National Nuclear Security Administration
Sandia Site Office
P. O. Box 5400
Albuquerque, NM 87185

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

John E. Kieling, Acting Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Bldg. 1
Santa Fe, NM 87505

Subject: Mixed Waste Landfill Groundwater Monitoring Report Calendar Year 2010

Dear Mr. Kieling:

On behalf of the United States Department of Energy/National Nuclear Security Administration (DOE/NNSA) and Sandia Corporation (Sandia), DOE/NNSA is submitting the *Mixed Waste Landfill Groundwater Monitoring Report Calendar Year 2010.* The report presents groundwater monitoring data from sampling events conducted at the Mixed Waste Landfill (MWL) in 2010. The results of the groundwater monitoring showed constituent concentrations within historical ranges for the MWL and no constituents exceeded their respective regulatory standards.

This is the last, separate Sandia National Laboratories/New Mexico (SNL/NM) Environmental Restoration (ER) Project MWL groundwater monitoring report. Currently, MWL groundwater monitoring results are provided to the New Mexico Environment Department (NMED) in two regulatory submittals: the SNL/NM Annual Groundwater Monitoring Report and the ER Project MWL Annual Groundwater Monitoring Report. The two reports contain the same information at the same level of detail. The Compliance Order on Consent (NMED April 2004) does not require a separate ER Project MWL report; therefore, future MWL groundwater monitoring results (Calendar Year 2011 and beyond) will only be submitted to NMED as part of the SNL/NM Annual Groundwater Monitoring Report.

If you have any questions regarding this annual report, please contact me at (505) 845-4392, or Carolyn Holloway of my staff at (505) 845-5248.

Sincerely,

Kimberly A. Davis for

Patty Wagner
Manager

Enclosure

cc:
See Page 2

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CERTIFICATION STATEMENT FOR APPROVAL AND FINAL RELEASE OF DOCUMENTS

Document title: **Mixed Waste Landfill Groundwater Monitoring Report Calendar Year 2010**

Document author: **Michael Sanders, Department 06234**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.

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U.S. Department of Energy
National Nuclear Security Administration
Sandia Site Office
Owner and Co-Operator

Sandia National Laboratories

Sandia National Laboratories/New Mexico Environmental Restoration Project

MIXED WASTE LANDFILL GROUNDWATER MONITORING REPORT CALENDAR YEAR 2010

SEPTEMBER 2011

United States Department of Energy
Sandia Site Office

Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

EXECUTIVE SUMMARY

Groundwater monitoring was conducted at a total of seven groundwater monitoring wells at the Mixed Waste Landfill (MWL), Sandia National Laboratories, New Mexico, in January, April, and July 2010. During 2008, four new monitoring wells (MWL-BW2, MWL-MW7, MWL-MW8, and MWL-MW9) were installed and subsequently sampled for eight consecutive quarters, in accordance with requirements specified in the Compliance Order on Consent (Consent Order; NMED April 2004) between the U.S. Department of Energy, Sandia Corporation, and the New Mexico Environment Department. The eighth quarter of sampling for MWL-BW2 was completed in January 2010 and for MWL-MW7, MWL-MW8, and MWL-MW9 in April 2010. In addition, sampling for perchlorate was required at the new wells for at least four consecutive quarters. The fourth and final quarter of perchlorate sampling was completed for the four new wells in April 2009. No detections of perchlorate at or above the screening level of 4 micrograms per liter were reported in any of the perchlorate samples collected from these wells. Perchlorate sampling was accordingly discontinued after April 2009. All MWL monitoring wells are now being sampled annually as required by the Consent Order.

The field activities and analytical results for the Calendar Year (CY) 2010 groundwater sampling events are presented in this report. The MWL groundwater monitoring wells were sampled in accordance with appropriate Field Operating Procedures for groundwater sampling activities and Mini-Sampling and Analysis Plans. The groundwater monitoring results for the CY 2010 sampling events are consistent with data for previous sampling events, within the range of historical MWL groundwater data, and indicate the MWL has not impacted groundwater beneath the site. Based upon the field and laboratory quality control sample and data validation results, the CY 2010 groundwater monitoring data are defensible and representative.

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ACRONYMS AND ABBREVIATIONS

AOP	Administrative Operating Procedure
ARG	Ancestral Rio Grande
CY	Calendar Year
DOE	U.S. Department of Energy
EB	equipment blank
EPA	U.S. Environmental Protection Agency
FB	field blank
FOP	Field Operating Procedure
GEL	GEL Laboratories, Inc.
HWB	Hazardous Waste Bureau
LTES	Long-Term Environmental Stewardship
MCL	maximum contaminant level
MDA	minimum detectable activity
MDL	method detection limit
µg/L	microgram(s) per liter
mg/L	milligram(s) per liter
MWL	Mixed Waste Landfill
NMED	New Mexico Environment Department
NPN	nitrate plus nitrite
pCi/L	picocurie(s) per liter
PQL	practical quantitation limit
QC	quality control
RCRA	Resource Conservation and Recovery Act
RPD	relative percent difference
Sandia	Sandia Corporation
SAP	Sampling and Analysis Plan
SC	specific conductance
SNL/NM	Sandia National Laboratories, New Mexico
SVOC	semivolatile organic compound
SWMU	Solid Waste Management Unit
TAL	target analyte list
TB	trip blank
VOC	volatile organic compound

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1.0 INTRODUCTION

Groundwater monitoring of seven wells was conducted at the Mixed Waste Landfill (MWL), Sandia National Laboratories, New Mexico (SNL/NM) during the first three quarters of Calendar Year (CY) 2010. This report describes the field activities conducted during the sampling events and presents the analytical results. Appendix A presents summary tables of the field measurements and sampling results.

The MWL is located on Kirtland Air Force Base, 4 miles south of the SNL/NM Technical Area I facilities and 5 miles southeast of Albuquerque International Sunport. The MWL is a 2.6-acre site in the north-central portion of Technical Area III (Figure 1-1). The MWL was established in 1959 as a disposal area for low-level radioactive and mixed waste generated by SNL/NM research facilities and accepted low-level radioactive and minor amounts of mixed waste from March 1959 through December 1988. Approximately 100,000 cubic feet of low-level radioactive and mixed waste containing approximately 6,300 curies (at the time of disposal) of activity were disposed of in the MWL.

The MWL consists of two distinct disposal areas: the classified area (occupying 0.6 acres) and the unclassified area (occupying 2.0 acres). Low-level radioactive and mixed waste was disposed of in each of these areas. Classified wastes were buried in cylindrical pits in the classified area. Unclassified wastes were buried in shallow trenches in the unclassified area. An evapotranspirative cover that includes a biointrusion barrier was installed during Fiscal Year 2009 (SNL/NM January 2010a) in accordance with the New Mexico Environment Department (NMED)-approved “MWL Corrective Measures Implementation Plan” (SNL/NM November 2005).

Groundwater at the MWL has been extensively characterized since 1990 for major ion chemistry, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), nitrate plus nitrite (NPN), metals, radionuclides, and perchlorate. Twenty-one years of quarterly, semiannual, and annual data indicate that groundwater has not been contaminated by releases from the MWL (Goering et al. 2002; Lyon and Goering January 2006; SNL/NM December 2001, January 2002, March 2002, July 2002, August 2002, October 2002, June 2003, September 2003, July 2004, November 2006, January 2008, May 2009, and June 2010).

The MWL groundwater monitoring well network was modified in 2008 (SNL/NM May 2009). Due to declining water levels, four monitoring wells (MWL-BW1, MWL-MW1, MWL-MW2, and MWL-MW3) were plugged and abandoned, and four new monitoring wells (MWL-BW2, MWL-MW7, MWL-MW8, and MWL-MW9) were installed. Figure 1-2 shows the current groundwater monitoring well network at the MWL. The well network consists of seven wells completed within the interfingering, fine-grained, alluvial fan deposits and coarse-grained, Ancestral Rio Grande (ARG) deposits. The monitoring well network currently consists of one background well (MWL-BW2), one on-site monitoring well (MWL-MW4), and five downgradient wells (MWL-MW5, MWL-MW6, MWL-MW7, MWL-MW8, and MWL-MW9).

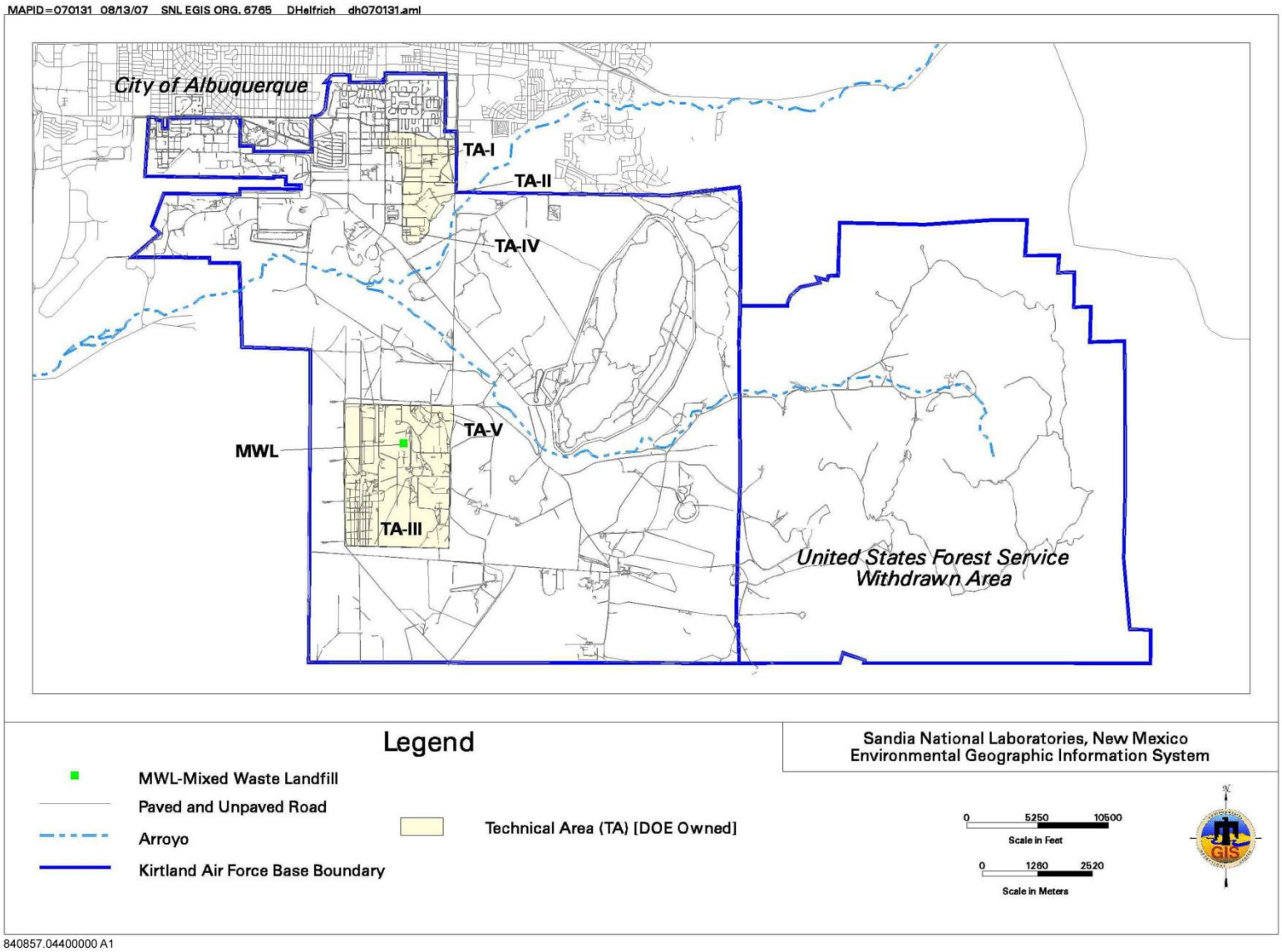

Figure 1-1
Location of the Mixed Waste Landfill, Sandia National Laboratories, and Kirtland Air Force Base

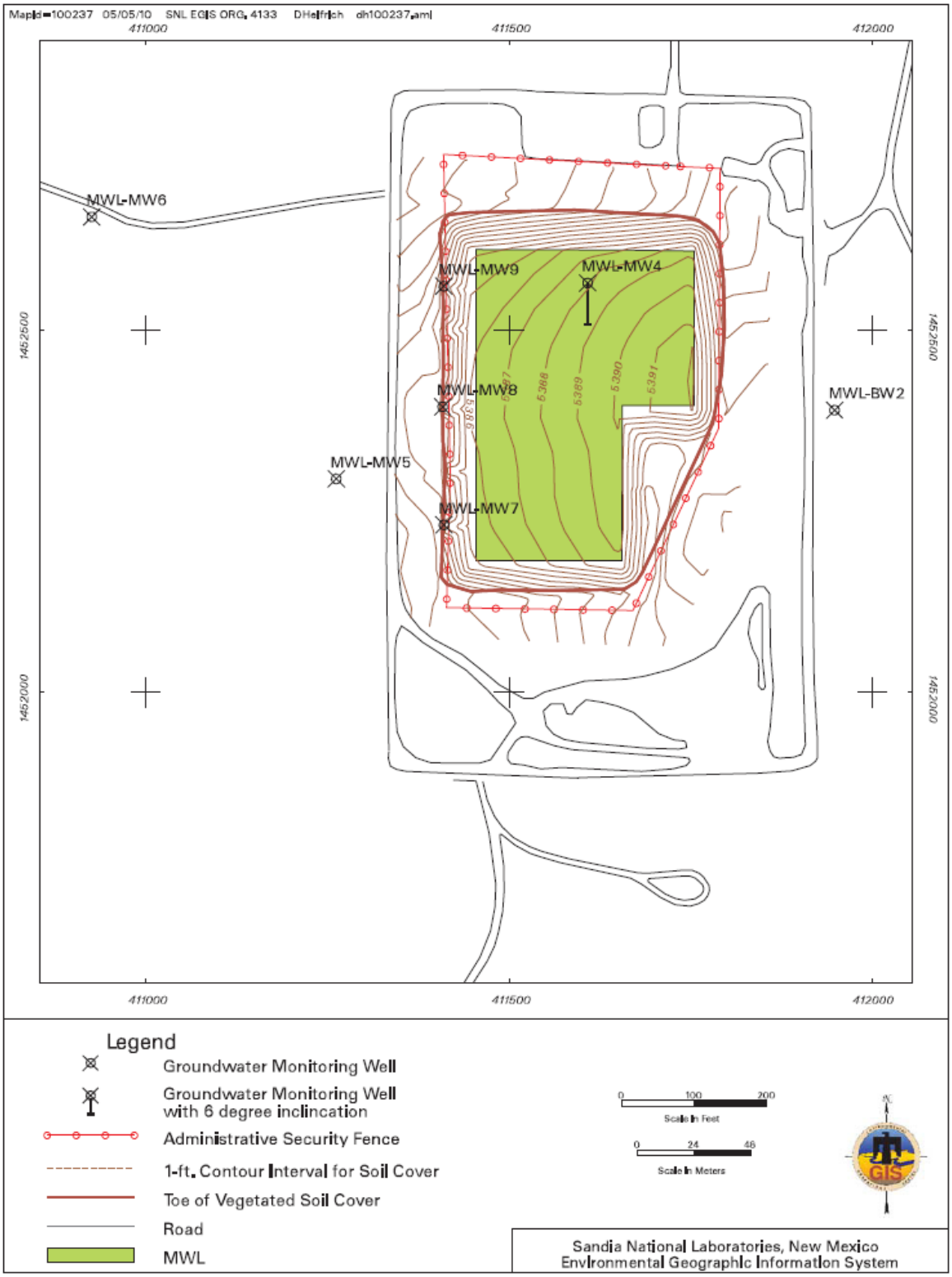

Figure 1-2
Location of Groundwater Monitoring Wells at the Mixed Waste Landfill, Calendar Year 2010

During construction of the evapotranspirative cover on May 27, 2009, the packer in the dual-screen well MWL-MW4 was removed to allow the well casing to be extended. The packer was serviced and reinstalled on March 4, 2010. References in this report to groundwater samples and water levels from MWL-MW4 refer to groundwater withdrawn or measured from the upper screened interval, and references made to the bottom of this well refer to the depth to the top of the packer.

In April 2010, the U.S. Department of Energy (DOE) and Sandia Corporation (Sandia) received a letter from the NMED entitled “Toluene Detections in Groundwater, Sandia National Laboratories Mixed Waste Landfill,” which required further investigation to determine the source of very low toluene concentrations in some MWL groundwater samples collected in 2008 through early 2010, including conducting a purging/sampling study of the groundwater along with any other studies necessary to determine the source (Bearzi April 2010). The results of the toluene investigation indicate that the MWL is not the source of the very low toluene concentrations detected in MWL groundwater samples. The DOE/Sandia submitted the “Mixed Waste Landfill Toluene Investigation Report” in August 2010 and received a Notice of Disapproval with two comments from the NMED in September 2010 (Bearzi September 2010). The DOE/Sandia response (Wagner October 2010) that included a revised version of the report (SNL/NM October 2010) was submitted to the NMED in October 2010. The NMED approved the revised “MWL Toluene Investigation Report” in January 2011 (Bearzi January 2011).

2.0 REGULATORY CRITERIA

Historically, the NMED Hazardous Waste Bureau (HWB) has provided regulatory oversight of the MWL as Solid Waste Management Unit (SWMU) 76 under the Hazardous and Solid Waste Amendments module of the facility Resource Conservation and Recovery Act (RCRA) Permit. The NMED confirmed that the MWL is properly designated as a SWMU (Dinwiddie June 1998) and, as such, must comply with the corrective action program defined in Title 20, New Mexico Administrative Code, Section 4.1.500, incorporating Title 40, Code of Federal Regulations, Section 264.101. The requirements for corrective action at the MWL (SWMU 76), including those for groundwater monitoring, are established through the corrective measures process.

The Compliance Order on Consent (Consent Order), effective in April 2004, transferred the regulatory requirements for groundwater sampling at the MWL from the facility RCRA Permit to the Consent Order (NMED April 2004). This report has been formatted to address the content criteria set forth in the Consent Order for Periodic Monitoring Reports. Table 2-1 provides a "crosswalk" that lists the required elements from the Consent Order and the corresponding section(s) in which these elements are addressed in this report.

Table 2-1
Monitoring Report Crosswalk for Mixed Waste Landfill
Annual Groundwater Monitoring Report

Required Elements of the Consent Order (NMED April 2004)	MWL Groundwater Monitoring Report Calendar Year 2010
1. Title Page and Signature Block (for the name, title, and organization of the preparer and the responsible DOE and Sandia representative)	Title Page Signatures for full Sandia and DOE chain of command on the transmittal paperwork that accompanies the report from Sandia to the DOE to the NMED
2. Executive Summary (Abstract)	Executive Summary and Section 9.0
3. Table of Contents	Table of Contents
4. Introduction	Section 1.0 Introduction
5. Scope of Activities	Section 3.0 Scope of Activities
6. Regulatory Criteria	Section 2.0 Regulatory Criteria
7. Monitoring Results	Section 6.0 Summary of Analytical Results
8. Conclusions	Section 9.0 Summary and Conclusions
9. Tables	Appendix A
10. Figures	Section 1.0 Introduction; Section 4.0 Field Methods and Measurements
11. Appendices	Appendix A (Summary Tables)

DOE = U.S. Department of Energy.
MWL = Mixed Waste Landfill.
NMED = New Mexico Environment Department.
Sandia = Sandia Corporation.

Although radionuclides are being monitored at the MWL, the information related to radionuclides is provided voluntarily by Sandia. The voluntary inclusion of such radionuclide information shall not be enforceable and shall not constitute the basis for any enforcement because such information falls wholly outside the requirements of the Consent Order, as specified in Section III.A (NMED April 2004).

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3.0 SCOPE OF ACTIVITIES

Groundwater sampling was conducted during CY 2010 at the MWL in accordance with the appropriate Field Operating Procedures (FOPs) (SNL/NM November 2009a, November 2009b, and November 2009c) and Mini-Sampling and Analysis Plans (SAPs) (SNL/NM January 2010b, April 2010, and July 2010). Seven monitoring wells at the MWL were sampled, including one background well (MWL-BW2), one on-site monitoring well (MWL-MW4), and five downgradient monitoring wells (MWL-MW5, MWL-MW6, MWL-MW7, MWL-MW8, and MWL-MW9).

3.1 Analytical Parameters

The analytical parameters selected for monitoring at the MWL groundwater wells during CY 2010 include target analyte list (TAL) metals, total uranium, VOCs, SVOCs, NPN, and major anions. Alkalinity titrations were performed in the field on groundwater collected from each well. Radiochemical analysis included tritium, gross alpha/beta radioactivity, gamma-emitting radionuclides, isotopic uranium, and radon-222. The analytical results are presented in Section 6.0.

The MWL groundwater samples were submitted for analysis to GEL Laboratories, Inc. (GEL) in Charleston, South Carolina. All groundwater samples were collected using a Bennett™ pump.

Field quality control (QC) samples submitted to GEL included field duplicate, equipment blank (EB), and field blank (FB) samples. In addition, trip blank (TB) samples were submitted with the samples for VOC analysis. Section 7.0 discusses the QC sample results.

3.2 Monitoring History

The groundwater monitoring well network at the MWL was originally installed in 1989. The wells have been sampled at various intervals since that time. During CY 2008, four monitoring wells (MWL-BW1, MWL-MW1, MWL-MW2, and MWL-MW3) were plugged and abandoned, and four new monitoring wells (MWL-BW2, MWL-MW7, MWL-MW8, and MWL-MW9) were installed (Bearzi January 2009).

In 1993, MWL-MW4 was completed at an angle of 6 degrees from vertical and is screened at two discrete intervals 20 feet apart (Peace et al. September 2002) to evaluate vertical anisotropy, vertical potentiometric gradients, and changes in aquifer parameters with depth. An inflatable packer separates the screened intervals, and pressure is maintained in the packer to isolate the two screened intervals. Although monitoring well MWL-MW4 is screened in two discrete intervals, only the upper interval was sampled during CY 2010, as this is the uppermost water-bearing interval beneath the MWL. References in this report to groundwater samples from MWL-MW4 refer to groundwater withdrawn from the upper interval.

3.3 Monitoring Network

The MWL wells were sampled either quarterly or annually in CY 2010. The established wells (MWL-MW4, MWL-MW5, and MWL-MW6) are required to undergo only annual sampling and

analysis. Wells MWL-BW2, MWL-MW7, MWL-MW8, and MWL-MW9 are considered new wells and, as required by the Consent Order (NMED April 2004), were to be sampled for eight consecutive quarters for a defined suite of parameters in addition to sampling for perchlorate for at least four consecutive quarters. The required four quarters of perchlorate sampling were completed in April 2009, and the eighth required quarterly sampling event was completed for the new wells in January or April 2010 (Table 3.3-1). Quarterly sampling was extended through July 2010 for the new wells to support the MWL Toluene Investigation (SNL/NM October 2010). All MWL groundwater monitoring wells are now on an annual sampling schedule in accordance with the Consent Order. Figure 1-2 shows the current groundwater monitoring network consisting of seven wells completed within the interfingering, fine-grained, alluvial fan deposits and coarse-grained ARG alluvial deposits. All seven MWL wells are constructed of 5-inch-diameter, Schedule 80 polyvinyl chloride casing and screen.

Three sampling events occurred at the MWL during CY 2010 on the following dates: January 4 to January 7, April 19 to April 28, and July 6 to July 13. Table 3.3-1 summarizes the groundwater sampling events conducted at the MWL during CY 2010.

Table 3.3-1
Calendar Year 2010 Groundwater Sampling Events at the Mixed Waste Landfill

Well ID	January 2010	April 2010	July 2010
MWL-BW2	8th quarter sampling	9th quarter sampling	10th quarter sampling
MWL-MW4	–	Annual sampling	–
MWL-MW5	–	Annual sampling	–
MWL-MW6	–	Annual sampling	–
MWL-MW7	7th quarter sampling	8th quarter sampling	9th quarter sampling
MWL-MW8	7th quarter sampling	8th quarter sampling	9th quarter sampling
MWL-MW9	7th quarter sampling	8th quarter sampling	9th quarter sampling

BW = Background well.
ID = Identification.
MW = Monitoring well.
MWL = Mixed Waste Landfill.

4.0 FIELD METHODS AND MEASUREMENTS

Field measurements performed during groundwater sampling activities included groundwater elevations and water quality parameters. The following sections present detailed discussions of field activities and methods.

4.1 Groundwater Elevation Measurements

Depth-to-groundwater measurements to support groundwater sampling activities were obtained using a Solinst™ water level meter prior to purging activities. Depth-to-groundwater measurements were performed in accordance with FOP 05-01, "Long-Term Environmental Stewardship (LTES) Groundwater Monitoring Well Sampling and Field Analytical Measurements" (SNL/NM November 2009a). Measurements were obtained from all sampled monitoring wells. Table A-1 (Appendix A) presents depth-to-water measurements and groundwater elevations.

Separate groundwater elevation measurements that are used to map the potentiometric surface at the MWL are collected in accordance with FOP 03-02, Revision 3, "LTES Groundwater Level Acquisition and Management" (SNL/NM November 2009d). The October 2010 groundwater elevation data for the MWL monitoring well network are summarized in Table 4.1-1 and Figure 4.1-1.

Table 4.1-1
Mixed Waste Landfill Groundwater Elevation Data, October 2010

Well ID	Groundwater Elevation[a]	Comments
MWL-BW2	4912.74	Used to contour top of water table
MWL-MW4	4893.52	Upper screened interval above packer; used to contour top of water table
MWL-MW5	4889.28	Not used; well screened below water table
MWL-MW6	4888.09	Not used; well screened below water table
MWL-MW7	4894.00	Used to contour top of water table
MWL-MW8	4893.75	Used to contour top of water table
MWL-MW9	4890.36	Used to contour top of water table

[a]All elevation data in this table are 1988 North American Vertical Datum elevations.
BW = Background well.
ID = Identification.
MW = Monitoring well.
MWL = Mixed Waste Landfill.

