0.078	U
	1,1,2-TRICHLOROETHANE	0.22	0.81	0.22	U
	1,1-DICHLOROETHANE	1.6	0.81	0.18	
	1,1-DICHLOROETHENE	14	0.81	0.19	
	1,2,4-TRICHLOROBENZENE	0.4	4.1	0.4	U
	1,2,4-TRIMETHYLBENZENE	0.21	0.81	0.21	U
	1,2-DIBROMOETHANE (EDB)	0.15	0.81	0.15	U
	1,2-DICHLOROBENZENE	0.16	0.81	0.16	U
	1,2-DICHLOROETHANE	0.13	0.81	0.13	U
	1,2-DICHLOROPROPANE	0.23	0.81	0.23	U
	1,3,5-TRIMETHYLBENZENE	0.14	0.81	0.14	U
	1,3-BUTADIENE	0.23	0.81	0.23	U
	1,3-DICHLOROBENZENE	0.21	0.81	0.21	U
	1,4-DICHLOROBENZENE	0.36	0.81	0.36	U
	1,4-DIOXANE	0.27	0.81	0.27	U
	2,2,4-TRIMETHYLPENTANE	0.12	4.1	0.12	U
	2-BUTANONE (METHYL ETHYL KETONE)	0.9	4.1	0.9	U
	2-HEXANONE	0.77	4.1	0.77	U
	2-PROPANOL	0.68	4.1	0.68	U
	3-CHLOROPROPENE	0.56	4.1	0.56	U
	4-ETHYLTOLUENE	0.18	0.81	0.18	U
	4-METHYL-2-PENTANONE	0.21	0.81	0.21	U
	ACETONE	0.77	4.1	0.77	U
	ALPHA-CHLOROTOLUENE	0.52	4.1	0.52	U
	BENZENE	0.21	0.81	0.21	U
	BROMODICHLOROMETHANE	0.19	0.81	0.19	U
	BROMOFORM	0.15	0.81	0.15	U
	BROMOMETHANE	0.64	4.1	0.64	U
	CARBON DISULFIDE	0.44	4.1	0.44	U
	CARBON TETRACHLORIDE	0.15	0.81	0.15	U
	CHLOROBENZENE	0.14	0.81	0.14	U
	CHLOROETHANE	0.38	4.1	0.38	U
	CHLOROFORM	0.2	0.81	0.2	U

U = Compound analyzed for but not detected above the Method Detection Limit.

Table-1 NMED DOE OB FFY 2015 Q-3 Mixed Waste Landfill Soil Vapor Quality Results: Volatile Organic Compounds by Method TO-15, April, 14 2015

MWL-SV03 sampled at a depth of 300 feet below ground surface

Trigger levels are 20 ppmv for PCE and TCE and 25 ppmv for total VOCs at samples collected from 400ft ports.

Monitoring Well/ Sample Depth	Analyte	Result (ppbv)	Reporting Limit (ppbv)	MDL (ppbv)	Laboratory Qualifier
MWL-SV03 300 ft	CHLOROMETHANE	0.41	4.1	0.41	U
	CIS-1,2-DICHLOROETHENE	1.4	0.81	0.18	
	CIS-1,3-DICHLOROPROPENE	0.16	0.81	0.16	U
	CUMENE	0.11	0.81	0.11	U
	CYCLOHEXANE	0.24	0.81	0.24	U
	DIBROMOCHLOROMETHANE	0.18	0.81	0.18	U
	ETHANOL	1.1	4.1	1.1	U
	ETHYL BENZENE	0.29	0.81	0.29	U
	FREON 11	9.5	0.81	0.098	
	FREON 113	78	0.81	0.32	
	FREON 114	0.12	0.81	0.12	U
	FREON 12	28	0.81	0.21	
	HEPTANE	0.26	0.81	0.26	U
	HEXACHLOROBUTADIENE	0.22	4.1	0.22	U
	HEXANE	0.22	0.81	0.22	U
	M,P-XYLENE	0.2	0.81	0.2	U
	METHYL TERT-BUTYL ETHER	0.2	0.81	0.2	U
	METHYLENE CHLORIDE	0.17	1.6	0.17	U
	O-XYLENE	0.16	0.81	0.16	U
	PROPYLBENZENE	0.17	0.81	0.17	U
	STYRENE	0.2	0.81	0.2	U
	TETRACHLOROETHENE	270	0.81	0.15	
	TETRAHYDROFURAN	0.95	4.1	0.95	U
	TOLUENE	2.4	0.81	0.099	
	TRANS-1,2-DICHLOROETHENE	0.27	0.81	0.27	U
	TRANS-1,3-DICHLOROPROPENE	0.3	0.81	0.3	U
	TRICHLOROETHENE	150	0.81	0.24	
	VINYL CHLORIDE	0.17	0.81	0.17	U

U = Compound analyzed for but not detected above the Method Detection Limit.

