Sandia National Laboratories, New Mexico (SNL/NM)

Environmental Restoration Project

A Department of Energy Environmental Cleanup Program

CONSOLIDATED
Quarterly Report

May through July 2010

September 2010

United States Department of Energy
Sandia Site Office

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

CONSOLIDATED
QUARTERLY REPORT

September 2010

SANDIA NATIONAL LABORATORIES/NEW MEXICO (SNL/NM)

ENVIRONMENTAL RESTORATION PROJECT

DEPARTMENT OF ENERGY (DOE): SANDIA SITE OFFICE
CONTRACTOR: SANDIA CORPORATION
PROJECT MANAGER: John Cochran

NUMBER OF POTENTIAL RELEASE SITES SUBJECT TO THIS PERMIT: 36
SUSPECT WASTE: radionuclides, metals, organics, and explosives

OVERVIEW

This Consolidated Quarterly Report for the Sandia National Laboratories Environmental Project addresses all quarterly reporting requirements pertaining to the Hazardous and Solid Waste Amendments (HSWA) Module of the Resource Conservation and Recovery Act (RCRA) Permit, the Compliance Order on Consent (Consent Order), and the Chemical Waste Landfill (CWL) Closure Plan. The following entities and reporting periods are addressed in these Sections:

SECTION I

Environmental Restoration Project Quarterly Report, reporting period:

May through July 2010

SECTION II

Chemical Waste Landfill Progress Report, reporting period:

May through July 2010

SECTION III

Perchlorate Screening Semiannual Report, reporting period:

April through June 2010

ABBREVIATIONS AND ACRONYMS

AOC	Areas of Concern
AOP	Administrative Operating Procedure
ARCOC	analysis request and chain of custody
BSG	Burn Site Groundwater
BW	background well
CAC	Corrective Action Complete
CAMU	Corrective Action Management Unit
CFR	Code of Federal Regulations
CME	Corrective Measures Evaluation
CMI	Corrective Measures Implementation
COA	certificates of analyses
COC	Constituents of Concern
CWL	Chemical Waste Landfill
CY	calendar year
CYN	Canyons (Burn Site)
DO	dissolved oxygen
DOE	Department of Energy
EB	equipment blank
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration Project
ET	evapotranspirative
FB	field blank
FOP	Field Operating Procedure
FY10	Fiscal Year 2010
GEL	General Engineering Laboratories
LTES	Long Term Environmental Stewardship
LWDS	Liquid Waste Disposal System
MCL	maximum contaminant level
MDL	method detection limit
µg/L	microgram per liter
mg/L	milligram per liter
MW	monitoring well
MWL	Mixed Waste Landfill
ND	non-detect
NMED	New Mexico Environment Department
NOD	Notice of Deficiency
NTU	Nephelometric Tributary Units

OB	Oversight Bureau
ORP	oxidation-reduction potential
PCB	polychlorinated biphenyls
pH	potential of hydrogen
PQL	practical quantitation limits
PSL	primary sub-liner
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	Semi-volatile organic compounds
SWMU	Solid Waste Management Unit
TA	Technical Area
TAG	Tijeras Arroyo Groundwater
TB	trip blank
TCE	trichloroethene
VCM	Voluntary Corrective Measure
VE	Vapor Extraction
VOC	volatile organic compound
VZMS	Vadose Zone Monitoring System
W	well

Environmental Restoration Project Consolidated Quarterly Report

Section I

Environmental Restoration Project Quarterly Report

September 2010

United States Department of Energy
Sandia Site Office

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1.0 Introduction

This Environmental Restoration Consolidated Quarterly Report (ER Quarterly Report) discusses ongoing corrective actions being implemented by the Sandia National Laboratories (SNL) Environmental Restoration (ER) Project. The status of regulatory closure activities is outlined below. In this Section, the Quarter refers to the May through July 2010 quarterly reporting period.

2.0 ER Work Completed this Quarter

2.1 Mixed Waste Landfill (MWL)

- Activities during this reporting period included submittal of the MWL Annual Groundwater Monitoring Report for Calendar Year (CY) 2009 to the New Mexico Environment Department (NMED) in June 2010.

- On April 30, 2010 the Department of Energy and Sandia Corporation (DOE/Sandia) received a letter from NMED entitled "Toluene Detections in Groundwater" requiring further investigation to determine the source of toluene in the groundwater samples collected from monitoring wells at MWL (NMED April 2010). Toluene and bis(2ethylhexylphthalate) were detected in CY 2009 groundwater samples at very low concentrations. Both of these compounds have been detected historically and are common laboratory contaminants. DOE/Sandia initiated an investigation in late 2009 to determine the source. The NMED provided further direction in the April 30, 2010 letter for conducting a purging/sampling study of the groundwater along with any other studies necessary to determine the source. This investigation is ongoing and will be completed in August of 2010.

- Mixed Waste Landfill groundwater monitoring activities for the fourth quarter of Fiscal Year 2010 were completed in early July 2010. The July sampling event included quarterly sampling of MWL-BW2, MWL-MW7, MWL-MW8, and MWL-MW9. The requirement for 8 consecutive quarters of groundwater sampling at MWL-BW2, MWL-MW7, MWL-MW8, and MWL-MW9 has been completed, and the sampling frequency for all existing MWL monitoring wells will be annual hereafter per Table XI-1 of the Compliance Order on Consent (NMED April 2004). All CY 2010 groundwater monitoring results will be presented in the MWL Annual Groundwater Monitoring Report for CY 2010 (anticipated delivery to NMED in the spring of 2011).

2.2 Project Management and Site Closure

ER Sites undergoing regulatory and administrative closure activities are presently addressed under project management. Two permit modification requests are currently in progress with the NMED and are summarized in this section. The sites, listed below, were discussed with NMED and public stakeholders in June 2009 as part of the comment resolution process for the renewal of the SNL Resource Conservation and Recovery Amendment (RCRA Permit). NMED verbally outlined their decisions about these sites at that meeting. In April 2010, DOE/Sandia received official written communication from NMED regarding their decisions on these sites (NMED April 2010). NMED's decisions from this April 2010 letter are outlined in this section.

2.2.1 Permit Modification Request Submitted in March 2006

- Twenty-six sites were submitted to NMED for the final determination of Corrective Action Complete (CAC) in March 2006. The sites included nineteen Solid Waste Management Units (SWMUs), and seven Areas of Concern (AOCs). The NMED issued a Notice of Public Comment Period and Intent to Approve a Class 3 Permit Modification of the RCRA Permit for Sandia for these 26 sites on December 10, 2007 (NMED December 2007). The NMED public review and comment period ended on February 8, 2008. The SWMUs and AOCs included in this permit modification request are listed below.

  SWMUs – 4, 5, 46, 49, 52, 68, 91, 101, 116, 138, 140, 147, 149, 150, 154, 161, 196, 233, 234

  AOCs – 1090, 1094, 1095, 1114, 1115, 1116, and 1117.

2.2.2 Permit Modification Request Submitted in January 2008

- Five sites were submitted for the final regulatory determination of CAC in a permit modification request in January 2008 (SNL/NM January 2008). This permit modification included all remaining SNL ER sites with the exception of the three active sites (SWMUs 83, 84, and 240), three Groundwater Investigation sites (Tijeras Arroyo, Technical Area V, and Burn Site), and the MWL (SWMU 76). Final reporting of the Corrective Measure Implementation for the MWL is pending. The MWL is addressed separately in section 2.1 of this Section of this ER Quarterly Report. The four SWMUs and one AOC included in the January 2008 permit modification request are listed below.

  SWMUs – 8, 28-2, 58, and 105

  AOC – 1101

2.2.3 Status of Permit Modification Requests Submitted in March 2006 and January 2008.

- On April 08, 2010, DOE/Sandia received a letter from NMED entitled: "Class 3 Permit Modification Requests for Granting Corrective Action Complete Status For 26 SWMUs [Solid Waste Management Units]/AOCs [Areas of Concern] (Request of March 1, 2006) And 5 Other SWMUs/AOCs (Request of January 7, 2008), Sandia National Laboratories, EPA ID# NM5890110518, HWB-SNL-06-007 and HWB-SNL-08-001" on April 14, 2010 (NMED April 2010). This letter included four main sections: "SWMUs Requiring Corrective Action," "SWMUs/AOCs to be Subject to Groundwater Monitoring Controls," "SWMUs/AOCs to be Restricted to Industrial Land Use," and "SWMUs/AOCs that do not Require Corrective Action." NMED requirements stated in this letter are outlined here:

  - The section titled "SWMUs Requiring Corrective Action," specifies additional characterization requirements for SNL/NM SWMUs 68 (Old Burn Site), 149 (Building 9930 Septic System), 154 (Building 9960 Septic System and Seepage Pits), and 8 and 58 (Open Dump [Coyote Canyon Blast Area] and Coyote Canyon Blast Area). Additional groundwater monitoring is required to be completed at existing wells associated with SWMUs 149 and 154; the work plan for these efforts is required to be submitted to the NMED by June 30, 2010. Groundwater monitoring wells are required to be installed and monitored at SWMUs 68, and 8/58. The work plan for the efforts at Sites 68 and 8/58 must be submitted to the NMED by September 30, 2010.
    - Activities associated with these requirements are summarized in section 2.3 of this ER Quarterly Report.

  - The section titled "SWMUs/AOCs to be Subject to Groundwater Monitoring Controls," specifies that annual groundwater monitoring be conducted at SWMUs 49 and 116.

  - The section titled "SWMUs/AOCs to be Restricted to Industrial Land Use" indicates that NMED intends to restrict the future land use of the following SWMUs/AOCs to industrial:

    1. SWMU 4 - Liquid Waste Disposal System Surface Impoundments
    2. SWMU 46 - Old Acid Waste Line Outfall
    3. SWMU 196 - Building 6597 Cistern
    4. SWMU 234 - Storm Drain System Outfall
    5. AOC 1090 - Building 6721 Septic System

- The Section titled "SWMUs/AOCs that do not Require Corrective Action" includes the following SWMUs/AOCs:

1. SWMU 4 - Liquid Waste Disposal System Surface Impoundments
2. SWMU 5 - Liquid Waste Disposal System Drainfield
3. SWMU 28-2- Mine Shaft
4. SWMU 46 - Old Acid Waste Line Outfall
5. SWMU 49 - Building 9820 Drains (Lurance Canyon)
6. SWMU 91 - Lead Firing Site
7. SWMU 101 - Building 9926/9926A Septic System and Seepage Pit (Coyote Test Field)
8. SWMU 105 - Mercury Spill (Building 6536)
9. SWMU 116 - Building 9990 Septic System (Coyote Test Field)
10. SWMU 138 - Building 6630 Septic Systems (TA-III)
11. SWMU 140 - Building 9965 Septic System and Drywell (Thunder Range)
12. SWMU 147 - Building 9925 Septic Systems (Coyote Test Field)
13. SWMU 150 - Building 9939/9939A Septic System and Drainfield (Coyote Test Field)
14. SWMU 161 - Building 6636 Septic System (TA-III)
15. SWMU 196 - Building 6597 Cistern (TA-V)
16. SWMU 233 - Storm Drain System Outfall
17. SWMU 234 - Storm Drain System Outfall
18. AOC 1090 - Building 6721 Septic System (TA-III)
19. AOC 1094 - Live Fire Range East Septic System (Lurance Canyon)
20. AOC 1095 - Building 9938 Seepage Pit (Coyote Test Field)
21. AOC 1101 - Building 885 Septic System
22. AOC 1114 - Building 9978 Drywell (Coyote Test Field)
23. AOC 1115 - Former Offices Septic System (Solar Tower Complex)
24. AOC 1116 - Building 9981A Seepage Pit (Solar Tower Complex)
25. AOC 1117 - Building 9982 Drywell (Solar Tower Complex)

2.3 Site-Wide Hydrogeologic Characterization

2.3.1 Technical Area-3/5 (TA 3/5) Groundwater

- Groundwater sampling in TA-3/5 was completed in June 2010. Analytical results will be discussed in the Calendar Year 2010 Groundwater Protection Program (GWPP) Annual Groundwater Monitoring Report (anticipated delivery to NMED in the summer of 2011).
- In May 2010, DOE/Sandia received a Notice of Conditional Approval from the NMED for the third Notice of Disapproval (NOD) on the Technical Area V Corrective Measures Evaluation (CME) Report (SNL/NM July 2005).

2.3.2 Burn Site Groundwater (BSG)

- Groundwater sampling for BSG was completed in May and June 2010 to verify the gasoline range organics results obtained in February and March 2010. Analytical results will be discussed in the Calendar Year 2010 GWPP Annual Groundwater Monitoring Report (anticipated delivery to NMED in the summer of 2011).
- DOE/Sandia implemented the field program described in the Burn Site Groundwater Characterization Work Plan, approved by NMED in February 2010 (Kieling February 2010).

2.3.3 Tijeras Arroyo Groundwater (TAG)

- Groundwater sampling for TAG was completed in May 2010. Results of perchlorate analysis are discussed in Section III of this ER Quarterly Report, and other analytical results will be discussed in the Calendar Year 2010 GWPP Annual Groundwater Monitoring Report (anticipated delivery to NMED in the summer of 2011).

2.3.4 Mixed Waste Landfill Groundwater (MWL)

- Groundwater sampling at the MWL was performed in July 2010. Results from these sampling events will be presented in the MWL Annual Groundwater Monitoring Report for Calendar Year 2010 (anticipated delivery to NMED in the spring of 2011).

2.3.5 Chemical Waste Landfill Groundwater (CWL)

- No CWL groundwater monitoring activities were performed for the reporting period of May through July 2010. Because validated analytical results associated with the April 2010 CWL groundwater sampling event were not received in time to be reported in the June 2010 ER Quarterly Report, these April 2010 results are summarized in Section II of this ER Quarterly Report.
- DOE/Sandia installed four new groundwater monitoring wells (CWL-BW5 and CWL-MW9 through MW11) and decommissioned four groundwater monitoring wells; two of which are dual completion wells (CWL-BW4A, CWL-MW4, MW5U/L, and MW6U/L), according to the approved Closure Plan Amendment (Kieling October 2009). Land surveying of the new wells and final reporting will be completed during the next reporting period.

2.3.6 SWMU 149 Groundwater

- In June 2010 DOE/Sandia submitted a "Sampling and Analysis Plan for Collection and Analyses of Additional Groundwater Samples Collected from Monitoring Well CTF-MW3, Located near SNL/NM SWMU 149," Attachment 1 in *Responses to New Mexico Environment Department's Comments for SWMUs 149 and 154 in "Class 3 Permit Modification Requests for Granting Corrective Action Complete Status for 26 SWMUs/AOCs and 5 Other SWMUs/AOCs"* (SNL/NM June 2010).

2.3.7 SWMU 154 Groundwater

- In June 2010 DOE/Sandia submitted a "Sampling and Analysis Plan for Collection and Analyses of Additional Groundwater Samples Collected from Monitoring Well CTF-MW2, Located near SNL/NM SWMU 154," Attachment 2 in *Responses to New Mexico Environment Department's Comments for SWMUs 149 and 154 in "Class 3 Permit Modification Requests for Granting Corrective Action Complete Status for 26 SWMUs/AOCs and 5 Other SWMUs/AOCs"* (SNL/NM June 2010).

2.4 ER Documents Submitted to the NMED Pending Regulatory Review and Approval

- The MWL Corrective Measures Implementation (CMI) report was submitted to NMED on January 26, 2010 (SNL/NM January 2010).
- Technical Area V Groundwater Corrective Measure Evaluation (CME) Work Plan was submitted to NMED on May 11, 2004 (SNL/NM April 2004).
- CME Report for Tijeras Arroyo Groundwater was submitted to NMED on September 01, 2005 (SNL/NM August 2005).
- BSG Interim Measures Work Plan was submitted to NMED on May 26, 2005 (SNL/NM May 2005).
- BSG Current Conceptual Model of Groundwater Flow and Contaminant Transport was submitted to NMED on April 09, 2008 (SNL/NM March 2008).
- BSG CME Work Plan was submitted to NMED on April 09, 2008 (SNL/NM March 2008).
- Sampling and Analysis Plan for Monitoring Well CTF-MW3 Located near SWMU 149 was submitted to NMED on June 24, 2010 (SNL/NM June 2010).
- Sampling and Analysis Plan for Monitoring Well CTF-MW2 Located near SWMU 154 was submitted to NMED on June 24, 2010 (SNL/NM June 2010).

3.0 LTES/ER Work Completed this Quarter

3.1 Corrective Action Management Unit (CAMU)

CAMU Post-closure Care operations consist of vadose-zone monitoring, leachate removal, and post-closure inspections, as required in the permit. Activities for this reporting period include the following:

- Weekly pumping of leachate from the leachate collection and removal system.
- Weekly inspection of the less-than-90-day area.
- Follow-up activities in response to findings indentified in the March 9, 2010 quarterly inspection:
  - Replacement of electrical outlet on south side of containment cell completed on May 10, 2010.
  - Repainting of the Primary Sub-liner's (PSL) protective steel casings completed on May 19, 2010.
- Quarterly inspection of the site (June 17, 2010), including containment cell cover, storm water diversion structures, security fences, gates, signs, and benchmarks:
  - 20 four-wing saltbush plants were identified growing on the cover. Because these plants can develop extensive root systems that could damage the high-density polyethylene cover, they were removed on July 16, 2010.
  - Tumbleweeds removed from sump on north-west site of containment cell on July 7, 2010.