Groundwater occurs at approximately 500 feet below ground surface within Santa Fe Group deposits (basin fill) in either fine-grained, alluvial fan deposits or coarse-grained, ARG deposits.

Figure 4.1-1 shows the localized potentiometric surface of the regional aquifer at the MWL in October 2010. Only MWL wells screened across the water table (MWL-BW2, MWL-MW7, MWL-MW8, MWL-MW9, and the upper screened interval of MWL-MW4) were used to contour the MWL potentiometric surface. Based upon the potentiometric surface contours, groundwater flows to the west-northwest.

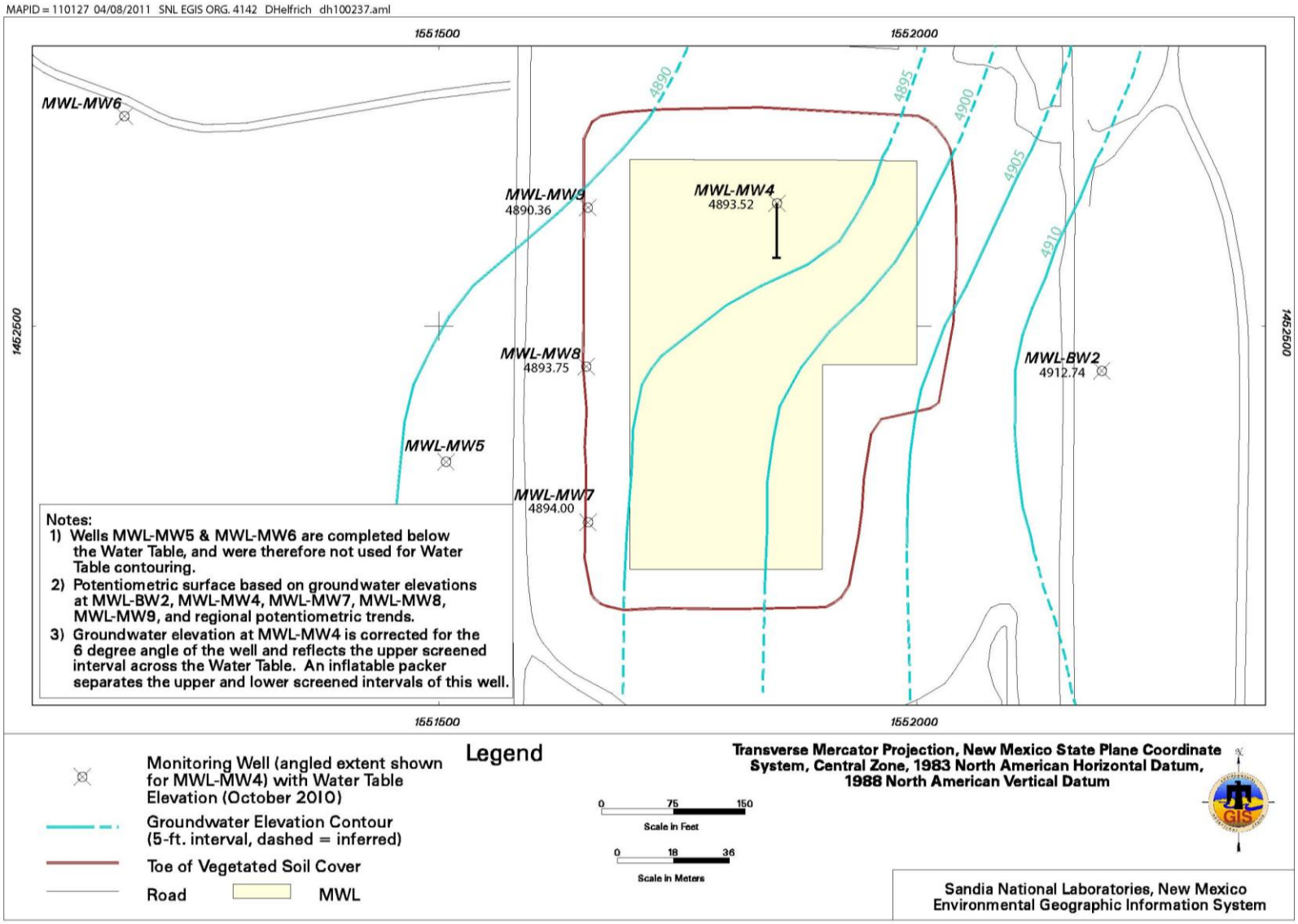

Figure 4.1-1
Potentiometric Surface of the Regional Aquifer at the Mixed Waste Landfill, October 2010

A hydrograph showing water level data for all MWL monitoring wells from January 2007 through December 2010 is provided as Figure 4.1-2. During CY 2010, groundwater elevations on the west side of the MWL decreased from 0.23 feet (MWL-MW5) to 0.03 feet (MWL-MW8). The greatest decrease in groundwater elevation was observed at MWL-BW2 on the east side of the MWL, which declined 0.35 feet. From 2005 through 2008, water levels in the two deeper wells MWL-MW5 and MWL-MW6 declined an average of 0.39 feet per year. The decline in these two wells was less between 2009 and 2010, averaging 0.15 feet per year.

During CY 2010, groundwater elevations in the four wells installed in 2008 (MWL-BW2, MWL-MW7, MWL-MW8, and MWL-MW9) decreased from 0.35 feet (MWL-BW2) to 0.04 feet (MWL-MW8). From January 2009 through December 2010, water level declines in these four wells ranged from 0.85 feet (MWL-BW2) to 0.26 feet (MWL-MW7). No seasonal fluctuations are evident.

A generalized conceptual model integrating new information from the installation and monitoring of the four wells installed in 2008 is presented in the MWL Annual Groundwater Monitoring Report for CY 2009 (SNL/NM June 2010). In summary, the geology of the upper portion of the regional groundwater system in general is a stratified system. The geology varies with depth from a low hydraulic conductivity layer (in which the now plugged and abandoned wells MWL-MW2 and MWL-MW3 were screened) to a medium conductivity layer (in which the lower parts of the screens of MWL-MW7, MWL-MW8, and MWL-MW9 reside) to a high conductivity layer corresponding to the ARG sediments (in which at least part of the screened intervals of MWL-MW4 [lower screen], MWL-MW5, and MWL-MW6 are located).

The uppermost surface of the regional aquifer continues to decline as a result of historic and ongoing large-scale removal of water by the City of Albuquerque and Kirtland Air Force Base drinking water production wells. The overall effect at the MWL is that groundwater flow is predominantly vertically downward in the lower and medium hydraulic conductivity layers in response to regional drawdown from pumping (i.e., a draining system).

4.2 Well Purging and Water Quality Measurements

Prior to sample collection, each monitoring well was purged to remove stagnant water from the well so that a representative groundwater sample could be obtained. In accordance with procedures described in FOP 05-01 (SNL/NM November 2009a), all wells were purged a minimum of one saturated casing volume (the volume of the saturated screen plus the annulus). Purging continued until four stable measurements for turbidity, pH, temperature, and specific conductance (SC) were obtained prior to the collection of groundwater samples. Groundwater stability is considered acceptable when the following parameters have been achieved:

- Turbidity measurements are within 10% or are less than or equal to 5 nephelometric turbidity units
- pH is within 0.1 standard units
- Temperature is within 1.0 degrees Celsius
- SC is within 5%

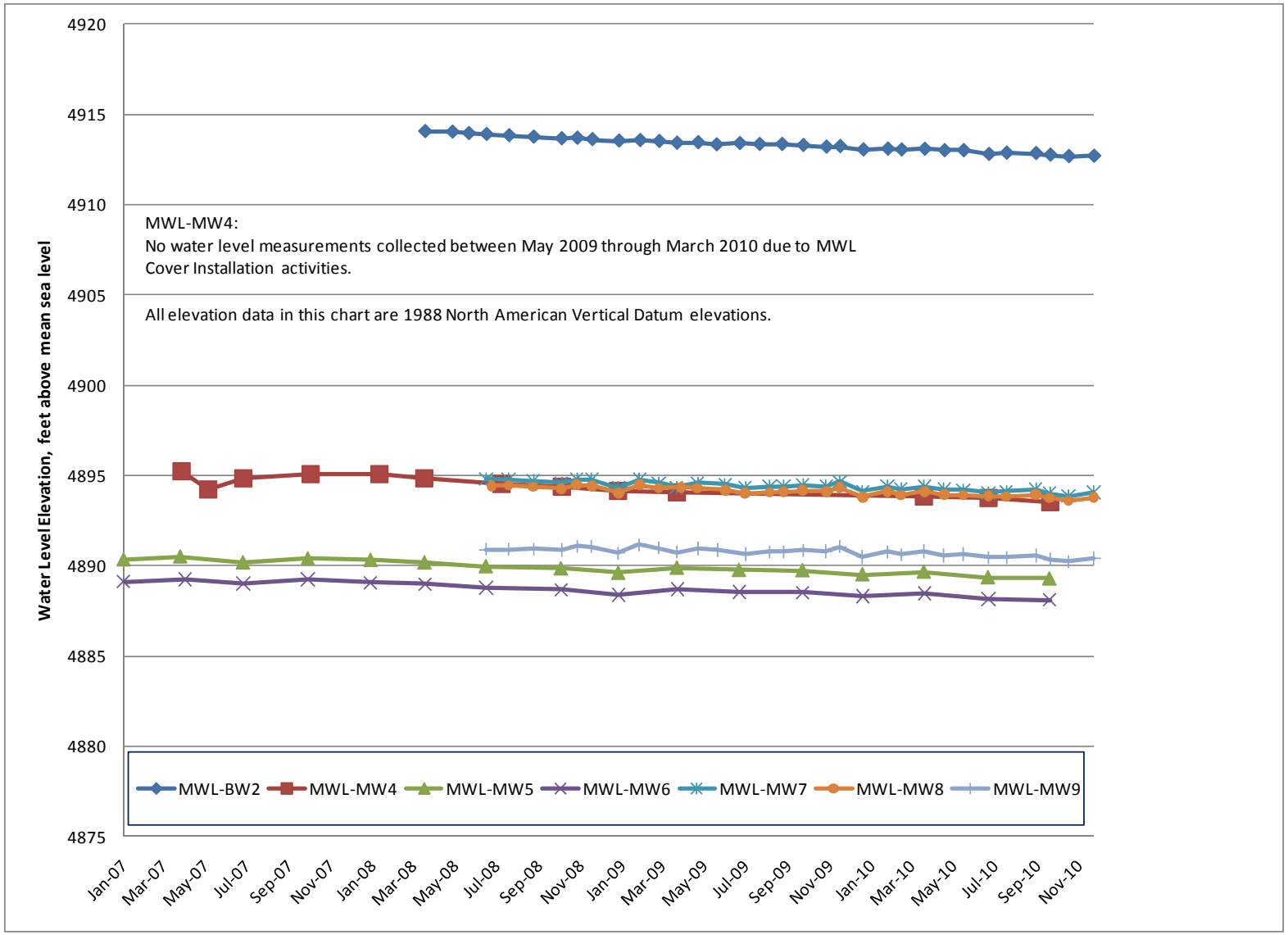

Figure 4.1-2
Hydrographs for MWL Monitoring Wells, January 2007 through December 2010

Purge volumes and indicator parameter measurements prior to sampling are shown in Table A-2 (Appendix A). The monitoring wells that have low yield were purged to dryness (Table A-2), allowed to recover, and then sampled to collect representative groundwater samples.

Field analytical measurements of stabilization parameters were collected in accordance with FOP 05-01 (SNL/NM November 2009a). Groundwater temperature, SC, pH, oxidation-reduction potential, and dissolved oxygen were measured using a YSI™ Model 620 Water Quality Meter. Turbidity was measured with a Hach™ Model 2100P portable turbidity meter. Field alkalinity was measured by field personnel using HACH Method 8203. Field water quality results are presented in Appendix A, Table A-2.

4.3 Pump Decontamination

The Bennett™ pump and tubing bundle used to collect groundwater samples were decontaminated prior to installation in MWL monitoring wells according to FOP 05-03, "LTES Groundwater Sampling Equipment Decontamination" (SNL/NM November 2009b). The EB samples for the CY 2010 groundwater sampling events were collected after decontamination to verify the effectiveness of the decontamination procedure and are discussed in Section 7.1.2.

4.4 Sample Collection

A Bennett™ sampling system was used to collect the groundwater samples from all MWL monitoring wells. The pump intake was set near or at the bottom of each screen interval (Appendix A, Table A-1). The minimum flow rate, given limitations of equipment and well characteristics, was used for all purging and sampling activities. All groundwater samples were collected directly from the pump discharge tubing into laboratory-provided sample containers.

Two groundwater samples were collected from each monitoring well for metal analyses. One unfiltered sample was collected for total metal analyses. The other sample was filtered through a 0.45-micron filter for dissolved metal analyses. Where appropriate for the requested analysis, chemical preservatives were added to the sample containers at the laboratory prior to shipment.

4.5 Sample Handling and Shipment

Immediately after collection, all sample containers were custody-taped, sealed in plastic bags, and placed on cold packs in shipping containers. Analysis Request/Chain-of-Custody forms were completed at the time of collection. The samples for chemical and radiological analyses were shipped via the SNL/NM Sample Management Office to the contracted analytical laboratory. Sample management activities followed SNL/NM Administrative Operating Procedure (AOP) 95-16, "Sample Management and Custody" (SNL/NM March 2007).

4.6 Waste Management

All purge and decontamination water was managed according to FOP 05-04, “LTES Groundwater Monitoring Waste Management” (SNL/NM November 2009c), and containerized on site pending the results of the analyses. All waste was managed as “nonregulated” waste, based upon historical sampling results and process knowledge of monitoring well locations. Results for the associated environmental samples provide supplemental data for approval to discharge water to the City of Albuquerque sanitary sewer system.

5.0 ANALYTICAL METHODS

Groundwater samples were submitted to GEL for chemical and radiological analyses. Analyses were performed in accordance with U.S. Environmental Protection Agency (EPA) test methods (EPA 1979, 1980, and 1986; Clesceri et al. 1998) and specified performance criteria (SNL/NM March 2003). Table A-3 (Appendix A) specifies the analytical parameters, appropriate test methods, and target analyte quantitation limits for sample analyses.

Analytical reports including certificates of analyses, analytical methods, method detection limits (MDLs), practical quantitation limits (PQLs), dates of analyses, results of QC analyses, and data validation findings are filed in the SNL/NM Customer Funded Records Center.

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6.0 SUMMARY OF ANALYTICAL RESULTS

Tables summarizing field measurements and analytical results are provided in Appendix A. Complete field documentation and laboratory analytical reports are filed in the SNL/NM Customer Funded Records Center.

The results for chemical and radiological constituent analysis are compared with established EPA Safe Drinking Water Act maximum contaminant levels (MCLs) (EPA 2009) and NMED HWB-approved background concentrations (NMED November 1998), where applicable.

The QC samples associated with each sampling event are included in the analysis of results and are discussed in Section 7.0. Data qualifiers resulting from QC samples or data validation results are presented with the related data in the respective data tables in Appendix A.

6.1 General Chemistry Parameters

The general chemistry analytical results are presented in Tables A-4 and A-5 (Appendix A). No general chemistry parameters exceed established MCLs in the groundwater samples. The only two parameters that have established MCLs are NPN (as nitrogen) and fluoride (10 and 4 milligrams per liter [mg/L], respectively. Concentrations of NPN (as nitrogen) range from 0.900 mg/L in the July MWL-MW8 sample to 3.59 mg/L in the April MWL-MW7 sample. Fluoride was detected at concentrations ranging from 0.642 mg/L in the January MWL-BW2 sample to 1.05 mg/L in the April MWL-MW9 sample.

6.2 Target Analyte List Metals

The TAL metal analysis includes two sets of analyses and results, filtered and unfiltered. Groundwater samples obtained for total metal analyses are collected without filtering, and dissolved metal samples are collected by filtering the sample prior to analysis (SNL/NM November 2009a). The difference in concentrations between the total and dissolved fraction may be attributed to the original metallic ion content of the particles and any sorption of ions to the suspended particles.

Table A-6 (Appendix A) summarizes the metal results, including total uranium, from all unfiltered groundwater samples collected during the CY 2010 groundwater monitoring events at the MWL. Samples were analyzed for TAL metals according to EPA Methods 6020 and 7470 (EPA 1986). No metals were detected in the unfiltered samples at concentrations that exceed the established MCLs, and the results are consistent with data from previous sampling events at the MWL. Barium results exceed the NMED HWB-approved background concentration of 0.120 mg/L in the groundwater samples from MWL-MW5 and MWL-MW8. Barium was reported in the environmental and duplicate samples from MWL-MW5 at concentrations of 0.126 and 0.127 mg/L, respectively. Barium was reported in all CY 2010 samples from MWL-MW8 at concentrations ranging from 0.141 to 0.145 mg/L. Uranium exceeds the NMED HWB-approved background concentration of 0.0052 mg/L in all CY 2010 MWL samples at concentrations ranging from 0.00573 mg/L in the April sample from MWL-MW4 to 0.00994 mg/L in the April sample from MWL-MW5.

Table A-7 (Appendix A) summarizes the metal results, including total uranium, for the filtered samples collected during the CY 2010 groundwater monitoring events. No detections of any metals in the filtered samples exceed the respective MCLs, and the results are consistent with data from previous sampling events at the MWL. Barium results exceed the NMED HWB-approved background concentration of 0.120 mg/L in the samples from MWL-MW5 and MWL-MW8 at concentrations ranging from 0.129 to 0.144 mg/L. Uranium exceeds the NMED HWB-approved background concentration of 0.0052 mg/L in all CY 2010 MWL samples at concentrations ranging from 0.0058 mg/L in the April sample from MWL-MW4 to 0.0102 mg/L in the April sample from MWL-MW5.

Barium and total uranium results for unfiltered and filtered samples reflect site-specific variations in background concentrations that are well below the established MCLs and are consistent with historical MWL monitoring results. They are not indicative of groundwater contamination.

6.3 Volatile and Semivolatile Organic Compounds

Detected VOCs and SVOCs are presented in Table A-8 (Appendix A). No VOCs or SVOCs were detected in any sample except for the VOCs toluene, chloromethane, and acetone. Toluene was detected in five January samples (one of which was a duplicate sample) including the sample from the background well MWL-BW2. Toluene concentrations ranged from 0.285 to 1.45 micrograms per liter (µg/L). All detections were very low concentrations and, of the five sampling results, three are below the PQL of 1.00 µg/L. No toluene detections were reported for the April and July samples, including the April purging/sampling study samples (34 samples and 14 field QC samples [SNL/NM October 2010]). Chloromethane was detected in two samples below the PQL of 1.00 µg/L, and acetone was detected below the PQL of 10.0 µg/L. Neither constituent has an established MCL.

During the April groundwater sampling event, two detections of methylene chloride (MWL-MW5 environmental and duplicate samples) and one detection of toluene were qualified as not detected during data validation due to associated laboratory method blank contamination (Section 7.2). Laboratory MDLs for VOCs and SVOCs are presented in Table A-9 (Appendix A).

The sporadic, very low-concentration detections of various VOCs are consistent with historic monitoring results and most likely reflect incidental sample contamination during the sampling, shipping, and/or laboratory analysis process. The results are not indicative of groundwater contamination.

6.4 Radiological Parameters

Groundwater samples from the MWL monitoring wells were screened for gamma-emitting radionuclides, gross alpha/beta activity, and tritium. The results for tritium, gross alpha/beta, gamma spectroscopy, and low-level tritium (April only) analyses are presented in Table A-10 (Appendix A) and are compared with the established EPA MCLs for gross alpha/beta activity and the NMED HWB background activity for cesium-137.

Gamma spectroscopy activity levels for short-list radionuclides are less than the associated minimum detectable activity (MDA). The potassium-40 results for the January environmental sample from MWL-MW7 and the April environmental sample from MWL-MW8 were rejected by the laboratory due to the peak not meeting identification criteria; however, these results were

qualified as not detected during data validation (i.e., results are not statistically different from zero). The potassium-40 activity result in the MWL-MW7 duplicate sample was not rejected by the laboratory and is less than the associated MDA.

Radioisotopic analyses included gross alpha/beta activity and tritium analyses (all sampling events) and istotopic uranium and radon-222 (July). The gross alpha measurements were corrected for naturally occurring uranium activity according to Title 40, Code of Federal Regulations, Parts 9, 141, and 142, Table I-4. No gross alpha activity results exceed the MCL of 15 picocuries per liter (pCi/L), and gross beta activity screening results do not exceed established limits. Isotopic uranium activity results are below NMED HWB background concentrations. Radon-222 was reported below the NMED HWB background level of 300 pCi/L in all groundwater samples, except the July sample from MWL-BW2 that had an activity of 494 ± 132 pCi/L. This result for the MWL-BW2 sample reflects site-specific variation in the radon-222 background concentration and is not indicative of groundwater contamination. Tritium activity levels are below laboratory MDAs in all groundwater samples (i.e., tritium was not detected). However, because it is a constituent of concern at the MWL, the results are presented in Table A-10 (Appendix A).

All April low-level tritium results were reported as nondetections except for the MWL-MW6 sample result (1.22 pCi/L). This result is slightly higher than the PQL of 1.18 pCi/L, but was qualified as estimated during data validation and is not indicative of groundwater contamination. Only detections are shown in Table A-10 for the April low-level tritium results.

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7.0 QUALITY CONTROL SAMPLE RESULTS

Field and laboratory QC samples were prepared to determine the accuracy of the methods used and to detect inadvertent sample contamination that may have occurred during the sampling and analysis process. All data were reviewed in accordance with AOP 00-03 “Data Validation Procedure for Chemical and Radiochemical Data” (SNL/NM July 2007). The results for each QC analysis and the impact on data quality are discussed in the following sections.

7.1 Field Quality Control Samples

The QC samples collected in the field included TB, EB, FB, and field duplicate samples. TB samples are submitted whenever samples are collected for VOC analysis to assess whether contamination of the samples occurred during shipment and storage. EB samples are collected to verify the effectiveness of the sampling equipment decontamination process, and duplicate samples are collected immediately after the environmental sample to provide information about sampling variability. FB samples provide a check for potential ambient sources of sample contamination during the sampling process and/or sampling error. The following sections discuss the analytical results for each QC sample type.

7.1.1 Trip Blank Samples

TB samples were submitted whenever samples were collected for VOC analysis to assess whether contamination of the samples had occurred during shipment and storage. TB samples consist of laboratory reagent-grade water with hydrochloric acid preservative contained in 40-milliliter volatile organic analysis vials prepared by the analytical laboratory, which accompany the empty sample containers supplied by the laboratory. TBs were brought to the field and accompanied each sample shipment. TB sample results are summarized as follows by sampling event.

January 2010. A total of seven TB samples were submitted with the January samples. No VOCs were detected above associated laboratory MDLs, except chloromethane. Chloromethane was detected in TBs associated with three EB samples and the MWL-BW2 environmental sample. No corrective action was required, as chloromethane was not detected in the associated EB samples or the MWL-BW2 environmental sample.

April 2010. A total of 10 TB samples were submitted with the April samples. No VOCs were detected above associated laboratory MDLs. Methylene chloride and toluene were qualified as not detected in TB samples associated with MWL-MW5, MWL-MW8, and both EB samples during data validation due to associated laboratory method blank contamination.

July 2010. A total of five TB samples were submitted with the July 2010 samples. No VOCs were detected above associated laboratory MDLs.

7.1.2 Equipment Blank Samples

A total of seven EB samples were collected during the CY 2010 sampling events at the MWL to verify the equipment decontamination process. The EB samples are collected prior to sampling various wells and submitted for all analytical parameters. The EB sampling results are summarized as follows by sampling event.

January 2010. A total of four EB samples were collected prior to sampling each monitoring well. The EB collected prior to sampling MWL-MW7 was submitted for all analytical parameters. EB samples associated with MWL-BW2, MWL-MW8, and MWL-MW9 were submitted for a limited set of parameters including VOCs, SVOCs, and metals. Various organic and inorganic parameters were detected in the EB samples. No corrective action was required except for metals. Detected metals included aluminum, arsenic, barium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, potassium, sodium, and zinc. Metals in associated environmental samples detected at concentrations less than five times the EB result were qualified as not detected during data validation. The number of metals detected in the EB samples may be attributed to new stainless steel water lines installed inside the sampling truck prior to this sampling event as part of the toluene investigation (Section 1.0), deionized water quality, sampling equipment, and/or the analytical laboratory.

April 2010. A total of two EB samples were collected prior to sampling monitoring wells MWL-BW2 and MWL-MW5 and submitted for all analyses. Various VOCs, chloride, alkalinity, calcium, chromium, cobalt, copper, iron, magnesium, manganese, sodium, and vanadium were detected in the EB samples. No corrective action was required for detected organic compounds as these compounds were not detected in associated environmental samples. No corrective action was required for chloride, alkalinity, calcium, chromium, iron, magnesium, manganese, or sodium, as these parameters were either not detected in the associated environmental samples or detected at concentrations greater than five times the EB result. Filtered fractions of cobalt, copper, and vanadium and unfiltered fractions of copper in associated environmental samples were detected at concentrations less than five times the EB result and were qualified as not detected during data validation.

July 2010. One EB sample was collected prior to sampling monitoring well MWL-MW7 and submitted for all analyses. Bromodichloromethane, chloroform, cadmium, calcium, cobalt, copper, iron, magnesium, zinc, and gross alpha were detected in the EB sample. No corrective action was required for bromodichloromethane, chloroform, cadmium, or zinc, as these analytes were not detected in the associated environmental sample. No corrective action was required for calcium, cobalt, or magnesium, as these parameters were detected in the environmental sample at concentrations greater than five times the EB result. The environmental sample results for copper, iron, and gross alpha were qualified as not detected during data validation because the results are less than five times the EB result.