Table-2 NMED DOE OB FFY 2015 Q-3 Mixed Waste Landfill Soil Vapor Quality Results: Volatile Organic Compounds by Method TO-15, April, 14 2015

MWL-SV03 sampled at a depth of 400 feet below ground surface

Trigger levels are 20 ppmv for PCE and TCE and 25 ppmv for total VOCs at samples collected from 400ft ports.

Monitoring Well/ Sample Depth	Analyte	Result (ppbv)	Reporting Limit (ppbv)	MDL (ppbv)	Laboratory Qualifier
MWL-SV03 400 ft	1,1,1-TRICHLOROETHANE	0.14	1	0.14	U
	1,1,2,2-TETRACHLOROETHANE	0.099	1	0.099	U
	1,1,2-TRICHLOROETHANE	0.27	1	0.27	U
	1,1-DICHLOROETHANE	1.7	1	0.23	
	1,1-DICHLOROETHENE	18	1	0.24	
	1,2,4-TRICHLOROBENZENE	0.5	5.2	0.5	U
	1,2,4-TRIMETHYLBENZENE	0.27	1	0.27	U
	1,2-DIBROMOETHANE (EDB)	0.19	1	0.19	U
	1,2-DICHLOROBENZENE	0.2	1	0.2	U
	1,2-DICHLOROETHANE	0.16	1	0.16	U
	1,2-DICHLOROPROPANE	0.29	1	0.29	U
	1,3,5-TRIMETHYLBENZENE	0.18	1	0.18	U
	1,3-BUTADIENE	0.29	1	0.29	U
	1,3-DICHLOROBENZENE	0.27	1	0.27	U
	1,4-DICHLOROBENZENE	0.46	1	0.46	U
	1,4-DIOXANE	0.35	1	0.35	U
	2,2,4-TRIMETHYLPENTANE	0.15	5.2	0.15	U
	2-BUTANONE (METHYL ETHYL KETONE)	1.1	5.2	1.1	U
	2-HEXANONE	0.98	5.2	0.98	U
	2-PROPANOL	0.86	5.2	0.86	U
	3-CHLOROPROPENE	0.71	5.2	0.71	U
	4-ETHYLTOLUENE	0.23	1	0.23	U
	4-METHYL-2-PENTANONE	0.26	1	0.26	U
	ACETONE	0.97	5.2	0.97	U
	ALPHA-CHLOROTOLUENE	0.66	5.2	0.66	U
	BENZENE	0.26	1	0.26	U
	BROMODICHLOROMETHANE	0.24	1	0.24	U
	BROMOFORM	0.19	1	0.19	U
	BROMOMETHANE	0.81	5.2	0.81	U
	CARBON DISULFIDE	0.56	5.2	0.56	U
	CARBON TETRACHLORIDE	0.19	1	0.19	U
	CHLOROBENZENE	0.18	1	0.18	U
	CHLOROETHANE	0.48	5.2	0.48	U
	CHLOROFORM	0.26	1	0.26	U

U = Compound analyzed for but not detected above the Method Detection Limit.

Table-2 NMED DOE OB FFY 2015 Q-3 Mixed Waste Landfill Soil Vapor Quality Results: Volatile Organic Compounds by Method TO-15, April, 14 2015

MWL-SV03 sampled at a depth of 400 feet below ground surface

Trigger levels are 20 ppmv for PCE and TCE and 25 ppmv for total VOCs at samples collected from 400ft ports.

Monitoring Well/ Sample Depth	Analyte	Result (ppbv)	Reporting Limit (ppbv)	MDL (ppbv)	Laboratory Qualifier
MWL-SV03 400 ft	CHLOROMETHANE	0.52	5.2	0.52	U
	CIS-1,2-DICHLOROETHENE	1.3	1	0.23	
	CIS-1,3-DICHLOROPROPENE	0.2	1	0.2	U
	CUMENE	0.14	1	0.14	U
	CYCLOHEXANE	0.3	1	0.3	U
	DIBROMOCHLOROMETHANE	0.23	1	0.23	U
	ETHANOL	1.4	5.2	1.4	U
	ETHYL BENZENE	0.37	1	0.37	U
	FREON 11	11	1	0.12	
	FREON 113	82	1	0.41	
	FREON 114	0.15	1	0.15	U
	FREON 12	27	1	0.27	
	HEPTANE	0.32	1	0.32	U
	HEXACHLOROBUTADIENE	0.28	5.2	0.28	U
	HEXANE	0.27	1	0.27	U
	M,P-XYLENE	0.25	1	0.25	U
	METHYL TERT-BUTYL ETHER	0.26	1	0.26	U
	METHYLENE CHLORIDE	0.21	2.1	0.21	U
	O-XYLENE	0.2	1	0.2	U
	PROPYLBENZENE	0.22	1	0.22	U
	STYRENE	0.26	1	0.26	U
	TETRACHLOROETHENE	330	1	0.19	
	TETRAHYDROFURAN	1.2	5.2	1.2	U
	TOLUENE	4.3	1	0.12	
	TRANS-1,2-DICHLOROETHENE	0.34	1	0.34	U
	TRANS-1,3-DICHLOROPROPENE	0.38	1	0.38	U
	TRICHLOROETHENE	210	1	0.3	
	VINYL CHLORIDE	0.21	1	0.21	U

U = Compound analyzed for but not detected above the Method Detection Limit.