- Quarterly monitoring of the Vadose Zone Monitoring System (VZMS) was conducted in June 2010. Results will be posted in the annual CAMU report.
- Waste management associated with the leachate collection was conducted and is outlined below, in this section.
- Composite leachate sampling for waste characterization was conducted on June 24, 2010.

3.1.1 CAMU Waste Management Activities

- Waste stored on site at the beginning of this period:
  - 123 gallons of leachate
  - 2 lbs Personal Protective Equipment (PPE)
- Waste generated on-site during the period:
  - 142 gallons of leachate
  - 6 gallons of rinsate

    - 5 lbs PPE, paper wipes, plastic drum pump
- Waste removed from site by the Hazardous Waste Management Facility:
    - 134 gallons of leachate on February 9, 2009
    - 4 gallons of rinsate on February 9, 2010
    - 5 lbs PPE, paper wipes, plastic drum pump on February 9, 2010
- Waste remaining on site at the end of this period:
    - 131 gallons of leachate
    - 2 gallons of rinsate
    - 2 lbs PPE

3.1.2 CAMU Regulatory Activities

- An audit of the CAMU was conducted by NMED on May 10, 2010. There were no findings reported by NMED.

3.2 Solid Waste Management Unit: Long Term Environmental Stewardship (LTES) Site 1, Cable Debris Site

- A "Notice of Termination for Storm Water Discharge Associated with Construction Activity under the National Pollution Discharge Elimination System (NPDES) – Construction General Permit (CPG) for the Cable Debris Project" was submitted to the USEPA and the NMED Surface Water Quality Bureau on July 7, 2010.

3.3 LTES Documents Submitted to NMED Pending Regulatory Review and Approval

- Investigation Report and Proposal for Corrective Action Complete for LTES Site 1/Cable Debris Site, was delivered to NMED in March 2009 (SNL/NM March 2009).

4.0 References

Kieling, J. E. (New Mexico Environment Department), October 2009. "Notice of Approval, Final Remedy and Closure Plan Amendment, Chemical Waste Landfill Sandia National Laboratories, EPA ID No. NM5890110518, NMED-HWB-05-016." New Mexico Environment Department Hazardous Waste Bureau, Santa Fe, New Mexico. October 16, 2009.

Kieling, J. E. (New Mexico Environment Department), February 2010. Letter to Ms. Wagner (U.S. Department of Energy) and Dr. Walck (Sandia Corporation). "Notice of Conditional Approval Burn Site Groundwater Characterization Work Plan, November 2009." New Mexico Environment Department Hazardous Waste Bureau, Santa Fe, New Mexico. February 12, 2010.

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. April 29, 2004.

New Mexico Environment Department (NMED), December 2007. “Notice of Public Comment Period and Intent to Approve a Class 3 Permit Modification of the RCRA Permit for Sandia National Laboratories.” New Mexico Environment Department Hazardous Waste Bureau, Santa Fe, New Mexico. December 10, 2007.

New Mexico Environment Department (NMED), April 2010. Letter to Ms. Davis (U.S. Department of Energy) and Dr. Walck (Sandia Corporation). “Class 3 Permit Modification Requests for Granting Corrective Action Complete Status for 26 SWMUs/AOCs (Request of March 1, 2006) and 5 Other SWMUs/AOCs (Request of January 7, 2008), Sandia National Laboratories, EPA ID# NM5890110518, HWB-SNL-06-007 and HWB-SNL-08-001.” New Mexico Environment Department Hazardous Waste Bureau, Santa Fe, New Mexico. April 8, 2010.

New Mexico Environment Department (NMED), April 2010. Letter to Ms. Wagner (U.S. Department of Energy) and Dr. Walck (Sandia Corporation). “Toluene Detections in Groundwater, Sandia National Laboratories Mixed Waste Landfill.” New Mexico Environment Department Hazardous Waste Bureau, Santa Fe, New Mexico. April 30, 2010.

NMED, see New Mexico Environment Department

Sandia National Laboratories/New Mexico (SNL/NM), April 2004. “Corrective Measures Evaluation Work Plan Technical Area V Groundwater,” Sandia National Laboratories, Albuquerque, New Mexico. May 11, 2004.

Sandia National Laboratories/New Mexico (SNL/NM), July 2005. “Corrective Measures Evaluation Report for Technical Area-V Groundwater.” Sandia National Laboratories, Albuquerque, New Mexico. July 21, 2005.

Sandia National Laboratories/New Mexico (SNL/NM), May 2005. “Burn Site Groundwater Interim Measures Work Plan,” Sandia National Laboratories, Albuquerque, New Mexico. May 26, 2005.

Sandia National Laboratories/New Mexico (SNL/NM), August 2005. “Corrective Measures Evaluation Report for Tijeras Arroyo Groundwater.” Sandia National Laboratories, Albuquerque, New Mexico. September 1, 2005.

Sandia National Laboratories/New Mexico (SNL/NM), March 2008. “Corrective Measures Evaluation Work Plan, Burn Site Groundwater.” Sandia National Laboratories, Albuquerque, New Mexico. April 9, 2008.

Sandia National Laboratories/New Mexico (SNL/NM), March 2008. “Current Conceptual Model of Groundwater Flow and Contaminant Transport at Sandia National Laboratories/New Mexico Burn Site,” Sandia National Laboratories, Albuquerque, New Mexico. April 9, 2008.

Sandia National Laboratories/New Mexico (SNL/NM), March 2009. “Investigation Report and Proposal for Corrective Action Complete for Long Term Environmental Stewardship (LTES) Site 1 Cable Debris Site.” Sandia National Laboratories, Albuquerque, New Mexico. March 30, 2009.

Sandia National Laboratories/New Mexico (SNL/NM), January 2010. “Mixed Waste Landfill Corrective Measures Implementation Report.” Sandia National Laboratories, Albuquerque, New Mexico. January 26, 2010.

Sandia National Laboratories/New Mexico (SNL/NM), June 2010. Sampling and Analysis Plans for Monitoring Wells CTF-MW2 and CTF-MW3 in “U.S. Department of Energy/Sandia Corporation Response to the New Mexico Environment Department letter of April 8, 2010 entitled, *Class 3 Permit Modification Requests for Granting Corrective Action Complete Status for 26 SWMUs/AOCs (Request of March 1, 2006) and 5 Other SWMUs/AOCs (Request of January 7, 2008),”* Sandia National Laboratories, Albuquerque, New Mexico. June 24, 2010.

Wagner, P. (U.S. Department of Energy), January 2008. Letter to J.P. Bearzi (New Mexico Environment Department) initiating a Class 3 Modification for the Designation of four (4) Solid Waste Management Units (SWMUs) and one (1) Area of Concern (AOC) as “approved for No Further Action”. January 7, 2008.

Environmental Restoration Project Consolidated Quarterly Report

Section II

Chemical Waste Landfill Quarterly Closure Progress Report

September 2010

United States Department of Energy
Sandia Site Office

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SECTION II. CHEMICAL WASTE LANDFILL QUARTERLY PROGRESS REPORT

This Sandia National Laboratories/New Mexico (SNL/NM) Chemical Waste Landfill (CWL) Quarterly Closure Progress Report has been prepared pursuant to the CWL Final Closure Plan and Postclosure Permit Application (Closure Plan) (SNL/NM December 1992). This Section documents activities at the CWL for the reporting period of May through July 2010. Because validated analytical results associated with the April 2010 semi-annual groundwater sampling event were not received in time to be reported in the June 2010 Environmental Restoration (ER) Quarterly Report, analytical results associated with the April sampling event are summarized in Section II, Appendix A of this ER Consolidated Quarterly Report.

1.0 Introduction

All voluntary corrective measures (VCMs) activities for the CWL have been completed. The CWL Landfill Excavation (LE) VCM Final Report was submitted to the NMED in April 2003 (SNL/NM April 2003) and approved by the NMED in December 2003 (Moats December 2003). The Site Operational Boundary Closure Addendum to the LE VCM Final Report was submitted to the NMED in August 2005 (SNL/NM August 2005) and approved by the NMED on October 25, 2005 (Bearzi October 2005). With the submittal of the Waste Management Addendum to the LE VCM Final Report in the February 22, 2006 CWL Quarterly Closure Progress Report (SNL/NM February 2006), as Appendix B, all LE VCM regulatory deliverables have been submitted. With the completion of the VCMs, technical meetings will be held on an as-needed basis. The public will continue to be informed of significant events through the ER Project public meeting process.

Installation of the cover as an interim measure was requested in April 2004 (Wagner April 2004) and approved with conditions in September 2004 (Kieling September 2004). The cover was completed in September 2005 in accordance with the conditions of approval. All field activities have been completed at the CWL, including the installation of new groundwater monitoring wells CWL-BW5, CWL-MW9, CWL-MW10, and MW11 and decommissioning of groundwater monitoring wells CWL-BW4A, CWL-MW4, MW5U/L, and MW6U/L, which are detailed in Section 2.0 below. Long-term monitoring under the NMED-approved CWL Post-Closure Care Permit (NMED October 2009) will commence after NMED approval of final closure.

2.0 Status of Closure

The Final Toxic Substances Control Act (TSCA) Closure Report documents the completion of all closure activities specified in the “Risk-Based Approval Request, 40 CFR 761.61(c) Risk-Based Method for Management of PCB [Polychlorinated Biphenyl] Materials” (SNL/NM October 2001), approved by the U.S. Environmental Protection Agency (EPA) in June 2002 (Cooke June 2002). The Final TSCA Closure Report was submitted to the EPA and NMED on November 2, 2006 (SNL/NM November 2006).

Upcoming CWL Closure Plan reporting activities include revising and submitting the Final Resource Conservation and Recovery Act (RCRA) Closure Report. The Final RCRA Closure Report will document both the backfilling of the former CWL and installation of the cover.

On May 21, 2007, the NMED issued the draft Post-Closure Care Permit for the CWL for public comment. Also included in the public notices were the CMS Report and the Closure Plan amendment (changes to Chapter 12 revising the closure process). On July 19, 2007, DOE and Sandia responded in opposition to the issuance of the CWL post-closure care permit as drafted and offered a number of comments, the most important of which were related to groundwater and vadose zone monitoring. In addition, DOE and Sandia provided revisions to the Chapter 12 Closure Plan Amendment and requested that a public hearing be scheduled to address these outstanding issues. The comment period was extended for 30 days at the request of citizens, several of whom also requested a public hearing.

Negotiations were initiated by the NMED in August 2008 with all parties requesting a public hearing. As part of these negotiations and at the request of the NMED, the DOE and Sandia revised the Closure Plan amendment to include a revision to Appendix G (Sampling Analysis Plan for Groundwater Assessment Monitoring at the CWL), Revision 4, Section 1.0 that addressed the replacement of existing groundwater monitoring wells with four new monitoring wells. Appendix G revisions were submitted to NMED in June 2009 (SNL/NM June 2009), and again in August 2009 (SNL/NM August 2009) after verbal comments were received from NMED on July 15 and 27, 2009.

The negotiations that covered the CWL Closure Plan Amendment As Changed (revisions to Chapter 12 and to Appendix G), the CWL Post-Closure Care Permit, and the CWL CMS Report and Final Remedy, were completed on October 15, 2009 and documented in the settlement agreement and Final Order In the Matter of Application for a Post-Closure Care Hazardous Waste Permit for the Chemical Waste Landfill, Sandia National Laboratories No. NM5890110518 (Final Order) (NMED October 2009). NMED issued a "Notice of Approval, Final Remedy and Closure Plan Amendment, Chemical Waste Landfill" on October 16, 2009 (Kieling October 2009). The October 16, 2009 NMED Approval included the final versions of two revisions to the Closure Plan that were part of the Closure Plan Amendment As Changed; Chapter 12 and Appendix G, Revision 4, Section 1.0.

Field work associated with the installation of the four new groundwater monitoring wells (CWL-BW5 and CWL-MW9 through MW11) and decommissioning of groundwater monitoring wells CWL-BW4A, CWL-MW4, MW5U/L, and MW6U/L began the week of April 5, 2010. During this reporting period monitoring well CWL-MW10 was installed, all four new wells were developed, and geophysical logging of the new wells was completed on July 19, 2010.

Final closure activities will be completed next quarter when the Well Installation and Decommissioning Report is submitted to the NMED as an appendix to the CWL Final RCRA Closure Report.

3.0 Water Monitoring Assessment

No CWL groundwater monitoring activities were performed for the reporting period of May through July 2010. Analytical results associated with the April 2010 groundwater sampling event are summarized in Section II, Appendix A of this ER Quarterly Report.

No soil-gas sampling was performed at the CWL during this reporting period. Soil-gas sampling is not required under the Closure Plan but will be a requirement for post-closure care (Kieling, December 2003).

4.0 Projected Activities for the Upcoming Quarter

Final CWL closure activities will be completed during the next reporting period and include final land surveying of the new wells and preparation of a Well Install and Decommissioning Report. The CWL Final RCRA Closure Report will include both the Well Installation and Decommissioning Report as an Appendix and the certification of closure according to the requirements of the CWL Closure Plan. Sandia and DOE will also submit the required 40 CFR 265.116 (survey plat) and 40 CFR 265.119 (notation on property deed) notices per the Closure Plan.

The Final RCRA Closure Report will document all final closure activities in accordance with Chapter 12 of the Closure Plan (Kieling October 2009) and will be submitted to the NMED next quarter (anticipated delivery to NMED in late September 2010). After NMED approval of the Final RCRA Closure Report, the Closure Plan is no longer in effect and the CWL Post-Closure Care Permit (NMED October 2009) will become the sole source of operating conditions.

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Appendix A

CHEMICAL WASTE LANDFILL
SEMI-ANNUAL GROUNDWATER MONITORING
ASSESSMENT REPORT
February 2010 – July 2010

Sandia National Laboratories/New Mexico
Environmental Programs and Assurance
Department 4133
Albuquerque, New Mexico 87185

September 2010

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1.0 Introduction

This report was prepared pursuant to Sections 1.2.1.6 and 1.3 of the *Chemical Waste Landfill [CWL] Final Closure Plan and Postclosure Permit Application* (CWL Closure Plan) (SNL/NM December 1992). In compliance with a recent request by the New Mexico Environment Department (NMED) dated January 2009, this and all future quarterly reports will graphically present groundwater data for CWL contaminants of concern (COC) detected above minimum detection limits along with corresponding measured groundwater elevations (Bearzi January 2009). These graphs will be in addition to the tabular form of results. The activities associated with the groundwater monitoring task are summarized as follows.

Sandia Corporation (Sandia) performed Fiscal Year 2010 (FY10) semi-annual groundwater sampling at the CWL, Sandia National Laboratories/New Mexico (SNL/NM) (Figure A-1) from April 1 to 14, 2010. CWL groundwater sampling is required by the interim status standards of the Resource Conservation and Recovery Act contained in Title 40 of the Code of Federal Regulations (CFR), Part 265, Subpart F, and the State of New Mexico Hazardous Waste Management Regulations. This groundwater sampling event was conducted in conformance with procedures outlined in the *Sampling and Analysis Plan for Groundwater Assessment Monitoring at the Chemical Waste Landfill*, Appendix G, Revision 4 of the CWL Closure Plan (Appendix G of the CWL Closure Plan) (SNL/NM December 1992).

In March 1998, the NMED approved eliminating chlorinated dioxins, furans, and pesticides from the Appendix IX list of constituents for CWL groundwater monitoring (Dinwiddie March 1998). In May 2000, the NMED approved the following changes to Appendix G of the CWL Closure Plan (Bearzi May 2000):

- Biannual frequency (every other year) for agreed upon Appendix IX constituents including volatile organic compounds (VOC), semi-volatile organic compounds (SVOC), chlorinated herbicides, polychlorinated biphenyls (PCB), total cyanide, sulfides, dissolved chromium, and total metals plus iron.
- Semi-annual frequency (twice a year) for Appendix IX VOC and Appendix IX metals.

This report describes groundwater sampling activities and presents analytical results from the second FY10 semi-annual groundwater assessment monitoring period. In April 2010, environmental groundwater samples were collected from monitoring wells (MW) (CWL-MW2BL, CWL-MW4, CWL-MW5L, CWL-MW5U, CWL-MW6L, and CWL-MW6U) (Figure A-2).

These samples were analyzed for the required 40 CFR 264 (Appendix IX) constituents: VOCs and total metals plus iron. The NMED DOE Oversight Bureau (OB) participated in the April 2010 sampling event and received split samples from four CWL monitoring wells (CWL-MW2BL, CWL-MW4, and CWL-MW5U). The split samples were sent to a different laboratory for analysis of Appendix IX VOCs and metals. Additional samples for total aluminum, calcium, magnesium, manganese, potassium, and sodium were requested by the NMED DOE OB at the three CWL wells. To ensure a consistent level of quality assurance for these analyses, SNL/NM also collected samples for these metals at these three CWL monitoring wells. These additional analyses are not required by Appendix G of the CWL Closure Plan (SNL/NM December 1992). The NMED DOE OB split sampling results are presented in a separate report and are not included in this report.

During April 2010, groundwater samples were not collected from background monitoring (BW) wells CWL-BW3 and CWL-BW4A, and monitoring wells CWL-MW1A, CWL-MW2BU, and CWL-MW3A. CWL-BW3, CWL-BW4A, and CWL-MW2BU could not be sampled due to insufficient volume of groundwater within the well screen interval. These three wells were purged to dryness prior to obtaining water quality measurements and appropriate representative sample volume. CWL-MW1A and CWL-MW3A were not sampled because these wells are dry and were partially filled with sediment during the Vapor Extraction (VE) Voluntary Corrective Measure (VCM) while being used as VE wells (1997-1998), and cannot be restored for the purpose of compliance groundwater monitoring.