7.1.3 Field Blank Samples

FB samples were collected at the various sampling locations, stored with the associated environmental samples throughout the sampling process, and returned to the laboratory for VOC analyses with the associated environmental samples to assess whether contamination of the samples resulted from ambient field conditions. The FB samples are prepared by pouring deionized water into sample containers at the sampling point (i.e., in the sampling truck at the well location) to simulate the transfer of environmental samples from the sampling system to the

sample container. Based upon a recommendation presented in the MWL Toluene Investigation Report (SNL/NM October 2010), an FB sample was collected for each MWL sampling location starting with the July sampling event.

January, April, and July 2010. In January and April, one FB sample was collected at MWL-MW9, and in July, four FB samples were collected at MWL-BW2, MWL-MW7, MWL-MW8, and MWL-MW9. Bromodichloromethane, chloroform, and dibromochloromethane were detected in the FB samples. No corrective action was required as these compounds were not detected in the associated environmental samples.

7.1.4 Field Duplicate Samples

Duplicate environmental samples were collected to estimate the overall reproducibility of the sampling and analytical processes. The duplicate samples were collected immediately after the original environmental sample in order to reduce variability caused by time and/or sampling mechanics. Duplicate samples were analyzed for all analytical parameters.

Relative percent difference (RPD) calculations between duplicate samples were performed for detected analytes. Table A-11 (Appendix A) summarizes the results for the CY 2010 duplicate sample analyses and presents calculated RPD values.

January, April, and July 2010. The MWL Mini-SAPs do not specify QC acceptance criteria for duplicate sample data; however, duplicate sample results show good correlation (low RPD values less than or equal to 20) for all calculated parameters, except aluminum, nickel, vanadium, and zinc. The RPD values for aluminum and vanadium were calculated at 58 and 90, respectively, for the unfiltered MWL-BW2 sample in April; the RPD for zinc was calculated at 44 in the filtered MWL-MW5 sample in April; and the RPD values for nickel and vanadium were calculated at 97 and 23, respectively, for the filtered MWL-MW7 sample in July. The RPD values for these metal parameters are considered estimated values, as reported concentrations are below associated PQLs.

7.2 Laboratory Quality Control Samples

Internal laboratory QC samples, including method blanks and duplicate laboratory control samples, were analyzed concurrently with all groundwater samples. Additionally, batch matrix spike, matrix spike duplicate, and surrogate spike analyses were analyzed by GEL. The chemical data were reviewed and qualified in accordance with AOP 00-03 (SNL/NM July 2007). Although some analytical results were qualified as not detected or as estimated values during the data validation process, no significant data quality problems were noted for any CY 2010 MWL groundwater monitoring samples.

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8.0 VARIANCES AND NONCONFORMANCES

All analytical and field methods were performed according to the requirements specified in the MWL groundwater monitoring Mini-SAPs for CY 2010 (SNL/NM January 2010b, April 2010, and July 2010), and no variances from the plans occurred.

As addressed in Section 7.1, various constituents have been detected in field QC samples since SNL/NM personnel changed suppliers for deionized water. In particular, various metals and the VOCs bromodichloromethane, chloroform, and dibromochloromethane continue to be detected in the FB samples. The DOE and Sandia continue to test and investigate the quality of deionized water currently in use and will make adjustments as necessary.

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9.0 SUMMARY AND CONCLUSIONS

Groundwater sampling and analysis were conducted at the MWL during three quarters in CY 2010 according to the Mini-SAPs generated for each sampling event (SNL/NM January 2010b, April 2010, and July 2010). No organic, inorganic, general chemistry, or radiological constituents were detected at concentrations or activity levels that exceed the respective established MCLs (where applicable) in the groundwater samples. The metals barium and uranium and radon-222 exceed the NMED HWB-approved background concentrations (NMED November 1998). Barium exceeds the NMED HWB-approved background concentration of 0.120 mg/L in unfiltered and filtered samples from MWL-MW5 and MWL-MW8 at concentrations ranging from 0.126 to 0.145 mg/L. Uranium exceeds the NMED HWB-approved background concentration of 0.0052 mg/L in all MWL unfiltered and filtered samples at concentrations ranging from 0.00573 to 0.0102 mg/L. Radon-222 was reported above the NMED HWB-approved background activity of 300 pCi/L in the July sample from MWL-BW2 at an activity of 494 ± 132 pCi/L. These results reflect site-specific variations in background concentrations or activity levels that are consistent with historical MWL monitoring results. They are not indicative of groundwater contamination.

The groundwater monitoring results for the CY 2010 sampling events are consistent with data for previous sampling events, within the range of historical MWL groundwater data, and indicate the MWL has not impacted groundwater beneath the site. Based upon the field and laboratory QC sample and data validation results, the CY 2010 groundwater monitoring data are defensible and representative.

Toluene was detected at very low concentrations in all the groundwater samples collected in January but was not detected in any of the samples collected in April or July. The toluene concentrations detected in the April groundwater and field QC samples, including some of the samples associated with the toluene investigation purging/sampling study, were related to contamination introduced into the samples during the analytical process at the off-site laboratory. The sporadic, very low-concentration detections of various VOCs including toluene are consistent with historical monitoring results and most likely reflect incidental sample contamination introduced during the sampling, shipping, and/or laboratory analytical process. The results are not indicative of groundwater contamination, as conclusively demonstrated in the “Mixed Waste Landfill Toluene Investigation Report” (SNL/NM October 2010).

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10.0 REFERENCES

Bearzi, J. (New Mexico Environment Department Hazardous Waste Bureau), January 2009. Letter to P. Wagner (U.S. Department of Energy) and F. Nimick (Sandia National Laboratories), "Notice of approval: Summary report for mixed waste landfill monitoring well plug and abandonment and installation—decommissioning of groundwater monitoring wells MWL-MW1, 2, and 3; Installation of groundwater monitoring wells MWL-MW7, 8, and 9, September, 2008, Sandia National Laboratories, EPA ID#NM5890110518 HWB-SNL-08-020," Hazardous Waste Bureau, New Mexico Environment Department, Santa Fe, New Mexico, January 15, 2009.

Bearzi, J.P. (New Mexico Environment Department), April 2010. Letter to P. Wagner (U.S. Department of Energy) and M. Walck (Sandia Corporation), "Toluene Detections in Groundwater, Sandia National Laboratories Mixed Waste Landfill," Hazardous Waste Bureau, New Mexico Environment Department, Santa Fe, New Mexico, April 30, 2010.

Bearzi, J.P. (New Mexico Environment Department), September 2010. Letter to P. Wagner (U.S. Department of Energy) and M. Walck (Sandia Corporation), "Notice of Disapproval, Mixed Waste Landfill Toluene Investigation Report, August 2010," Hazardous Waste Bureau, New Mexico Environment Department, Santa Fe, New Mexico, September 30, 2010.

Bearzi, J.P. (New Mexico Environment Department), January 2011. Letter to P. Wagner (U.S. Department of Energy) and J. Hruby (Sandia Corporation), "Notice of Approval, Mixed Waste Landfill Toluene Investigation Report, Revised October 2010, Sandia National Laboratories, EPA ID No. NM5890110518, HWB-SNL-10-011," Hazardous Waste Bureau, New Mexico Environment Department, Santa Fe, New Mexico, January 13, 2011.

Clesceri, L.S., A.E. Greenburg, and A.D. Eaton, 1998. "Standard Methods for the Examination of Water and Wastewater," 20th ed., Standard Method 2320B, published jointly by American Public Health Association, American Water Works Association, and Water Environment Federation, Washington, D.C.

Dinwiddie, R.S. (New Mexico Environment Department), June 1998. Letter to M.J. Zamorski (U.S. Department of Energy), "Mixed Waste Landfill: Regulatory Status, SNL/KAFB," Hazardous Waste Bureau, New Mexico Environment Department, Santa Fe, New Mexico, June 11, 1998.

EPA, see U.S. Environmental Protection Agency.

Goering, T.J., G.M. Haggerty, D. Van Hart, and J.L. Peace, December 2002. "Mixed Waste Landfill Groundwater Report, 1990 through 2001, Sandia National Laboratories, Albuquerque, New Mexico," SAND Report SAND2002-4098, Sandia National Laboratories, Albuquerque, New Mexico.

Lyon, M.L., and T.J. Goering, January 2006. "Mixed Waste Landfill Annual Groundwater Monitoring Report, April 2005," SAND Report SAND2006-0391, Sandia National Laboratories, Albuquerque, New Mexico.

New Mexico Environment Department (NMED), November 1998. Letter from B. Garcia (NMED Hazardous and Radioactive Materials Bureau) to M. Zamorski (U.S. Department of Energy) and J.B. Woodward (Sandia Corporation), Re: “Approval, SNL Background Study,” New Mexico Environment Department, Santa Fe, New Mexico, November 25, 1998.

New Mexico Environment Department (NMED), April 2004. “Compliance Order on Consent Pursuant to the New Mexico Hazardous Waste Act,§ 74-4-10,” New Mexico Environment Department, Santa Fe, New Mexico.

NMED, see New Mexico Environment Department.

Peace, J.L., T.J. Goering, and M.D. McVey, September 2002. “Report of the Mixed Waste Landfill Phase 2 RCRA Facility Investigation, Sandia National Laboratories, Albuquerque, New Mexico,” SAND Report SAND2002-2997, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), December 2001. “Mixed Waste Landfill Quarterly Groundwater Monitoring Report for Monitoring Wells MWL-MW5 and MWL-MW6, July 2001, Sandia National Laboratories/New Mexico,” Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), January 2002. “Mixed Waste Landfill Quarterly Groundwater Monitoring Report, MWL-MW4, MWL-MW5, and MWL-MW6, January 2002,” Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), March 2002. “Mixed Waste Landfill Quarterly Groundwater Monitoring Report, MWL-MW4, MWL-MW5, and MWL-MW6, October/November 2001,” Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), July 2002. “Mixed Waste Landfill Quarterly Groundwater Monitoring Report, MWL-MW5 and MWL-MW6, July 2002,” Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), August 2002. “Mixed Waste Landfill Annual Groundwater Monitoring Report, April 2002,” Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), October 2002. “Mixed Waste Landfill Quarterly Groundwater Monitoring Report, MWL-MW5 and MWL-MW6, October 2002,” Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), March 2003. “SNL/NM Statement of Work for Analytical Laboratories,” Revision 2, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), June 2003. “Mixed Waste Landfill Annual Groundwater Monitoring Report, April 2003,” Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), September 2003. “Mixed Waste Landfill Annual Groundwater Monitoring Report, April 2003, Addendum – Cadmium Verification Sampling, September 2003,” Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), July 2004. “Mixed Waste Landfill Annual Groundwater Monitoring Report, April 2004,” Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories, New Mexico (SNL/NM), November 2005. “Mixed Waste Landfill Corrective Measures Implementation Plan,” Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), November 2006. “Mixed Waste Landfill Annual Groundwater Monitoring Report, April 2006 Sampling Event, Sandia National Laboratories/New Mexico,” Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), March 2007. “Sample Management and Custody,” AOP 95-16, Revision 02, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories, New Mexico (SNL/NM), July 2007. “Data Validation Procedure for Chemical and Radiochemical Data,” AOP 00-03, Revision 2, Sample Management Office, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), January 2008. “Mixed Waste Landfill Annual Groundwater Monitoring Report, Spring 2007 Sampling Event,” Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories, New Mexico (SNL/NM), May 2009. “Mixed Waste Landfill Annual Groundwater Monitoring Report, Calendar Year 2008,” Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), November 2009a. “Long-Term Environmental Stewardship (LTES) Groundwater Monitoring Well Sampling and Field Analytical Measurements,” FOP 05-01, Revision 03, Environmental Programs and Assurance Department, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), November 2009b. “Long-Term Environmental Stewardship (LTES) Groundwater Sampling Equipment Decontamination,” FOP 05-03, Revision 03, Environmental Programs and Assurance Department, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), November 2009c. “Long-Term Environmental Stewardship (LTES) Groundwater Monitoring Waste Management,” FOP 05-04, Revision 03, Environmental Programs and Assurance Department, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), November 2009d. “Long-Term Environmental Stewardship (LTES) Groundwater Level Acquisition and Management,” FOP 03-02, Rev. 03, Environmental Programs and Assurance Department, Sandia National Laboratories, Albuquerque, New Mexico

Sandia National Laboratories, New Mexico (SNL/NM), January 2010a. “Mixed Waste Landfill Corrective Measures Implementation Report,” Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories, New Mexico (SNL/NM), January 2010b. “Mixed Waste Landfill Groundwater Monitoring Mini-SAP for FY10, 2nd Quarter Sampling, January 2010,” Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories, New Mexico (SNL/NM), April 2010. “Mixed Waste Landfill Groundwater Monitoring, Mini-SAP for FY10, 3rd Quarter Sampling, April 2010,” Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories, New Mexico (SNL/NM), June 2010. “Mixed Waste Landfill Annual Groundwater Monitoring Report, Calendar Year 2009,” Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories, New Mexico (SNL/NM), July 2010. “Mixed Waste Landfill Groundwater Monitoring, Mini-SAP for FY10, 4th Quarter Sampling, July 2010,” Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories, New Mexico (SNL/NM), October 2010. “Mixed Waste Landfill Toluene Investigation Report,” Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

SNL/NM, see Sandia National Laboratories/New Mexico.

U.S. Environmental Protection Agency (EPA), 1979. “Methods for Chemical Analysis of Water and Wastes,” EPA-600/4-79-020, U.S. Environmental Protection Agency, Cincinnati, Ohio.

U.S. Environmental Protection Agency (EPA), 1980. “Prescribed Procedures for Measurement of Radioactivity in Drinking Water,” EPA-600/4-80-032, U.S. Environmental Protection Agency, Cincinnati, Ohio.

U.S. Environmental Protection Agency (EPA), 1986. “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,” SW-846, 3rd ed., Rev. 1, U.S. Environmental Protection Agency, Washington, D.C.

U.S. Environmental Protection Agency (EPA), 2009. “National Primary Drinking Water Regulations,” EPA 816-F-09-0004, U.S. Environmental Protection Agency, Washington, D.C.

Wagner, P. (U.S. Department of Energy), October 2010. Letter to J.P. Bearzi (New Mexico Environment Department), “Response to September 28, 2010 New Mexico Environment Department Comments on the Mixed Waste Landfill (MWL) Toluene Investigation Report,” Sandia National Laboratories, Albuquerque, New Mexico, October 14, 2010.

APPENDIX A
Summary Tables of Field Measurements and Analytical Results, Calendar Year 2010

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Table

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Table A-1
Groundwater Elevations, Pump Setting Depths, and Static Water Level Information
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Date of Measurement	Measurement Point Elevation[a] (FAMSL)	Depth to Water (FBTOC)	Groundwater Elevation (FAMSL)	Elevation of Bottom of Well (FAMSL)	Static Water Height (feet)	Pump Setting Depth (FBTOC)
MWL-MW4	04/28/10	5391.70	498.09[b]	4893.61	4881.26[c]	12.35	509.5
MWL-MW5	04/20/10	5382.56	493.10	4889.46	4858.82	30.64	517
MWL-MW6	04/19/10	5375.31	486.97	4888.34	4842.13	46.21	527
MWL-MW7	01/05/10	5383.30	489.29	4894.01	4881.63	12.38	493
	04/22/10		488.72	4894.58		12.95	493
	07/07/10		489.15	4894.15		12.52	493
MWL-MW8	01/06/10	5384.67	490.80	4893.87	4882.74	11.13	497
	04/26/10		490.63	4894.04		11.30	497
	07/12/10		490.70	4893.97		11.23	497
MWL-MW9	01/07/10	5381.91	491.36	4890.55	4879.3	11.25	497
	04/21/10		491.04	4890.87		11.57	497
	07/13/10		491.32	4890.59		11.29	497
MWL-BW2	01/04/10	5391.02	478.16	4912.86	4886.67	26.50	497.5
	04/27/10		478.03	4912.99		26.32	497.5
	07/06/10		478.15	4912.87		26.20	497.5

[a]Measurement point is the top of well casing. All elevations in this table are 1988 North American Vertical Datum elevations.
[b]MWL-MW4 orientation is 6 degrees from vertical. Depth of water measurement was 500.83 feet in the well, corrected to 498.09 feet vertically below the measurement point.
[c]Bottom of well MWL-MW4 assumed to be the top of the packer, which is set at the approximate bottom of the upper well screen.
BW = Background Well.
FAMSL = Feet above mean sea level.
FBTOC = Feet below top of casing.
ID = Identification.
MW = Monitoring Well.
MWL = Mixed Waste Landfill.

Table A-2
Summary of Purge Volumes and Purge Indicator Measurements
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Sample Attributes	Measurement Relative to Sampling	Purge Volume (gallons)	Temp (°C)	Specific Conductivity (µmhos/cm)	ORP (mV)	pH (at 25°C)	Turbidity (NTU)	DO (% Sat)
MWL-MW7 Date purge began: 1/5/2010 Date sampled: 1/5/2010	Before Sampling	5	16.43	576	202.1	7.25	0.88	39.2
		6	16.53	576	200.0	7.24	0.66	39.7
		7	16.70	579	196.5	7.24	0.64	40.7
		8	16.74	579	196.9	7.24	0.62	41.7
MWL-MW8[a] Date purge began: 1/6/2010 Date sampled: 1/6/2010	Before Sampling	7	16.33	578	193.6	7.21	1.21	38.1
		8	17.10	582	189.1	7.22	1.29	35.1
		9	17.13	584	187.6	7.21	0.99	32.2
		10	17.35	586	184.4	7.20	1.00	26.9
MWL-MW9[a] Date purge began: 1/7/2010 Date sampled: 1/7/2010	Before Sampling	4	14.78	564	219.3	7.25	0.29	30.0
		5	15.68	565	214.1	7.26	0.77	27.1
		6	16.13	567	210.3	7.26	1.15	25.9
		7	16.49	569	207.0	7.24	1.10	20.9
MWL-BW2 Date purge began: 1/4/2010 Date sampled: 1/4/2010	Before Sampling	34	17.30	700	100.8	7.07	0.26	7.5
		36	17.78	702	100.5	7.07	0.20	7.0
		38	18.02	7.04	100.3	7.07	0.15	6.8
		39	18.14	7.04	100.3	7.07	0.18	6.7
MWL-MW4[a] Date purge began: 4/28/2009 Date sampled: 4/29/2009	Before Sampling	13	20.01	579	96.4	7.41	0.82	27.0
		14	19.39	592	256.4	7.37	0.48	37.6
		15	19.73	592	255.5	7.33	0.53	29.8
		16	19.80	592	257.4	7.33	0.26	27.6
MWL-MW5 Date purge began: 4/20/2010 Date sampled: 4/20/2010	Before Sampling	30	20.72	860	174.2	7.03	0.26	28.2
		35	20.88	861	170.0	7.05	0.23	28.5
		40	21.04	863	166.6	7.03	0.23	28.8
		41	21.00	863	166.5	7.03	0.24	28.9

Refer to footnotes at end of table.

Table A-2 (Continued)
Summary of Purge Volumes and Purge Indicator Measurements
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Sample Attributes	Measurement Relative to Sampling	Purge Volume (gallons)	Temp (°C)	Specific Conductivity (μmhos/cm)	ORP (mV)	pH (at 25°C)	Turbidity (NTU)	DO (% Sat)
MWL-MW6 Date purge began: 4/19/2010 Date sampled: 4/19/2010	Before Sampling	37	20.47	822	179.2	7.16	0.10	33.0
		39	20.62	822	177.2	7.16	0.10	33.1
		40	20.65	821	176.3	7.16	0.09	32.9
		41	20.72	822	175.0	7.16	0.11	33.3
MWL-MW7 Date purge began: 4/22/2010 Date sampled: 4/22/2010	Before Sampling	8	16.53	565	248.2	7.28	0.89	44.8
		9	16.61	565	245.8	7.29	0.69	45.2
		10	16.79	565	243.3	7.30	0.71	44.7
		11	16.67	565	242.3	7.30	0.42	44.2
MWL-MW8[a] Date purge began: 4/26/2010 Date sampled: 4/26/2010	Before Sampling	7	20.34	565	208.5	7.26	1.60	47.8
		8	20.37	568	205.1	7.26	1.58	43.5
		9	21.97	585	155.7	7.20	0.59	30.4
		10	22.14	586	153.3	7.21	0.53	30.1
MWL-MW9[a] Date purge began: 4/21/2010 Date sampled: 4/21/2010	Before Sampling	5	20.34	562	240.9	7.25	1.14	35.6
		6	20.48	562	236.8	7.27	2.22	37.8
		6.5	21.30	570	135.1	7.19	1.60	29.7
		7.5	21.44	571	134.5	7.20	1.50	30.8
MWL-BW2 Date purge began: 4/27/2010 Date sampled: 4/27/2010	Before Sampling	34	19.91	687	159.6	7.13	0.22	7.1
		36	19.91	687	157.1	7.12	0.22	7.0
		38	19.89	6.88	154.8	7.12	0.28	7.1
		40	20.02	688	152.4	7.12	0.25	8.0
MWL-MW7 Date purge began: 7/7/2010 Date sampled: 7/7/2010	Before Sampling	5	22.99	568	243.1	7.55	0.42	49.1
		6	23.47	568	243.7	7.55	0.31	51.6
		7	23.60	569	243.4	7.55	0.25	52.1
		8	23.69	568	243.1	7.55	0.28	52.6

Refer to footnotes at end of table.

Table A-2 (Concluded)
Summary of Purge Volumes and Purge Indicator Measurements
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Sample Attributes	Measurement Relative to Sampling	Purge Volume (gallons)	Temp (°C)	Specific Conductivity (µmhos/cm)	ORP (mV)	pH (at 25°C)	Turbidity (NTU)	DO (% Sat)
MWL-MW8[a] Date purge began: 7/12/2010 Date sampled: 7/12/2010	Before Sampling	8	22.70	574	200.5	7.47	0.94	47.9
		9	22.79	578	200.0	7.46	0.90	42.6
		10	25.84	595	173.0	7.45	0.74	30.5
		11	25.54	595	167.5	7.45	0.83	27.9
MWL-MW9[a] Date purge began: 7/13/2010 Date sampled: 7/13/2010	Before Sampling	3	23.69	554	208.4	7.54	0.66	46.1
		4	23.94	556	213.5	7.55	1.07	49.6
		4.75	23.84	559	21.41	7.54	1.47	41.3
		5.25	25.66	577	223.5	7.47	1.65	47.9
MWL-BW2 Date purge began: 7/6/2010 Date sampled: 7/6/2010	Before Sampling	34	21.32	681	138.4	7.32	0.63	10.1
		36	21.44	680	138.1	7.32	0.65	9.6
		38	21.62	684	140.0	7.32	0.67	11.7
		40	21.70	683	143.6	7.32	0.58	12.8

[a]Wells were purged to dryness. Purge volumes show total gallons removed prior to sampling.

°C = Degree(s) Celsius.
%sat = Percent saturation.
BW = Background Well.
DO = Dissolved oxygen.
µmhos/cm = Micromhos per centimeter.
mV = Millivolt(s).
MW = Monitoring Well.
MWL = Mixed Waste Landfill.
NTU = Nephelometric turbidity units.
ORP = Oxidation-reduction potential.
pH = Potential of hydrogen.
Temp = Temperature.

Table A-3
Analytical Parameters, Test Methods, and Target Quantitation Limits
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Analytical Parameter	Test Method[a]	Target Quantitation Limit[b]
Total Metals TAL and Uranium	SW846-6020 SW846-7470A	0.0002 – 2.50 mg/L
Volatile Organic Compounds	SW846-8260B	1.00 – 10.0 µg/L
Semivolatile Organic Compounds	SW846-8270C	1.00 – 23.8 µg/L
Nitrate plus Nitrite (as nitrogen)	EPA 353.2	0.250 – 0.500 mg/L
Major Anions Bromide, Fluoride, Chloride, and Sulfate	SW846-9056	0.100 – 4.0 mg/L
Total Alkalinity as Calcium Carbonate	SM 2320B	1.00 mg/L
Radionuclides Gamma-Emitting Radionuclides Gross Beta Activity Tritium	 EPA 901.1 EPA 900.0 EPA 906.0 HASL-300	 MDA is isotope-specific 0.969 – 3.51 pCi/L 1.18 – 183 pCi/L

[a]Methods are from EPA, 1979, "Methods for Chemical Analysis of Water and Wastes," EPA-600/4-79-020, U.S. Environmental Protection Agency, Cincinnati, Ohio; EPA, 1980, "Prescribed Procedures for Measurement of Radioactivity in Drinking Water," EPA-600/4-80-032, U.S. Environmental Protection Agency, Cincinnati, Ohio; EPA, 1986, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd ed., Rev. 1, U.S. Environmental Protection Agency, Washington, D.C., or Clesceri, L.S., A.E. Greenburg, and A.D. Eaton, 1998, "Standard Methods for the Examination of Water and Wastewater," 20th ed., Method 2320B; DOE Environmental Measurements Laboratory, 1990, "EML Procedures Manual," 27th ed., Vol. 1, Rev. 1992, HASL-300.
[b]For target compounds only. Reporting limits may be elevated if an interfering component is present or if sample dilution is required.
DOE = U.S. Department of Energy.
EPA = U.S. Environmental Protection Agency.
HASL = Health and Safety Laboratory.
MDA = Minimum detectable activity.
µg/L = Microgram(s) per liter.
mg/L = Milligram(s) per liter.
pCi/L = Picocurie(s) per liter.
SM = Standard Method.
SW = Solid waste.
TAL = Target analyte list.