Table-3 NMED DOE OB FFY 2015 Q-3 Mixed Waste Landfill Soil Vapor Quality Results: Volatile Organic Compounds by Method TO-15, April, 14 2015

MWL-SV04 sampled at a depth of 300 feet below ground surface

Trigger levels are 20 ppmv for PCE and TCE and 25 ppmv for total VOCs at samples collected from 400ft ports.

Monitoring Well/ Sample Depth	Analyte	Result (ppbv)	Reporting Limit (ppbv)	MDL (ppbv)	Laboratory Qualifier
MWL-SV04 300 ft	1,1,1-TRICHLOROETHANE	0.54	0.41	0.057	
	1,1,2,2-TETRACHLOROETHANE	0.039	0.41	0.039	U
	1,1,2-TRICHLOROETHANE	0.11	0.41	0.11	U
	1,1-DICHLOROETHANE	0.66	0.41	0.091	
	1,1-DICHLOROETHENE	8.8	0.41	0.094	
	1,2,4-TRICHLOROBENZENE	0.2	2	0.2	U
	1,2,4-TRIMETHYLBENZENE	0.1	0.41	0.1	U
	1,2-DIBROMOETHANE (EDB)	0.075	0.41	0.075	U
	1,2-DICHLOROBENZENE	0.08	0.41	0.08	U
	1,2-DICHLOROETHANE	0.064	0.41	0.064	U
	1,2-DICHLOROPROPANE	0.11	0.41	0.11	U
	1,3,5-TRIMETHYLBENZENE	0.073	0.41	0.073	U
	1,3-BUTADIENE	0.12	0.41	0.12	U
	1,3-DICHLOROBENZENE	0.11	0.41	0.11	U
	1,4-DICHLOROBENZENE	0.18	0.41	0.18	U
	1,4-DIOXANE	0.14	0.41	0.14	U
	2,2,4-TRIMETHYLPENTANE	0.059	2	0.059	U
	2-BUTANONE (METHYL ETHYL KETONE)	0.45	2	0.45	U
	2-HEXANONE	0.38	2	0.38	U
	2-PROPANOL	0.34	2	0.34	U
	3-CHLOROPROPENE	0.28	2	0.28	U
	4-ETHYLTOLUENE	0.091	0.41	0.091	U
	4-METHYL-2-PENTANONE	0.1	0.41	0.1	U
	ACETONE	4.5	2	0.38	
	ALPHA-CHLOROTOLUENE	0.26	2	0.26	U
	BENZENE	0.1	0.41	0.1	U
	BROMODICHLOROMETHANE	0.094	0.41	0.094	U
	BROMOFORM	0.076	0.41	0.076	U
	BROMOMETHANE	0.32	2	0.32	U
	CARBON DISULFIDE	0.22	2	0.22	U
	CARBON TETRACHLORIDE	0.074	0.41	0.074	U
	CHLOROBENZENE	0.073	0.41	0.073	U
	CHLOROETHANE	0.19	2	0.19	U
	CHLOROFORM	0.1	0.41	0.1	U

U = Compound analyzed for but not detected above the Method Detection Limit.

Table-3 NMED DOE OB FFY 2015 Q-3 Mixed Waste Landfill Soil Vapor Quality Results: Volatile Organic Compounds by Method TO-15, April, 14 2015

MWL-SV04 sampled at a depth of 300 feet below ground surface

Trigger levels are 20 ppmv for PCE and TCE and 25 ppmv for total VOCs at samples collected from 400ft ports.