Three of the monitoring wells (CWL-MW2B, CWL-MW5, and CWL-MW6) are multi-completion wells with two separate polyvinyl chloride casing and screen intervals. One is screened across the water table, and the other is screened at an interval approximately 30 feet below the water table. The wells screened across the water table are designated as CWL-MW2BU, CWL-MW5U, and CWL-MW6U to indicate the upper (“U”) screened well completions. The wells screened below the first water-bearing zone are designated CWL-MW2BL, CWL-MW5L, and CWL-MW6L to indicate the lower (“L”) screened well completions. Further discussion of the completion of these wells is presented in the CWL Groundwater Assessment Report (SNL/NM October 1995). The following sections provide descriptions of the field methods used and a discussion of the analytical and quality control (QC) results.

Shortly after the April sampling event monitoring wells CWL-BW4A, CWL-MW4, CWL-MW5U/L, and CWL-MW6U/L were decommissioned and new wells CWL-BW5, CWL-MW9, CWL-MW10, and CWL-MW11 were installed according to the NMED-approved CWL Closure Plan Appendix G amendment (Kieling October 2009). Future groundwater monitoring will only

be performed at the newly installed wells. After NMED-approval of the CWL Final RCRA Closure Report, the NMED-approved CWL Post-Closure Care Permit (NMED October 2009) will take effect and the other existing monitoring wells will be decommissioned as stipulated in the permit.

2.0 Field Methods and Measurements

The semi-annual groundwater sampling field measurements were collected in conformance with Appendix G of the CWL Closure Plan (SNL/NM December 1992). Groundwater monitoring was performed according to Appendix G of the Closure Plan and updated SNL/NM Environmental Restoration Project field operating procedures (FOP) (SNL/NM November 1995, September 1996, and February 1997).

2.1 Groundwater Elevation Determinations

Groundwater elevations at the CWL wells were determined using a Solinst® water level indicator prior to purging activities. Measurements were taken in accordance with FOP 95-02, *A Technical Procedure for the Measurement of Static Water Levels* (SNL/NM November 1995) until three replicate measurements agreed to within 0.05 foot of each other. The portion of the well sounder in contact with the groundwater was decontaminated between measurements at different wells (SNL/NM February 1997). During April 2010, SNL/NM verified that monitoring wells CWL-MW1A and CWL-MW3A are dry. Table A-1 summarizes the depth-to-water measurements for all CWL wells, and Attachment A provides complete field measurement information. Plots A-1 to A-9, graphically display water level measurements obtained from CWL monitoring wells between October 2004 and April 2010.

2.2 Well Evacuation

A Bennett Company groundwater sampling system was used to collect groundwater samples from all wells, except small-diameter wells (less than 2 inches). Because CWL-MW5L and CWL-MW6L are small-diameter wells (less than 2 inches), dedicated sampling systems manufactured by QED Environmental Systems, Inc. are used to collect samples. Prior to sample collection, each monitoring well was purged to remove stagnant well casing water. More than one day was required to complete purging and sampling at CWL-MW5U and CWL-MW6U, due to the slow recharge rate of the monitoring wells. Monitoring wells purged to dryness were allowed to recover before sampling to ensure the most representative groundwater sample possible given the

low yield of these wells. CWL-MW2BL and CWL-MW4 were purged a minimum of three well-bore volumes prior to sampling. CWL-MW5L and CWL-MW6L were purged a minimum of two tubing water volumes prior to sampling.

Collection of field analytical measurements and groundwater samples was performed in accordance with procedures described in FOP 94-48, *Sampling Groundwater Monitoring Wells* (SNL/NM September 1996), consistent with the requirements of Appendix G of the CWL Closure Plan (SNL/NM December 1992). Groundwater temperature, specific conductance (SC), and potential of hydrogen (pH) were measured using a YSI™ Model 620 Water Quality Meter. Turbidity was measured with a Hach™ Model 2100P portable turbidity meter. Groundwater stability is considered acceptable when measurements are within 5 nephelometric turbidity units, 0.2 pH units, and 0.2 degrees Celsius, and SC is within 1 percent or 10 micromhos per centimeter (whichever is greater). Monitoring wells CWL-MW2BL, CWL-MW4, CWL-MW5L, and CWL-MW6L were purged until three stable measurements of turbidity, temperature, SC, and pH were obtained. All purged water was placed into 55-gallon containers and stored at the Building 9925 waste accumulation area pending the results of the analyses. Table A-2 summarizes average pumping rates, pumping duration, and well discharge volumes for each well sampled. Table A-3 summarizes temperature, pH, SC, and turbidity measurements. Field Measurement Logs in Attachment A document well purging and water quality measurements.

2.3 Groundwater Sample Collection

All groundwater samples were collected directly from the sample discharge tube into laboratory-prepared sample containers. Chemical preservatives for samples intended for chemical analyses were added to the sample containers at the laboratory prior to shipment to SNL/NM.

Table A-4 presents the sample number assigned to each sample. Table A-5 summarizes the analyses performed, analytical methods, sample containers, preservatives, and holding time requirements. Section 3.0 of this report summarizes the analytical results. Analysis Request/Chain-of-Custody documentation for all samples submitted for analyses are presented in Attachment B and filed in the SNL/NM Customer Funded Records Center.

2.4 Pump Decontamination

A Bennett Company groundwater sampling system was used to collect groundwater samples from all wells, except for CWL-MW5L and CWL-MW6L. The sampling pump and tubing bundle were decontaminated prior to installation in monitoring wells according to procedures described in FOP 94-26, *General Equipment Decontamination* (SNL/NM February 1997). Two equipment blank (EB) or rinsate samples were collected to verify the effectiveness of the equipment decontamination process. These samples were collected prior to sampling CWL-MW5U and CWL-MW6U, and results are discussed in section 4.1.1 of this report.

3.0 Analytical Results

Groundwater samples collected for analysis of VOCs and metals were submitted to General Engineering Laboratories, Inc. in Charleston, South Carolina. Tables A-6 and A-7 summarize the chemical parameters, laboratory method detection limits (MDL), and U.S. Environmental Protection Agency (EPA) maximum contaminant levels (MCL) for drinking water supplies. Tables A-8 and A-9 summarize all analytes detected in samples collected from CWL groundwater monitoring wells during the second FY10 semi-annual sampling event. All chemical analytical results are compared to EPA MCLs for drinking water supplies. Analytical reports, including the results of the analyses, analytical methods, quantitation limits, dates of analysis, and results of QC analyses, are filed in the SNL/NM Customer Funded Records Center.

No VOCs were detected at concentrations exceeding the associated MCL. No VOCs were detected in any sample except for chloromethane, toluene, and trichloroethene (TCE). Chloromethane was detected below the laboratory practical quantitation limits (PQL) in CWL-MW6U sample and duplicate sample at concentrations of 0.400 micrograms per liter (μg/L) and 0.480 μg/L, respectively. Toluene was detected below the MCL of 1,000 μg/L in the sample from CWL-MW6U sample at a concentration of 0.330 μg/L. Toluene was not detected above the laboratory MDL in the associated CWL-MW6U duplicate sample. TCE was detected below the MCL of 5.0 μg/L in the groundwater samples from CWL-MW5L, CWL-MW5U, CWL-MW5U duplicate sample, and CWL-MW6L at concentrations of 0.570 μg/L, 2.74 μg/L, 2.75 μg/L, and 0.450 μg/L, respectively. Table A-8 summarizes the detected VOCs. Plots A-10 to A-12 display TCE results.

No total metal parameters were detected above established regulatory limits in any groundwater sample. Chromium was detected below the MCL of 0.10 milligrams per liter (mg/L) in CWL-

MW4 at a concentration of 0.0263 mg/L. Nickel was detected above the laboratory MDL in all environmental groundwater samples, except at CWL-MW5L. Detected nickel concentrations ranged from 0.00253 mg/L at CWL-MW6L to 0.252 mg/L at CWL-MW4. There is not an established MCL for nickel. In general, chromium and nickel results from CWL-MW4 groundwater sample correlate to increased field turbidity measurements. CWL-MW4 is also constructed with a stainless steel well screen. Additional samples were collected for total aluminum, calcium, magnesium, manganese, potassium, and sodium at CWL-MW2BL, CWL-MW4, and CWL-MW5U to duplicate the analyses performed by the NMED DOE OB. There are no established MCLs for these metals. Aluminum was not detected above the laboratory MDL. Reported concentration for calcium ranged from 91.8 mg/L to 117 mg/L, magnesium from 25.3 mg/L to 36.5, manganese at 0.0368 mg/L in CWL-MW4 only, potassium from 5.95 mg/L to 9.08 mg/L, and sodium from 74.0 mg/L to 83.0 mg/L. Table A-9 summarizes the total metal concentrations for all groundwater samples collected during the second FY10 semi-annual sampling event at the CWL. Plots A-13 to A-18 display detected chromium and nickel results.

4.0 Quality Control

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. The following sections discuss each sample type.

4.1 Field QC Samples

Field QC samples included EB, environmental duplicate, field blank (FB), and trip blank (TB) samples. The field QC samples were submitted for analysis along with the groundwater samples in accordance with QC procedures specified in Appendix G of the CWL Closure Plan (SNL/NM December 1992).

4.1.1 EB Samples

Two EB or rinsate samples were collected to verify the effectiveness of the equipment decontamination process. These samples were collected prior to sampling CWL-MW5U and CWL-MW6U. Table A-10 summarizes detected parameters from both EB samples. The EB samples were analyzed for VOCs and total metals. Detected analytes included bromodichloromethane, bromoform, chloroform, chloromethane, and dibromochloromethane. No corrective action was required for any detected compound, except chloromethane, since these

compounds were not detected in associated environmental samples. Chloromethane was detected in the CWL-MW5U sample at a concentration less than five times the EB result, and was qualified as not detected during data validation.

4.1.2 Duplicate Environmental Samples

Two duplicate environmental samples were collected and analyzed for all parameters in order to determine the overall reproducibility of the sampling and analysis process. The duplicate sample was collected at CWL-MW5U and CWL-MW6U immediately after the original environmental samples in order to reduce variability caused by time and/or sampling mechanics.

Relative percent difference (RPD) calculations between duplicate samples were performed for all analytes. Table A-11 summarizes the results of the duplicate sample analyses and calculated RPD values. The results show that sampling and analysis precision was in conformance with Appendix G of the CWL Closure Plan requirements for all measured parameters, except selenium in CWL-MW5U. The selenium RPD was calculated at 22, and is considered an estimated value since the sample results were reported less than the laboratory PQL.

4.1.3 Field Blank Samples

FB samples were collected for VOCs to assess whether contamination of the samples resulted from ambient field conditions. A FB sample was collected at each monitoring well, since monitoring well drilling activities at the CWL were being performed during this sampling event. The FB samples were prepared by pouring deionized water into sample containers at the sample collection point to simulate the transfer of environmental samples from the sampling system to the sample container. VOCs detected above laboratory MDLs included bromodichloromethane, bromoform, chloroform, chloromethane, and dibromochloromethane. No corrective action was necessary for bromodichloromethane, bromoform, or dibromochloromethane, since these compounds were not detected in the associated environmental samples. Chloroform was qualified as not detected in CWL-MW2BL and CWL-MW5L, and chloromethane not detected in the CWL-MW5U sample during data validation since these compounds were detected at concentrations less than five times the blank concentration.

4.1.4 Trip Blanks

TB samples are submitted whenever samples are collected for VOC analysis to assess whether contamination of the samples has occurred during shipment and storage. TB samples consist of laboratory reagent grade water with hydrochloric acid preservative contained in 40-milliliter VOC 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 VOC sample shipment. A total of eight TBs were submitted with the samples discussed in this report. No VOCs were detected above laboratory MDLs in any TB sample.

4.2 Laboratory QC

Internal laboratory QC analyses performed included method blank, laboratory control sample, matrix spike, matrix spike duplicate, and surrogate spike analyses. All laboratory data were reviewed and qualified in accordance with AOP [Administrative Operating Procedure] 00-03, Revision 2, *Data Validation Procedure for Chemical and Radiochemical Data* (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 CWL groundwater sample, except aluminum and vanadium. Aluminum in CWL-MW2BL and CWL-MW5U, and vanadium in CWL-MW2BL, CWL-MW5L, CWL-MW5U, and CWL-MW6L were qualified as unusable during data validation since the matrix spike percent recoveries did not meet acceptance criteria. SNL/NM requested GEL reanalyze these metals. Results of the reanalysis are reported and QC measures were acceptable. Data validation reports associated with the second FY10 semi-annual groundwater sampling event are provided in Attachment C.

4.3 Variances and Nonconformances

Variances and nonconformances from requirements in Appendix G of the CWL Closure Plan (SNL/NM December 1992) are identified as follows:

- CWL-MW1A and CWL-MW3A are no longer sampled, since 1998 these wells do not contain water. The wells partially filled with sediment during the VE VCM and have not recovered. SNL/NM personnel lowered a water level meter to verify that these wells are dry.

- No samples were collected from CWL-BW3, CWL-BW4A, or CWL-MW2BU. Consistent with recent previous sampling events, these wells did not produce enough water to collect a representative sample in April 2010.

- CWL-MW5U and CWL-MW6U were purged to dryness, allowed to recover, and then sampled to collect the most representative groundwater sample possible given the low yield of these wells.

- CWL-MW5L and CWL-MW6L were sampled using dedicated sampling systems manufactured by QED Environmental Systems, Inc.

- COCs detected above minimum detection limits, and water levels are presented in graphical form as requested by NMED (Bearzi January 2009).

5.0 Summary

In April 2010, samples were collected from CWL monitoring wells (CWL-MW2BL, CWL-MW4, CWL-MW5L, CWL-MW5U, CWL-MW6L, and CWL-MW6U) and were analyzed for 40 CFR 264 (Appendix IX) VOCs and total metals plus iron. Additional samples were collected for aluminum, calcium, magnesium, manganese, potassium, and sodium at selected well locations to duplicate NMED DOE OB analyses. No analytes were detected at concentrations exceeding the associated EPA MCLs from any CWL groundwater samples.

Shortly after the April sampling event monitoring wells CWL-BW4A, CWL-MW4, CWL-MW5U/L, and CWL-MW6U/L were decommissioned and new wells CWL-BW5, CWL-MW9, CWL-MW10, and CWL-MW11 were installed according to the NMED-approved CWL Closure Plan Appendix G amendment (Kieling October 2009). Future groundwater monitoring will only be performed at the newly installed wells. After NMED-approval of the CWL Final RCRA Closure Report, the NMED-approved CWL Post-Closure Care Permit (NMED October 2009) will take effect and the other existing monitoring wells will be decommissioned as stipulated in the permit.

6.0 References

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

FIGURES

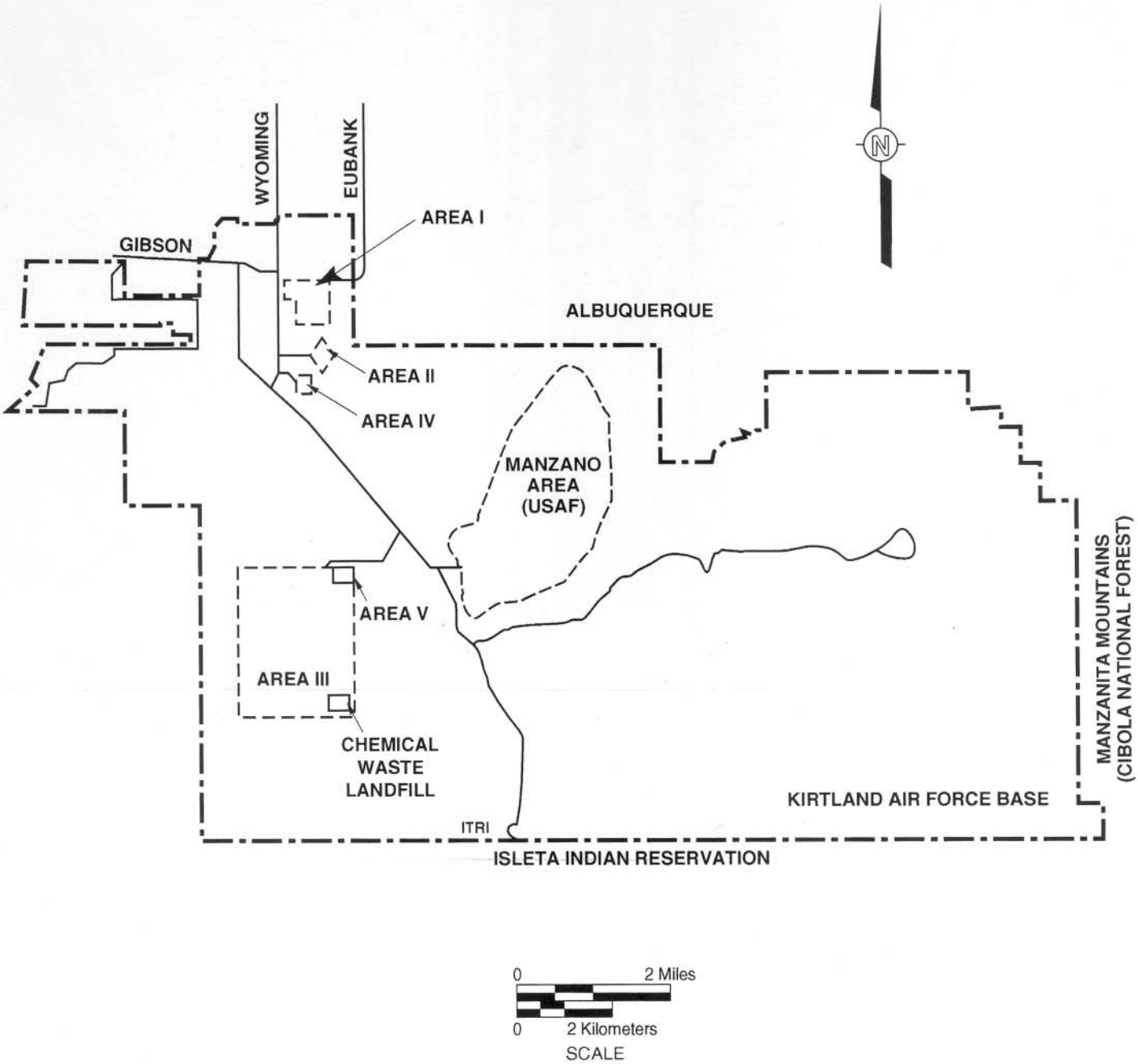


Figure A -1
Location of the Chemical Waste Landfill
Sandia National Laboratories/New Mexico