Table A-4
Summary of Nitrate plus Nitrite Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result (mg/L)	MDL[a] (mg/L)	PQL[b] (mg/L)	MCL[c] (mg/L)	NMED HWB[d] (mg/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample Number	Analytical Method[g]
MWL-BW2 04-Jan-10	Nitrate plus nitrite as N	2.20	0.100	0.500	10.0	4.0			087998-018	EPA 353.2
MWL-MW7 05-Jan-10	Nitrate plus nitrite as N	3.41	0.100	0.500	10.0	4.0			088002-018	EPA 353.2
MWL-MW7 (Duplicate) 05-Jan-10	Nitrate plus nitrite as N	3.29	0.100	0.500	10.0	4.0			088003-018	EPA 353.2
MWL-MW8 06-Jan-10	Nitrate plus nitrite as N	1.07	0.050	0.250	10.0	4.0			088007-018	EPA 353.2
MWL-MW9 07-Jan-10	Nitrate plus nitrite as N	2.12	0.100	0.500	10.0	4.0			088011-018	EPA 353.2
MWL-BW2 27-Apr-10	Nitrate plus nitrite as N	2.38	0.100	0.500	10.0	4.0	B		088942-018	EPA 353.2
MWL-BW2 (Duplicate) 27-Apr-10	Nitrate plus nitrite as N	2.30	0.050	0.250	10.0	4.0	B		088943-018	EPA 353.2
MWL-MW4 29-Apr-10	Nitrate plus nitrite as N	2.43	0.100	0.500	10.0	4.0	B		088949-018	EPA 353.2
MWL-MW5 20-Apr-10	Nitrate plus nitrite as N	1.45	0.050	0.250	10.0	4.0	B		088918-018	EPA 353.2
MWL-MW5 (Duplicate) 20-Apr-10	Nitrate plus nitrite as N	1.55	0.050	0.250	10.0	4.0	B		088919-018	EPA 353.2
MWL-MW6 19-Apr-10	Nitrate plus nitrite as N	1.89	0.100	0.500	10.0	4.0	B		088909-018	EPA 353.2
MWL-MW7 22-Apr-10	Nitrate plus nitrite as N	3.59	0.100	0.500	10.0	4.0	B		088929-018	EPA 353.2
MWL-MW8 26-Apr-10	Nitrate plus nitrite as N	1.32	0.050	0.250	10.0	4.0	B		088934-018	EPA 353.2
MWL-MW9 21-Apr-10	Nitrate plus nitrite as N	2.33	0.100	0.500	10.0	4.0	B		088924-018	EPA 353.2
MWL-BW2 06-Jul-10	Nitrate plus nitrite as N	2.03	0.100	0.500	10.0	4.0			089402-018	EPA 353.2
MWL-MW7 07-Jul-10	Nitrate plus nitrite as N	3.11	0.100	0.500	10.0	4.0			089407-018	EPA 353.2
MWL-MW7 (Duplicate) 07-Jul-10	Nitrate plus nitrite as N	3.11	0.050	0.250	10.0	4.0			089408-018	EPA 353.2

Refer to footnotes at end of table.

Table A-4 (Concluded)
Summary of Nitrate plus Nitrite Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result (mg/L)	MDL[a] (mg/L)	PQL[b] (mg/L)	MCL[c] (mg/L)	NMED HWB[d] (mg/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample Number	Analytical Method[g]
MWL-MW8 12-Jul-10	Nitrate plus nitrite as N	0.900	0.050	0.250	10.0	4.0	B		089411-018	EPA 353.2
MWL-MW9 13-Jul-10	Nitrate plus nitrite as N	2.41	0.100	0.500	10.0	4.0	B		089414-018	EPA 353.2

[a]The MDL is the minimum concentration or activity that can be measured and reported with 99% confidence that the analyte is greater than zero.
[b]The PQL is the lowest concentration of analyte in a sample that can be reliably determined within specified limits of precision and accuracy by the indicated method under routine laboratory operating conditions.
[c]The MCL is established by the EPA Primary Water Regulations (40 CFR 141.11[b]), and subsequent amendments.
[d]NMED, November 1998, Letter from B. Garcia to M. Zamorski (U.S. Department of Energy) and J.B. Woodward (Sandia Corporation), Re: "Approval, SNL Background Study," New Mexico Environment Department, Santa Fe, New Mexico, November 25, 1998.
[e]B = Analyte is detected in associated laboratory method blank.
[f]If cell is blank, then all quality control samples meet acceptance criteria with respect to submitted samples.
[g]EPA 1979, "Methods for Chemical Analysis of Water and Wastes," EPA-600/4-79-020, U.S. Environmental Protection Agency, Cincinnati, Ohio.

BW = Background Well.
CFR = Code of Federal Regulations.
EPA = U.S. Environmental Protection Agency.
HWB = Hazardous Waste Bureau.
ID = Identification.
MCL = Maximum contaminant level.
MDL = Method detection limit.
mg/L = Milligram(s) per liter.
MW = Monitoring Well.
MWL = Mixed Waste Landfill.
N = Nitrogen.
NMED = New Mexico Environment Department.
PQL = Practical quantitation limit.

Table A-5
Summary of Alkalinity and Anion Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result (mg/L)	MDL[a] (mg/L)	PQL[b] (mg/L)	MCL[c] (mg/L)	Laboratory Qualifier[d]	Validation Qualifier[e]	Sample Number	Analytical Method[f]
MWL-BW2	Alkalinity, total as CaCO3	236	0.725	1.00	NE			087998-016	SM 2320B
04-Jan-10	Bromide	0.361	0.066	0.200	NE			087998-016	SW846 9056
	Chloride	67.3	0.660	2.00	NE			087998-016	SW846 9056
	Fluoride	0.642	0.033	0.100	4.0			087998-016	SW846 9056
	Sulfate	46.5	1.00	4.00	NE			087998-016	SW846 9056
MWL-MW7	Alkalinity, total as CaCO3	207	0.725	1.00	NE			088002-016	SM 2320B
05-Jan-10	Bromide	0.294	0.066	0.200	NE			088002-016	SW846 9056
	Chloride	40.2	0.660	2.00	NE			088002-016	SW846 9056
	Fluoride	0.903	0.033	0.100	4.0			088002-016	SW846 9056
	Sulfate	36.8	0.100	0.400	NE			088002-016	SW846 9056
MWL-MW7 (Duplicate)	Alkalinity, total as CaCO3	206	0.725	1.00	NE			088003-016	SM 2320B
05-Jan-10	Bromide	0.278	0.066	0.200	NE			088003-016	SW846 9056
	Chloride	40.4	0.660	2.00	NE			088003-016	SW846 9056
	Fluoride	0.971	0.033	0.100	4.0			088003-016	SW846 9056
	Sulfate	36.8	0.100	0.400	NE			088003-016	SW846 9056
MWL-MW8	Alkalinity, total as CaCO3	217	0.725	1.00	NE			088007-016	SM 2320B
06-Jan-10	Bromide	0.325	0.066	0.200	NE			088007-016	SW846 9056
	Chloride	48.7	0.660	2.00	NE			088007-016	SW846 9056
	Fluoride	0.970	0.033	0.100	4.0			088007-016	SW846 9056
	Sulfate	36.0	0.100	0.400	NE			088007-016	SW846 9056
MWL-MW9	Alkalinity, total as CaCO3	209	0.725	1.00	NE	B		088011-016	SM 2320B
07-Jan-10	Bromide	0.279	0.066	0.200	NE			088011-016	SW846 9056
	Chloride	38.9	0.660	2.00	NE			088011-016	SW846 9056
	Fluoride	1.02	0.033	0.100	4.0			088011-016	SW846 9056
	Sulfate	38.0	0.100	0.400	NE			088011-016	SW846 9056
MWL-BW2	Alkalinity, total as CaCO3	238	0.725	1.00	NE	B		088942-016	SM 2320B
27-Apr-10	Bromide	0.399	0.066	0.200	NE			088942-016	SW846 9056
	Chloride	58.4	0.660	2.00	NE			088942-016	SW846 9056
	Fluoride	0.667	0.033	0.100	4.0			088942-016	SW846 9056
	Sulfate	43.7	1.00	4.00	NE			088942-016	SW846 9056
MWL-BW2 (Duplicate)	Alkalinity, total as CaCO3	235	0.725	1.00	NE	B		088943-016	SM 2320B
27-Apr-10	Bromide	0.399	0.066	0.200	NE			088943-016	SW846 9056
	Chloride	59.3	0.660	2.00	NE			088943-016	SW846 9056
	Fluoride	0.675	0.033	0.100	4.0			088943-016	SW846 9056
	Sulfate	44.6	1.00	4.00	NE			088943-016	SW846 9056

Refer to footnotes at end of table.

Table A-5 (Continued)
Summary of Alkalinity and Anion Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result (mg/L)	MDL[a] (mg/L)	PQL[b] (mg/L)	MCL[c] (mg/L)	Laboratory Qualifier[d]	Validation Qualifier[e]	Sample Number	Analytical Method[f]
MWL-MW4	Alkalinity, total as CaCO3	208	0.725	1.00	NE	B		088949-016	SM 2320B
29-Apr-10	Bromide	0.375	0.066	0.200	NE			088949-016	SW846 9056
	Chloride	47.6	0.660	2.00	NE			088949-016	SW846 9056
	Fluoride	0.982	0.033	0.100	4.0			088949-016	SW846 9056
	Sulfate	38.0	0.100	0.400	NE			088949-016	SW846 9056
MWL-MW5	Alkalinity, total as CaCO3	307	0.725	1.00	NE	B		088918-016	SM 2320B
20-Apr-10	Bromide	0.464	0.066	0.200	NE			088918-016	SW846 9056
	Chloride	84.5	0.660	2.00	NE			088918-016	SW846 9056
	Fluoride	0.861	0.033	0.100	4.0			088918-016	SW846 9056
	Sulfate	53.6	1.00	4.00	NE			088918-016	SW846 9056
MWL-MW5 (Duplicate)	Alkalinity, total as CaCO3	310	0.725	1.00	NE	B		088919-016	SM 2320B
20-Apr-10	Bromide	0.467	0.066	0.200	NE			088919-016	SW846 9056
	Chloride	84.7	0.660	2.00	NE			088919-016	SW846 9056
	Fluoride	0.885	0.033	0.100	4.0			088919-016	SW846 9056
	Sulfate	53.9	1.00	4.00	NE			088919-016	SW846 9056
MWL-MW6	Alkalinity, total as CaCO3	289	0.725	1.00	NE	B		088909-016	SM 2320B
19-Apr-10	Bromide	0.530	0.066	0.200	NE			088909-016	SW846 9056
	Chloride	74.4	0.660	2.00	NE			088909-016	SW846 9056
	Fluoride	0.734	0.033	0.100	4.0			088909-016	SW846 9056
	Sulfate	50.2	1.00	4.00	NE			088909-016	SW846 9056
MWL-MW7	Alkalinity, total as CaCO3	209	0.725	1.00	NE	B		088929-016	SM 2320B
22-Apr-10	Bromide	0.298	0.066	0.200	NE			088929-016	SW846 9056
	Chloride	40.4	0.660	2.00	NE			088929-016	SW846 9056
	Fluoride	1.02	0.033	0.100	4.0			088929-016	SW846 9056
	Sulfate	37.1	0.100	0.400	NE			088929-016	SW846 9056
MWL-MW8	Alkalinity, total as CaCO3	220	0.725	1.00	NE	B		088934-016	SM 2320B
26-Apr-10	Bromide	0.349	0.066	0.200	NE			088934-016	SW846 9056
	Chloride	44.8	0.660	2.00	NE			088934-016	SW846 9056
	Fluoride	0.947	0.033	0.100	4.0			088934-016	SW846 9056
	Sulfate	37.1	0.100	0.400	NE			088934-016	SW846 9056
MWL-MW9	Alkalinity, total as CaCO3	316	0.725	1.00	NE	B		088924-016	SM 2320B
21-Apr-10	Bromide	0.298	0.066	0.200	NE			088924-016	SW846 9056
	Chloride	39.9	0.660	2.00	NE			088924-016	SW846 9056
	Fluoride	1.05	0.033	0.100	4.0			088924-016	SW846 9056
	Sulfate	38.5	0.100	0.400	NE			088924-016	SW846 9056

Refer to footnotes at end of table.

Table A-5 (Concluded)
Summary of Alkalinity and Anion Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result (mg/L)	MDL[a] (mg/L)	PQL[b] (mg/L)	MCL[c] (mg/L)	Laboratory Qualifier[d]	Validation Qualifier[e]	Sample Number	Analytical Method[f]
MWL-BW2	Alkalinity, total as CaCO3	250	0.725	1.00	NE	B		089402-016	SM 2320B
06-Jul-10	Bromide	0.388	0.066	0.200	NE			089402-016	SW846 9056
	Chloride	60.1	0.660	2.00	NE	B		089402-016	SW846 9056
	Fluoride	0.690	0.033	0.100	4.0			089402-016	SW846 9056
	Sulfate	45.0	1.00	4.00	NE			089402-016	SW846 9056
MWL-MW7	Alkalinity, total as CaCO3	217	0.725	1.00	NE	B		089407-016	SM 2320B
07-Jul-10	Bromide	0.328	0.066	0.200	NE			089407-016	SW846 9056
	Chloride	37.9	0.660	2.00	NE	B		089407-016	SW846 9056
	Fluoride	0.919	0.033	0.100	4.0			089407-016	SW846 9056
	Sulfate	37.6	0.100	0.400	NE			089407-016	SW846 9056
MWL-MW7 (Duplicate)	Alkalinity, total as CaCO3	219	0.725	1.00	NE	B		089408-016	SM 2320B
07-Jul-10	Bromide	0.317	0.066	0.200	NE			089408-016	SW846 9056
	Chloride	39.0	0.660	2.00	NE	B		089408-016	SW846 9056
	Fluoride	0.948	0.033	0.100	4.0			089408-016	SW846 9056
	Sulfate	37.5	0.100	0.400	NE			089408-016	SW846 9056
MWL-MW8	Alkalinity, total as CaCO3	231	0.725	1.00	NE	B		089411-016	SM 2320B
12-Jul-10	Bromide	0.361	0.066	0.200	NE			089411-016	SW846 9056
	Chloride	50.5	0.660	2.00	NE			089411-016	SW846 9056
	Fluoride	1.01	0.033	0.100	4.0			089411-016	SW846 9056
	Sulfate	35.5	0.100	0.400	NE			089411-016	SW846 9056
MWL-MW9	Alkalinity, total as CaCO3	227	0.725	1.00	NE	B		089414-016	SM 2320B
13-Jul-10	Bromide	0.333	0.066	0.200	NE			089414-016	SW846 9056
	Chloride	39.3	0.660	2.00	NE			089414-016	SW846 9056
	Fluoride	1.04	0.033	0.100	4.0			089414-016	SW846 9056
	Sulfate	38.2	0.100	0.400	NE			089414-016	SW846 9056

[a]The MDL is the minimum concentration or activity that can be measured and reported with 99% confidence that the analyte is greater than zero.
[b]The PQL is the lowest concentration of analyte in a sample that can be reliably determined within specified limits of precision and accuracy by the indicated method under routine laboratory operating conditions.
[c]The MCL is established by the EPA Primary Water Regulations (40 CFR 141.11[b]), and subsequent amendments.
[d]B = Analyte is detected in associated laboratory method blank.
[e]If cell is blank, then all quality control samples meet acceptance criteria with respect to submitted samples.
[f]EPA 1986,"Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd ed., Rev. 1, U.S. Environmental Protection Agency, Washington, D.C.
Clesceri, L.S., A.E. Greenburg, and A.D. Eaton, 1998, *Standard Methods for the Examination of Water and Wastewater*, 20th ed., Method 2320B.

BW = Background Well.
CaCO3 = Calcium carbonate.
CFR = Code of Federal Regulations
EPA = U.S. Environmental Protection Agency.
ID = Identification.
MCL = Maximum contaminant level.
MDL = Method detection limit.
mg/L = Milligram(s) per liter.
MW = Monitoring Well.
MWL = Mixed Waste Landfill.
NE = Not established.
PQL = Practical quantitation limit.
SM = Standard Method.
SW = Solid waste.

Table A-6
Summary of Unfiltered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-BW2	Aluminum	ND	0.010	0.030	NE	NE	U		087998-009	SW846 6020
04-Jan-10	Antimony	ND	0.0005	0.003	0.006	0.006	U		087998-009	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	0.014	U		087998-009	SW846 6020
	Barium	0.0909	0.0005	0.002	2.00	0.120			087998-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		087998-009	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		087998-009	SW846 6020
	Calcium	72.3	0.100	1.00	NE	NE			087998-009	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		087998-009	SW846 6020
	Cobalt	0.000132	0.0001	0.001	NE	0.0025	J		087998-009	SW846 6020
	Copper	0.000569	0.0003	0.001	NE	< 0.050	J	0.0039U	087998-009	SW846 6020
	Iron	0.192	0.010	0.100	NE	NE			087998-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		087998-009	SW846 6020
	Magnesium	23.0	0.005	0.015	NE	NE			087998-009	SW846 6020
	Manganese	ND	0.001	0.005	NE	NE	U		087998-009	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U		087998-009	SW846 7470
	Nickel	0.00277	0.0005	0.002	NE	0.028			087998-009	SW846 6020
	Potassium	3.86	0.080	0.300	NE	NE			087998-009	SW846 6020
	Selenium	0.00172	0.001	0.005	0.050	0.005	J		087998-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		087998-009	SW846 6020
	Sodium	60.6	0.400	1.25	NE	NE			087998-009	SW846 6020
	Thallium	0.000375	0.0003	0.001	0.002	0.002	J	0.0017U	087998-009	SW846 6020
	Uranium	**0.00686**	0.00005	0.0002	0.030	0.0052			087998-009	SW846 6020
	Vanadium	ND	0.003	0.010	NE	0.013	U		087998-009	SW846 6020
	Zinc	ND	0.0026	0.010	NE	0.260	U		087998-009	SW846 6020

Refer to footnotes at the end of table

Table A-6 (Continued)
Summary of Unfiltered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW7	Aluminum	ND	0.010	0.030	NE	NE	U		088002-009	SW846 6020
05-Jan-10	Antimony	ND	0.0005	0.003	0.006	0.006	U		088002-009	SW846 6020
	Arsenic	0.00184	0.0015	0.005	0.010	0.014	B, J	0.012U	088002-009	SW846 6020
	Barium	0.0974	0.0005	0.002	2.00	0.120			088002-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		088002-009	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		088002-009	SW846 6020
	Calcium	58.6	0.100	1.00	NE	NE			088002-009	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		088002-009	SW846 6020
	Cobalt	0.000105	0.0001	0.001	NE	0.0025	J		088002-009	SW846 6020
	Copper	0.000757	0.0003	0.001	NE	< 0.050	J	0.0045U	088002-009	SW846 6020
	Iron	0.168	0.010	0.100	NE	NE			088002-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		088002-009	SW846 6020
	Magnesium	20.3	0.005	0.015	NE	NE			088002-009	SW846 6020
	Manganese	0.00139	0.001	0.005	NE	NE	J		088002-009	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U		088002-009	SW846 7470
	Nickel	0.00226	0.0005	0.002	NE	0.028			088002-009	SW846 6020
	Potassium	5.10	0.080	0.300	NE	NE			088002-009	SW846 6020
	Selenium	ND	0.001	0.005	0.050	0.005	U		088002-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		088002-009	SW846 6020
	Sodium	50.8	0.400	1.25	NE	NE			088002-009	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		088002-009	SW846 6020
	Uranium	**0.00781**	0.00005	0.0002	0.030	0.0052			088002-009	SW846 6020
	Vanadium	ND	0.003	0.010	NE	0.013	U		088002-009	SW846 6020
	Zinc	ND	0.0026	0.010	NE	0.260	U		088002-009	SW846 6020

Refer to footnotes at the end of table

Table A-6 (Continued)
Summary of Unfiltered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW7 (Duplicate) 05-Jan-10	Aluminum	ND	0.010	0.030	NE	NE	U		088003-009	SW846 6020
	Antimony	ND	0.0005	0.003	0.006	0.006	U		088003-009	SW846 6020
	Arsenic	0.0019	0.0015	0.005	0.010	0.014	B, J	0.012U	088003-009	SW846 6020
	Barium	0.104	0.0005	0.002	2.00	0.120			088003-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		088003-009	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		088003-009	SW846 6020
	Calcium	61.0	0.100	1.00	NE	NE			088003-009	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		088003-009	SW846 6020
	Cobalt	0.000113	0.0001	0.001	NE	0.0025	J		088003-009	SW846 6020
	Copper	0.000695	0.0003	0.001	NE	< 0.050	J	0.0045U	088003-009	SW846 6020
	Iron	0.187	0.010	0.100	NE	NE			088003-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		088003-009	SW846 6020
	Magnesium	22.1	0.005	0.015	NE	NE			088003-009	SW846 6020
	Manganese	0.00137	0.001	0.005	NE	NE	J		088003-009	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U		088003-009	SW846 7470
	Nickel	0.00244	0.0005	0.002	NE	0.028			088003-009	SW846 6020
	Potassium	5.37	0.080	0.300	NE	NE			088003-009	SW846 6020
	Selenium	ND	0.001	0.005	0.050	0.005	U		088003-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		088003-009	SW846 6020
	Sodium	53.2	0.400	1.25	NE	NE			088003-009	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		088003-009	SW846 6020
	Uranium	**0.00833**	0.00005	0.0002	0.030	0.0052			088003-009	SW846 6020
	Vanadium	0.0041	0.003	0.010	NE	0.013	J	0.024U	088003-009	SW846 6020
	Zinc	ND	0.0026	0.010	NE	0.260	U		088003-009	SW846 6020

Refer to footnotes at the end of table

Table A-6 (Continued)
Summary of Unfiltered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW8	Aluminum	0.077	0.010	0.030	NE	NE		0.18U	088007-009	SW846 6020
06-Jan-10	Antimony	ND	0.0005	0.003	0.006	0.006	U		088007-009	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	0.014	U		088007-009	SW846 6020
	Barium	**0.143**	0.0005	0.002	2.00	0.120			088007-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		088007-009	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		088007-009	SW846 6020
	Calcium	60.9	0.100	1.00	NE	NE			088007-009	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		088007-009	SW846 6020
	Cobalt	0.000161	0.0001	0.001	NE	0.0025	J		088007-009	SW846 6020
	Copper	0.000838	0.0003	0.001	NE	< 0.050	J	0.0043U	088007-009	SW846 6020
	Iron	0.275	0.010	0.100	NE	NE			088007-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		088007-009	SW846 6020
	Magnesium	22.1	0.005	0.015	NE	NE			088007-009	SW846 6020
	Manganese	0.227	0.001	0.005	NE	NE			088007-009	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U		088007-009	SW846 7470
	Nickel	0.00279	0.0005	0.002	NE	0.028			088007-009	SW846 6020
	Potassium	5.61	0.080	0.300	NE	NE			088007-009	SW846 6020
	Selenium	ND	0.001	0.005	0.050	0.005	U		088007-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		088007-009	SW846 6020
	Sodium	51.0	0.400	1.25	NE	NE			088007-009	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		088007-009	SW846 6020
	Uranium	**0.00789**	0.00005	0.0002	0.030	0.0052			088007-009	SW846 6020
	Vanadium	ND	0.003	0.010	NE	0.013	U		088007-009	SW846 6020
	Zinc	0.00496	0.0026	0.010	NE	0.260	J		088007-009	SW846 6020

Refer to footnotes at the end of table

Table A-6 (Continued)
Summary of Unfiltered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW9	Aluminum	0.0371	0.010	0.030	NE	NE			088011-009	SW846 6020
07-Jan-10	Antimony	ND	0.0005	0.003	0.006	0.006	U		088011-009	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	0.014	U		088011-009	SW846 6020
	Barium	0.095	0.0005	0.002	2.00	0.120			088011-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		088011-009	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		088011-009	SW846 6020
	Calcium	57.4	0.100	1.00	NE	NE	B		088011-009	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		088011-009	SW846 6020
	Cobalt	0.000256	0.0001	0.001	NE	0.0025	J		088011-009	SW846 6020
	Copper	0.00104	0.0003	0.001	NE	< 0.050		0.0048U	088011-009	SW846 6020
	Iron	0.233	0.010	0.100	NE	NE			088011-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		088011-009	SW846 6020
	Magnesium	19.9	0.005	0.015	NE	NE			088011-009	SW846 6020
	Manganese	0.0195	0.001	0.005	NE	NE			088011-009	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U		088011-009	SW846 7470
	Nickel	0.00186	0.0005	0.002	NE	0.028	J		088011-009	SW846 6020
	Potassium	4.96	0.080	0.300	NE	NE			088011-009	SW846 6020
	Selenium	ND	0.001	0.005	0.050	0.005	U		088011-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		088011-009	SW846 6020
	Sodium	45.2	0.080	0.250	NE	NE			088011-009	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		088011-009	SW846 6020
	Uranium	**0.00942**	0.00005	0.0002	0.030	0.0052			088011-009	SW846 6020
	Vanadium	0.00317	0.003	0.010	NE	0.013	J		088011-009	SW846 6020
	Zinc	0.00317	0.0026	0.010	NE	0.260	J		088011-009	SW846 6020

Refer to footnotes at the end of table

Table A-6 (Continued)
Summary of Unfiltered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-BW2	Aluminum	0.0109	0.010	0.030	NE	NE	J		088942-009	SW846 6020
27-Apr-10	Antimony	ND	0.0005	0.003	0.006	0.006	U		088942-009	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	0.014	U		088942-009	SW846 6020
	Barium	0.0938	0.0005	0.002	2.00	0.120			088942-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		088942-009	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		088942-009	SW846 6020
	Calcium	67.2	0.200	2.00	NE	NE	B		088942-009	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		088942-009	SW846 6020
	Cobalt	ND	0.0001	0.001	NE	0.0025	U		088942-009	SW846 6020
	Copper	0.000382	0.0003	0.001	NE	< 0.050	J	0.019UJ	088942-009	SW846 6020
	Iron	0.0703	0.010	0.100	NE	NE	J		088942-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		088942-009	SW846 6020
	Magnesium	20.9	0.005	0.015	NE	NE			088942-009	SW846 6020
	Manganese	ND	0.001	0.005	NE	NE	U		088942-009	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U		088942-009	SW846 7470
	Nickel	0.00103	0.0005	0.002	NE	0.028	J		088942-009	SW846 6020
	Potassium	4.14	0.080	0.300	NE	NE			088942-009	SW846 6020
	Selenium	0.00241	0.001	0.005	0.050	0.005	J		088942-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		088942-009	SW846 6020
	Sodium	50.2	0.800	2.50	NE	NE			088942-009	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		088942-009	SW846 6020
	Uranium	**0.00652**	0.00005	0.0002	0.030	0.0052			088942-009	SW846 6020
	Vanadium	0.010	0.003	0.010	NE	0.013			088942-009	SW846 6020
	Zinc	ND	0.0026	0.010	NE	0.260	U		088942-009	SW846 6020