Monitoring Well/ Sample Depth	Analyte	Result (ppbv)	Reporting Limit (ppbv)	MDL (ppbv)	Laboratory Qualifier
MWL-SV04 300 ft	CHLOROMETHANE	0.21	2	0.21	U
	CIS-1,2-DICHLOROETHENE	0.41	0.41	0.09	U
	CIS-1,3-DICHLOROPROPENE	0.08	0.41	0.08	U
	CUMENE	0.055	0.41	0.055	U
	CYCLOHEXANE	0.12	0.41	0.12	U
	DIBROMOCHLOROMETHANE	0.092	0.41	0.092	U
	ETHANOL	0.55	2	0.55	U
	ETHYL BENZENE	0.14	0.41	0.14	U
	FREON 11	8.6	0.41	0.049	
	FREON 113	51	0.41	0.16	
	FREON 114	0.061	0.41	0.061	U
	FREON 12	19	0.41	0.11	
	HEPTANE	0.13	0.41	0.13	U
	HEXACHLOROBUTADIENE	0.11	2	0.11	U
	HEXANE	0.11	0.41	0.11	U
	M,P-XYLENE	0.099	0.41	0.099	U
	METHYL TERT-BUTYL ETHER	0.1	0.41	0.1	U
	METHYLENE CHLORIDE	0.084	0.81	0.084	U
	O-XYLENE	0.081	0.41	0.081	U
	PROPYLBENZENE	0.087	0.41	0.087	U
	STYRENE	0.1	0.41	0.1	U
	TETRACHLOROETHENE	86	0.41	0.075	
	TETRAHYDROFURAN	0.47	2	0.47	U
	TOLUENE	0.8	0.41	0.05	
	TRANS-1,2-DICHLOROETHENE	0.14	0.41	0.14	U
	TRANS-1,3-DICHLOROPROPENE	0.15	0.41	0.15	U
	TRICHLOROETHENE	58	0.41	0.12	
	VINYL CHLORIDE	0.084	0.41	0.084	U

U = Compound analyzed for but not detected above the Method Detection Limit.

Table-4 NMED DOE OB FFY 2015 Q-3 Mixed Waste Landfill Soil Vapor Quality Results: Volatile Organic Compounds by Method TO-15, April, 14 2015

MWL-SV04 sampled at a depth of 400 feet below ground surface

Trigger levels are 20 ppmv for PCE and TCE and 25 ppmv for total VOCs at samples collected from 400ft ports.

Monitoring Well/ Sample Depth	Analyte	Result (ppbv)	Reporting Limit (ppbv)	MDL (ppbv)	Laboratory Qualifier
MWL-SV04 400 ft	1,1,1-TRICHLOROETHANE	0.62	0.41	0.057	
	1,1,2,2-TETRACHLOROETHANE	0.039	0.41	0.039	U
	1,1,2-TRICHLOROETHANE	0.11	0.41	0.11	U
	1,1-DICHLOROETHANE	0.68	0.41	0.091	
	1,1-DICHLOROETHENE	6.6	0.41	0.094	
	1,2,4-TRICHLOROBENZENE	0.2	2	0.2	U
	1,2,4-TRIMETHYLBENZENE	0.1	0.41	0.1	U
	1,2-DIBROMOETHANE (EDB)	0.075	0.41	0.075	U
	1,2-DICHLOROBENZENE	0.08	0.41	0.08	U
	1,2-DICHLOROETHANE	0.064	0.41	0.064	U
	1,2-DICHLOROPROPANE	0.11	0.41	0.11	U
	1,3,5-TRIMETHYLBENZENE	0.073	0.41	0.073	U
	1,3-BUTADIENE	0.12	0.41	0.12	U
	1,3-DICHLOROBENZENE	0.11	0.41	0.11	U
	1,4-DICHLOROBENZENE	0.18	0.41	0.18	U
	1,4-DIOXANE	0.14	0.41	0.14	U
	2,2,4-TRIMETHYLPENTANE	0.059	2	0.059	U
	2-BUTANONE (METHYL ETHYL KETONE)	0.45	2	0.45	U
	2-HEXANONE	0.38	2	0.38	U
	2-PROPANOL	0.34	2	0.34	U
	3-CHLOROPROPENE	0.28	2	0.28	U
	4-ETHYLTOLUENE	0.091	0.41	0.091	U
	4-METHYL-2-PENTANONE	0.1	0.41	0.1	U
	ACETONE	3.8	2	0.38	
	ALPHA-CHLOROTOLUENE	0.26	2	0.26	U
	BENZENE	0.9	0.41	0.1	
	BROMODICHLOROMETHANE	0.094	0.41	0.094	U
	BROMOFORM	0.076	0.41	0.076	U
	BROMOMETHANE	0.32	2	0.32	U
	CARBON DISULFIDE	0.22	2	0.22	U
	CARBON TETRACHLORIDE	0.074	0.41	0.074	U
	CHLOROBENZENE	0.073	0.41	0.073	U
	CHLOROETHANE	0.19	2	0.19	U
	CHLOROFORM	0.1	0.41	0.1	U

U = Compound analyzed for but not detected above the Method Detection Limit.

Table-4 NMED DOE OB FFY 2015 Q-3 Mixed Waste Landfill Soil Vapor Quality Results: Volatile Organic Compounds by Method TO-15, April, 14 2015

MWL-SV04 sampled at a depth of 400 feet below ground surface

Trigger levels are 20 ppmv for PCE and TCE and 25 ppmv for total VOCs at samples collected from 400ft ports.