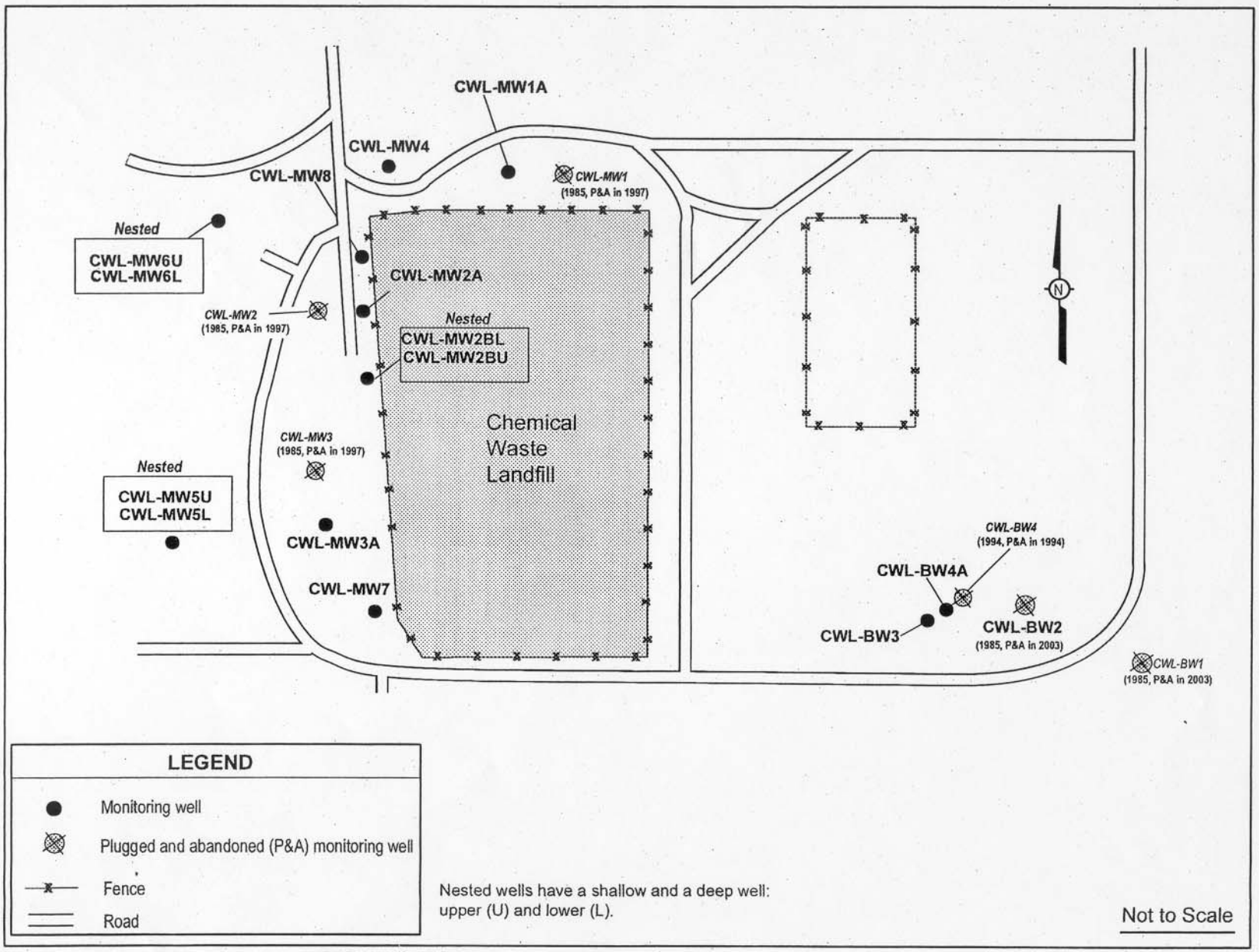


Figure A-2

Monitoring Well Locations at the Chemical Waste Landfill, Sandia National Laboratories/ New Mexico

TABLES

Table A-1

Monitoring Well Groundwater Elevations
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, February - July 2010

Well Number	Date of Measurement	Measuring Point Elevation[a] (FAMSL)	Depth to Water (FBTOC)	Groundwater Elevation[a] (FAMSL)	Bottom of Well Elevation (FAMSL)	Static Water Height (feet)
CWL-BW3	03-30-10	5430.23	504.25	4925.98	4921.05	4.93
CWL-BW4A	03-30-10	5431.36	504.92	4926.44	4919.24	7.20
CWL-MW1A	04-01-10	5421.49	NA	NA	4925.41	Dry
CWL-MW2BL	03-30-10	5419.39	498.72	4920.67	4859.87	60.80
CWL-MW2BU	04-02-10	5419.42	493.72[b]	4925.70	4916.37	9.33
CWL-MW3A	04-01-10	5417.78	NA	NA	4924.39	Dry
CWL-MW4	03-30-10	5420.33	497.40	4922.93	4915.38	7.55
CWL-MW5L	03-30-10	5415.80	495.53	4920.27	4856.02	64.25
CWL-MW5U	03-30-10	5416.01	490.37	4925.64	4912.02	13.62
CWL-MW6L	03-30-10	5417.13	497.36	4919.77	4850.65	69.12
CWL-MW6U	03-30-10	5416.78	490.68	4926.10	4912.65	13.45

[a]Measurement point is the top of well casing.
[b]Estimated depth to water measurement for CWL-MW2BU, due to dedicated sampling equipment in well.

BW = Background well.
CWL = Chemical waste landfill.
FAMSL = Feet above mean sea level.
FBTOC = Feet below top of casing.
L = Lower well completion zone.
NA = Not applicable, CWL-MW1A and CWL-MW3A are dry wells.
MW = Monitoring well.
U = Upper well completion zone.

Table A-2

Volumes Purged from Monitoring Wells
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, February - July 2010

Well Number	Volume Purged[a] (gal)	Time Pumped (minutes)	Average Pump Rate (gal/minute)	Well Pumped to Dryness
CWL-MW2BL	224	323	0.69	No
CWL-MW4	21.0	84	0.25	No
CWL-MW5L	2.64	47	0.06	No
CWL-MW5U	7.00	21	0.33	Yes
CWL-MW6L	2.91	94	0.03	No
CWL-MW6U	8.00	19	0.42	Yes

[a]Volume of groundwater purged before sampling.
CWL = Chemical waste landfill.
gal = Gallon(s).
L = Lower well completion zone.
MW = Monitoring well.
NA = Not applicable.
U = Upper well completion zone.

Table A-3

Summary of Field Measurements
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, February - July 2010

Well Number	Measurement Period[a]	pH	Temperature °C	SC (µmhos/cm)	Turbidity (NTU)
CWL-MW2BL	Purge measurements: 04-14-10	6.70 6.69 6.70	21.85 21.99 22.10	1,108 1,106 1,107	0.15 0.15 0.12
CWL-MW4	Purge measurements: 04-05-10	6.86 6.86 6.86	18.08 18.15 18.14	959 960 960	6.65 4.95 4.45
CWL-MW5L	Purge measurements: 04-13-10	6.74 6.74 6.74	18.03 18.15 18.22	1,082 1,083 1,083	0.19 0.24 0.20
CWL-MW5U	Purge measurements: 04-08-10 and 04-09-10	7.02 6.92 6.93	18.14 17.00 17.48	860 925 919	0.20 0.16 0.23
CWL-MW6L	Purge measurements: 04-12-10	6.82 6.79 6.79	20.18 20.53 20.59	1,046 1,047 1,042	2.79 2.90 2.77
CWL-MW6U	Purge measurements: 04-06-10 and 04-07-10	6.93 6.93 6.93	14.52 15.65 16.33	908 909 914	0.38 0.26 0.43

[a]Last three water quality measurements prior to sampling. For complete record reference Attachment A.

CWL = Chemical Waste Landfill.
L = Lower well completion zone.
MW = Monitoring well.
NTU = Turbidity measured in nephelometric turbidity units.
pH = Potential of hydrogen (negative logarithm of the hydrogen ion concentration).
SC = Specific conductance, in micromhos per centimeter.
U = Upper well completion zone.
µmhos/cm = micro-mohs per centimeter
°C = Degrees Celsius.

Table A-4
Sample Number Identification
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, February - July 2010

Sample Identification	ARCOC[a]	Sample Number	Date Sampled	Laboratory	Sample Type
CWL-MW2BL	612862	088581	04-14-10	GEL	Environmental Sample
CWL-MW4	612855	088560	04-05-10	GEL	Environmental Sample
CWL-MW5L	612861	088578	04-13-10	GEL	Environmental Sample
CWL-MW5U	612859	088571	04-09-10	GEL	Environmental Sample
CWL-MW5U	612859	088572	04-09-10	GEL	Duplicate Sample
CWL-MW6L	612860	088575	04-12-10	GEL	Environmental Sample
CWL-MW6U	612857	088565	04-07-10	GEL	Environmental Sample
CWL-MW6U	612857	088566	04-07-10	GEL	Duplicate Sample
CWL-EB1(prior to CWL-MW6U)	612856	088563	04-05-10	GEL	Equipment Blank
CWL-EB2(prior to CWL-MW5U)	612858	088569	04-07-10	GEL	Equipment Blank
CWL-FB1	612855	088561	04-05-10	GEL	Field Blank
CWL-FB2	612857	088567	04-07-10	GEL	Field Blank
CWL-FB3	612859	088573	04-09-10	GEL	Field Blank
CWL-FB4	612860	088576	04-12-10	GEL	Field Blank
CWL-FB5	612861	088579	04-13-10	GEL	Field Blank
CWL-FB6	612862	088582	04-14-10	GEL	Field Blank
CWL-TB3	612855	088562	04-05-10	GEL	Trip Blank
CWL-TB4	612856	088564	04-05-10	GEL	Trip Blank
CWL-TB5	612857	088568	04-07-10	GEL	Trip Blank
CWL-TB6	612858	088570	04-07-10	GEL	Trip Blank
CWL-TB7	612859	088574	04-09-10	GEL	Trip Blank
CWL-TB8	612860	088577	04-12-10	GEL	Trip Blank
CWL-TB9	612861	088580	04-13-10	GEL	Trip Blank
CWL-TB10	612863	088582	04-14-10	GEL	Trip Blank

ARCOC[a] = Analysis Request and Chain of Custody Record.
CWL = Chemical Waste Landfill.
EB = Equipment blank sample.
L = Lower well completion zone.
TB = Trip blank.
BW = Background well.
GEL = General Engineering Laboratories.
FB = Field blank sample.
MW = Monitoring well.
U = Upper well completion zone.

Table A-5

Analysis, Methods, Sample Containers, Preservatives, and Holding Times
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, February - July 2010

Analysis	Method[a]	Container Type/ Volume/Preservative	Holding Time
Appendix IX Volatile Organic Compounds	8260B	Glass; 3 x 40 mL; HCl, 4°C	14 days
Appendix IX Total metals plus iron	6020/7470A	Polyethylene; 500 mL; HNO_3, 4°C	28 days/180 days[b]
Appendix IX Total metals plus aluminum, calcium, iron, magnesium, manganese, potassium, and sodium	6020/7470A	Polyethylene; 500 mL; HNO_3, 4°C	28 days/180 days[b]

[a]U.S. Environmental Protection Agency, November 1986. "Test Methods for Evaluating Solid, Physical/Chemical Methods," 3rd ed., (and updates), *SW-846*, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C.
[b]Holding time for mercury is 28 days; all other metals are 180 days.
HCl = Hydrochloric acid.
HNO_3 = Nitric acid.
L = Liter(s).
mL = Milliliter(s).
°C = Degrees Celsius.

Table A-6

Chemical Parameters, MDL/MCL for Volatile Organic Compounds Analyzed
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, February - July 2010

Test Method 8260B[a] (Appendix IX List)[b]	MDL (μg/L)	MCL (μg/L)	Test Method 8260B[a] (Appendix IX List)[b]	MDL (μg/L)	MCL (μg/L)
1,1,1,2-Tetrachloroethane	0.300	NE	Carbon tetrachloride	0.300	5.0
1,1,1-Trichloroethane	0.325	200	Chlorobenzene	0.250	100
1,1,2,2-Tetrachloroethane	0.250	NE	Chloroethane	0.300	NE
1,1,2-Trichloroethane	0.250	5.0	Chloroform	0.250	NE
1,1-Dichloroethane	0.300	NE	Chloromethane	0.300	NE
1,1-Dichloroethene	0.300	7.0	Chloroprene	0.300	NE
1,2,3-Trichloropropane	0.300	NE	Dibromochloromethane	0.300	NE
1,2,4-Trichlorobenzene	0.300	70	Dibromomethane	0.300	NE
1,2-Dibromo-3-chloropropane	0.300	0.2	Dichlorodifluoromethane	0.300	NE
1,2-Dibromoethane	0.250	0.05	Ethyl benzene	0.250	700
1,2-Dichloroethane	0.250	5.0	Ethyl cyanide	1.50	NE
1,2-Dichloropropane	0.250	5.0	Ethyl methacrylate	1.00	NE
2-Butanone	1.25	NE	Iodomethane	1.25	NE
2-Hexanone	1.25	NE	Isobutanol	12.5	NE
4-methyl-, 2-Pentanone	1.25	NE	Methacrylonitrile	1.00	NE
Acetone	3.50	NE	Methyl methacrylate	1.00	NE
Acetonitrile	6.25	NE	Methylene chloride	3.00	5.0
Acrolein	1.25	NE	Pentachloroethane	1.00	NE
Acrylonitrile	1.00	NE	Styrene	0.250	100
Allyl chloride	1.50	NE	Tetrachloroethene	0.300	5.0
Benzene	0.300	5.0	Toluene	0.250	1,000
Bromodichloromethane	0.250	NE	Trichloroethene	0.250	5.0
Bromoform	0.250	NE	Trichlorofluoromethane	0.300	NE
Bromomethane	0.300	NE	Vinyl acetate	1.50	NE
Carbon disulfide	1.25	NE	Vinyl chloride	0.500	2.0

Refer to footnotes at end of table.

Table A-6 *(Concluded)*

Chemical Parameters, MDL/MCL for Volatile Organic Compounds Analyzed
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, February - July 2010

Test Method 8260B[a] (Appendix IX List)[b]	MDL (μg/L)	MCL (μg/L)	Test Method 8260B[a] (Appendix IX List)[b]	MDL (μg/L)	MCL (μg/L)
Xylenes (Total)	0.300	10,000	trans-1,3-Dichloropropene	0.250	NE
Bis(2-Chloroisopropyl)ether	1.50	NE	trans-1,4-Dichloro-2-butene	1.00	NE
cis-1,3-Dichloropropene	0.250	NE	trans-1,2-Dichloroethene	0.300	100

[a]U.S. Environmental Protection Agency November 1986. "Test Methods for Evaluating Solid, Physical/Chemical Methods," 3rd ed., (and updates), *SW-846*, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C.
[b]Title 40 Code of Federal Regulations (CFR), Part 264, Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Appendix IX, Groundwater Monitoring List.

EPA = Environmental Protection Agency.
MCL = Maximum contaminant levels (established by the U.S. EPA Primary Drinking Water Regulations in 40 CFR 141.11(b), subsequent amendments, or the New Mexico Environmental Improvement Board in the *New Mexico Register*, Title 20, Chapter 7, Part 1).
MDL = The method detection level of an analyte that can be determined, but not quantified, with 99% confidence.
μg/L = Microgram(s) per liter.
NE = Not established.

Table A-7

Chemical Parameters, MDL/MCL for Metal Parameters Analyzed
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, February - July 2010

Appendix IX List[a]	Test Method[b]	MDL (mg/L)	MCL (mg/L)
Aluminum	6020	0.010 – 0.050	NE
Antimony	6020	0.0005 – 0.0025	0.006
Arsenic	6020	0.0015	0.01
Barium	6020	0.0005 – 0.0025	2.0
Beryllium	6020	0.0005	0.004
Cadmium	6020	0.00011	0.005
Calcium	6020	0.100	NE
Chromium	6020	0.0125	0.10
Cobalt	6020	0.0005	NE
Copper	6020	0.0015	NE
Iron	6020	0.050	NE
Lead	6020	0.0005 – 0.0025	NE
Magnesium	6020	0.005 – 0.025	NE
Manganese	6020	0.005	NE
Mercury	7470A	0.000066	0.002
Nickel	6020	0.0025	NE
Potassium	6020	0.080 – 0.400	NE
Selenium	6020	0.001	0.05
Silver	6020	0.0002 – 0.001	NE
Sodium	6020	0.400	NE
Thallium	6020	0.0003 – 0.0015	0.002
Tin	6020	0.001 – 0.005	NE
Vanadium	6020	0.003 – 0.015	NE
Zinc	6020	0.0026	NE

[a]Title 40 Code of Federal Regulations (CFR), Part 264, Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Appendix IX, Groundwater Monitoring List. Addition metal parameters includes iron and uranium.