Refer to footnotes at the end of table

Table A-6 (Continued)
Summary of Unfiltered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
WL-BW2 (Duplicate)	Aluminum	0.0197	0.010	0.030	NE	NE	J		088943-009	SW846 6020
27-Apr-10	Antimony	ND	0.0005	0.003	0.006	0.006	U		088943-009	SW846 6020
	Arsenic	0.00517	0.0015	0.005	0.010	0.014	B	0.014U	088943-009	SW846 6020
	Barium	0.0943	0.0005	0.002	2.00	0.120			088943-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		088943-009	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		088943-009	SW846 6020
	Calcium	67.8	0.200	2.00	NE	NE	B		088943-009	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		088943-009	SW846 6020
	Cobalt	ND	0.0001	0.001	NE	0.0025	U		088943-009	SW846 6020
	Copper	0.000393	0.0003	0.001	NE	< 0.050	J	0.019UJ	088943-009	SW846 6020
	Iron	0.070	0.010	0.100	NE	NE	J		088943-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		088943-009	SW846 6020
	Magnesium	20.5	0.005	0.015	NE	NE			088943-009	SW846 6020
	Manganese	ND	0.001	0.005	NE	NE	U		088943-009	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U		088943-009	SW846 7470
	Nickel	0.00104	0.0005	0.002	NE	0.028	J		088943-009	SW846 6020
	Potassium	4.02	0.080	0.300	NE	NE			088943-009	SW846 6020
	Selenium	0.00214	0.001	0.005	0.050	0.005	J		088943-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		088943-009	SW846 6020
	Sodium	49.8	0.800	2.50	NE	NE			088943-009	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		088943-009	SW846 6020
	Uranium	**0.00636**	0.00005	0.0002	0.030	0.0052			088943-009	SW846 6020
	Vanadium	0.00378	0.003	0.010	NE	0.013	J		088943-009	SW846 6020
	Zinc	ND	0.0026	0.010	NE	0.260	U		088943-009	SW846 6020

Refer to footnotes at the end of table

Table A-6 (Continued)
Summary of Unfiltered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW4	Aluminum	0.0106	0.010	0.030	NE	NE	J		088949-009	SW846 6020
29-Apr-10	Antimony	0.00372	0.0005	0.003	0.006	0.006			088949-009	SW846 6020
	Arsenic	0.00913	0.0015	0.005	0.010	0.014	B	0.014U	088949-009	SW846 6020
	Barium	0.0974	0.0005	0.002	2.00	0.120			088949-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		088949-009	SW846 6020
	Cadmium	0.000233	0.00011	0.001	0.005	0.00047	J		088949-009	SW846 6020
	Calcium	61.0	0.200	2.00	NE	NE	B		088949-009	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		088949-009	SW846 6020
	Cobalt	0.000166	0.0001	0.001	NE	0.0025	J		088949-009	SW846 6020
	Copper	0.00305	0.0003	0.001	NE	< 0.050			088949-009	SW846 6020
	Iron	0.0607	0.010	0.100	NE	NE	J		088949-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		088949-009	SW846 6020
	Magnesium	18.5	0.005	0.015	NE	NE			088949-009	SW846 6020
	Manganese	0.00925	0.001	0.005	NE	NE			088949-009	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U		088949-009	SW846 7470
	Nickel	0.0106	0.0005	0.002	NE	0.028			088949-009	SW846 6020
	Potassium	5.29	0.080	0.300	NE	NE			088949-009	SW846 6020
	Selenium	ND	0.001	0.005	0.050	0.005	U		088949-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		088949-009	SW846 6020
	Sodium	44.5	0.800	2.50	NE	NE			088949-009	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		088949-009	SW846 6020
	Uranium	**0.00573**	0.00005	0.0002	0.030	0.0052			088949-009	SW846 6020
	Vanadium	ND	0.003	0.010	NE	0.013	U		088949-009	SW846 6020
	Zinc	0.117	0.0026	0.010	NE	0.260			088949-009	SW846 6020

Refer to footnotes at the end of table

Table A-6 (Continued)
Summary of Unfiltered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW5	Aluminum	ND	0.010	0.030	NE	NE	U		088918-009	SW846 6020
20-Apr-10	Antimony	ND	0.0005	0.003	0.006	0.006	U		088918-009	SW846 6020
	Arsenic	0.00326	0.0015	0.005	0.010	0.014	B, J	0.012U	088918-009	SW846 6020
	Barium	**0.126**	0.0005	0.002	2.00	0.120			088918-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		088918-009	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		088918-009	SW846 6020
	Calcium	94.5	0.100	1.00	NE	NE	B		088918-009	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		088918-009	SW846 6020
	Cobalt	0.000141	0.0001	0.001	NE	0.0025	J		088918-009	SW846 6020
	Copper	0.000877	0.0003	0.001	NE	< 0.050	J	0.0092U	088918-009	SW846 6020
	Iron	0.197	0.010	0.100	NE	NE	B		088918-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		088918-009	SW846 6020
	Magnesium	31.1	0.005	0.015	NE	NE			088918-009	SW846 6020
	Manganese	0.00759	0.001	0.005	NE	NE			088918-009	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U	UJ	088918-009	SW846 7470
	Nickel	0.00177	0.0005	0.002	NE	0.028	J		088918-009	SW846 6020
	Potassium	6.39	0.400	1.50	NE	NE			088918-009	SW846 6020
	Selenium	0.00123	0.001	0.005	0.050	0.005	J	NJ-	088918-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		088918-009	SW846 6020
	Sodium	68.6	0.400	1.25	NE	NE			088918-009	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		088918-009	SW846 6020
	Uranium	**0.00994**	0.00005	0.0002	0.030	0.0052			088918-009	SW846 6020
	Vanadium	ND	0.003	0.010	NE	0.013	U	UJ	088918-009	SW846 6020
	Zinc	0.00307	0.0026	0.010	NE	0.260			088918-009	SW846 6020

Refer to footnotes at the end of table

Table A-6 (Continued)
Summary of Unfiltered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW5 (Duplicate) 20-Apr-10	Aluminum	ND	0.010	0.030	NE	NE	U		088919-009	SW846 6020
	Antimony	ND	0.0005	0.003	0.006	0.006	U		088919-009	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	0.014	U		088919-009	SW846 6020
	Barium	**0.127**	0.0005	0.002	2.00	0.120			088919-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		088919-009	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		088919-009	SW846 6020
	Calcium	90.7	0.100	1.00	NE	NE	B		088919-009	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		088919-009	SW846 6020
	Cobalt	0.000122	0.0001	0.001	NE	0.0025	J		088919-009	SW846 6020
	Copper	0.000822	0.0003	0.001	NE	< 0.050	J	0.0092U	088919-009	SW846 6020
	Iron	0.236	0.010	0.100	NE	NE	B		088919-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		088919-009	SW846 6020
	Magnesium	30.9	0.005	0.015	NE	NE			088919-009	SW846 6020
	Manganese	0.0081	0.001	0.005	NE	NE			088919-009	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U	UJ	088919-009	SW846 7470
	Nickel	0.00178	0.0005	0.002	NE	0.028	J		088919-009	SW846 6020
	Potassium	6.43	0.400	1.50	NE	NE			088919-009	SW846 6020
	Selenium	ND	0.001	0.005	0.050	0.005	U	UJ	088919-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		088919-009	SW846 6020
	Sodium	60.9	0.400	1.25	NE	NE			088919-009	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		088919-009	SW846 6020
	Uranium	**0.0099**	0.00005	0.0002	0.030	0.0052			088919-009	SW846 6020
	Vanadium	ND	0.003	0.010	NE	0.013	U	UJ	088919-009	SW846 6020
	Zinc	0.00293	0.0026	0.010	NE	0.260	J		088919-009	SW846 6020

Refer to footnotes at the end of table

Table A-6 (Continued)
Summary of Unfiltered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW6	Aluminum	ND	0.010	0.030	NE	NE	U		088909-009	SW846 6020
19-Apr-10	Antimony	ND	0.0005	0.003	0.006	0.006	U		088909-009	SW846 6020
	Arsenic	0.00288	0.0015	0.005	0.010	0.014	B, J	0.012U	088909-009	SW846 6020
	Barium	0.110	0.0005	0.002	2.00	0.120			088909-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		088909-009	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		088909-009	SW846 6020
	Calcium	90.0	0.100	1.00	NE	NE	B		088909-009	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		088909-009	SW846 6020
	Cobalt	ND	0.0001	0.001	NE	0.0025	U		088909-009	SW846 6020
	Copper	0.000556	0.0003	0.001	NE	< 0.050	J		088909-009	SW846 6020
	Iron	0.0705	0.010	0.100	NE	NE	B, J		088909-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		088909-009	SW846 6020
	Magnesium	28.7	0.005	0.015	NE	NE			088909-009	SW846 6020
	Manganese	ND	0.001	0.005	NE	NE	U		088909-009	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U	UJ	088909-009	SW846 7470
	Nickel	0.0012	0.0005	0.002	NE	0.028	J		088909-009	SW846 6020
	Potassium	6.08	0.400	1.50	NE	NE			088909-009	SW846 6020
	Selenium	0.0016	0.001	0.005	0.050	0.005	J	NJ-	088909-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		088909-009	SW846 6020
	Sodium	63.7	0.400	1.25	NE	NE			088909-009	SW846 6020
	Thallium	0.000771	0.0003	0.001	0.002	0.002	J		088909-009	SW846 6020
	Uranium	**0.00947**	0.00005	0.0002	0.030	0.0052		J+	088909-009	SW846 6020
	Vanadium	0.00674	0.003	0.010	NE	0.013	B, J	0.022U	088909-009	SW846 6020
	Zinc	ND	0.0026	0.010	NE	0.260	U		088909-009	SW846 6020

Refer to footnotes at the end of table

Table A-6 (Continued)
Summary of Unfiltered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW7	Aluminum	ND	0.010	0.030	NE	NE	U		088929-009	SW846 6020
22-Apr-10	Antimony	ND	0.0005	0.003	0.006	0.006	U		088929-009	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	0.014	U		088929-009	SW846 6020
	Barium	0.0995	0.0005	0.002	2.00	0.120			088929-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		088929-009	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		088929-009	SW846 6020
	Calcium	54.5	0.100	1.00	NE	NE	B		088929-009	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		088929-009	SW846 6020
	Cobalt	ND	0.0001	0.001	NE	0.0025	U		088929-009	SW846 6020
	Copper	0.000703	0.0003	0.001	NE	< 0.050	J		088929-009	SW846 6020
	Iron	0.128	0.010	0.100	NE	NE	B		088929-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		088929-009	SW846 6020
	Magnesium	19.1	0.005	0.015	NE	NE			088929-009	SW846 6020
	Manganese	ND	0.001	0.005	NE	NE	U		088929-009	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U	UJ	088929-009	SW846 7470
	Nickel	0.00123	0.0005	0.002	NE	0.028	J		088929-009	SW846 6020
	Potassium	4.84	0.400	1.50	NE	NE			088929-009	SW846 6020
	Selenium	ND	0.001	0.005	0.050	0.005	U	UJ	088929-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		088929-009	SW846 6020
	Sodium	43.9	0.400	1.25	NE	NE			088929-009	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		088929-009	SW846 6020
	Uranium	**0.00819**	0.00005	0.0002	0.030	0.0052			088929-009	SW846 6020
	Vanadium	0.00648	0.003	0.010	NE	0.013	B, J	0.022UJ	088929-009	SW846 6020
	Zinc	0.00342	0.0026	0.010	NE	0.260	J		088929-009	SW846 6020

Refer to footnotes at the end of table

Table A-6 (Continued)
Summary of Unfiltered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW8	Aluminum	0.0355	0.010	0.030	NE	NE			088934-009	SW846 6020
26-Apr-10	Antimony	ND	0.0005	0.003	0.006	0.006	U		088934-009	SW846 6020
	Arsenic	0.00304	0.0015	0.005	0.010	0.014	B, J	0.014U	088934-009	SW846 6020
	Barium	**0.141**	0.0005	0.002	2.00	0.120			088934-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		088934-009	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		088934-009	SW846 6020
	Calcium	57.2	0.200	2.00	NE	NE	B		088934-009	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		088934-009	SW846 6020
	Cobalt	ND	0.0001	0.001	NE	0.0025	U		088934-009	SW846 6020
	Copper	0.000671	0.0003	0.001	NE	< 0.050	J		088934-009	SW846 6020
	Iron	0.149	0.010	0.100	NE	NE			088934-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		088934-009	SW846 6020
	Magnesium	20.3	0.005	0.015	NE	NE			088934-009	SW846 6020
	Manganese	0.00703	0.001	0.005	NE	NE			088934-009	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U		088934-009	SW846 7470
	Nickel	0.00109	0.0005	0.002	NE	0.028	J		088934-009	SW846 6020
	Potassium	5.29	0.080	0.300	NE	NE			088934-009	SW846 6020
	Selenium	ND	0.001	0.005	0.050	0.005	U		088934-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		088934-009	SW846 6020
	Sodium	42.5	0.080	0.250	NE	NE			088934-009	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		088934-009	SW846 6020
	Uranium	**0.00694**	0.00005	0.0002	0.030	0.0052			088934-009	SW846 6020
	Vanadium	ND	0.003	0.010	NE	0.013	U		088934-009	SW846 6020
	Zinc	0.00359	0.0026	0.010	NE	0.260	J		088934-009	SW846 6020

Refer to footnotes at the end of table

Table A-6 (Continued)
Summary of Unfiltered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW9	Aluminum	0.0386	0.010	0.030	NE	NE			088924-009	SW846 6020
21-Apr-10	Antimony	ND	0.0005	0.003	0.006	0.006	U		088924-009	SW846 6020
	Arsenic	0.00344	0.0015	0.005	0.010	0.014	B, J	0.012U	088924-009	SW846 6020
	Barium	0.102	0.0005	0.002	2.00	0.120			088924-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		088924-009	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		088924-009	SW846 6020
	Calcium	58.3	0.100	1.00	NE	NE	B		088924-009	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		088924-009	SW846 6020
	Cobalt	0.000139	0.0001	0.001	NE	0.0025	J		088924-009	SW846 6020
	Copper	0.000816	0.0003	0.001	NE	< 0.050	J		088924-009	SW846 6020
	Iron	0.144	0.010	0.100	NE	NE	B		088924-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		088924-009	SW846 6020
	Magnesium	19.7	0.005	0.015	NE	NE			088924-009	SW846 6020
	Manganese	0.00676	0.001	0.005	NE	NE			088924-009	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U	UJ	088924-009	SW846 7470
	Nickel	0.00122	0.0005	0.002	NE	0.028	J		088924-009	SW846 6020
	Potassium	4.90	0.400	1.50	NE	NE			088924-009	SW846 6020
	Selenium	ND	0.001	0.005	0.050	0.005	U	UJ	088924-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		088924-009	SW846 6020
	Sodium	44.8	0.400	1.25	NE	NE			088924-009	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		088924-009	SW846 6020
	Uranium	**0.00982**	0.00005	0.0002	0.030	0.0052			088924-009	SW846 6020
	Vanadium	0.0149	0.003	0.010	NE	0.013	B	0.022UJ	088924-009	SW846 6020
	Zinc	0.00441	0.0026	0.010	NE	0.260	J		088924-009	SW846 6020

Refer to footnotes at the end of table

Table A-6 (Continued)
Summary of Unfiltered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-BW2	Aluminum	ND	0.010	0.030	NE	NE	U		089402-009	SW846 6020
06-Jul-10	Antimony	ND	0.0005	0.003	0.006	0.006	U		089402-009	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	0.014	U		089402-009	SW846 6020
	Barium	0.0961	0.0005	0.002	2.00	0.120			089402-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		089402-009	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		089402-009	SW846 6020
	Calcium	69.2	0.100	1.00	NE	NE	B		089402-009	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		089402-009	SW846 6020
	Cobalt	0.0001	0.0001	0.001	NE	0.0025	J		089402-009	SW846 6020
	Copper	0.000576	0.0003	0.001	NE	< 0.050	J		089402-009	SW846 6020
	Iron	0.224	0.010	0.100	NE	NE			089402-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		089402-009	SW846 6020
	Magnesium	25.2	0.005	0.015	NE	NE			089402-009	SW846 6020
	Manganese	ND	0.001	0.005	NE	NE	U		089402-009	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U		089402-009	SW846 7470
	Nickel	0.00173	0.0005	0.002	NE	0.028	J		089402-009	SW846 6020
	Potassium	3.93	0.080	0.300	NE	NE			089402-009	SW846 6020
	Selenium	0.00226	0.001	0.005	0.050	0.005	J		089402-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		089402-009	SW846 6020
	Sodium	51.8	0.400	1.25	NE	NE			089402-009	SW846 6020
	Thallium	0.000504	0.0003	0.001	0.002	0.002	J	0.0029U	089402-009	SW846 6020
	Uranium	**0.00729**	0.00005	0.0002	0.030	0.0052			089402-009	SW846 6020
	Vanadium	0.0057	0.003	0.010	NE	0.013	J		089402-009	SW846 6020
	Zinc	ND	0.0026	0.010	NE	0.260	U		089402-009	SW846 6020

Refer to footnotes at the end of table

Table A-6 (Continued)
Summary of Unfiltered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW7	Aluminum	ND	0.010	0.030	NE	NE	U		089407-009	SW846 6020
07-Jul-10	Antimony	ND	0.0005	0.003	0.006	0.006	U		089407-009	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	0.014	U		089407-009	SW846 6020
	Barium	0.0977	0.0005	0.002	2.00	0.120			089407-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		089407-009	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		089407-009	SW846 6020
	Calcium	55.8	0.100	1.00	NE	NE	B		089407-009	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		089407-009	SW846 6020
	Cobalt	ND	0.0001	0.001	NE	0.0025	U		089407-009	SW846 6020
	Copper	0.000736	0.0003	0.001	NE	< 0.050	J	0.013UJ	089407-009	SW846 6020
	Iron	0.183	0.010	0.100	NE	NE			089407-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		089407-009	SW846 6020
	Magnesium	18.0	0.005	0.015	NE	NE			089407-009	SW846 6020
	Manganese	ND	0.001	0.005	NE	NE	U		089407-009	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U		089407-009	SW846 7470
	Nickel	0.00157	0.0005	0.002	NE	0.028	J		089407-009	SW846 6020
	Potassium	4.86	0.080	0.300	NE	NE			089407-009	SW846 6020
	Selenium	ND	0.001	0.005	0.050	0.005	U		089407-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		089407-009	SW846 6020
	Sodium	44.8	0.080	0.250	NE	NE			089407-009	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		089407-009	SW846 6020
	Uranium	**0.00798**	0.00005	0.0002	0.030	0.0052			089407-009	SW846 6020
	Vanadium	0.00783	0.003	0.010	NE	0.013	J		089407-009	SW846 6020
	Zinc	ND	0.0026	0.010	NE	0.260	U		089407-009	SW846 6020

Refer to footnotes at the end of table

Table A-6 (Continued)
Summary of Unfiltered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW7 (Duplicate) 07-Jul-10	Aluminum	ND	0.010	0.030	NE	NE	U		089408-009	SW846 6020
	Antimony	ND	0.0005	0.003	0.006	0.006	U		089408-009	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	0.014	U		089408-009	SW846 6020
	Barium	0.0947	0.0005	0.002	2.00	0.120			089408-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		089408-009	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		089408-009	SW846 6020
	Calcium	54.9	0.100	1.00	NE	NE	B		089408-009	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		089408-009	SW846 6020
	Cobalt	ND	0.0001	0.001	NE	0.0025	U		089408-009	SW846 6020
	Copper	0.000721	0.0003	0.001	NE	< 0.050	J	0.013UJ	089408-009	SW846 6020
	Iron	0.181	0.010	0.100	NE	NE			089408-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		089408-009	SW846 6020
	Magnesium	17.2	0.005	0.015	NE	NE			089408-009	SW846 6020
	Manganese	ND	0.001	0.005	NE	NE	U		089408-009	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U		089408-009	SW846 7470
	Nickel	0.00139	0.0005	0.002	NE	0.028	J		089408-009	SW846 6020
	Potassium	4.52	0.080	0.300	NE	NE			089408-009	SW846 6020
	Selenium	ND	0.001	0.005	0.050	0.005	U		089408-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		089408-009	SW846 6020
	Sodium	45.9	0.080	0.250	NE	NE			089408-009	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		089408-009	SW846 6020
	Uranium	**0.00796**	0.00005	0.0002	0.030	0.0052			089408-009	SW846 6020
	Vanadium	0.00828	0.003	0.010	NE	0.013	J		089408-009	SW846 6020
	Zinc	ND	0.0026	0.010	NE	0.260	U		089408-009	SW846 6020

Refer to footnotes at the end of table

Table A-6 (Continued)
Summary of Unfiltered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW8	Aluminum	0.079	0.010	0.030	NE	NE			089411-009	SW846 6020
12-Jul-10	Antimony	ND	0.0005	0.003	0.006	0.006	U		089411-009	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	0.014	U		089411-009	SW846 6020
	Barium	**0.145**	0.0005	0.002	2.00	0.120			089411-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		089411-009	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		089411-009	SW846 6020
	Calcium	61.2	0.100	1.00	NE	NE			089411-009	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		089411-009	SW846 6020
	Cobalt	0.000101	0.0001	0.001	NE	0.0025	J		089411-009	SW846 6020
	Copper	0.000687	0.0003	0.001	NE	< 0.050	J		089411-009	SW846 6020
	Iron	0.237	0.010	0.100	NE	NE			089411-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		089411-009	SW846 6020
	Magnesium	21.4	0.005	0.015	NE	NE			089411-009	SW846 6020
	Manganese	0.0111	0.001	0.005	NE	NE			089411-009	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U		089411-009	SW846 7470
	Nickel	0.0013	0.0005	0.002	NE	0.028	J		089411-009	SW846 6020
	Potassium	5.34	0.080	0.300	NE	NE			089411-009	SW846 6020
	Selenium	ND	0.001	0.005	0.050	0.005	U		089411-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		089411-009	SW846 6020
	Sodium	46.5	0.080	0.250	NE	NE			089411-009	SW846 6020
	Thallium	0.000508	0.0003	0.001	0.002	0.002	J		089411-009	SW846 6020
	Uranium	**0.00745**	0.00005	0.0002	0.030	0.0052	B		089411-009	SW846 6020
	Vanadium	ND	0.003	0.010	NE	0.013	U		089411-009	SW846 6020
	Zinc	0.0034	0.0026	0.010	NE	0.260	J		089411-009	SW846 6020

Refer to footnotes at the end of table

Table A-6 (Continued)
Summary of Unfiltered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW9	Aluminum	0.0124	0.010	0.030	NE	NE	J		089414-009	SW846 6020
13-Jul-10	Antimony	ND	0.0005	0.003	0.006	0.006	U		089414-009	SW846 6020
	Arsenic	0.00316	0.0015	0.005	0.010	0.014	J		089414-009	SW846 6020
	Barium	0.0959	0.0005	0.002	2.00	0.120			089414-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		089414-009	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		089414-009	SW846 6020
	Calcium	58.4	0.100	1.00	NE	NE			089414-009	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		089414-009	SW846 6020
	Cobalt	ND	0.0001	0.001	NE	0.0025	U		089414-009	SW846 6020
	Copper	0.00102	0.0003	0.001	NE	< 0.050			089414-009	SW846 6020
	Iron	0.165	0.010	0.100	NE	NE			089414-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		089414-009	SW846 6020
	Magnesium	21.5	0.005	0.015	NE	NE			089414-009	SW846 6020
	Manganese	0.00364	0.001	0.005	NE	NE	J		089414-009	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U		089414-009	SW846 7470
	Nickel	0.00134	0.0005	0.002	NE	0.028	J		089414-009	SW846 6020
	Potassium	4.81	0.080	0.300	NE	NE			089414-009	SW846 6020
	Selenium	ND	0.001	0.005	0.050	0.005	U		089414-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		089414-009	SW846 6020
	Sodium	42.4	0.080	0.250	NE	NE			089414-009	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		089414-009	SW846 6020
	Uranium	**0.00881**	0.00005	0.0002	0.030	0.0052	B		089414-009	SW846 6020
	Vanadium	0.00697	0.003	0.010	NE	0.013	J		089414-009	SW846 6020
	Zinc	ND	0.0026	0.010	NE	0.260	U		089414-009	SW846 6020

[a]Values in **bold** exceed the established MCL and/or the NMED HWB-approved background level.
[b]The MDL is the minimum concentration or activity that can be measured and reported with 99% confidence that the analyte is greater than zero.
[c]The PQL is the lowest concentration of analyte in a sample that can be reliably determined within specified limits of precision and accuracy by the indicated method under routine laboratory operating conditions.
[d]The MCL is established by the EPA Primary Water Regulations (40 CFR 141.11[b]), and subsequent amendments.
[e]NMED November 1998, Letter from B. Garcia to M. Zamorski (U.S. Department of Energy) and J.B. Woodward (Sandia Corporation), Re: "Approval, SNL Background Study," New Mexico Environment Department, Santa Fe, New Mexico, November 25, 1998.
[f]Laboratory Qualifier.
B = Analyte is detected in associated laboratory method blank.
J = Amount detected is below the PQL.
U = Analyte is absent or below the MDL.