Monitoring Well/ Sample Depth	Analyte	Result (ppbv)	Reporting Limit (ppbv)	MDL (ppbv)	Laboratory Qualifier
MWL-SV04 400 ft	CHLOROMETHANE	0.21	2	0.21	U
	CIS-1,2-DICHLOROETHENE	0.55	0.41	0.09	
	CIS-1,3-DICHLOROPROPENE	0.08	0.41	0.08	U
	CUMENE	0.055	0.41	0.055	U
	CYCLOHEXANE	0.12	0.41	0.12	U
	DIBROMOCHLOROMETHANE	0.092	0.41	0.092	U
	ETHANOL	0.55	2	0.55	U
	ETHYL BENZENE	0.14	0.41	0.14	U
	FREON 11	7.2	0.41	0.049	
	FREON 113	43	0.41	0.16	
	FREON 114	0.061	0.41	0.061	U
	FREON 12	14	0.41	0.11	
	HEPTANE	0.13	0.41	0.13	U
	HEXACHLOROBUTADIENE	0.11	2	0.11	U
	HEXANE	0.11	0.41	0.11	U
	M,P-XYLENE	0.099	0.41	0.099	U
	METHYL TERT-BUTYL ETHER	0.1	0.41	0.1	U
	METHYLENE CHLORIDE	0.084	0.81	0.084	U
	O-XYLENE	0.081	0.41	0.081	U
	PROPYLBENZENE	0.087	0.41	0.087	U
	STYRENE	0.1	0.41	0.1	U
	TETRACHLOROETHENE	93	0.41	0.075	
	TETRAHYDROFURAN	0.47	2	0.47	U
	TOLUENE	0.57	0.41	0.05	
	TRANS-1,2-DICHLOROETHENE	0.14	0.41	0.14	U
	TRANS-1,3-DICHLOROPROPENE	0.15	0.41	0.15	U
	TRICHLOROETHENE	58	0.41	0.12	
	VINYL CHLORIDE	0.084	0.41	0.084	U

U = Compound analyzed for but not detected above the Method Detection Limit.

Table-5 NMED DOE OB FFY 2015 Q-3 Mixed Waste Landfill Soil Vapor Quality Results: Volatile Organic Compounds by Method TO-15, April, 14 2015

MWL-SV05 sampled at a depth of 300 feet below ground surface

Trigger levels are 20 ppmv for PCE and TCE and 25 ppmv for total VOCs at samples collected from 400ft ports.

Monitoring Well/ Sample Depth	Analyte	Result (ppbv)	Reporting Limit (ppbv)	MDL (ppbv)	Laboratory Qualifier
MWL-SV05 300 ft	1,1,1-TRICHLOROETHANE	0.73	0.24	0.033	
	1,1,2,2-TETRACHLOROETHANE	0.023	0.24	0.023	U
	1,1,2-TRICHLOROETHANE	0.063	0.24	0.063	U
	1,1-DICHLOROETHANE	0.95	0.24	0.053	
	1,1-DICHLOROETHENE	19	0.24	0.055	
	1,2,4-TRICHLOROBENZENE	0.11	1.2	0.11	U
	1,2,4-TRIMETHYLBENZENE	0.061	0.24	0.061	U
	1,2-DIBROMOETHANE (EDB)	0.043	0.24	0.043	U
	1,2-DICHLOROBENZENE	0.046	0.24	0.046	U
	1,2-DICHLOROETHANE	0.037	0.24	0.037	U
	1,2-DICHLOROPROPANE	0.066	0.24	0.066	U
	1,3,5-TRIMETHYLBENZENE	0.042	0.24	0.042	U
	1,3-BUTADIENE	0.067	0.24	0.067	U
	1,3-DICHLOROBENZENE	0.062	0.24	0.062	U
	1,4-DICHLOROBENZENE	0.1	0.24	0.1	U
	1,4-DIOXANE	0.079	0.24	0.079	U
	2,2,4-TRIMETHYLPENTANE	0.034	1.2	0.034	U
	2-BUTANONE (METHYL ETHYL KETONE)	0.26	1.2	0.26	U
	2-HEXANONE	0.22	1.2	0.22	U
	2-PROPANOL	0.2	1.2	0.2	U
	3-CHLOROPROPENE	0.16	1.2	0.16	U
	4-ETHYLTOLUENE	0.053	0.24	0.053	U
	4-METHYL-2-PENTANONE	0.061	0.24	0.061	U
	ACETONE	6.7	1.2	0.22	
	ALPHA-CHLOROTOLUENE	0.15	1.2	0.15	U
	BENZENE	0.06	0.24	0.06	U
	BROMODICHLOROMETHANE	0.055	0.24	0.055	U
	BROMOFORM	0.044	0.24	0.044	U
	BROMOMETHANE	0.19	1.2	0.19	U
	CARBON DISULFIDE	0.13	1.2	0.13	U
	CARBON TETRACHLORIDE	0.66	0.24	0.043	
	CHLOROBENZENE	0.042	0.24	0.042	U
	CHLOROETHANE	0.11	1.2	0.11	U
	CHLOROFORM	0.43	0.24	0.058	

U = Compound analyzed for but not detected above the Method Detection Limit.