[b]U.S. Environmental Protection Agency November 1986. "Test Methods for Evaluating Solid, Physical/Chemical Methods," 3rd ed., (and updates), *SW-846*, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C.

EPA = Environmental Protection Agency.

MCL = Maximum contaminant levels (established by the U.S. EPA Primary Drinking Water Regulations in 40 CFR 141.11(b), subsequent amendments, or the New Mexico Environmental Improvement Board in the *New Mexico Register*, Title 20, Chapter 7, Part 1).

MDL = The method detection level of an analyte that can be determined, but not quantified, with 99% confidence.

mg/L = Milligram(s) per liter.

NE = Not established.

Table A-8

Summary of Detected Volatile Organic Compounds
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, February - July 2010

		ARCOC No.:	612862	612855	612861	612859
		Sample No.:	088581	088560	088578	088571
		Well No.:	CWL-MW2BL	CWL-MW4	CWL-MW5L	CWL-MW5U
		Sample Type:	Environmental	Environmental	Environmental	Environmental
		Sample Method:	Bennett Pump	Bennett Pump	QED Pump	Bennett Pump
		Laboratory:	GEL	GEL	GEL	GEL
		Date Sampled:	04-14-10	04-05-10	04-13-10	04-09-10
Parameter	**Method**	**MCL**	**All results in μg/L**			
Chloromethane	8260B	NE	ND (0.300)	ND (0.300)	ND (0.300)	ND (1.00)
Toluene	8260B	1,000	ND (0.250)	ND (0.250)	ND (0.250)	ND (0.250)
Trichloroethene	8260B	5	ND (0.250)	ND (0.250)	0.570 (1.00) J	2.74

Refer to footnotes at end of table.

Table A-8 *(Concluded)*

Summary of Detected Volatile Organic Compounds
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, February - July 2010

		ARCOC No.:	612859	612860	612857	612857
		Sample No.:	088572	088575	088565	088566
		Well No.:	CWL-MW5U	CWL-MW6L	CWL-MW6U	CWL-MW6U
		Sample Type:	Duplicate	Environmental	Environmental	Duplicate
		Sample Method:	Bennett Pump	QED Pump	Bennett Pump	Bennett Pump
		Laboratory:	GEL	GEL	GEL	GEL
		Date Sampled:	04-09-10	04-12-10	04-07-10	04-07-10
Parameter	**Method**	**MCL**	**All results in μg/L**			
Chloromethane	8260B	NE	ND (0.300)	ND (0.300)	0.400 (1.00) J	0.480 (1.00) J
Toluene	8260B	1,000	ND (0.250)	ND (0.250)	0.330 (1.00) J	ND (0.250)
Trichloroethene	8260B	5	2.75	0.450 (1.00) J	ND (0.250)	ND (0.250)

Results for CWL-MW4 are included for table completeness, as no compounds were detected above laboratory practical quantitiation limits.
If result detected below laboratory practical quantitation limit, then practical quantitation limit is indicated in parenthesis.

ARCOC= Analysis Request and Chain of Custody.
GEL = General Engineering Laboratories.
J = The associated value is an estimated quantity and/or detected below the practical quantitation limit.
L = Lower well completion zone.
MCL = Maximum contamination levels (established by the U.S. EPA Primary Drinking Water Regulations in 40 CFR 141.11(b), subsequent amendments or the New Mexico Environmental Improvement Board in the New Mexico Register, Title 20, Chapter 7, Part 1).
MW = Monitoring well.
ND = The analyte was analyzed for but was not detected or qualified as not detected during data validation. The associated numerical value is the sample quantitation limit.
U = Upper well completion zone.
μg/L = Milligram(s) per liter.

Table A-9

Summary of Total Metal Parameters
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, February - July 2010

		ARCOC No.:	612862	612855	612861	612859
		Sample No.:	088581	088560	088578	088571
		Well No.:	CWL-MW2BL	CWL-MW4	CWL-MW5L	CWL-MW5U
		Sample Type:	Environmental	Environmental	Environmental	Environmental
		Sample Method:	Bennett Pump	Bennett Pump	QED Pump	Bennett Pump
		Laboratory:	GEL	GEL	GEL	GEL
		Date Sampled:	04-14-10	04-05-10	04-13-10	04-09-10
Parameter	**Method**	**MCL**	**All results in mg/L**			
Aluminum	6020	NE	ND (0.010)	ND (0.010)	NS	ND (0.010)
Antimony	6020	0.006	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.0005)
Arsenic	6020	0.01	ND (0.0015)	ND (0.0015)	ND (0.0015)	0.00253 (0.005) J
Barium	6020	2.0	0.0579	0.0597	0.057	0.0666
Beryllium	6020	0.004	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.0005)
Cadmium	6020	0.005	ND (0.00011)	ND (0.00011)	ND (0.00011)	ND (0.00011)
Calcium	6020	NE	117	95.1	NS	91.8
Chromium	6020	0.10	ND (0.0125)	0.0263 (0.050) J	ND (0.0125)	ND (0.0125)
Cobalt	6020	NE	ND (0.0005)	0.00331 (0.005) J	ND (0.0005)	ND (0.0005)
Copper	6020	NE	ND (0.0015)	0.00261 (0.005) J, J+	ND (0.0015)	ND (0.0015)
Iron	6020	NE	0.160 (0.500) J	0.771	0.173 (0.500) J	0.133 (0.500) J
Lead	6020	NE	ND (0.0005)	ND (0.0025)	ND (0.0005)	ND (0.0005)
Magnesium	6020	NE	36.5	25.3	NS	26.0
Manganese	6020	NE	ND (0.005)	0.0368	NS	ND (0.005)
Mercury	7470A	0.002	ND (0.000066)	ND (0.000066)	ND (0.000066)	ND (0.000066)
Nickel	6020	NE	0.00273 (0.010) J	0.252	ND (0.0025)	ND (0.0025)
Potassium	6020	NE	5.95	8.74	NS	9.08
Selenium	6020	0.05	0.00155 (0.005) J	0.00164 (0.005) J	0.00132 (0.005) J	0.0017 (0.005) J
Silver	6020	NE	ND (0.0002)	ND (0.0002)	ND (0.0002)	ND (0.0002)
Sodium	6020	NE	83.0	74.0	NS	75.3
Thallium	6020	0.002	ND (0.0003)	ND (0.0015)	ND (0.0003)	ND (0.0043)
Tin	6020	NE	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
Vanadium	6020	NE	ND (0.015) UJ	ND (0.003)	ND (0.015)	ND (0.003) UJ
Zinc	6020	NE	ND (0.0026)	0.00413 (0.010) J	ND (0.0026)	0.0309

Refer to footnotes at end of table.

Table A-9 *(Continued)*

Summary of Total Metal Parameters
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, February - July 2010

		ARCOC No.:	612859	612860	612857	612857
		Sample No.:	088572	088575	088565	088566
		Well No.:	CWL-MW5U	CWL-MW6L	CWL-MW6U	CWL-MW6U
		Sample Type:	Duplicate	Environmental	Environmental	Duplicate
		Sample Method:	Bennett Pump	QED Pump	Bennett Pump	Bennett Pump
		Laboratory:	GEL	GEL	GEL	GEL
		Date Sampled:	04-09-10	04-12-10	04-07-10	04-07-10
Parameter	**Method**	**MCL**	**All results in mg/L**			
Aluminum	6020	NE	ND (0.010)	NS	NS	NS
Antimony	6020	0.006	ND (0.0005)	ND (0.0005)	ND (0.0025)	ND (0.0025)
Arsenic	6020	0.01	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)
Barium	6020	2.0	0.0671	0.0559	0.073	0.0697
Beryllium	6020	0.004	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.0005)
Cadmium	6020	0.005	ND (0.00011)	ND (0.00011)	ND (0.00011)	ND (0.00011)
Calcium	6020	NE	94.9	NS	NS	NS
Chromium	6020	0.10	ND (0.0125)	ND (0.0125)	ND (0.0125)	ND (0.0125)
Cobalt	6020	NE	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.0005)
Copper	6020	NE	ND (0.0015)	ND (0.0015)	ND (0.0015) UJ	ND (0.0015) UJ
Iron	6020	NE	0.162 (0.500) J	0.185 (0.500) J	0.321 (0.500) J	0.301 (0.500) J
Lead	6020	NE	ND (0.0005)	ND (0.0005)	ND (0.0025)	ND (0.0025)
Magnesium	6020	NE	27.5	NS	NS	NS
Manganese	6020	NE	ND (0.005)	NS	NS	NS
Mercury	7470A	0.002	ND (0.000066)	ND (0.000066)	ND (0.000066)	ND (0.000066)
Nickel	6020	NE	0.00259 (0.010) J	0.00253 (0.010) J	0.00271 (0.010) J	0.00255 (0.010) J
Potassium	6020	NE	9.08	NS	NS	NS
Selenium	6020	0.05	0.00136 (0.005) J	0.00137 (0.005) J	0.00152 (0.005) J	0.00129 (0.005) J
Silver	6020	NE	ND (0.0002)	ND (0.0002)	ND (0.001)	ND (0.001)
Sodium	6020	NE	77.7	NS	NS	NS
Thallium	6020	0.002	ND (0.0003)	ND (0.0003)	ND (0.0015)	ND (0.0015)
Tin	6020	NE	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.005)
Vanadium	6020	NE	ND (0.003) UJ	ND (0.015)	ND (0.003)	ND (0.003)
Zinc	6020	NE	0.0311	ND (0.0026)	0.00623 (0.010) J	0.00677 (0.010) J

Refer to footnotes at end of table.

Table A-9 *(Concluded)*

Summary of Total Metal Parameters
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, February - July 2010

If result detected below laboratory practical quantitation limit, then practical quantitation limit is indicated in parenthesis.

ARCOC = Analysis Request and Chain of Custody.
GEL = General Engineering Laboratories.
J = The associated value is an estimated quantity and/or detected below the practical quantitation limit.
J+ = The associated numerical value is an estimated quantity with a suspected positive bias.
L = Lower well completion zone.
MCL = Maximum contamination levels (established by the U.S. EPA Primary Drinking Water Regulations in 40 CFR 141.11(b), subsequent amendments or the New Mexico Environmental Improvement Board. In the New Mexico Register, Title 20, Chapter 7, Part 1).
mg/L = Milligram(s) per liter.
MW = Monitoring well.
ND = The analyte was analyzed for but was not detected or qualified as not detected during data validation. The associated numerical value is the sample quantitation limit.
NE = Not established.
NS = Not sampled.
U = Upper well completion zone.
UJ = The analyte was analyzed for but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

Table A-10

Summary of Detected Parameters in Equipment Blank Samples
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, February - July 2010

		ARCOC No.: Sample No.: Well No.: Sample Type: Sample Method: Laboratory: Date Sampled:	612856 088563 Prior to CWL-MW6U Equipment Blank Bennett Pump GEL 04-05-10	612858 088569 Prior to CWL-MW5U Equipment Blank Bennett Pump GEL 04-07-10
Parameter	**Method**	**MCL**	**All results in µg/L (unless otherwise specified)**	
Bromodichloromethane	8260B	NE	3.79	2.29
Bromoform	8260B	NE	2.07	1.19
Chloroform	8260B	NE	2.85	1.25
Chloromethane	8260B	NE	ND (0.300)	0.460 (1.00) J
Dibromochloromethane	8260B	NE	5.05	3.37

If result detected below laboratory practical quantitation limit, then practical quantitation limit is indicated in parenthesis.

ARCOC = Analysis Request and Chain of Custody.
GEL = General Engineering Laboratories.
J = The associated value is an estimated quantity and/or detected below the practical quantitation limit.
L = Lower well completion zone.
MCL = Maximum contamination levels (established by the U.S. EPA Primary Drinking Water Regulations in 40 CFR 141.11(b), subsequent amendments or the New Mexico Environmental Improvement Board in the New Mexico Register, Title 20, Chapter 7, Part 1).
MW = Monitoring well.
ND = The analyte was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.
U = Upper well completion zone.
µg/L = Microgram(s) per liter.

Table A-11

Summary of Environmental and Duplicate Analyses
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, February - July 2010

Parameter	Environmental Sample Results (R_1) (mg/L, unless indicated)	Duplicate Sample Results (R_2) (mg/L, unless indicated)	RPD
CWL-MW5U			
Trichloroethene (µg/L)	2.74	2.75	< 1
Arsenic	0.00253 (0.005) J	ND (0.0015)	NC
Barium	0.0666	0.0671	1
Calcium	91.8	94.9	3
Iron	0.133 (0.500) J	0.162 (0.500) J	20
Magnesium	26.0	27.5	6
Nickel	ND (0.0025)	0.00259 (0.010) J	NC
Potassium	9.08	9.08	< 1
Selenium	0.0017 (0.005) J	0.00136 (0.005) J	22
Sodium	75.3	77.7	3
Zinc	0.0309	0.0311	1
CWL-MW6U			
Chloromethane (µg/L)	0.400 (1.00) J	0.480 (1.00) J	18
Toluene (µg/L)	0.330 (1.00) J	ND (0.250)	NC
Barium	0.073	0.0697	5
Iron	0.321 (0.500) J	0.301 (0.500) J	6
Nickel	0.00271 (0.010) J	0.00255 (0.010) J	6
Selenium	0.00152 (0.005) J	0.00129 (0.005) J	16
Zinc	0.00623 (0.010) J	0.00677 (0.010) J	8

L = Lower well completion zone.
J = The associated value is qualified as an estimated quantity and/or detected below the practical quantitation limit.
mg/L = Milligram(s) per liter.
MW = Monitoring well.
µg/L = Microgram(s) per liter.
NC = Not calculated for non-detected values.
ND = The analyte was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.
RPD = Relative percent difference is calculated with the following equation and rounded to nearest whole number:

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

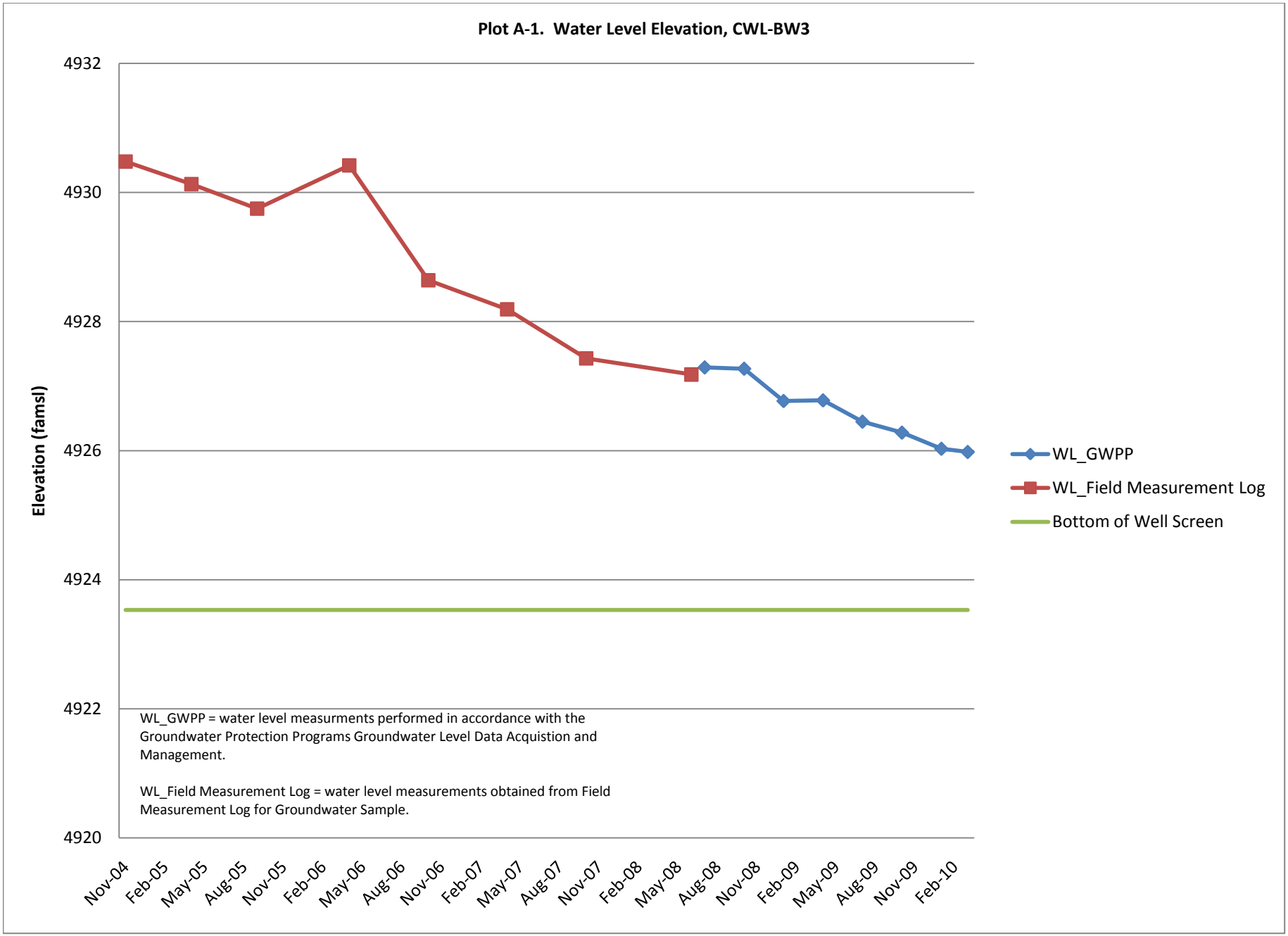
where:

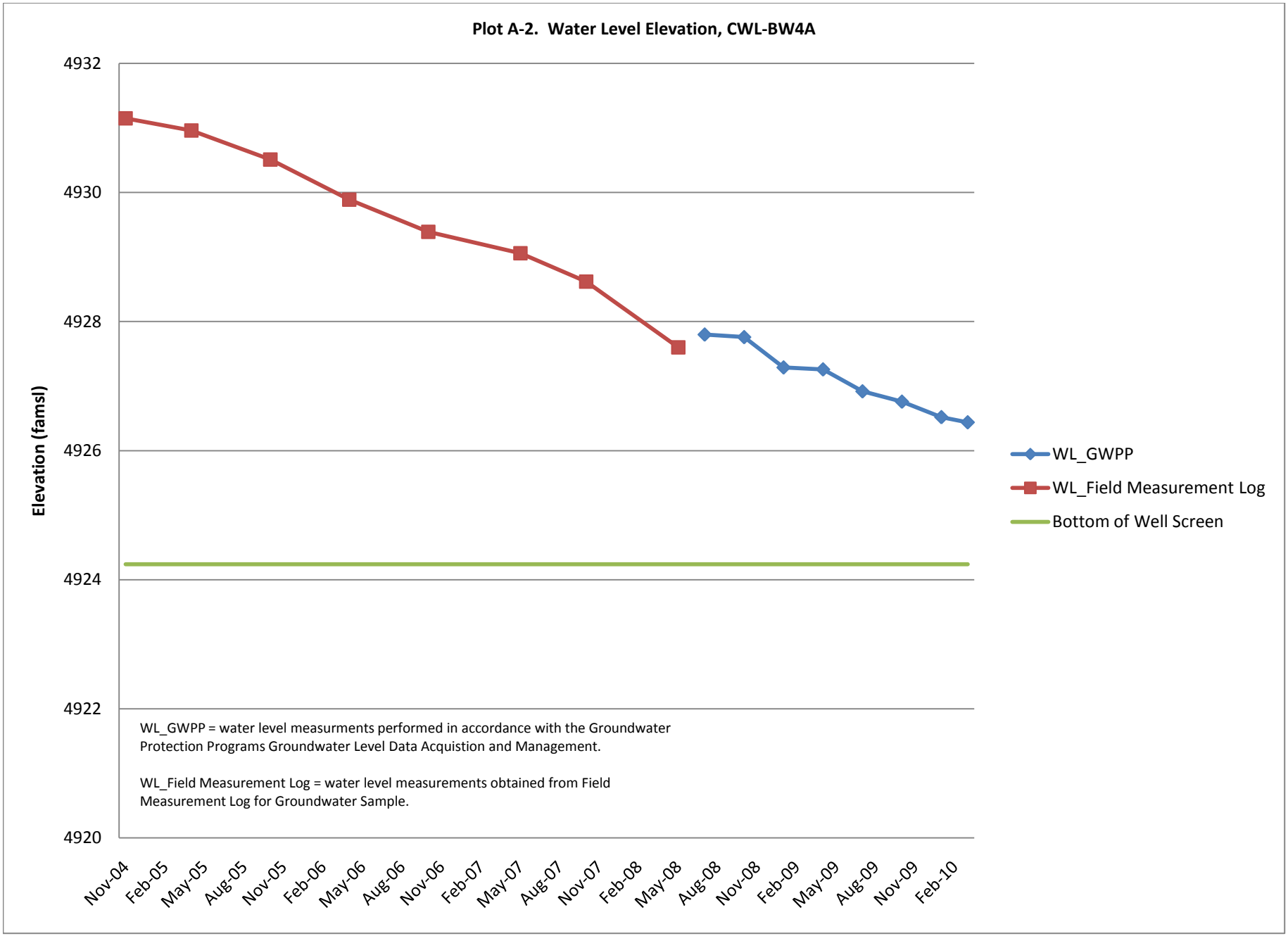
R_1 = analysis result.

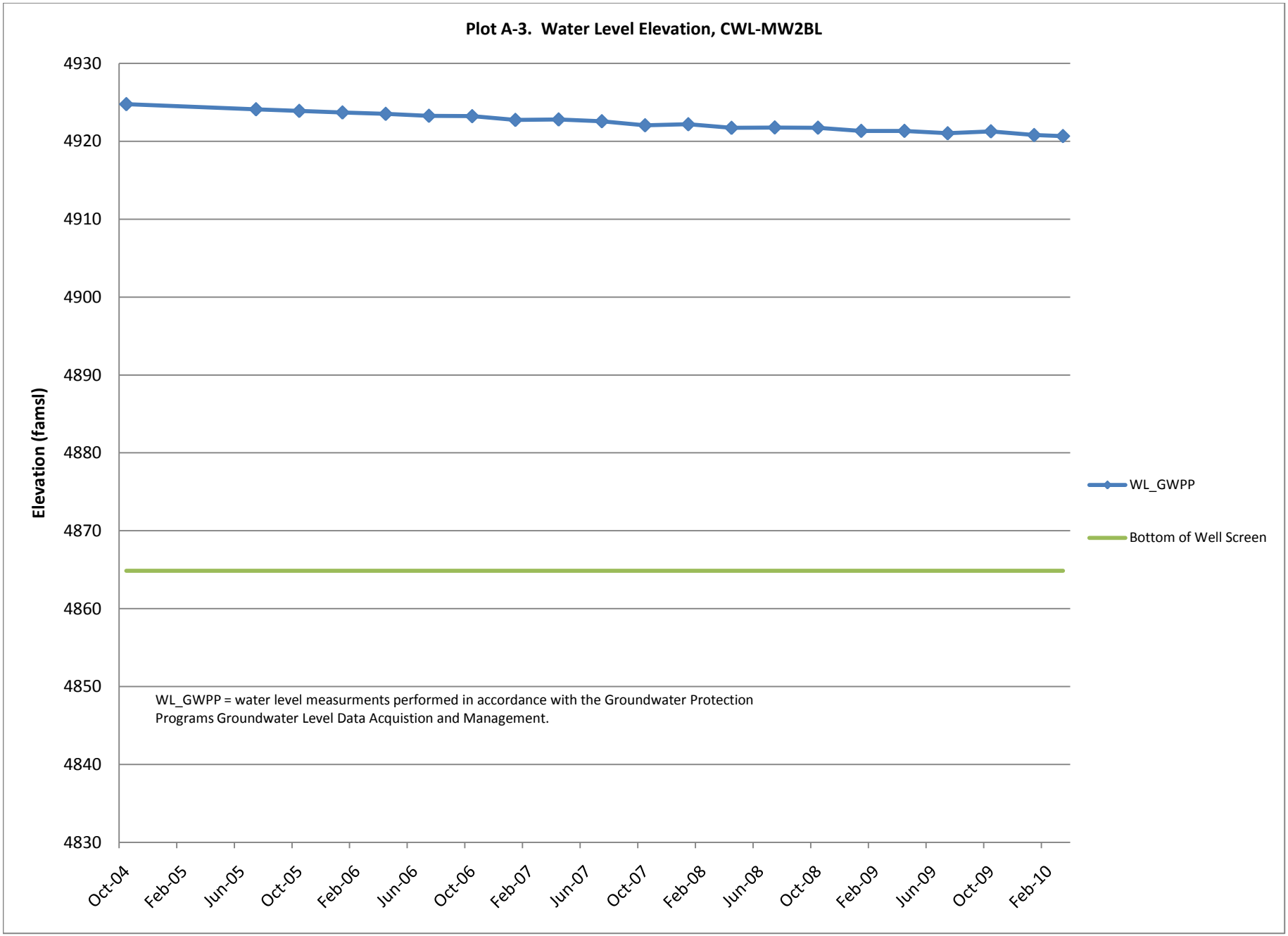
R_2 = duplicate analysis result.

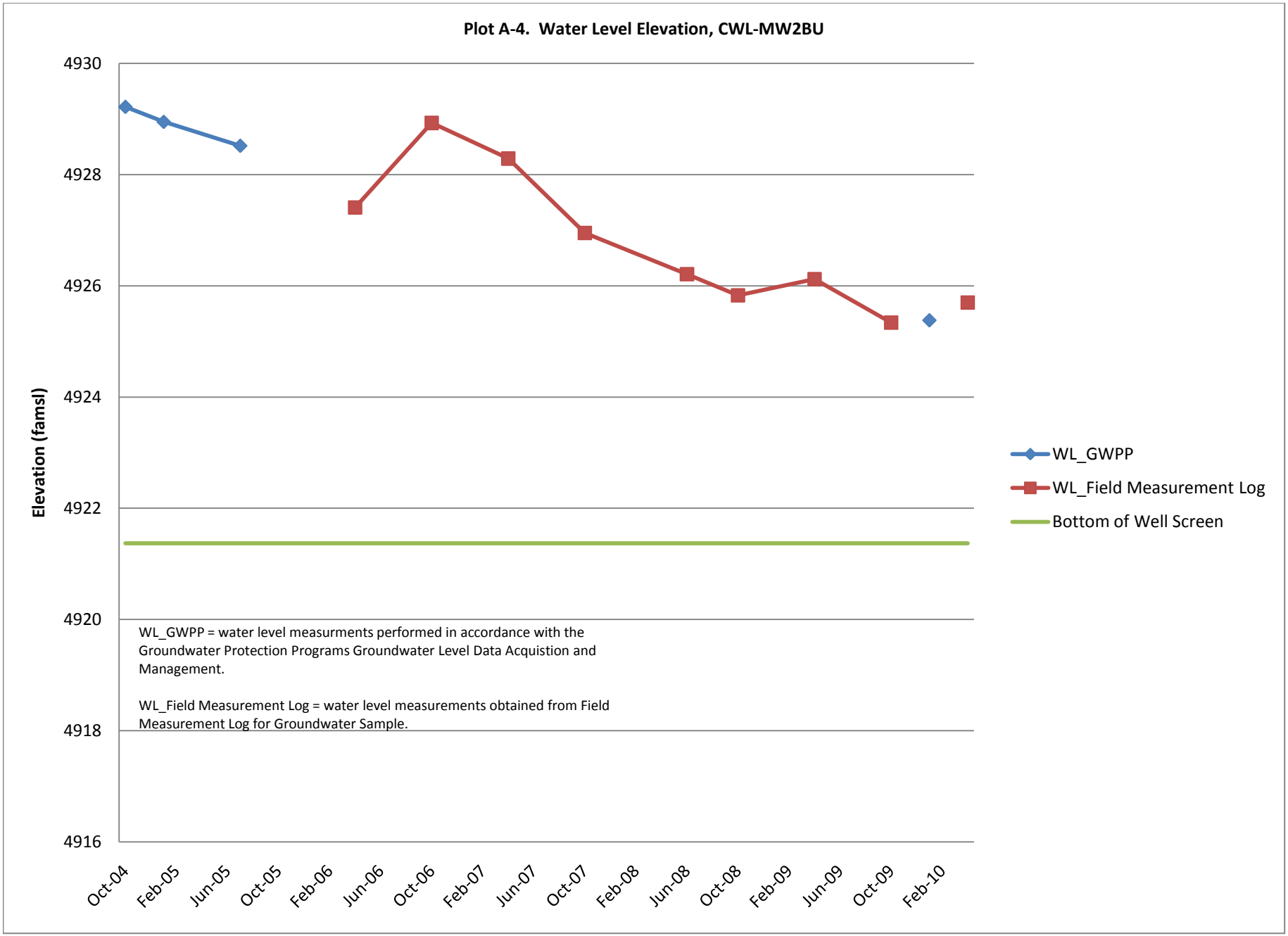
U = Upper well completion zone.