Table A-6 (Concluded)
Summary of Unfiltered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

[g]Validation Qualifier.
If cell is blank, then all quality control samples meet acceptance criteria with respect to submitted samples.
J+ = The associated numerical value is an estimated quantity with suspected positive bias.
NJ- = Presumptive evidence of the presence of the material at an estimated quantity with a suspected negative bias.
U = The analyte was analyzed for but not detected. The associated numerical value is the sample quantitation limit.
UJ = The analyte was analyzed for but not detected. The associated value is an estimate and may be inaccurate or imprecise.
[h]EPA 1986, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd ed., Rev. 1, U.S. Environmental Protection Agency, Washington, D.C.
BW = Background Well.
CFR = Code of Federal Regulations.
EPA = U.S. Environmental Protection Agency.
HWB = Hazardous Waste Bureau.
ID = Identification.
MCL = Maximum contaminant level.
MDL = Method detection limit.
mg/L = Milligram(s) per liter.
MW = Monitoring Well.
MWL = Mixed Waste Landfill.
ND = Not detected.
NE = Not established.
NMED = New Mexico Environment Department.
PQL = Practical quantitation limit.
SW = Solid Waste

Table A-7
Summary of Filtered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result [a] (mg/L)	MDL [b] (mg/L)	PQL [c] (mg/L)	MCL [d] (mg/L)	NMED HWB (mg/L)	Laboratory Qualifier [f]	Validation Qualifier [g]	Sample Number	Analytical Method [h]
MWL-BW2	Aluminum	ND	0.010	0.030	NE	NE	U		087998-010	SW846 6020
04-Jan-10	Antimony	ND	0.0005	0.003	0.006	0.006	U		087998-010	SW846 6020
	Arsenic	0.0024	0.0015	0.005	0.010	0.014	B, J	0.012U	087998-010	SW846 6020
	Barium	0.0949	0.0005	0.002	2.00	0.120			087998-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		087998-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		087998-010	SW846 6020
	Calcium	75.6	0.100	1.00	NE	NE			087998-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		087998-010	SW846 6020
	Cobalt	0.000154	0.0001	0.001	NE	0.0025	J	0.00087U	087998-010	SW846 6020
	Copper	0.000552	0.0003	0.001	NE	< 0.050	J	0.011U	087998-010	SW846 6020
	Iron	0.203	0.010	0.100	NE	NE			087998-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		087998-010	SW846 6020
	Magnesium	25.2	0.005	0.015	NE	NE			087998-010	SW846 6020
	Manganese	0.00101	0.001	0.005	NE	NE	J	0.063U	087998-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U		087998-010	SW846 7470
	Nickel	0.00279	0.0005	0.002	NE	0.028		0.038U	087998-010	SW846 6020
	Potassium	4.27	0.080	0.300	NE	NE			087998-010	SW846 6020
	Selenium	0.00165	0.001	0.005	0.050	0.005	J		087998-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		087998-010	SW846 6020
	Sodium	66.3	0.400	1.25	NE	NE			087998-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		087998-010	SW846 6020
	Uranium	**0.00706**	0.00005	0.0002	0.030	0.0052			087998-010	SW846 6020
	Vanadium	0.00455	0.003	0.010	NE	0.013	J	0.024U	087998-010	SW846 6020
	Zinc	ND	0.0026	0.010	NE	0.260	U		087998-010	SW846 6020

Refer to footnotes at the end of table.

Table A-7 (Continued)
Summary of Filtered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW7	Aluminum	ND	0.010	0.030	NE	NE	U		088002-010	SW846 6020
05-Jan-10	Antimony	ND	0.0005	0.003	0.006	0.006	U		088002-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	0.014	U		088002-010	SW846 6020
	Barium	0.0938	0.0005	0.002	2.00	0.120			088002-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		088002-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		088002-010	SW846 6020
	Calcium	59.5	0.100	1.00	NE	NE			088002-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		088002-010	SW846 6020
	Cobalt	ND	0.0001	0.001	NE	0.0025	U		088002-010	SW846 6020
	Copper	0.000825	0.0003	0.001	NE	< 0.050	J	0.012U	088002-010	SW846 6020
	Iron	0.155	0.010	0.100	NE	NE			088002-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		088002-010	SW846 6020
	Magnesium	21.3	0.005	0.015	NE	NE			088002-010	SW846 6020
	Manganese	ND	0.001	0.005	NE	NE	U		088002-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U		088002-010	SW846 7470
	Nickel	0.00218	0.0005	0.002	NE	0.028			088002-010	SW846 6020
	Potassium	5.15	0.080	0.300	NE	NE			088002-010	SW846 6020
	Selenium	ND	0.001	0.005	0.050	0.005	U		088002-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		088002-010	SW846 6020
	Sodium	49.3	0.400	1.25	NE	NE			088002-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		088002-010	SW846 6020
	Uranium	**0.00774**	0.00005	0.0002	0.030	0.0052			088002-010	SW846 6020
	Vanadium	0.00528	0.003	0.010	NE	0.013	J	0.024U	088002-010	SW846 6020
	Zinc	ND	0.0026	0.010	NE	0.260	U		088002-010	SW846 6020

Refer to footnotes at the end of table.

Table A-7 (Continued)
Summary of Filtered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW7 (Duplicate) 05-Jan-10	Aluminum	ND	0.010	0.030	NE	NE	U		088003-010	SW846 6020
	Antimony	ND	0.0005	0.003	0.006	0.006	U		088003-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	0.014	U		088003-010	SW846 6020
	Barium	0.0961	0.0005	0.002	2.00	0.120			088003-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		088003-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		088003-010	SW846 6020
	Calcium	60.7	0.100	1.00	NE	NE			088003-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		088003-010	SW846 6020
	Cobalt	0.000105	0.0001	0.001	NE	0.0025	J		088003-010	SW846 6020
	Copper	0.000672	0.0003	0.001	NE	< 0.050	J	0.012U	088003-010	SW846 6020
	Iron	0.161	0.010	0.100	NE	NE			088003-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		088003-010	SW846 6020
	Magnesium	22.7	0.005	0.015	NE	NE			088003-010	SW846 6020
	Manganese	ND	0.001	0.005	NE	NE	U		088003-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U		088003-010	SW846 7470
	Nickel	0.0023	0.0005	0.002	NE	0.028			088003-010	SW846 6020
	Potassium	5.71	0.080	0.300	NE	NE			088003-010	SW846 6020
	Selenium	ND	0.001	0.005	0.050	0.005	U		088003-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		088003-010	SW846 6020
	Sodium	53.1	0.400	1.25	NE	NE			088003-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		088003-010	SW846 6020
	Uranium	**0.00792**	0.00005	0.0002	0.030	0.0052			088003-010	SW846 6020
	Vanadium	0.00403	0.003	0.010	NE	0.013	J	0.024U	088003-010	SW846 6020
	Zinc	ND	0.0026	0.010	NE	0.260	U		088003-010	SW846 6020

Refer to footnotes at the end of table.

Table A-7 (Continued)
Summary of Filtered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW8	Aluminum	ND	0.010	0.030	NE	NE	U		088007-010	SW846 6020
06-Jan-10	Antimony	ND	0.0005	0.003	0.006	0.006	U		088007-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	0.014	U		088007-010	SW846 6020
	Barium	**0.142**	0.0005	0.002	2.00	0.120			088007-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		088007-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		088007-010	SW846 6020
	Calcium	62.3	0.100	1.00	NE	NE			088007-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		088007-010	SW846 6020
	Cobalt	0.000119	0.0001	0.001	NE	0.0025	J		088007-010	SW846 6020
	Copper	0.000651	0.0003	0.001	NE	< 0.050	J	0.0021U	088007-010	SW846 6020
	Iron	0.179	0.010	0.100	NE	NE			088007-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		088007-010	SW846 6020
	Magnesium	22.2	0.005	0.015	NE	NE			088007-010	SW846 6020
	Manganese	0.224	0.001	0.005	NE	NE			088007-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U		088007-010	SW846 7470
	Nickel	0.00269	0.0005	0.002	NE	0.028			088007-010	SW846 6020
	Potassium	5.84	0.080	0.300	NE	NE			088007-010	SW846 6020
	Selenium	ND	0.001	0.005	0.050	0.005	U		088007-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		088007-010	SW846 6020
	Sodium	53.7	0.400	1.25	NE	NE			088007-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		088007-010	SW846 6020
	Uranium	**0.00779**	0.00005	0.0002	0.030	0.0052			088007-010	SW846 6020
	Vanadium	ND	0.003	0.010	NE	0.013	U		088007-010	SW846 6020
	Zinc	0.00492	0.0026	0.010	NE	0.260	J		088007-010	SW846 6020

Refer to footnotes at the end of table.

Table A-7 (Continued)
Summary of Filtered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW9	Aluminum	ND	0.010	0.030	NE	NE	U		088011-010	SW846 6020
07-Jan-10	Antimony	0.000782	0.0005	0.003	0.006	0.006	J		088011-010	SW846 6020
	Arsenic	0.00175	0.0015	0.005	0.010	0.014	J		088011-010	SW846 6020
	Barium	0.0945	0.0005	0.002	2.00	0.120			088011-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		088011-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		088011-010	SW846 6020
	Calcium	60.3	0.100	1.00	NE	NE	B		088011-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		088011-010	SW846 6020
	Cobalt	0.000181	0.0001	0.001	NE	0.0025	J		088011-010	SW846 6020
	Copper	0.00081	0.0003	0.001	NE	< 0.050	J	0.0025U	088011-010	SW846 6020
	Iron	0.180	0.010	0.100	NE	NE			088011-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		088011-010	SW846 6020
	Magnesium	20.3	0.005	0.015	NE	NE			088011-010	SW846 6020
	Manganese	0.00407	0.001	0.005	NE	NE	J		088011-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U		088011-010	SW846 7470
	Nickel	0.00164	0.0005	0.002	NE	0.028	J		088011-010	SW846 6020
	Potassium	4.95	0.080	0.300	NE	NE			088011-010	SW846 6020
	Selenium	ND	0.001	0.005	0.050	0.005	U		088011-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		088011-010	SW846 6020
	Sodium	47.8	0.080	0.250	NE	NE			088011-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		088011-010	SW846 6020
	Uranium	**0.00971**	0.00005	0.0002	0.030	0.0052			088011-010	SW846 6020
	Vanadium	ND	0.003	0.010	NE	0.013	U		088011-010	SW846 6020
	Zinc	ND	0.0026	0.010	NE	0.260	U		088011-010	SW846 6020

Refer to footnotes at the end of table.

Table A-7 (Continued)
Summary of Filtered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-BW2	Aluminum	0.0118	0.010	0.030	NE	NE	J		088942-010	SW846 6020
27-Apr-10	Antimony	ND	0.0005	0.003	0.006	0.006	U		088942-010	SW846 6020
	Arsenic	0.00331	0.0015	0.005	0.010	0.014	B, J	0.014U	088942-010	SW846 6020
	Barium	0.0935	0.0005	0.002	2.00	0.120			088942-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		088942-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		088942-010	SW846 6020
	Calcium	64.1	0.200	2.00	NE	NE	B		088942-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		088942-010	SW846 6020
	Cobalt	0.000305	0.0001	0.001	NE	0.0025	J	0.0034U	088942-010	SW846 6020
	Copper	0.00044	0.0003	0.001	NE	< 0.050	J	0.0036U	088942-010	SW846 6020
	Iron	0.0625	0.010	0.100	NE	NE	J		088942-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		088942-010	SW846 6020
	Magnesium	20.1	0.005	0.015	NE	NE			088942-010	SW846 6020
	Manganese	ND	0.001	0.005	NE	NE	U		088942-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U		088942-010	SW846 7470
	Nickel	0.00108	0.0005	0.002	NE	0.028	J		088942-010	SW846 6020
	Potassium	3.95	0.080	0.300	NE	NE			088942-010	SW846 6020
	Selenium	0.002	0.001	0.005	0.050	0.005	J		088942-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		088942-010	SW846 6020
	Sodium	48.0	0.800	2.50	NE	NE			088942-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		088942-010	SW846 6020
	Uranium	**0.00638**	0.00005	0.0002	0.030	0.0052			088942-010	SW846 6020
	Vanadium	0.00856	0.003	0.010	NE	0.013	J	0.074UJ	088942-010	SW846 6020
	Zinc	ND	0.0026	0.010	NE	0.260	U		088942-010	SW846 6020

Refer to footnotes at the end of table.

Table A-7 (Continued)
Summary of Filtered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-BW2 (Duplicate) 27-Apr-10	Aluminum	ND	0.010	0.030	NE	NE	U		088943-010	SW846 6020
	Antimony	ND	0.0005	0.003	0.006	0.006	U		088943-010	SW846 6020
	Arsenic	0.00518	0.0015	0.005	0.010	0.014	B	0.014U	088943-010	SW846 6020
	Barium	0.095	0.0005	0.002	2.00	0.120			088943-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		088943-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		088943-010	SW846 6020
	Calcium	71.7	0.200	2.00	NE	NE	B		088943-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		088943-010	SW846 6020
	Cobalt	0.000139	0.0001	0.001	NE	0.0025	J	0.0034U	088943-010	SW846 6020
	Copper	0.00043	0.0003	0.001	NE	< 0.050	J	0.0036U	088943-010	SW846 6020
	Iron	0.0648	0.010	0.100	NE	NE	J		088943-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		088943-010	SW846 6020
	Magnesium	21.9	0.005	0.015	NE	NE			088943-010	SW846 6020
	Manganese	ND	0.001	0.005	NE	NE	U		088943-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U		088943-010	SW846 7470
	Nickel	0.00113	0.0005	0.002	NE	0.028	J		088943-010	SW846 6020
	Potassium	4.20	0.080	0.300	NE	NE			088943-010	SW846 6020
	Selenium	0.00206	0.001	0.005	0.050	0.005	J		088943-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		088943-010	SW846 6020
	Sodium	53.1	0.800	2.50	NE	NE			088943-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		088943-010	SW846 6020
	Uranium	**0.00642**	0.00005	0.0002	0.030	0.0052			088943-010	SW846 6020
	Vanadium	ND	0.003	0.010	NE	0.013	U	0.074UJ	088943-010	SW846 6020
	Zinc	ND	0.0026	0.010	NE	0.260	U		088943-010	SW846 6020

Refer to footnotes at the end of table.

Table A-7 (Continued)
Summary of Filtered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW4	Aluminum	0.0172	0.010	0.030	NE	NE	J		088949-010	SW846 6020
29-Apr-10	Antimony	0.00288	0.0005	0.003	0.006	0.006	J		088949-010	SW846 6020
	Arsenic	0.007	0.0015	0.005	0.010	0.014	B	0.014U	088949-010	SW846 6020
	Barium	0.0969	0.0005	0.002	2.00	0.120			088949-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		088949-010	SW846 6020
	Cadmium	0.000237	0.00011	0.001	0.005	0.00047	J		088949-010	SW846 6020
	Calcium	59.5	0.200	2.00	NE	NE	B		088949-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		088949-010	SW846 6020
	Cobalt	0.000137	0.0001	0.001	NE	0.0025	J		088949-010	SW846 6020
	Copper	0.00163	0.0003	0.001	NE	< 0.050			088949-010	SW846 6020
	Iron	0.045	0.010	0.100	NE	NE	J	NJ-	088949-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		088949-010	SW846 6020
	Magnesium	18.6	0.005	0.015	NE	NE			088949-010	SW846 6020
	Manganese	0.004	0.001	0.005	NE	NE	J		088949-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U		088949-010	SW846 7470
	Nickel	0.00976	0.0005	0.002	NE	0.028			088949-010	SW846 6020
	Potassium	5.11	0.080	0.300	NE	NE			088949-010	SW846 6020
	Selenium	ND	0.001	0.005	0.050	0.005	U		088949-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		088949-010	SW846 6020
	Sodium	44.5	0.800	2.50	NE	NE			088949-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		088949-010	SW846 6020
	Uranium	**0.0058**	0.00005	0.0002	0.030	0.0052			088949-010	SW846 6020
	Vanadium	0.0111	0.003	0.010	NE	0.013			088949-010	SW846 6020
	Zinc	0.106	0.0026	0.010	NE	0.260			088949-010	SW846 6020

Refer to footnotes at the end of table.

Table A-7 (Continued)
Summary of Filtered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW5	Aluminum	ND	0.010	0.030	NE	NE	U		088918-010	SW846 6020
20-Apr-10	Antimony	ND	0.0005	0.003	0.006	0.006	U		088918-010	SW846 6020
	Arsenic	0.004	0.0015	0.005	0.010	0.014	B, J	0.012U	088918-010	SW846 6020
	Barium	**0.129**	0.0005	0.002	2.00	0.120			088918-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		088918-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		088918-010	SW846 6020
	Calcium	88.8	0.100	1.00	NE	NE	B		088918-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		088918-010	SW846 6020
	Cobalt	0.000134	0.0001	0.001	NE	0.0025	J	0.00086U	088918-010	SW846 6020
	Copper	0.000791	0.0003	0.001	NE	< 0.050	J	0.0081U	088918-010	SW846 6020
	Iron	0.165	0.010	0.100	NE	NE	B		088918-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		088918-010	SW846 6020
	Magnesium	28.7	0.005	0.015	NE	NE			088918-010	SW846 6020
	Manganese	0.00296	0.001	0.005	NE	NE	J		088918-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U	UJ	088918-010	SW846 7470
	Nickel	0.00203	0.0005	0.002	NE	0.028			088918-010	SW846 6020
	Potassium	5.62	0.400	1.50	NE	NE			088918-010	SW846 6020
	Selenium	0.00135	0.001	0.005	0.050	0.005	J	NJ-	088918-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		088918-010	SW846 6020
	Sodium	60.6	0.400	1.25	NE	NE			088918-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		088918-010	SW846 6020
	Uranium	**0.0102**	0.00005	0.0002	0.030	0.0052			088918-010	SW846 6020
	Vanadium	0.00933	0.003	0.010	NE	0.013	B, J	0.022UJ	088918-010	SW846 6020
	Zinc	0.00443	0.0026	0.010	NE	0.260	J		088918-010	SW846 6020

Refer to footnotes at the end of table.

Table A-7 (Continued)
Summary of Filtered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW5 (Duplicate)	Aluminum	ND	0.010	0.030	NE	NE	U		088919-010	SW846 6020
20-Apr-10	Antimony	ND	0.0005	0.003	0.006	0.006	U		088919-010	SW846 6020
	Arsenic	0.00234	0.0015	0.005	0.010	0.014	B, J	0.012U	088919-010	SW846 6020
	Barium	**0.138**	0.0005	0.002	2.00	0.120			088919-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		088919-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		088919-010	SW846 6020
	Calcium	95.5	0.100	1.00	NE	NE	B		088919-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		088919-010	SW846 6020
	Cobalt	0.000126	0.0001	0.001	NE	0.0025	J	0.00086U	088919-010	SW846 6020
	Copper	0.000843	0.0003	0.001	NE	< 0.050	J	0.0081U	088919-010	SW846 6020
	Iron	0.198	0.010	0.100	NE	NE	B		088919-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		088919-010	SW846 6020
	Magnesium	31.2	0.005	0.015	NE	NE			088919-010	SW846 6020
	Manganese	0.00323	0.001	0.005	NE	NE	J		088919-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U	UJ	088919-010	SW846 7470
	Nickel	0.00169	0.0005	0.002	NE	0.028	J		088919-010	SW846 6020
	Potassium	5.92	0.400	1.50	NE	NE			088919-010	SW846 6020
	Selenium	0.00155	0.001	0.005	0.050	0.005	J	NJ-	088919-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		088919-010	SW846 6020
	Sodium	65.5	0.400	1.25	NE	NE			088919-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		088919-010	SW846 6020
	Uranium	**0.0102**	0.00005	0.0002	0.030	0.0052			088919-010	SW846 6020
	Vanadium	0.00358	0.003	0.010	NE	0.013	B, J	0.022UJ	088919-010	SW846 6020
	Zinc	0.00282	0.0026	0.010	NE	0.260	J		088919-010	SW846 6020

Refer to footnotes at the end of table.

Table A-7 (Continued)
Summary of Filtered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW6	Aluminum	ND	0.010	0.030	NE	NE	U		088909-010	SW846 6020
19-Apr-10	Antimony	ND	0.0005	0.003	0.006	0.006	U		088909-010	SW846 6020
	Arsenic	0.00474	0.0015	0.005	0.010	0.014	B, J	0.012U	088909-010	SW846 6020
	Barium	0.109	0.0005	0.002	2.00	0.120			088909-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		088909-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		088909-010	SW846 6020
	Calcium	86.6	0.100	1.00	NE	NE	B		088909-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		088909-010	SW846 6020
	Cobalt	0.000196	0.0001	0.001	NE	0.0025	J		088909-010	SW846 6020
	Copper	0.00102	0.0003	0.001	NE	< 0.050			088909-010	SW846 6020
	Iron	0.184	0.010	0.100	NE	NE	B		088909-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		088909-010	SW846 6020
	Magnesium	28.1	0.005	0.015	NE	NE			088909-010	SW846 6020
	Manganese	ND	0.001	0.005	NE	NE	U		088909-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U	UJ	088909-010	SW846 7470
	Nickel	0.00156	0.0005	0.002	NE	0.028	J		088909-010	SW846 6020
	Potassium	5.94	0.400	1.50	NE	NE			088909-010	SW846 6020
	Selenium	0.00158	0.001	0.005	0.050	0.005	J	NJ-	088909-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		088909-010	SW846 6020
	Sodium	62.8	0.400	1.25	NE	NE			088909-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		088909-010	SW846 6020
	Uranium	**0.00989**	0.00005	0.0002	0.030	0.0052			088909-010	SW846 6020
	Vanadium	0.00826	0.003	0.010	NE	0.013	B, J	0.022UJ	088909-010	SW846 6020
	Zinc	ND	0.0026	0.010	NE	0.260	U		088909-010	SW846 6020

Refer to footnotes at the end of table.

Table A-7 (Continued)
Summary of Filtered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW7	Aluminum	ND	0.010	0.030	NE	NE	U		088929-010	SW846 6020
22-Apr-10	Antimony	ND	0.0005	0.003	0.006	0.006	U		088929-010	SW846 6020
	Arsenic	0.00242	0.0015	0.005	0.010	0.014	B, J	0.012U	088929-010	SW846 6020
	Barium	0.108	0.0005	0.002	2.00	0.120			088929-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		088929-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		088929-010	SW846 6020
	Calcium	58.5	0.100	1.00	NE	NE	B		088929-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		088929-010	SW846 6020
	Cobalt	0.000128	0.0001	0.001	NE	0.0025	J		088929-010	SW846 6020
	Copper	0.000799	0.0003	0.001	NE	< 0.050	J		088929-010	SW846 6020
	Iron	0.159	0.010	0.100	NE	NE	B		088929-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		088929-010	SW846 6020
	Magnesium	19.2	0.005	0.015	NE	NE			088929-010	SW846 6020
	Manganese	ND	0.001	0.005	NE	NE	U		088929-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U	UJ	088929-010	SW846 7470
	Nickel	0.00127	0.0005	0.002	NE	0.028	J		088929-010	SW846 6020
	Potassium	5.45	0.400	1.50	NE	NE			088929-010	SW846 6020
	Selenium	ND	0.001	0.005	0.050	0.005	U	UJ	088929-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		088929-010	SW846 6020
	Sodium	49.8	0.400	1.25	NE	NE			088929-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		088929-010	SW846 6020
	Uranium	**0.00842**	0.00005	0.0002	0.030	0.0052			088929-010	SW846 6020
	Vanadium	0.00828	0.003	0.010	NE	0.013	B, J	0.022UJ	088929-010	SW846 6020
	Zinc	ND	0.0026	0.010	NE	0.260	U		088929-010	SW846 6020

Refer to footnotes at the end of table.

Table A-7 (Continued)
Summary of Filtered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW8	Aluminum	ND	0.010	0.030	NE	NE	U		088934-010	SW846 6020
26-Apr-10	Antimony	ND	0.0005	0.003	0.006	0.006	U		088934-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	0.014	U		088934-010	SW846 6020
	Barium	**0.142**	0.0005	0.002	2.00	0.120			088934-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		088934-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		088934-010	SW846 6020
	Calcium	56.6	0.200	2.00	NE	NE	B		088934-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		088934-010	SW846 6020
	Cobalt	0.000266	0.0001	0.001	NE	0.0025	J		088934-010	SW846 6020
	Copper	0.000555	0.0003	0.001	NE	< 0.050	J		088934-010	SW846 6020
	Iron	0.087	0.010	0.100	NE	NE	J		088934-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		088934-010	SW846 6020
	Magnesium	19.2	0.005	0.015	NE	NE			088934-010	SW846 6020
	Manganese	0.00265	0.001	0.005	NE	NE	J		088934-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U		088934-010	SW846 7470
	Nickel	0.00104	0.0005	0.002	NE	0.028	J		088934-010	SW846 6020
	Potassium	5.25	0.080	0.300	NE	NE			088934-010	SW846 6020
	Selenium	ND	0.001	0.005	0.050	0.005	U		088934-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		088934-010	SW846 6020
	Sodium	43.0	0.080	0.250	NE	NE			088934-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		088934-010	SW846 6020
	Uranium	**0.00679**	0.00005	0.0002	0.030	0.0052			088934-010	SW846 6020
	Vanadium	ND	0.003	0.010	NE	0.013	U		088934-010	SW846 6020
	Zinc	0.0032	0.0026	0.010	NE	0.260	J		088934-010	SW846 6020

Refer to footnotes at the end of table.