Table-5 NMED DOE OB FFY 2015 Q-3 Mixed Waste Landfill Soil Vapor Quality Results: Volatile Organic Compounds by Method TO-15, April, 14 2015

MWL-SV05 sampled at a depth of 300 feet below ground surface

Trigger levels are 20 ppmv for PCE and TCE and 25 ppmv for total VOCs at samples collected from 400ft ports.

Monitoring Well/ Sample Depth	Analyte	Result (ppbv)	Reporting Limit (ppbv)	MDL (ppbv)	Laboratory Qualifier
MWL-SV05 300 ft	CHLOROMETHANE	0.12	1.2	0.12	U
	CIS-1,2-DICHLOROETHENE	0.48	0.24	0.052	
	CIS-1,3-DICHLOROPROPENE	0.046	0.24	0.046	U
	CUMENE	0.032	0.24	0.032	U
	CYCLOHEXANE	0.07	0.24	0.07	U
	DIBROMOCHLOROMETHANE	0.054	0.24	0.054	U
	ETHANOL	1.9	1.2	0.32	
	ETHYL BENZENE	0.084	0.24	0.084	U
	FREON 11	16	0.24	0.028	
	FREON 113	68	0.24	0.094	
	FREON 114	0.035	0.24	0.035	U
	FREON 12	25	0.24	0.062	
	HEPTANE	0.24	0.24	0.074	
	HEXACHLOROBUTADIENE	0.065	1.2	0.065	U
	HEXANE	0.37	0.24	0.062	
	M,P-XYLENE	0.057	0.24	0.057	U
	METHYL TERT-BUTYL ETHER	0.058	0.24	0.058	U
	METHYLENE CHLORIDE	0.54	0.47	0.048	
	O-XYLENE	0.047	0.24	0.047	U
	PROPYLBENZENE	0.05	0.24	0.05	U
	STYRENE	0.06	0.24	0.06	U
	TETRACHLOROETHENE	76	0.24	0.044	
	TETRAHYDROFURAN	0.27	1.2	0.27	U
	TOLUENE	0.88	0.24	0.029	
	TRANS-1,2-DICHLOROETHENE	0.079	0.24	0.079	U
	TRANS-1,3-DICHLOROPROPENE	0.087	0.24	0.087	U
	TRICHLOROETHENE	72	0.24	0.07	
	VINYL CHLORIDE	0.049	0.24	0.049	U

U = Compound analyzed for but not detected above the Method Detection Limit.

Table-6 NMED DOE OB FFY 2015 Q-3 Mixed Waste Landfill Soil Vapor Quality Results: Volatile Organic Compounds by Method TO-15, April, 14 2015

MWL-SV05 sampled at a depth of 400 feet below ground surface

Trigger levels are 20 ppmv for PCE and TCE and 25 ppmv for total VOCs at samples collected from 400ft ports.