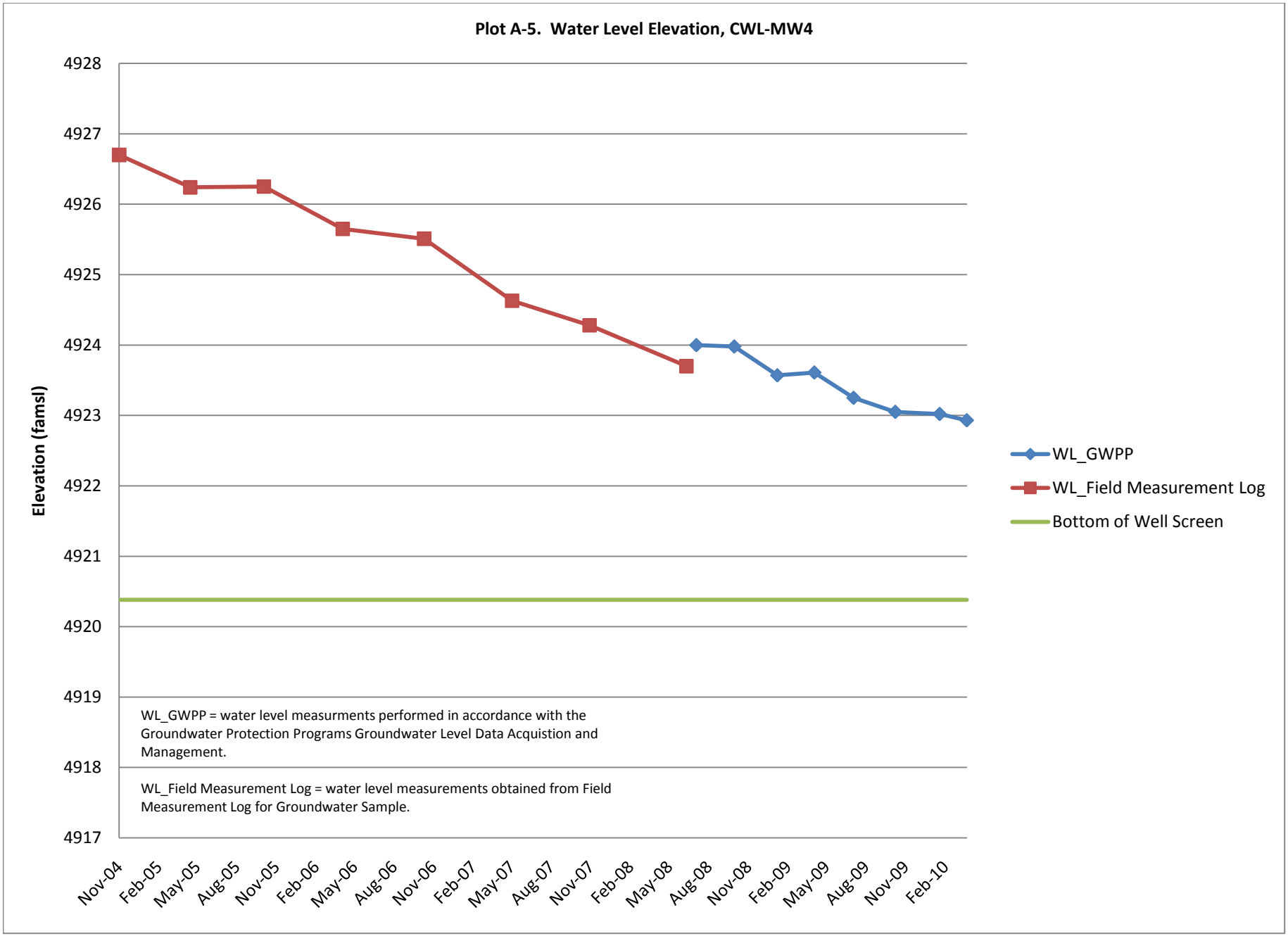
PLOTS

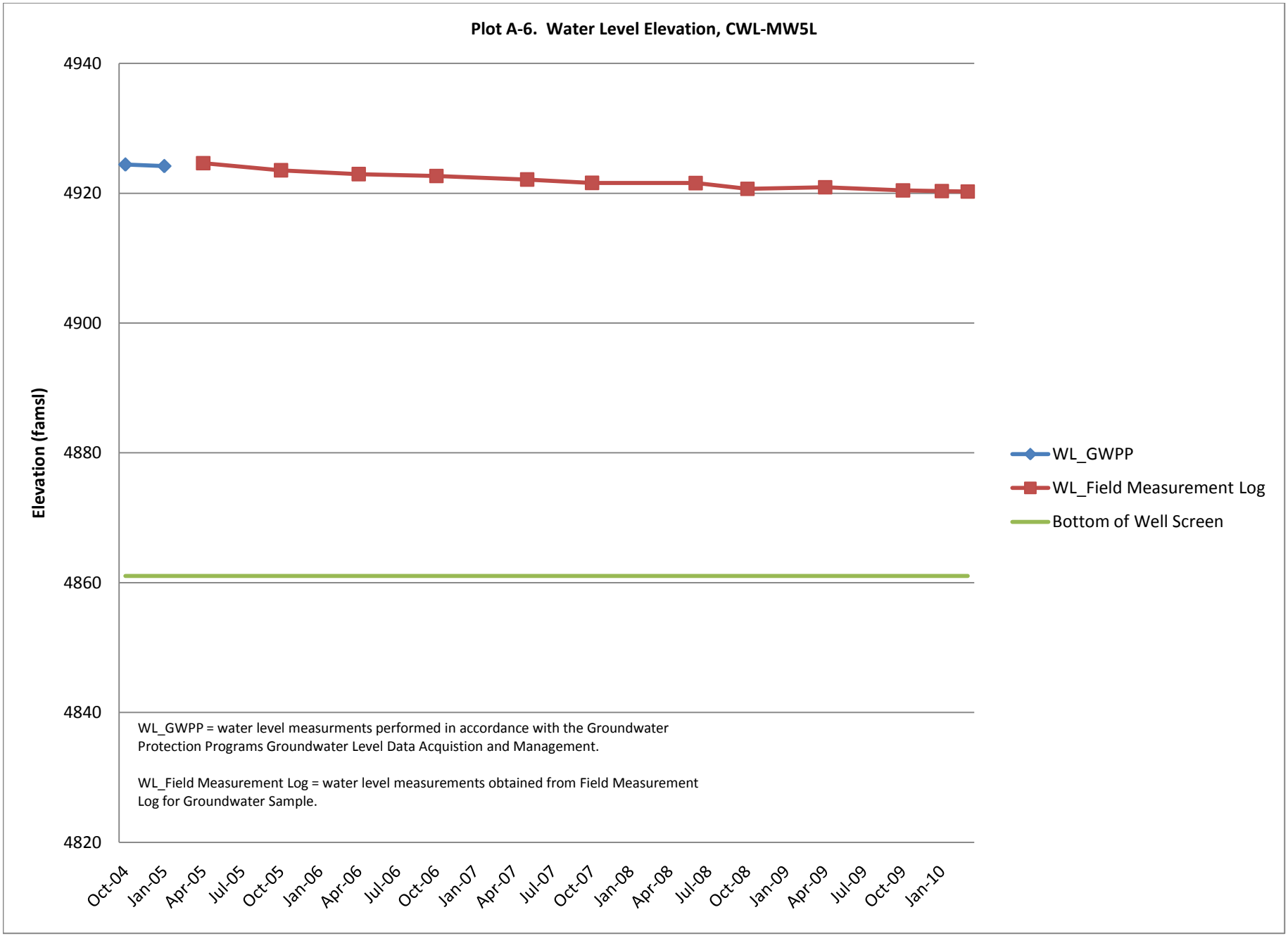

Plot A-1. Water Level Elevation, CWL-BW3
Elevation (famsl)
4932
4930
4928
4926
4924
4922
4920
Nov-04
Feb-05
May-05
Aug-05
Nov-05
Feb-06
May-06
Aug-06
Nov-06
Feb-07
May-07
Aug-07
Nov-07
Feb-08
May-08
Aug-08
Nov-08
Feb-09
May-09
Aug-09
Nov-09
Feb-10
WL_GWPP
WL_Field Measurement Log
Bottom of Well Screen
WL_GWPP = water level measurments performed in accordance with the Groundwater Protection Programs Groundwater Level Data Acquistion and Management.
WL_Field Measurement Log = water level measurements obtained from Field Measurement Log for Groundwater Sample.

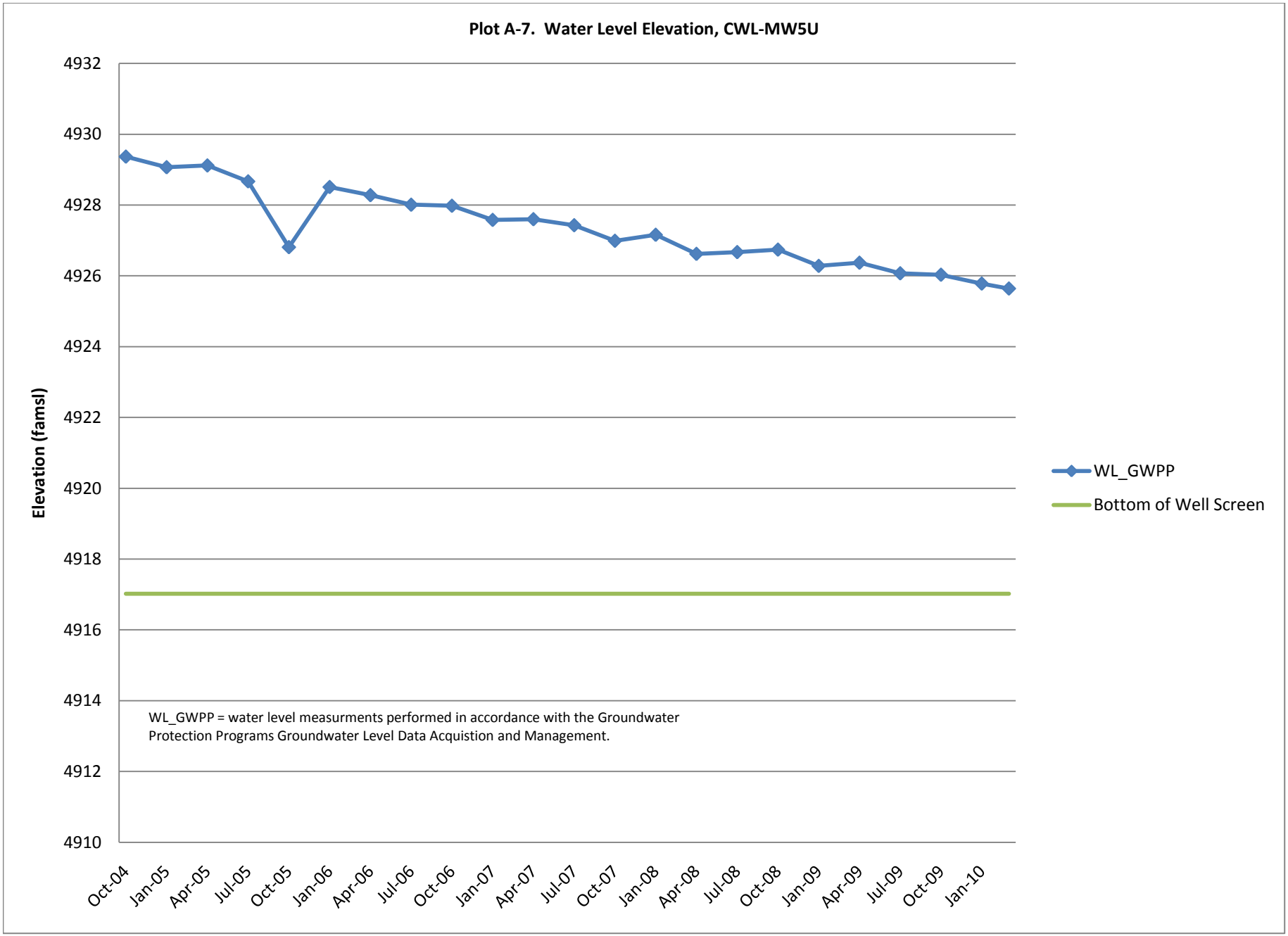

Plot A-2. Water Level Elevation, CWL-BW4A
Elevation (famsl)
4932
4930
4928
4926
4924
4922
4920
Nov-04
Feb-05
May-05
Aug-05
Nov-05
Feb-06
May-06
Aug-06
Nov-06
Feb-07
May-07
Aug-07
Nov-07
Feb-08
May-08
Aug-08
Nov-08
Feb-09
May-09
Aug-09
Nov-09
Feb-10
WL_GWPP
WL_Field Measurement Log
Bottom of Well Screen
WL_GWPP = water level measurments performed in accordance with the Groundwater Protection Programs Groundwater Level Data Acquistion and Management.
WL_Field Measurement Log = water level measurements obtained from Field Measurement Log for Groundwater Sample.

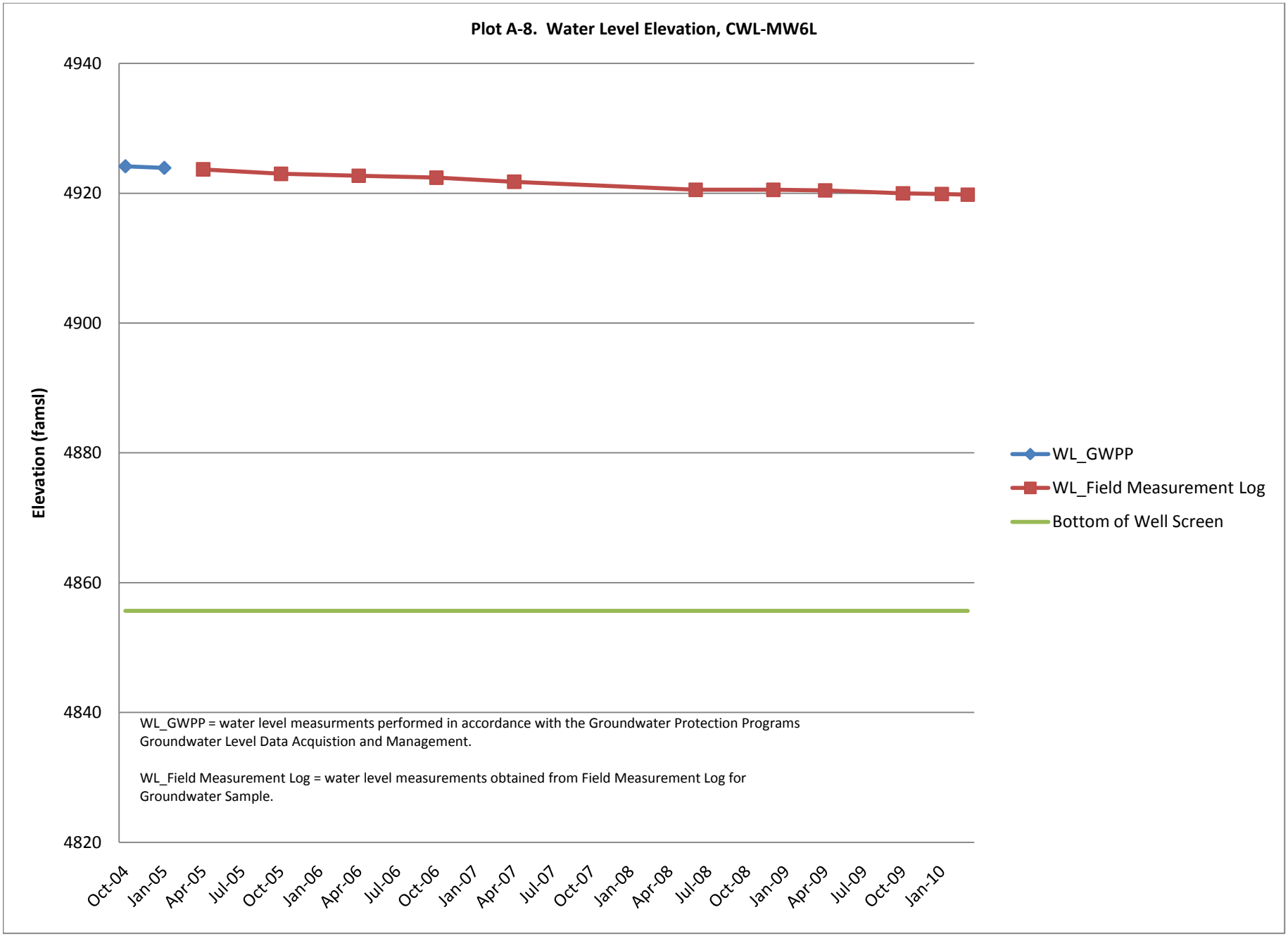

Plot A-3. Water Level Elevation, CWL-MW2BL
Elevation (famsl)
4930
4920
4910
4900
4890
4880
4870
4860
4850
4840
4830
Oct-04
Feb-05
Jun-05
Oct-05
Feb-06
Jun-06
Oct-06
Feb-07
Jun-07
Oct-07
Feb-08
Jun-08
Oct-08
Feb-09
Jun-09
Oct-09
Feb-10
WL_GWPP
Bottom of Well Screen
WL_GWPP = water level measurments performed in accordance with the Groundwater Protection Programs Groundwater Level Data Acquistion and Management.

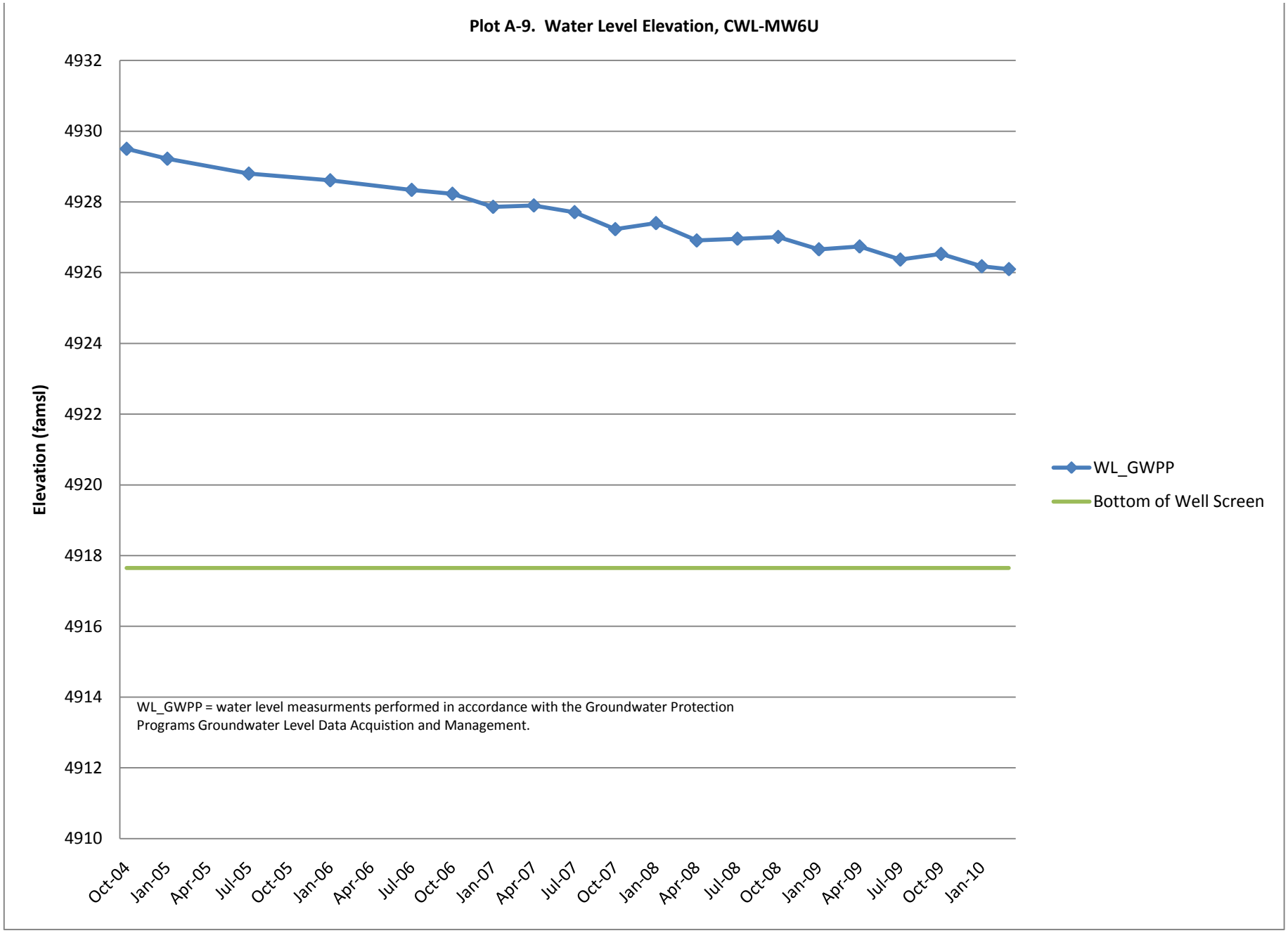

Plot A-4. Water Level Elevation, CWL-MW2BU
Elevation (famsl)
4930
4928
4926
4924
4922
4920
4918
4916
Oct-04
Feb-05
Jun-05
Oct-05
Feb-06
Jun-06
Oct-06
Feb-07
Jun-07
Oct-07
Feb-08
Jun-08
Oct-08
Feb-09
Jun-09
Oct-09
Feb-10
WL_GWPP
WL_Field Measurement Log
Bottom of Well Screen
WL_GWPP = water level measurments performed in accordance with the Groundwater Protection Programs Groundwater Level Data Acquistion and Management.
WL_Field Measurement Log = water level measurements obtained from Field Measurement Log for Groundwater Sample.