Table A-7 (Continued)
Summary of Filtered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW9	Aluminum	ND	0.010	0.030	NE	NE	U		088924-010	SW846 6020
21-Apr-10	Antimony	ND	0.0005	0.003	0.006	0.006	U		088924-010	SW846 6020
	Arsenic	0.0044	0.0015	0.005	0.010	0.014	B, J	0.012U	088924-010	SW846 6020
	Barium	0.098	0.0005	0.002	2.00	0.120			088924-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		088924-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		088924-010	SW846 6020
	Calcium	58.6	0.100	1.00	NE	NE	B		088924-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		088924-010	SW846 6020
	Cobalt	0.000158	0.0001	0.001	NE	0.0025	J		088924-010	SW846 6020
	Copper	0.000725	0.0003	0.001	NE	< 0.050	J		088924-010	SW846 6020
	Iron	0.127	0.010	0.100	NE	NE	B		088924-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		088924-010	SW846 6020
	Magnesium	18.5	0.005	0.015	NE	NE			088924-010	SW846 6020
	Manganese	0.00168	0.001	0.005	NE	NE	J		088924-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U	UJ	088924-010	SW846 7470
	Nickel	0.00129	0.0005	0.002	NE	0.028	J		088924-010	SW846 6020
	Potassium	5.44	0.400	1.50	NE	NE			088924-010	SW846 6020
	Selenium	ND	0.001	0.005	0.050	0.005	U	UJ	088924-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		088924-010	SW846 6020
	Sodium	49.3	0.400	1.25	NE	NE			088924-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		088924-010	SW846 6020
	Uranium	**0.00959**	0.00005	0.0002	0.030	0.0052			088924-010	SW846 6020
	Vanadium	0.012	0.003	0.010	NE	0.013	B	0.022UJ	088924-010	SW846 6020
	Zinc	ND	0.0026	0.010	NE	0.260	U		088924-010	SW846 6020

Refer to footnotes at the end of table.

Table A-7 (Continued)
Summary of Filtered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-BW2	Aluminum	ND	0.010	0.030	NE	NE	U		089402-010	SW846 6020
06-Jul-10	Antimony	ND	0.0005	0.003	0.006	0.006	U		089402-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	0.014	U		089402-010	SW846 6020
	Barium	0.0948	0.0005	0.002	2.00	0.120			089402-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		089402-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		089402-010	SW846 6020
	Calcium	70.4	0.100	1.00	NE	NE	B		089402-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		089402-010	SW846 6020
	Cobalt	ND	0.0001	0.001	NE	0.0025	U		089402-010	SW846 6020
	Copper	0.000786	0.0003	0.001	NE	< 0.050	J		089402-010	SW846 6020
	Iron	0.226	0.010	0.100	NE	NE			089402-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		089402-010	SW846 6020
	Magnesium	25.1	0.005	0.015	NE	NE			089402-010	SW846 6020
	Manganese	ND	0.001	0.005	NE	NE	U		089402-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U		089402-010	SW846 7470
	Nickel	0.00172	0.0005	0.002	NE	0.028	J		089402-010	SW846 6020
	Potassium	4.00	0.080	0.300	NE	NE			089402-010	SW846 6020
	Selenium	0.00228	0.001	0.005	0.050	0.005	J		089402-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		089402-010	SW846 6020
	Sodium	54.4	0.400	1.25	NE	NE			089402-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		089402-010	SW846 6020
	Uranium	**0.0074**	0.00005	0.0002	0.030	0.0052			089402-010	SW846 6020
	Vanadium	0.00687	0.003	0.010	NE	0.013	J		089402-010	SW846 6020
	Zinc	ND	0.0026	0.010	NE	0.260	U		089402-010	SW846 6020

Refer to footnotes at the end of table.

Table A-7 (Continued)
Summary of Filtered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW7	Aluminum	ND	0.010	0.030	NE	NE	U		089407-010	SW846 6020
07-Jul-10	Antimony	ND	0.0005	0.003	0.006	0.006	U		089407-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	0.014	U		089407-010	SW846 6020
	Barium	0.0982	0.0005	0.002	2.00	0.120			089407-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		089407-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		089407-010	SW846 6020
	Calcium	55.6	0.100	1.00	NE	NE	B		089407-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		089407-010	SW846 6020
	Cobalt	ND	0.0001	0.001	NE	0.0025	U		089407-010	SW846 6020
	Copper	0.00246	0.0003	0.001	NE	< 0.050		0.0032U	089407-010	SW846 6020
	Iron	0.184	0.010	0.100	NE	NE		0.29U	089407-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		089407-010	SW846 6020
	Magnesium	17.4	0.005	0.015	NE	NE			089407-010	SW846 6020
	Manganese	ND	0.001	0.005	NE	NE	U		089407-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U		089407-010	SW846 7470
	Nickel	0.00445	0.0005	0.002	NE	0.028			089407-010	SW846 6020
	Potassium	4.91	0.080	0.300	NE	NE			089407-010	SW846 6020
	Selenium	ND	0.001	0.005	0.050	0.005	U		089407-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		089407-010	SW846 6020
	Sodium	45.3	0.080	0.250	NE	NE			089407-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		089407-010	SW846 6020
	Uranium	**0.00816**	0.00005	0.0002	0.030	0.0052			089407-010	SW846 6020
	Vanadium	0.0081	0.003	0.010	NE	0.013	J		089407-010	SW846 6020
	Zinc	ND	0.0026	0.010	NE	0.260	U		089407-010	SW846 6020

Refer to footnotes at the end of table.

Table A-7 (Continued)
Summary of Filtered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW7 (Duplicate) 07-Jul-10	Aluminum	ND	0.010	0.030	NE	NE	U		089408-010	SW846 6020
	Antimony	ND	0.0005	0.003	0.006	0.006	U		089408-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	0.014	U		089408-010	SW846 6020
	Barium	0.0971	0.0005	0.002	2.00	0.120			089408-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		089408-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		089408-010	SW846 6020
	Calcium	54.8	0.100	1.00	NE	NE	B		089408-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		089408-010	SW846 6020
	Cobalt	0.000171	0.0001	0.001	NE	0.0025	J	0.00088U	089408-010	SW846 6020
	Copper	0.000873	0.0003	0.001	NE	< 0.050	J	0.0032U	089408-010	SW846 6020
	Iron	0.198	0.010	0.100	NE	NE		0.29U	089408-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		089408-010	SW846 6020
	Magnesium	17.4	0.005	0.015	NE	NE			089408-010	SW846 6020
	Manganese	ND	0.001	0.005	NE	NE	U		089408-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U		089408-010	SW846 7470
	Nickel	0.00155	0.0005	0.002	NE	0.028	J		089408-010	SW846 6020
	Potassium	4.58	0.080	0.300	NE	NE			089408-010	SW846 6020
	Selenium	ND	0.001	0.005	0.050	0.005	U		089408-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		089408-010	SW846 6020
	Sodium	46.0	0.080	0.250	NE	NE			089408-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		089408-010	SW846 6020
	Uranium	**0.008**	0.00005	0.0002	0.030	0.0052			089408-010	SW846 6020
	Vanadium	0.00646	0.003	0.010	NE	0.013	J		089408-010	SW846 6020
	Zinc	ND	0.0026	0.010	NE	0.260	U		089408-010	SW846 6020

Refer to footnotes at the end of table.

Table A-7 (Continued)
Summary of Filtered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW8	Aluminum	ND	0.010	0.030	NE	NE	U		089411-010	SW846 6020
12-Jul-10	Antimony	0.000927	0.0005	0.003	0.006	0.006	J		089411-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	0.014	U		089411-010	SW846 6020
	Barium	**0.144**	0.0005	0.002	2.00	0.120			089411-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		089411-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		089411-010	SW846 6020
	Calcium	61.7	0.100	1.00	NE	NE			089411-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		089411-010	SW846 6020
	Cobalt	0.000251	0.0001	0.001	NE	0.0025	J		089411-010	SW846 6020
	Copper	0.00058	0.0003	0.001	NE	< 0.050	J		089411-010	SW846 6020
	Iron	0.140	0.010	0.100	NE	NE			089411-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		089411-010	SW846 6020
	Magnesium	21.4	0.005	0.015	NE	NE			089411-010	SW846 6020
	Manganese	0.00325	0.001	0.005	NE	NE	J		089411-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U		089411-010	SW846 7470
	Nickel	0.00133	0.0005	0.002	NE	0.028	J		089411-010	SW846 6020
	Potassium	5.06	0.080	0.300	NE	NE			089411-010	SW846 6020
	Selenium	ND	0.001	0.005	0.050	0.005	U		089411-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		089411-010	SW846 6020
	Sodium	44.4	0.080	0.250	NE	NE			089411-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		089411-010	SW846 6020
	Uranium	**0.00739**	0.00005	0.0002	0.030	0.0052	B		089411-010	SW846 6020
	Vanadium	ND	0.003	0.010	NE	0.013	U		089411-010	SW846 6020
	Zinc	0.00364	0.0026	0.010	NE	0.260	J		089411-010	SW846 6020

Refer to footnotes at the end of table.

Table A-7 (Continued)
Summary of Filtered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	NMED HWB[e] (mg/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW9	Aluminum	ND	0.010	0.030	NE	NE	U		089414-010	SW846 6020
13-Jul-10	Antimony	ND	0.0005	0.003	0.006	0.006	U		089414-010	SW846 6020
	Arsenic	0.00316	0.0015	0.005	0.010	0.014	J		089414-010	SW846 6020
	Barium	0.0971	0.0005	0.002	2.00	0.120			089414-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		089414-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		089414-010	SW846 6020
	Calcium	57.3	0.100	1.00	NE	NE			089414-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		089414-010	SW846 6020
	Cobalt	0.00017	0.0001	0.001	NE	0.0025	J		089414-010	SW846 6020
	Copper	0.000471	0.0003	0.001	NE	< 0.050	J		089414-010	SW846 6020
	Iron	0.138	0.010	0.100	NE	NE			089414-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.010	U		089414-010	SW846 6020
	Magnesium	20.3	0.005	0.015	NE	NE			089414-010	SW846 6020
	Manganese	0.00153	0.001	0.005	NE	NE	J		089414-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U		089414-010	SW846 7470
	Nickel	0.0013	0.0005	0.002	NE	0.028	J		089414-010	SW846 6020
	Potassium	5.03	0.080	0.300	NE	NE			089414-010	SW846 6020
	Selenium	ND	0.001	0.005	0.050	0.005	U		089414-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	< 0.010	U		089414-010	SW846 6020
	Sodium	46.4	0.080	0.250	NE	NE			089414-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		089414-010	SW846 6020
	Uranium	**0.00883**	0.00005	0.0002	0.030	0.0052	B		089414-010	SW846 6020
	Vanadium	0.00767	0.003	0.010	NE	0.013	J		089414-010	SW846 6020
	Zinc	ND	0.0026	0.010	NE	0.260	U		089414-010	SW846 6020

[a]Values in **bold** exceed the established MCL and/or the NMED HWB-approved background level.
[b]The MDL is the minimum concentration or activity that can be measured and reported with 99% confidence that the analyte is greater than zero.
[c]The PQL is the lowest concentration of analyte in a sample that can be reliably determined within specified limits of precision and accuracy by the indicated method under routine laboratory operating conditions.
[d]The MCL is established by the EPA Primary Water Regulations (40 CFR 141.11[b]), and subsequent amendments.
[e]NMED November 1998, Letter from B. Garcia to M. Zamorski (U.S. Department of Energy) and J.B. Woodward (Sandia Corporation), Re: "Approval, SNL Background Study," New Mexico Environment Department, Santa Fe, New Mexico, November 25, 1998.
[f]Laboratory Qualifier
B = Analyte is detected in associated laboratory method blank.
J = Amount detected is below the PQL.
U = Analyte is absent or below the MDL.
[g]Validation Qualifier.
If cell is blank, then all quality control samples meet acceptance criteria with respect to submitted samples.
NJ- = Presumptive evidence of the presence of the material at an estimated quantity with a suspected negative bias.
U = The analyte was analyzed for but not detected. The associated numerical value is the sample quantitation limit.
UJ = The analyte was analyzed for but not detected. The associated value is an estimate and may be inaccurate or imprecise.

Table A-7 (Concluded)
Summary of Filtered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

[h]EPA 1986, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd ed., Rev. 1, U.S. Environmental Protection Agency, Washington, D.C.
BW = Background Well.
CFR = Code of Federal Regulations.
EPA = U.S. Environmental Protection Agency.
HWB = Hazardous Waste Bureau.
ID = Identification.
MCL = Maximum contaminant level.
MDL = Method detection limit.
mg/L = Milligram(s) per liter.
MW = Monitoring Well.
MWL = Mixed Waste Landfill.
ND = Not detected.
NE = Not established.
NMED = New Mexico Environment Department.
PQL = Practical quantitation limit.
SW = Solid Waste

Table A-8
Summary of Detected Volatile and Semivolatile Organic Compounds
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Result (μg/L)	MDL[a] (μg/L)	PQL[b] (μg/L)	MCL[c] (μg/L)	Laboratory Qualifier[d]	Validation Qualifier[e]	Sample Number	Analytical Method[f]
MWL-BW2 04-Jan-10	Toluene	0.438	0.250	1.00	1,000	J		087998-001	SW846-8260B
MWL-MW7 05-Jan-10	Toluene	0.320	0.250	1.00	1,000	J		088002-001	SW846-8260B
MWL-MW7 (Duplicate) 05-Jan-10	Toluene	0.285	0.250	1.00	1,000	J		088003-001	SW846-8260B
MWL-MW8 06-Jan-10	Chloromethane	0.338	0.300	1.00	NE	J		088007-001	SW846-8260B
	Toluene	1.45	0.250	1.00	1,000			088007-001	SW846-8260B
MWL-MW9 07-Jan-10	Toluene	1.10	0.250	1.00	1,000			088011-001	SW846-8260B
MWL-MW5 20-Apr-10	Methylene Chloride	3.95	3.00	10.0	5.00	B, J	10.0U	088918-001	SW846-8260B
MWL-MW5 (Duplicate) 20-Apr-10	Methylene Chloride	3.95	3.00	10.0	5.00	B, J	10.0U	088919-001	SW846-8260B
MWL-MW6 19-Apr-10	Acetone	7.91	3.50	10.0	NE	J		088909-001	SW846-8260B
MWL-MW8 26-Apr-10	Toluene	0.260	0.250	1.00	1,000	B, J	1.0U	088934-001	SW846-8260B
MWL-MW8 12-Jul-10	Chloromethane	0.370	0.300	1.00	NE	J		089411-001	SW846-8260B

[a]The MDL is the minimum concentration or activity that can be measured and reported with 99% confidence that the analyte is greater than zero.
[b]The PQL is the lowest concentration of analyte in a sample that can be reliably determined within specified limits of precision and accuracy by the indicated method under routine laboratory operating conditions.
[c]The MCL is established by the EPA Primary Water Regulations (40 CFR 141.11[b]), and subsequent amendments.
[d]Laboratory Qualifier.
B = Analyte is detected in associated laboratory method blank.
J = Amount detected is below the PQL.
[e]Validation Qualifier.
If cell is blank, then all quality control samples meet acceptance criteria with respect to submitted samples.
U = The analyte was analyzed for but not detected. The associated numerical value is the sample quantitation limit.
[f]EPA 1986, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd ed., Rev. 1, U.S. Environmental Protection Agency, Washington, D.C.

BW = Background Well.
CFR = Code of Federal Regulations.
EPA = U.S. Environmental Protection Agency.
ID = Identification.
MCL = Maximum contaminant level.
MDL = Method detection limit.
μg/L = Microgram(s) per liter.
MW = Monitoring Well.
MWL = Mixed Waste Landfill.
NE = Not established.
PQL = Practical quantitation limit.
SW = Solid Waste.

Table A-9
Method Detection Limits for Volatile and Semivolatile Organic Compounds
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Analyte	MDL[a] (μg/L)	Analytical Method[b]	Analyte	MDL[a] (μg/L)	Analytical Method[b]	Analyte	MDL[a] (μg/L)	Analytical Method[b]
1,1,1-Trichloroethane	0.325	8260	1,2,4-Trichlorobenzene	2.00 - 2.38	8270	Di-n-butyl phthalate	2.00 - 2.38	8270
1,1,2,2-Tetrachloroethane	0.250	8260	1,2-Dichlorobenzene	2.00 - 2.38	8270	Di-n-octyl phthalate	3.00 - 3.57	8270
1,1,2-Trichloroethane	0.250	8260	1,3-Dichlorobenzene	2.00 - 2.38	8270	Dibenz[a,h]anthracene	0.200 - 0.238	8270
1,1-Dichloroethane	0.300	8260	1,4-Dichlorobenzene	2.00 - 2.38	8270	Dibenzofuran	2.00 - 2.38	8270
1,1-Dichloroethene	0.300	8260	2,4,5-Trichlorophenol	2.00 - 2.38	8270	Diethylphthalate	2.00 - 2.38	8270
1,2-Dichloroethane	0.250	8260	2,4,6-Trichlorophenol	2.00 - 2.38	8270	Dimethylphthalate	2.00 - 2.38	8270
1,2-Dichloropropane	0.250	8260	2,4-Dichlorophenol	2.00 - 2.38	8270	Dinitro-o-cresol	3.00 - 3.57	8270
2-Butanone	1.25	8260	2,4-Dimethylphenol	2.00 - 2.38	8270	Diphenyl amine	3.00 - 3.57	8270
2-Hexanone	1.25	8260	2,4-Dinitrophenol	5.00 - 5.95	8270	Fluoranthene	0.200 - 0.238	8270
4-methyl-, 2-Pentanone	1.25	8260	2,4-Dinitrotoluene	2.00 - 2.38	8270	Fluorene	0.200 - 0.238	8270
Acetone	3.50	8260	2,6-Dinitrotoluene	2.00 - 2.38	8270	Hexachlorobenzene	2.00 - 2.38	8270
Benzene	0.300	8260	2-Chloronaphthalene	0.300 - 0.357	8270	Hexachlorobutadiene	2.00 - 2.38	8270
Bromodichloromethane	0.250	8260	2-Chlorophenol	2.00 - 2.38	8270	Hexachlorocyclopentadiene	3.00 - 3.57	8270
Bromoform	0.250	8260	2-Methylnaphthalene	0.300 - 0.357	8270	Hexachloroethane	2.00 - 2.38	8270
Bromomethane	0.300	8260	2-Nitroaniline	2.00 - 2.38	8270	Indeno(1,2,3-c,d)pyrene	0.200 - 0.238	8270
Carbon disulfide	1.25	8260	2-Nitrophenol	2.00 - 2.38	8270	Isophorone	3.00 - 3.57	8270
Carbon tetrachloride	0.300	8260	3,3'-Dichlorobenzidine	2.00 - 2.38	8270	Naphthalene	0.300 - 0.357	8270
Chlorobenzene	0.250	8260	3-Nitroaniline	2.00 - 2.38	8270	Nitro-benzene	3.00 - 3.57	8270
Chloroethane	0.300	8260	4-Bromophenyl phenyl ether	2.00 - 2.38	8270	Pentachlorophenol	2.00 - 2.38	8270
Chloroform	0.250	8260	4-Chloro-3-methylphenol	2.00 - 2.38	8270	Phenanthrene	0.200 - 0.238	8270
Chloromethane	0.300	8260	4-Chlorobenzenamine	2.00 - 2.38	8270	Phenol	1.00 - 1.19	8270
Dibromochloromethane	0.300	8260	4-Chlorophenyl phenyl ether	2.00 - 2.38	8270	Pyrene	0.300 - 0.357	8270
Ethyl benzene	0.250	8260	4-Nitroaniline	3.00 - 3.57	8270	bis(2-Chloroethoxy)methane	3.00 - 3.57	8270
Methylene chloride	3.00	8260	4-Nitrophenol	2.00 - 2.38	8270	bis(2-Chloroethyl)ether	2.00 - 2.38	8270
Styrene	0.250	8260	Acenaphthene	0.310 - 0.369	8270	bis(2-Ethylhexyl)phthalate	2.00 - 2.38	8270
Tetrachloroethene	0.300	8260	Acenaphthylene	0.200 - 0.238	8270	bis-Chloroisopropyl ether	2.00 - 2.38	8270
Toluene	0.250	8260	Anthracene	0.200 - 0.238	8270	m,p-Cresol	3.00 - 3.57	8270
Trichloroethene	0.250	8260	Benzo(a)anthracene	0.200 - 0.238	8270	n-Nitrosodipropylamine	2.00 - 2.38	8270
Vinyl acetate	1.50	8260	Benzo(a)pyrene	0.200 - 0.238	8270	o-Cresol	2.00 - 2.38	8270
Vinyl chloride	0.500	8260	Benzo(b)fluoranthene	0.200 - 0.238	8270			
Xylene	0.300	8260	Benzo(ghi)perylene	0.200 - 0.238	8270			
cis-1,2-Dichloroethene	0.300	8260	Benzo(k)fluoranthene	0.200 - 0.238	8270			
cis-1,3-Dichloropropene	0.250	8260	Butylbenzyl phthalate	2.00 - 2.38	8270			
trans-1,2-Dichloroethene	0.300	8260	Carbazole	0.200 - 0.238	8270			
trans-1,3-Dichloropropene	0.250	8260	Chrysene	0.200 - 0.238	8270			

[a]The MDL is the minimum concentration or activity that can be measured and reported with 99% confidence that the analyte is greater than zero.
[b]EPA 1986, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd ed., Rev. 1, U.S. Environmental Protection Agency, Washington, D.C.
EPA = U.S. Environmental Protection Agency.
MDL = Method detection limit.
µg/L = Microgram(s) per liter.

Table A-10
Summary of Tritium, Gross Alpha, Gross Beta, Gamma Spectroscopy, Isotopic Uranium, and Radon-222 Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Activity[a] (pCi/L)	MDA[b] (pCi/L)	Critical Level[c] (pCi/L)	MCL[d] (pCi/L)	NMED HWB[e] (pCi/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-BW2	Americium-241	-4.38 ± 18.4	21.9	11.0	NE	NE	U	BD	087998-033	EPA 901.1
04-Jan-10	Cesium-137	-3.32 ± 2.28	3.60	1.80	NE	9.3	U	BD	087998-033	EPA 901.1
	Cobalt-60	0.698 ± 2.22	3.85	1.93	NE	NE	U	BD	087998-033	EPA 901.1
	Potassium-40	11.7 ± 50.3	39.1	19.6	NE	NE	U	BD	087998-033	EPA 901.1
	Gross Alpha	1.97	NA	NA	15	NE	NA		087998-034	EPA 900.0
	Gross Beta	4.74 ± 1.23	1.33	0.637	4mrem/yr	NE			087998-034	EPA 900.0
	Tritium	11.4 ± 87.7	151	73.2	NE	NE	U	BD	087998-036	EPA 906.0 M
MWL-MW7	Americium-241	1.95 ± 12.1	21.0	10.5	NE	NE	U	BD	088002-033	EPA 901.1
05-Jan-10	Cesium-137	-3.4 ± 3.87	3.97	1.99	NE	9.3	U	BD	088002-033	EPA 901.1
	Cobalt-60	-5.06 ± 4.14	3.42	1.71	NE	NE	U	BD	088002-033	EPA 901.1
	Potassium-40	73.4 ± 28.7	33.5	16.8	NE	NE	X	R	088002-033	EPA 901.1
	Gross Alpha	7.07	NA	NA	15	NE	NA	None	088002-034	EPA 900.0
	Gross Beta	3.98 ± 1.04	1.07	0.513	4mrem/yr	NE			088002-034	EPA 900.0
	Tritium	43.6 ± 90.1	153	74.0	NE	NE	U	BD	088002-036	EPA 906.0 M
MWL-MW7 (Duplicate)	Americium-241	-18.2 ± 12.6	20.7	10.4	NE	NE	U	BD	088003-033	EPA 901.1
05-Jan-10	Cesium-137	0.400 ± 2.27	3.78	1.89	NE	9.3	U	BD	088003-033	EPA 901.1
	Cobalt-60	0.487 ± 2.25	3.79	1.90	NE	NE	U	BD	088003-033	EPA 901.1
	Potassium-40	-14.6 ± 42.5	46.6	23.3	NE	NE	U	BD	088003-033	EPA 901.1
	Gross Alpha	5.02	NA	NA	15	NE	NA	None	088003-034	EPA 900.0
	Gross Beta	4.94 ± 1.19	1.17	0.564	4mrem/yr	NE			088003-034	EPA 900.0
	Tritium	-34.2 ± 87.1	153	74.1	NE	NE	U	BD	088003-036	EPA 906.0 M
MWL-MW8	Americium-241	-4.21 ± 5.90	9.77	4.89	NE	NE	U	BD	088007-033	EPA 901.1
06-Jan-10	Cesium-137	-2.37 ± 2.65	3.08	1.54	NE	9.3	U	BD	088007-033	EPA 901.1
	Cobalt-60	2.37 ± 1.95	3.55	1.77	NE	NE	U	BD	088007-033	EPA 901.1
	Potassium-40	25.2 ± 46.4	30.7	15.4	NE	NE	U	BD	088007-033	EPA 901.1
	Gross Alpha	4.91	NA	NA	15	NE	NA	None	088007-034	EPA 900.0
	Gross Beta	6.81 ± 1.53	1.41	0.687	4mrem/yr	NE			088007-034	EPA 900.0
	Tritium	-38 ± 87.2	153	74.3	NE	NE	U	BD	088007-036	EPA 906.0 M
MWL-MW9	Americium-241	-1.52 ± 8.81	13.6	6.82	NE	NE	U	BD	088011-033	EPA 901.1
07-Jan-10	Cesium-137	1.92 ± 1.84	3.26	1.63	NE	9.3	U	BD	088011-033	EPA 901.1
	Cobalt-60	0.306 ± 1.84	3.11	1.56	NE	NE	U	BD	088011-033	EPA 901.1
	Potassium-40	16.8 ± 41.2	31.1	15.6	NE	NE	U	BD	088011-033	EPA 901.1
	Gross Alpha	9.89	NA	NA	15	NE	NA	None	088011-034	EPA 900.0
	Gross Beta	10.4 ± 2.11	1.67	0.813	4mrem/yr	NE			088011-034	EPA 900.0
	Tritium	27.9 ± 91.3	157	75.6	NE	NE	U	BD	088011-036	EPA 906.0 M

Refer to footnotes at end of table.