Monitoring Well/ Sample Depth	Analyte	Result (ppbv)	Reporting Limit (ppbv)	MDL (ppbv)	Laboratory Qualifier
MWL-SV05 400 ft	1,1,1-TRICHLOROETHANE	0.88	0.22	0.03	
	1,1,2,2-TETRACHLOROETHANE	0.021	0.22	0.021	U
	1,1,2-TRICHLOROETHANE	0.058	0.22	0.058	U
	1,1-DICHLOROETHANE	0.97	0.22	0.049	
	1,1-DICHLOROETHENE	7.4	0.22	0.05	
	1,2,4-TRICHLOROBENZENE	0.1	1.1	0.1	U
	1,2,4-TRIMETHYLBENZENE	0.056	0.22	0.056	U
	1,2-DIBROMOETHANE (EDB)	0.04	0.22	0.04	U
	1,2-DICHLOROBENZENE	0.042	0.22	0.042	U
	1,2-DICHLOROETHANE	0.034	0.22	0.034	U
	1,2-DICHLOROPROPANE	0.061	0.22	0.061	U
	1,3,5-TRIMETHYLBENZENE	0.039	0.22	0.039	U
	1,3-BUTADIENE	0.23	0.22	0.062	
	1,3-DICHLOROBENZENE	0.057	0.22	0.057	U
	1,4-DICHLOROBENZENE	0.096	0.22	0.096	U
	1,4-DIOXANE	0.073	0.22	0.073	U
	2,2,4-TRIMETHYLPENTANE	0.031	1.1	0.031	U
	2-BUTANONE (METHYL ETHYL KETONE)	0.24	1.1	0.24	U
	2-HEXANONE	0.2	1.1	0.2	U
	2-PROPANOL	0.18	1.1	0.18	U
	3-CHLOROPROPENE	0.15	1.1	0.15	U
	4-ETHYLTOLUENE	0.048	0.22	0.048	U
	4-METHYL-2-PENTANONE	0.056	0.22	0.056	U
	ACETONE	6.2	1.1	0.2	
	ALPHA-CHLOROTOLUENE	0.14	1.1	0.14	U
	BENZENE	0.35	0.22	0.055	
	BROMODICHLOROMETHANE	0.05	0.22	0.05	U
	BROMOFORM	0.04	0.22	0.04	U
	BROMOMETHANE	0.17	1.1	0.17	U
	CARBON DISULFIDE	0.12	1.1	0.12	U
	CARBON TETRACHLORIDE	0.35	0.22	0.039	
	CHLOROBENZENE	0.039	0.22	0.039	U
	CHLOROETHANE	0.1	1.1	0.1	U
	CHLOROFORM	0.33	0.22	0.054	

J = Estimated value

U = Compound analyzed for but not detected above the Method Detection Limit.

Table-6 NMED DOE OB FFY 2015 Q-3 Mixed Waste Landfill Soil Vapor Quality Results: Volatile Organic Compounds by Method TO-15, April, 14 2015

MWL-SV05 sampled at a depth of 400 feet below ground surface

Trigger levels are 20 ppmv for PCE and TCE and 25 ppmv for total VOCs at samples collected from 400ft ports.

Monitoring Well/ Sample Depth	Analyte	Result (ppbv)	Reporting Limit (ppbv)	MDL (ppbv)	Laboratory Qualifier
MWL-SV05 400 ft	CHLOROMETHANE	0.11	1.1	0.11	U
	CIS-1,2-DICHLOROETHENE	0.4	0.22	0.048	
	CIS-1,3-DICHLOROPROPENE	0.043	0.22	0.043	U
	CUMENE	0.029	0.22	0.029	U
	CYCLOHEXANE	0.27	0.22	0.064	
	DIBROMOCHLOROMETHANE	0.049	0.22	0.049	U
	ETHANOL	0.29	1.1	0.29	U
	ETHYL BENZENE	0.077	0.22	0.077	U
	FREON 11	11	0.22	0.026	
	FREON 113	30	0.22	0.086	
	FREON 114	0.032	0.22	0.032	U
	FREON 12	13	0.22	0.057	
	HEPTANE	0.068	0.22	0.068	U
	HEXACHLOROBUTADIENE	0.06	1.1	0.06	U
	HEXANE	0.058	0.22	0.058	U
	M,P-XYLENE	0.053	0.22	0.053	U
	METHYL TERT-BUTYL ETHER	0.054	0.22	0.054	U
	METHYLENE CHLORIDE	0.46	0.43	0.045	
	O-XYLENE	0.043	0.22	0.043	U
	PROPYLBENZENE	0.046	0.22	0.046	U
	STYRENE	0.055	0.22	0.055	U
	TETRACHLOROETHENE	74	0.22	0.04	
	TETRAHYDROFURAN	0.25	1.1	0.25	U
	TOLUENE	28	0.22	0.026	
	TRANS-1,2-DICHLOROETHENE	0.072	0.22	0.072	U
	TRANS-1,3-DICHLOROPROPENE	0.08	0.22	0.08	U
	TRICHLOROETHENE	62	0.22	0.064	
	VINYL CHLORIDE	0.045	0.22	0.045	U

J = Estimated value

U = Compound analyzed for but not detected above the Method Detection Limit.

Table-6 NMED DOE OB FFY 2015 Q-3 Mixed Waste Landfill Soil Vapor Quality Results: Volatile Organic Compounds by Method TO-15, April, 14 2015

MWL-SV05 sampled at a depth of 400 feet below ground surface

Trigger levels are 20 ppmv for PCE and TCE and 25 ppmv for total VOCs at samples collected from 400ft ports.