Table A-10 (Continued)
Summary of Tritium, Gross Alpha, Gross Beta, Gamma Spectroscopy, Isotopic Uranium, and Radon-222 Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Activity[a] (pCi/L)	MDA[b] (pCi/L)	Critical Level[c] (pCi/L)	MCL[d] (pCi/L)	NMED HWB[e] (pCi/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-BW2	Americium-241	-0.0373 ± 5.88	9.55	4.78	NE	NE	U	BD	088942-033	EPA 901.1
27-Apr-10	Cesium-137	0.751 ± 1.60	2.72	1.36	NE	9.3	U	BD	088942-033	EPA 901.1
	Cobalt-60	-1.43 ± 2.86	2.87	1.44	NE	NE	U	BD	088942-033	EPA 901.1
	Potassium-40	17.2 ± 31.1	40.6	20.3	NE	NE	U	BD	088942-033	EPA 901.1
	Gross Alpha	7.73	NA	NA	15	NE	NA	None	088942-034	EPA 900.0
	Gross Beta	3.63 ± 1.09	1.20	0.572	4mrem/yr	NE		BD	088942-034	EPA 900.0
	Tritium	34.7 ± 101	183	80.9	NE	NE	U	BD	088942-036	EPA 906.0 M
MWL-BW2 (Duplicate)	Americium-241	-1.16 ± 7.62	12.8	6.42	NE	NE	U	BD	088943-033	EPA 901.1
27-Apr-10	Cesium-137	-0.495 ± 2.82	3.30	1.65	NE	9.3	U	BD	088943-033	EPA 901.1
	Cobalt-60	0.546 ± 1.86	3.18	1.59	NE	NE	U	BD	088943-033	EPA 901.1
	Potassium-40	-1.01 ± 35.8	42.4	21.2	NE	NE	U	BD	088943-033	EPA 901.1
	Gross Alpha	6.24	NA	NA	15	NE	NA	None	088943-034	EPA 900.0
	Gross Beta	3.19 ± 1.06	1.23	0.586	4mrem/yr	NE		J	088943-034	EPA 900.0
	Tritium	34.5 ± 101	182	80.4	NE	NE	U	BD	088943-036	EPA 906.0 M
MWL-MW4	Americium-241	-0.689 ± 7.49	11.9	5.94	NE	NE	U	BD	088949-033	EPA 901.1
29-Apr-10	Cesium-137	1.87 ± 1.65	2.87	1.44	NE	9.3	U	BD	088949-033	EPA 901.1
	Cobalt-60	-0.705 ± 1.69	2.69	1.35	NE	NE	U	BD	088949-033	EPA 901.1
	Potassium-40	-9.08 ± 34.3	43.3	21.7	NE	NE	U	BD	088949-033	EPA 901.1
	Gross Alpha	6.56	NA	NA	15	NE	NA	None	088949-034	EPA 900.0
	Gross Beta	4.68 ± 1.21	1.20	0.569	4mrem/yr	NE			088949-034	EPA 900.0
	Tritium	-36.9 ± 89.2	180	79.4	NE	NE	U	BD	088949-036	EPA 906.0 M
MWL-MW5	Americium-241	-36.5 ± 11.6	17.5	8.77	NE	NE	U	BD	088918-033	EPA 901.1
20-Apr-10	Cesium-137	0.0424 ± 1.92	3.28	1.64	NE	9.3	U	BD	088918-033	EPA 901.1
	Cobalt-60	-1.93 ± 2.83	3.20	1.60	NE	NE	U	BD	088918-033	EPA 901.1
	Potassium-40	5.62 ± 42.1	45.2	22.6	NE	NE	U	BD	088918-033	EPA 901.1
	Gross Alpha	6.74	NA	NA	15	NE	NA	None	088918-034	EPA 900.0
	Gross Beta	4.55 ± 1.46	1.86	0.894	4mrem/yr	NE		J	088918-034	EPA 900.0
	Tritium	-21 ± 90.0	157	76.1	NE	NE	U	BD	088918-036	EPA 906.0 M
MWL-MW5 (Duplicate)	Americium-241	-26.5 ± 11.6	18.7	9.33	NE	NE	U	BD	088919-033	EPA 901.1
20-Apr-10	Cesium-137	-0.343 ± 1.91	3.21	1.61	NE	9.3	U	BD	088919-033	EPA 901.1
	Cobalt-60	1.07 ± 1.93	3.35	1.68	NE	NE	U	BD	088919-033	EPA 901.1
	Potassium-40	4.85 ± 53.3	52.6	26.3	NE	NE	U	BD	088919-033	EPA 901.1
	Gross Alpha	8.57	NA	NA	15	NE	NA	None	088919-034	EPA 900.0
	Gross Beta	5.50 ± 1.39	1.33	0.633	4mrem/yr	NE			088919-034	EPA 900.0
	Tritium	-24.8 ± 89.7	157	76.0	NE	NE	U	BD	088919-036	EPA 906.0 M

Refer to footnotes at end of table.

Table A-10 (Continued)
Summary of Tritium, Gross Alpha, Gross Beta, Gamma Spectroscopy, Isotopic Uranium, and Radon-222 Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Activity[a] (pCi/L)	MDA[b] (pCi/L)	Critical Level[c] (pCi/L)	MCL[d] (pCi/L)	NMED HWB[e] (pCi/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW6	Americium-241	-18 ± 12.1	19.1	9.57	NE	NE	U	BD	088909-033	EPA 901.1
19-Apr-10	Cesium-137	-0.304 ± 1.79	2.97	1.49	NE	9.3	U	BD	088909-033	EPA 901.1
	Cobalt-60	0.169 ± 1.88	3.17	1.58	NE	NE	U	BD	088909-033	EPA 901.1
	Potassium-40	-19.9 ± 37.2	45.3	22.6	NE	NE	U	BD	088909-033	EPA 901.1
	Gross Alpha	5.26	NA	NA	15	NE	NA	None	088909-034	EPA 900.0
	Gross Beta	3.20 ± 1.08	1.32	0.627	4mrem/yr	NE		J	088909-034	EPA 900.0
	Tritium	41.7 ± 91.6	156	75.4	NE	NE	U	BD	088909-036	EPA 906.0 M
	Low Level Tritium	1.22 ± 0.744	1.18	0.554	NE	NE		J	088909-037	HASL 300
MWL-MW7	Americium-241	1.28 ± 5.88	9.61	4.81	NE	NE	U	BD	088929-033	EPA 901.1
22-Apr-10	Cesium-137	0.658 ± 1.66	2.81	1.41	NE	9.3	U	BD	088929-033	EPA 901.1
	Cobalt-60	1.77 ± 1.71	3.04	1.52	NE	NE	U	BD	088929-033	EPA 901.1
	Potassium-40	-5.69 ± 36.1	36.5	18.2	NE	NE	U	BD	088929-033	EPA 901.1
	Gross Alpha	3.52	NA	NA	15	NE	NA	None	088929-034	EPA 900.0
	Gross Beta	5.63 ± 1.24	0.969	0.459	4mrem/yr	NE			088929-034	EPA 900.0
	Tritium	-21 ± 89.8	157	76.0	NE	NE	U	BD	088929-036	EPA 906.0 M
MWL-MW8	Americium-241	-8.24 ± 5.47	8.80	4.40	NE	NE	U	BD	088934-033	EPA 901.1
26-Apr-10	Cesium-137	1.65 ± 1.77	3.12	1.56	NE	9.3	U	BD	088934-033	EPA 901.1
	Cobalt-60	-2.01 ± 2.70	3.21	1.61	NE	NE	U	BD	088934-033	EPA 901.1
	Potassium-40	49.5 ± 43.8	29.3	14.7	NE	NE	X	BD	088934-033	EPA 901.1
	Gross Alpha	3.52	NA	NA	15	NE	NA	None	088934-034	EPA 900.0
	Gross Beta	4.29 ± 1.12	1.12	0.529	4mrem/yr	NE			088934-034	EPA 900.0
	Tritium	108 ± 112	181	79.8	NE	NE	U	BD	088934-036	EPA 906.0 M
MWL-MW9	Americium-241	-2.93 ± 13.3	22.5	11.3	NE	NE	U	BD	088924-033	EPA 901.1
21-Apr-10	Cesium-137	0.313 ± 1.86	3.19	1.60	NE	9.3	U	BD	088924-033	EPA 901.1
	Cobalt-60	0.497 ± 1.94	3.35	1.67	NE	NE	U	BD	088924-033	EPA 901.1
	Potassium-40	-36.3 ± 44.5	49.3	24.7	NE	NE	U	BD	088924-033	EPA 901.1
	Gross Alpha	1.63	NA	NA	15	NE	NA	None	088924-034	EPA 900.0
	Gross Beta	5.65 ± 1.37	1.31	0.632	4mrem/yr	NE			088924-034	EPA 900.0
	Tritium	-115 ± 86.7	157	76.1	NE	NE	U	BD	088924-036	EPA 906.0 M

Refer to footnotes at end of table.

Table A-10 (Continued)
Summary of Tritium, Gross Alpha, Gross Beta, Gamma Spectroscopy, Isotopic Uranium, and Radon-222 Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Activity[a] (pCi/L)	MDA[b] (pCi/L)	Critical Level[c] (pCi/L)	MCL[d] (pCi/L)	NMED HWB[e] (pCi/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-BW2	Americium-241	2.09 ± 7.82	11.7	5.84	NE	NE	U	BD	089402-033	EPA 901.1
06-Jul-10	Cesium-137	0.0535 ± 1.91	3.17	1.59	NE	9.3	U	BD	089402-033	EPA 901.1
	Cobalt-60	1.65 ± 2.02	3.57	1.79	NE	NE	U	BD	089402-033	EPA 901.1
	Potassium-40	-44.9 ± 38.0	42.0	21.0	NE	NE	U	BD	089402-033	EPA 901.1
	Gross Alpha	1.31	NA	NA	15	NE	NA	None	089402-034	EPA 900.0
	Gross Beta	5.56 ± 1.61	1.94	0.935	4mrem/yr	NE		J	089402-034	EPA 900.0
	Uranium-233/234	6.13 ± 0.909	0.122	0.0544	NE	7.0			089402-035	HASL-300
	Uranium-235/236	0.199 ± 0.0724	0.0735	0.0288	NE	0.41		J	089402-035	HASL-300
	Uranium-238	2.12 ± 0.353	0.0845	0.0358	NE	3.0			089402-035	HASL-300
	Tritium	37.6 ± 91.4	156	75.3	NE	NE	U	BD	089402-036	EPA 906.0 M
	Radon-222	**494 ± 132**	92.4	43.9	NE	300			089402-038	SM 7500 Rn B
MWL-MW7	Americium-241	0.165 ± 3.95	5.01	2.51	NE	NE	U	BD	089407-033	EPA 901.1
07-Jul-10	Cesium-137	0.155 ± 3.51	3.96	1.98	NE	9.3	U	BD	089407-033	EPA 901.1
	Cobalt-60	-2.63 ± 3.37	4.03	2.02	NE	NE	U	BD	089407-033	EPA 901.1
	Potassium-40	58.5 ± 25.5	58.5	24.7	NE	NE	U	BD	089407-033	EPA 901.1
	Gross Alpha	-2.23	NA	NA	15	NE	NA	None	089407-034	EPA 900.0
	Gross Beta	5.39 ± 1.57	1.95	0.948	4mrem/yr	NE		J	089407-034	EPA 900.0
	Uranium-233/234	5.38 ± 0.818	0.132	0.059	NE	7.0			089407-035	HASL-300
	Uranium-235/236	0.286 ± 0.0926	0.0797	0.0312	NE	0.41			089407-035	HASL-300
	Uranium-238	2.38 ± 0.396	0.0916	0.0388	NE	3.0			089407-035	HASL-300
	Tritium	61.8 ± 93.4	157	75.9	NE	NE	U	BD	089407-036	EPA 906.0 M
	Radon-222	289 ± 85.8	77.9	37.0	NE	300			089407-038	SM 7500 Rn B
MWL-MW7 (Duplicate)	Americium-241	-40.3 ± 11.7	17.4	8.68	NE	NE	U	BD	089408-033	EPA 901.1
07-Jul-10	Cesium-137	-0.51 ± 1.86	3.14	1.57	NE	9.3	U	BD	089408-033	EPA 901.1
	Cobalt-60	2.81 ± 2.08	3.77	1.89	NE	NE	U	BD	089408-033	EPA 901.1
	Potassium-40	6.90 ± 35.9	46.5	23.3	NE	NE	U	BD	089408-033	EPA 901.1
	Gross Alpha	-2.41	NA	NA	15	NE	NA	None	089408-034	EPA 900.0
	Gross Beta	4.28 ± 1.13	1.23	0.592	4mrem/yr	NE			089408-034	EPA 900.0
	Uranium-233/234	5.27 ± 0.794	0.125	0.0559	NE	7.0			089408-035	HASL-300
	Uranium-235/236	0.187 ± 0.0707	0.0756	0.0296	NE	0.41		J	089408-035	HASL-300
	Uranium-238	2.71 ± 0.438	0.0868	0.0368	NE	3.0			089408-035	HASL-300
	Tritium	41.5 ± 91.5	156	75.3	NE	NE	U	BD	089408-036	EPA 906.0 M
	Radon-222	231 ± 75.3	78.1	37.1	NE	300		J	089408-038	SM 7500 Rn B

Refer to footnotes at end of table.

Table A-10 (Continued)
Summary of Tritium, Gross Alpha, Gross Beta, Gamma Spectroscopy, Isotopic Uranium, and Radon-222 Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Well ID	Analyte	Activity[a] (pCi/L)	MDA[b] (pCi/L)	Critical Level[c] (pCi/L)	MCL[d] (pCi/L)	NMED HWB[e] (pCi/L)	Laboratory Qualifier[f]	Validation Qualifier[g]	Sample Number	Analytical Method[h]
MWL-MW8	Americium-241	1.48 ± 4.05	6.68	3.34	NE	NE	U	BD	089411-033	EPA 901.1
12-Jul-10	Cesium-137	-9.95 ± 5.84	8.40	4.20	NE	9.3	U	BD	089411-033	EPA 901.1
	Cobalt-60	-0.248 ± 3.33	5.58	2.79	NE	NE	U	BD	089411-033	EPA 901.1
	Potassium-40	-0.685 ± 59.6	76.8	38.4	NE	NE	U	BD	089411-033	EPA 901.1
	Gross Alpha	-4.99	NA	NA	15	NE	NA	None	089411-034	EPA 900.0
	Gross Beta	9.90 ± 2.90	3.51	1.69	4mrem/yr	NE		J	089411-034	EPA 900.0
	Uranium-233/234	5.24 ± 0.813	0.149	0.0667	NE	7.0			089411-035	HASL-300
	Uranium-235/236	0.223 ± 0.0844	0.0901	0.0353	NE	0.41		J	089411-035	HASL-300
	Uranium-238	2.33 ± 0.400	0.103	0.0439	NE	3.0			089411-035	HASL-300
	Tritium	59.4 ± 92.5	156	75.3	NE	NE	U	BD	089411-036	EPA 906.0 M
	Radon-222	183 ± 61.4	67.0	31.9	NE	300		J	089411-038	SM 7500 Rn B
MWL-MW9	Americium-241	5.51 ± 8.50	13.2	6.59	NE	NE	U	BD	089414-033	EPA 901.1
13-Jul-10	Cesium-137	2.66 ± 1.79	3.21	1.61	NE	9.3	U	BD	089414-033	EPA 901.1
	Cobalt-60	0.205 ± 1.83	3.08	1.54	NE	NE	U	BD	089414-033	EPA 901.1
	Potassium-40	-10.1 ± 39.7	42.5	21.2	NE	NE	U	BD	089414-033	EPA 901.1
	Gross Alpha	-0.42	NA	NA	15	NE	NA	None	089414-034	EPA 900.0
	Gross Beta	6.44 ± 2.04	2.44	1.16	4mrem/yr	NE		J	089414-034	EPA 900.0
	Uranium-233/234	5.43 ± 0.832	0.140	0.0624	NE	7.0			089414-035	HASL-300
	Uranium-235/236	0.148 ± 0.0652	0.0843	0.0331	NE	0.41		J	089414-035	HASL-300
	Uranium-238	2.78 ± 0.458	0.0969	0.0411	NE	3.0			089414-035	HASL-300
	Tritium	-21.9 ± 89.5	157	75.8	NE	NE	U	BD	089414-036	EPA 906.0 M
	Radon-222	294 ± 83.4	70.5	33.6	NE	300			089414-038	SM 7500 Rn B

[a]Values in **bold** exceed the established MCL and/or the NMED HWB-approved background level. Activity levels of zero or less are considered to be not detected.
[b]MDA is the minimal detectable activity in a sample required to ensure a 95% probability that the measured activity is accurately quantified above the critical level.
[c]Critical level is the minimum activity that can be measured and reported with 99% confidence that the analyte is greater than zero, analyte is matrix-specific.
NA = Not applicable for gross alpha activities. The critical level could not be calculated as the gross alpha activity was corrected by subtracting out the total uranium activity.
[d]The MCL is established by the EPA Primary Water Regulations (40 CFR 141.11[b]), and subsequent amendments.
[e]NMED November 1998, Letter from B. Garcia to M. Zamorski (U.S. Department of Energy) and J.B. Woodward (Sandia Corporation), Re: "Approval, SNL Background Study," New Mexico Environment Department, Santa Fe, New Mexico, November 25, 1998.
[f]Laboratory Qualifier.
NA = Not applicable for gross alpha activities. The MDA could not be calculated as the gross alpha activity was corrected by subtracting out the total uranium activity.
U = Analyte is absent or below the method detection limit.
X = Used in radiochemistry to identify data rejected due to interference, low abundance, peak not meeting identification criteria, or uncertain identification for gamma spectroscopy.

Table A-10 (Concluded)
Summary of Tritium, Gross Alpha, Gross Beta, Gamma Spectroscopy, Isotopic Uranium, and Radon-222 Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

[g]Validation Qualifier.
If cell is blank, then all quality control samples met acceptance criteria with respect to submitted samples.
BD = Used in radiochemistry to identify results that are not statistically different from zero.
J = The associated value is an estimated quantity.
[h]EPA 1980, "Prescribed Procedures for Measurement of Radioactivity in Drinking Water," EPA-600/4-80-032, U.S. Environmental Protection Agency, Cincinnati, Ohio; DOE Environmental Measurements Laboratory, 1990, "EML Procedures Manual," 27th ed., Vol. 1, Rev. 1992, HASL-300.
BW = Background Well.
CFR = Code of Federal Regulations.
DOE = U.S. Department of Energy.
EPA = U.S. Environmental Protection Agency.
HASL = Health and Safety Laboratory.
HWB = Hazardous Waste Bureau.
ID = Identification.
MCL = Maximum contaminant level.
MDA = Minimum detectable activity.
mrem/yr = Millirem per year.
MW = Monitoring Well.
MWL = Mixed Waste Landfill.
NE = Not established.
NMED = New Mexico Environment Department.
pCi/L = Picocurie(s) per liter.
SM = Standard Method.

Table A-11
Duplicate Sample Analytical Results for Chemical Analyses
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Sample Location	MWL-MW7 Environmental Result (R_1) January 5, 2010	MWL-MW7 Duplicate Result (R_2) January 5, 2010	
Parameter[a]	All results in mg/L (unless noted)		RPD[b]
Toluene (μg/L)	0.320	0.285	12
Nitrate plus nitrite as N	3.41	3.29	4
Alkalinity, total as CaCO3	207	206	< 1
Bromide	0.294	0.278	6
Chloride	40.2	40.4	< 1
Fluoride	0.903	0.971	7
Sulfate	36.8	36.8	< 1
Barium (unfiltered)	0.0974	0.104	7
Calcium (unfiltered)	58.6	61.0	4
Cobalt (unfiltered)	0.000105	0.000113	7
Iron (unfiltered)	0.168	0.187	11
Magnesium (unfiltered)	20.3	22.1	8
Manganese (unfiltered)	0.00139	0.00137	1
Nickel (unfiltered)	0.00226	0.00244	8
Potassium (unfiltered)	5.10	5.37	5
Sodium (unfiltered)	50.8	53.2	5
Uranium (unfiltered)	0.00781	0.00833	6
Barium (filtered)	0.0938	0.0961	2
Calcium (filtered)	59.5	60.7	2
Iron (filtered)	0.155	0.161	4
Magnesium (filtered)	21.3	22.7	6
Nickel (filtered)	0.00218	0.0023	5
Potassium (filtered)	5.15	5.71	10
Sodium (filtered)	49.3	53.1	7
Uranium (filtered)	0.00774	0.00792	2

Refer to footnotes at end of table.

Table A-11 (Continued)
Duplicate Sample Analytical Results for Chemical Analyses
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Sample Location	MWL-BW2 Environmental Result (R_1) April 27, 2010	MWL-BW2 Duplicate Result (R_2) April 27, 2010	
Parameter[a]	All results in mg/L (unless noted)		RPD[b]
Nitrate plus nitrite as N	2.38	2.30	3
Alkalinity, total as CaCO3	238	235	1
Bromide	0.399	0.399	<1
Chloride	58.4	59.3	2
Fluoride	0.667	0.675	1
Sulfate	43.7	44.6	2
Aluminum (unfiltered)	0.0109	0.0197	58
Barium (unfiltered)	0.0938	0.0943	1
Calcium (unfiltered)	67.2	67.8	1
Iron (unfiltered)	0.0703	0.0700	<1
Magnesium (unfiltered)	20.9	20.5	2
Nickel (unfiltered)	0.00103	0.00104	1
Potassium (unfiltered)	4.14	4.02	3
Selenium (unfiltered)	0.00241	0.00214	12
Sodium (unfiltered)	50.2	49.8	1
Uranium (unfiltered)	0.00652	0.00636	2
Vanadium (unfiltered)	0.010	0.00378	90
Barium (filtered)	0.0935	0.095	2
Calcium (filtered)	64.1	71.7	11
Iron (filtered)	0.0625	0.0648	4
Magnesium (filtered)	20.1	21.9	9
Nickel (filtered)	0.00108	0.00113	5
Potassium (filtered)	3.95	4.20	6
Selenium (filtered)	0.002	0.00206	3
Sodium (filtered)	48.0	53.1	10
Uranium (filtered)	0.00638	0.00642	1

Refer to footnotes at end of table.

Table A-11 (Continued)
Duplicate Sample Analytical Results for Chemical Analyses
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Sample Location	MWL-MW5 Environmental Result (R_1) April 20, 2010	MWL-MW5 Duplicate Result (R_2) April 20, 2010	
Parameter[a]	All results in mg/L (unless noted)		RPD[b]
Nitrate plus nitrite as N	1.45	1.55	7
Alkalinity, total as CaCO3	307	310	1
Bromide	0.464	0.467	1
Chloride	84.5	84.7	<1
Fluoride	0.861	0.885	3
Sulfate	53.6	53.9	1
Barium (unfiltered)	0.126	0.127	1
Calcium (unfiltered)	94.5	90.7	4
Cobalt (unfiltered)	0.000141	0.000122	14
Iron (unfiltered)	0.197	0.236	18
Magnesium (unfiltered)	31.1	30.9	1
Manganese (unfiltered)	0.00759	0.0081	7
Nickel (unfiltered)	0.00177	0.00178	1
Potassium (unfiltered)	6.39	6.43	1
Sodium (unfiltered)	68.6	60.9	12
Uranium (unfiltered)	0.00994	0.00990	<1
Zinc (unfiltered)	0.00307	0.00293	5
Barium (filtered)	0.129	0.138	7
Calcium (filtered)	88.8	95.5	7
Iron (filtered)	0.165	0.198	18
Magnesium (filtered)	28.7	31.2	8
Manganese (filtered)	0.00296	0.00323	9
Nickel (filtered)	0.00203	0.00169	18
Potassium (filtered)	5.62	5.92	5
Selenium (filtered)	0.00135	0.00155	14
Sodium (filtered)	60.6	65.5	8
Uranium (filtered)	0.0102	0.0102	<1
Zinc (filtered)	0.00443	0.00282	44

Refer to footnotes at end of table.

Table A-11 (Concluded)
Duplicate Sample Analytical Results for Chemical Analyses
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2010

Sample Location	MWL-MW7 Environmental Result (R_1) July 7, 2010	MWL-MW7 Duplicate Result (R_2) July 7, 2010	
Parameter[a]	All results in mg/L (unless noted)		RPD[b]
Nitrate plus nitrite as N	3.11	3.11	< 1
Alkalinity, total as CaCO3	217	219	1
Bromide	0.328	0.317	3
Chloride	37.9	39.0	3
Fluoride	0.919	0.948	3
Sulfate	37.6	37.5	< 1
Barium (unfiltered)	0.0977	0.0947	3
Calcium (unfiltered)	55.8	54.9	2
Iron (unfiltered)	0.183	0.181	1
Magnesium (unfiltered)	18.0	17.2	5
Nickel (unfiltered)	0.00157	0.00139	12
Potassium (unfiltered)	4.86	4.52	7
Sodium (unfiltered)	44.8	45.9	2
Uranium (unfiltered)	0.00798	0.00796	< 1
Vanadium (unfiltered)	0.00783	0.00828	6
Barium (filtered)	0.0982	0.0971	1
Calcium (filtered)	55.6	54.8	1
Magnesium (filtered)	17.4	17.4	< 1
Nickel (filtered)	0.00445	0.00155	97
Potassium (filtered)	4.91	4.58	7
Sodium (filtered)	45.3	46.0	2
Uranium (filtered)	0.00816	0.008	2
Vanadium (filtered)	0.0081	0.00646	23

[a]Parameters not detected in both samples are not listed.
[b]RPD is not calculated for estimated values.
BW = Background Well.
CaCO3 = Calcium carbonate.
µg/L = Microgram(s) per liter.
mg/L = Milligram(s) per liter.
MW = Monitoring Well.
MWL = Mixed Waste Landfill.
N = Nitrogen.
RPD = Relative percent difference is calculated with the following equation and rounded to nearest whole number:

$$RPD = \frac{|R_1 - R_2|}{[(R_1 + R_2)/2]} \times 100$$

where:
R_1 = analysis result
R_2 = duplicate analysis result