Monitoring Well/ Sample Depth	Analyte	Result (ppbv)	Reporting Limit (ppbv)	MDL (ppbv)	Laboratory Qualifier
MWL-SV05 400 ft DUP	1,1,1-TRICHLOROETHANE	0.36	0.23	0.032	
	1,1,2,2-TETRACHLOROETHANE	0.022	0.23	0.022	U
	1,1,2-TRICHLOROETHANE	0.061	0.23	0.061	U
	1,1-DICHLOROETHANE	0.39	0.23	0.052	
	1,1-DICHLOROETHENE	3.4	0.23	0.053	
	1,2,4-TRICHLOROBENZENE	0.11	1.2	0.11	U
	1,2,4-TRIMETHYLBENZENE	0.06	0.23	0.06	U
	1,2-DIBROMOETHANE (EDB)	0.042	0.23	0.042	U
	1,2-DICHLOROBENZENE	0.045	0.23	0.045	U
	1,2-DICHLOROETHANE	0.036	0.23	0.036	U
	1,2-DICHLOROPROPANE	0.065	0.23	0.065	U
	1,3,5-TRIMETHYLBENZENE	0.041	0.23	0.041	U
	1,3-BUTADIENE	0.066	0.23	0.066	U
	1,3-DICHLOROBENZENE	0.06	0.23	0.06	U
	1,4-DICHLOROBENZENE	0.1	0.23	0.1	U
	1,4-DIOXANE	0.077	0.23	0.077	U
	2,2,4-TRIMETHYLPENTANE	3.1	1.2	0.033	
	2-BUTANONE (METHYL ETHYL KETONE)	2.1	1.2	0.25	
	2-HEXANONE	0.22	1.2	0.22	U
	2-PROPANOL	7	1.2	0.19	
	3-CHLOROPROPENE	0.16	1.2	0.16	U
	4-ETHYLTOLUENE	0.23	0.23	0.051	U
	4-METHYL-2-PENTANONE	0.61	0.23	0.059	
	ACETONE	8.8	1.2	0.22	
	ALPHA-CHLOROTOLUENE	0.15	1.2	0.15	U
	BENZENE	1.1	0.23	0.058	
	BROMODICHLOROMETHANE	0.053	0.23	0.053	U
	BROMOFORM	0.043	0.23	0.043	U
	BROMOMETHANE	0.18	1.2	0.18	U
	CARBON DISULFIDE	0.12	1.2	0.12	U
	CARBON TETRACHLORIDE	0.042	0.23	0.042	U
	CHLOROBENZENE	0.041	0.23	0.041	U
	CHLOROETHANE	0.11	1.2	0.11	U
	CHLOROFORM	0.22	0.23	0.057	J

J = Estimated value

U = Compound analyzed for but not detected above the Method Detection Limit.

Table-6 NMED DOE OB FFY 2015 Q-3 Mixed Waste Landfill Soil Vapor Quality Results: Volatile Organic Compounds by Method TO-15, April, 14 2015

MWL-SV05 sampled at a depth of 400 feet below ground surface

Trigger levels are 20 ppmv for PCE and TCE and 25 ppmv for total VOCs at samples collected from 400ft ports.

Monitoring Well/ Sample Depth	Analyte	Result (ppbv)	Reporting Limit (ppbv)	MDL (ppbv)	Laboratory Qualifier
MWL-SV05 400 ft DUP	CHLOROMETHANE	0.12	1.2	0.12	U
	CIS-1,2-DICHLOROETHENE	0.051	0.23	0.051	U
	CIS-1,3-DICHLOROPROPENE	0.045	0.23	0.045	U
	CUMENE	0.031	0.23	0.031	U
	CYCLOHEXANE	2.9	0.23	0.068	
	DIBROMOCHLOROMETHANE	0.052	0.23	0.052	U
	ETHANOL	27	1.2	0.31	
	ETHYL BENZENE	0.88	0.23	0.082	
	FREON 11	5.6	0.23	0.028	
	FREON 113	16	0.23	0.091	
	FREON 114	0.034	0.23	0.034	U
	FREON 12	7.2	0.23	0.06	
	HEPTANE	1.2	0.23	0.073	
	HEXACHLOROBUTADIENE	0.063	1.2	0.063	U
	HEXANE	1.1	0.23	0.061	
	M,P-XYLENE	2.2	0.23	0.056	
	METHYL TERT-BUTYL ETHER	0.057	0.23	0.057	U
	METHYLENE CHLORIDE	6.1	0.46	0.047	
	O-XYLENE	0.74	0.23	0.046	
	PROPYLBENZENE	0.049	0.23	0.049	U
	STYRENE	0.47	0.23	0.058	
	TETRACHLOROETHENE	35	0.23	0.042	
	TETRAHYDROFURAN	0.27	1.2	0.27	U
	TOLUENE	27	0.23	0.028	
	TRANS-1,2-DICHLOROETHENE	0.077	0.23	0.077	U
	TRANS-1,3-DICHLOROPROPENE	0.085	0.23	0.085	U
	TRICHLOROETHENE	34	0.23	0.068	
	VINYL CHLORIDE	0.048	0.23	0.048	U

J = Estimated value

U = Compound analyzed for but not detected above the Method Detection Limit.