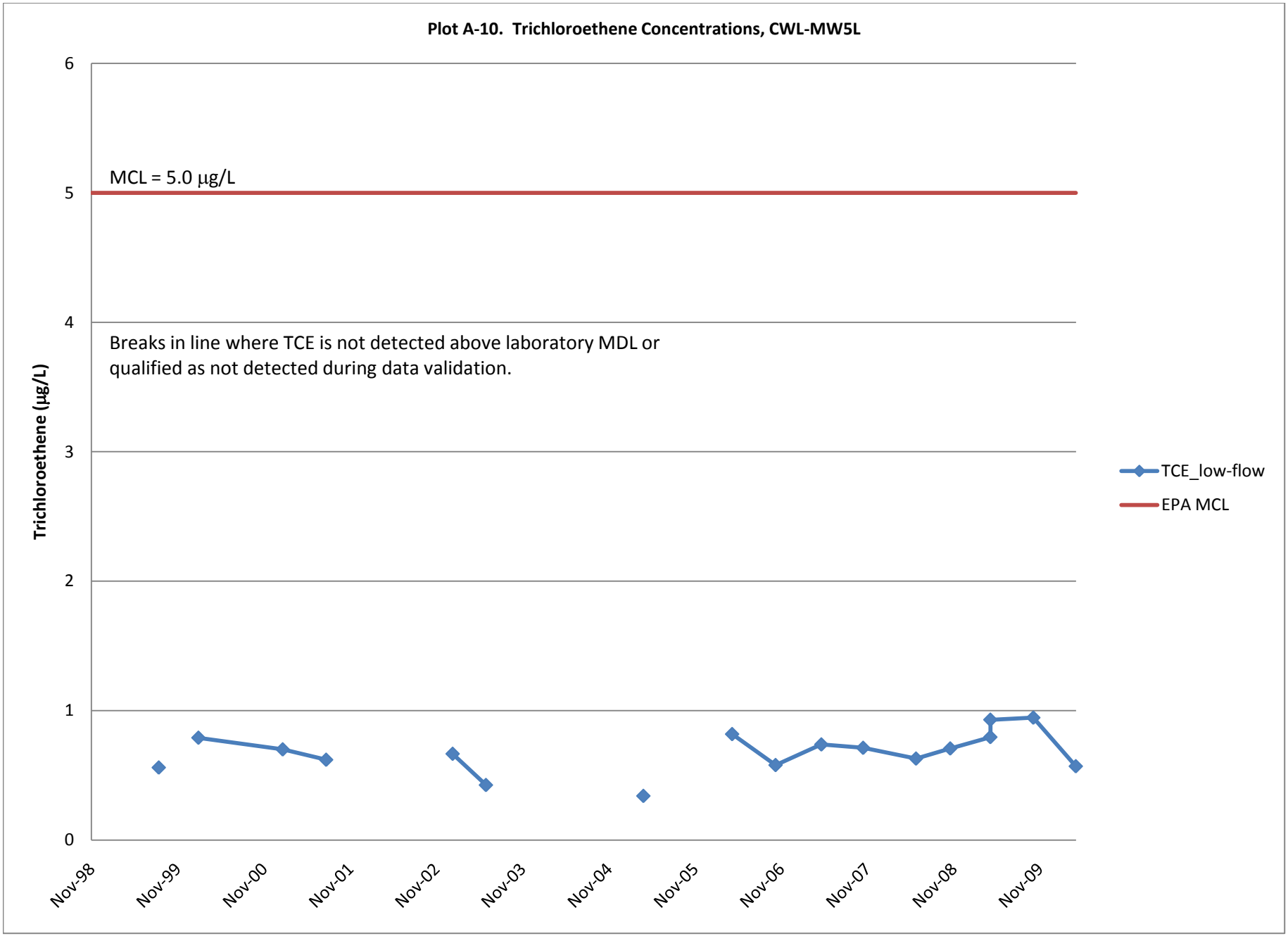

Plot A-5. Water Level Elevation, CWL-MW4
Elevation (famsl)
4928
4927
4926
4925
4924
4923
4922
4921
4920
4919
4918
4917
Nov-04
Feb-05
May-05
Aug-05
Nov-05
Feb-06
May-06
Aug-06
Nov-06
Feb-07
May-07
Aug-07
Nov-07
Feb-08
May-08
Aug-08
Nov-08
Feb-09
May-09
Aug-09
Nov-09
Feb-10
WL_GWPP
WL_Field Measurement Log
Bottom of Well Screen
WL_GWPP = water level measurments performed in accordance with the Groundwater Protection Programs Groundwater Level Data Acquistion and Management.
WL_Field Measurement Log = water level measurements obtained from Field Measurement Log for Groundwater Sample.

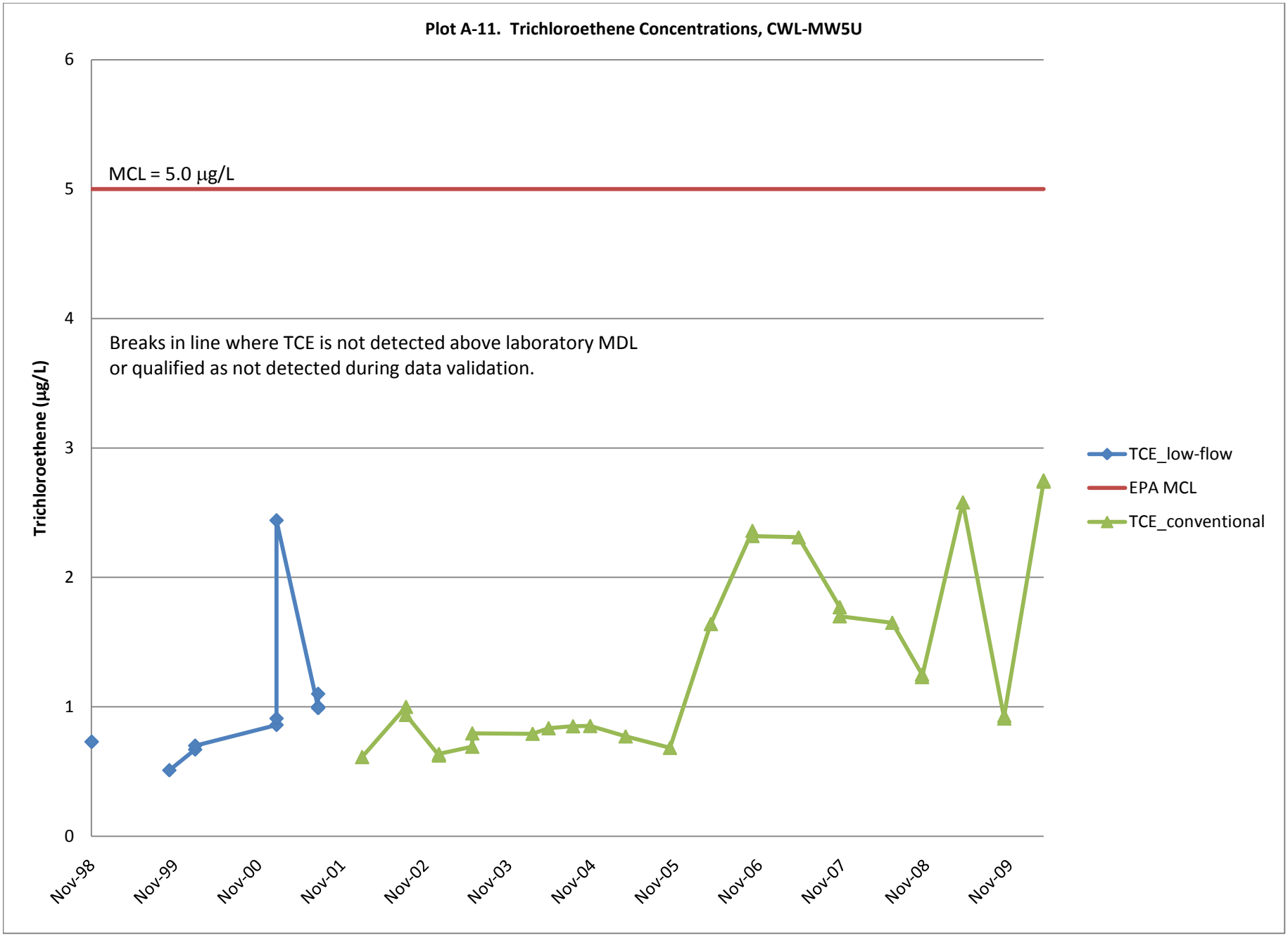

Plot A-6. Water Level Elevation, CWL-MW5L
Elevation (famsl)
4940
4920
4900
4880
4860
4840
4820
Oct-04
Jan-05
Apr-05
Jul-05
Oct-05
Jan-06
Apr-06
Jul-06
Oct-06
Jan-07
Apr-07
Jul-07
Oct-07
Jan-08
Apr-08
Jul-08
Oct-08
Jan-09
Apr-09
Jul-09
Oct-09
Jan-10
WL_GWPP
WL_Field Measurement Log
Bottom of Well Screen
WL_GWPP = water level measurments performed in accordance with the Groundwater Protection Programs Groundwater Level Data Acquistion and Management.
WL_Field Measurement Log = water level measurements obtained from Field Measurement Log for Groundwater Sample.

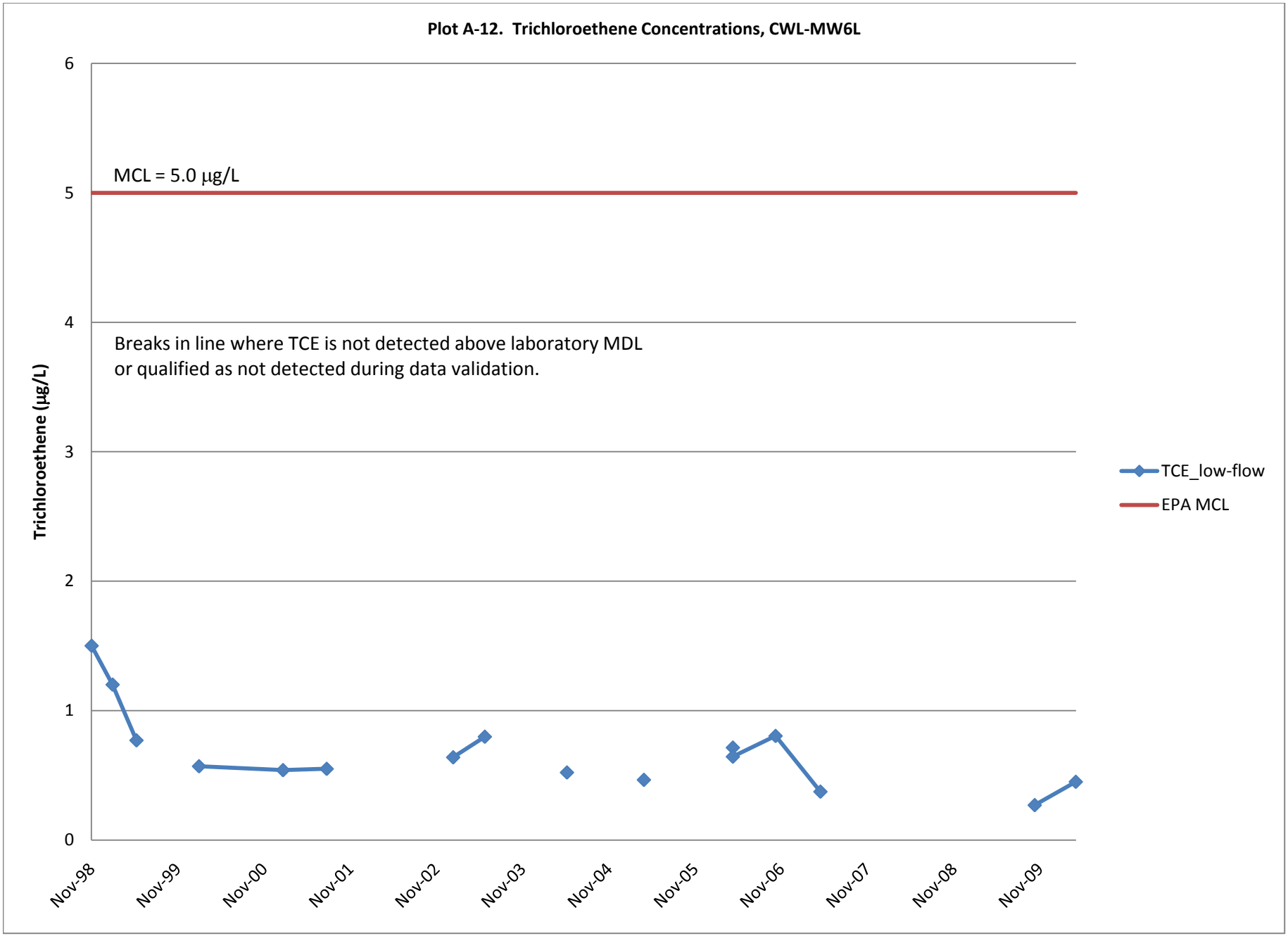

Plot A-7. Water Level Elevation, CWL-MW5U
Elevation (famsl)
4932
4930
4928
4926
4924
4922
4920
4918
4916
4914
4912
4910
Oct-04
Jan-05
Apr-05
Jul-05
Oct-05
Jan-06
Apr-06
Jul-06
Oct-06
Jan-07
Apr-07
Jul-07
Oct-07
Jan-08
Apr-08
Jul-08
Oct-08
Jan-09
Apr-09
Jul-09
Oct-09
Jan-10
WL_GWPP
Bottom of Well Screen
WL_GWPP = water level measurments performed in accordance with the Groundwater Protection Programs Groundwater Level Data Acquistion and Management.

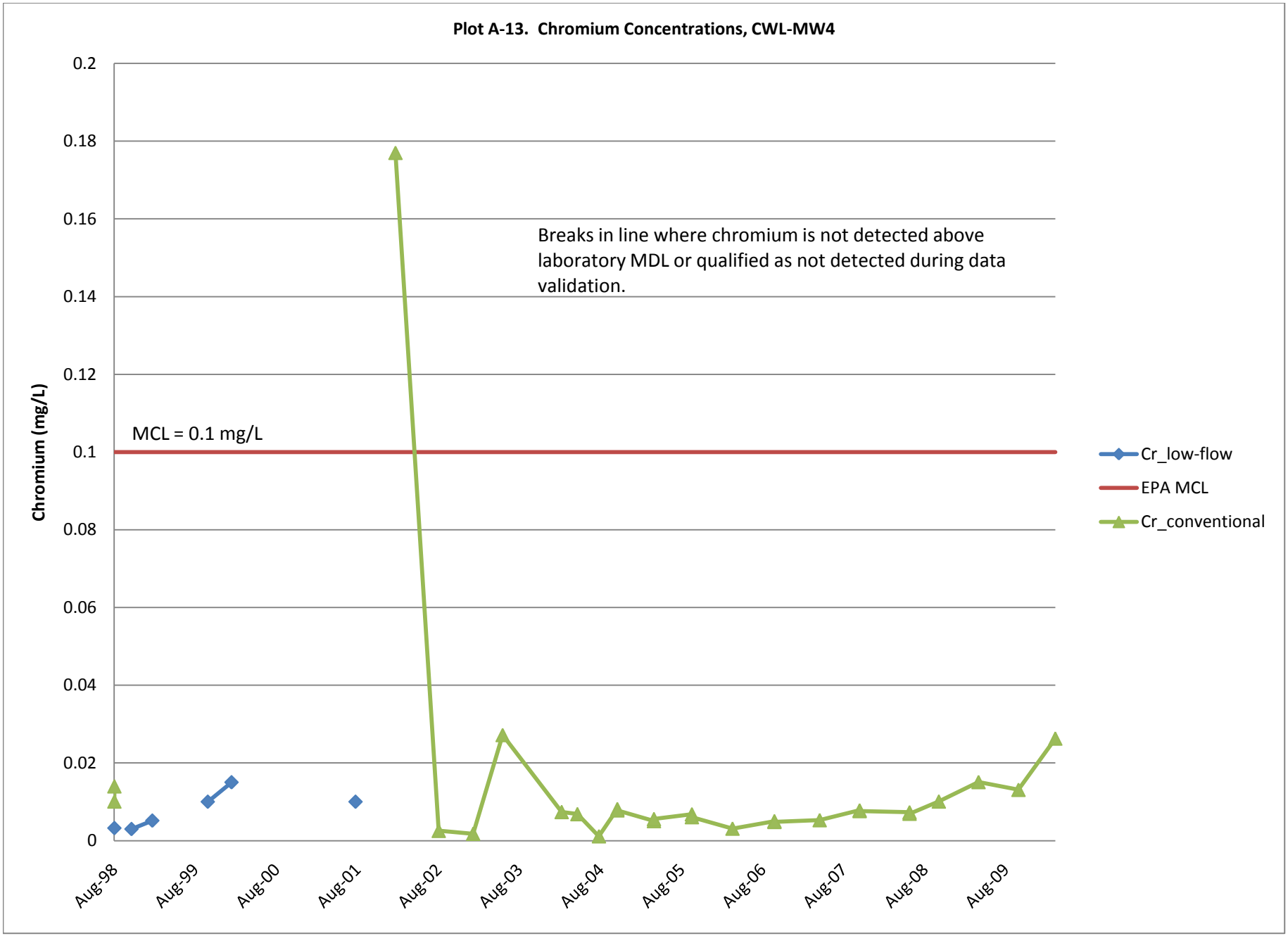

Plot A-8. Water Level Elevation, CWL-MW6L
Elevation (famsl)
4940
4920
4900
4880
4860
4840
4820
Oct-04
Jan-05
Apr-05
Jul-05
Oct-05
Jan-06
Apr-06
Jul-06
Oct-06
Jan-07
Apr-07
Jul-07
Oct-07
Jan-08
Apr-08
Jul-08
Oct-08
Jan-09
Apr-09
Jul-09
Oct-09
Jan-10
WL_GWPP
WL_Field Measurement Log
Bottom of Well Screen
WL_GWPP = water level measurments performed in accordance with the Groundwater Protection Programs Groundwater Level Data Acquistion and Management.
WL_Field Measurement Log = water level measurements obtained from Field Measurement Log for Groundwater Sample.

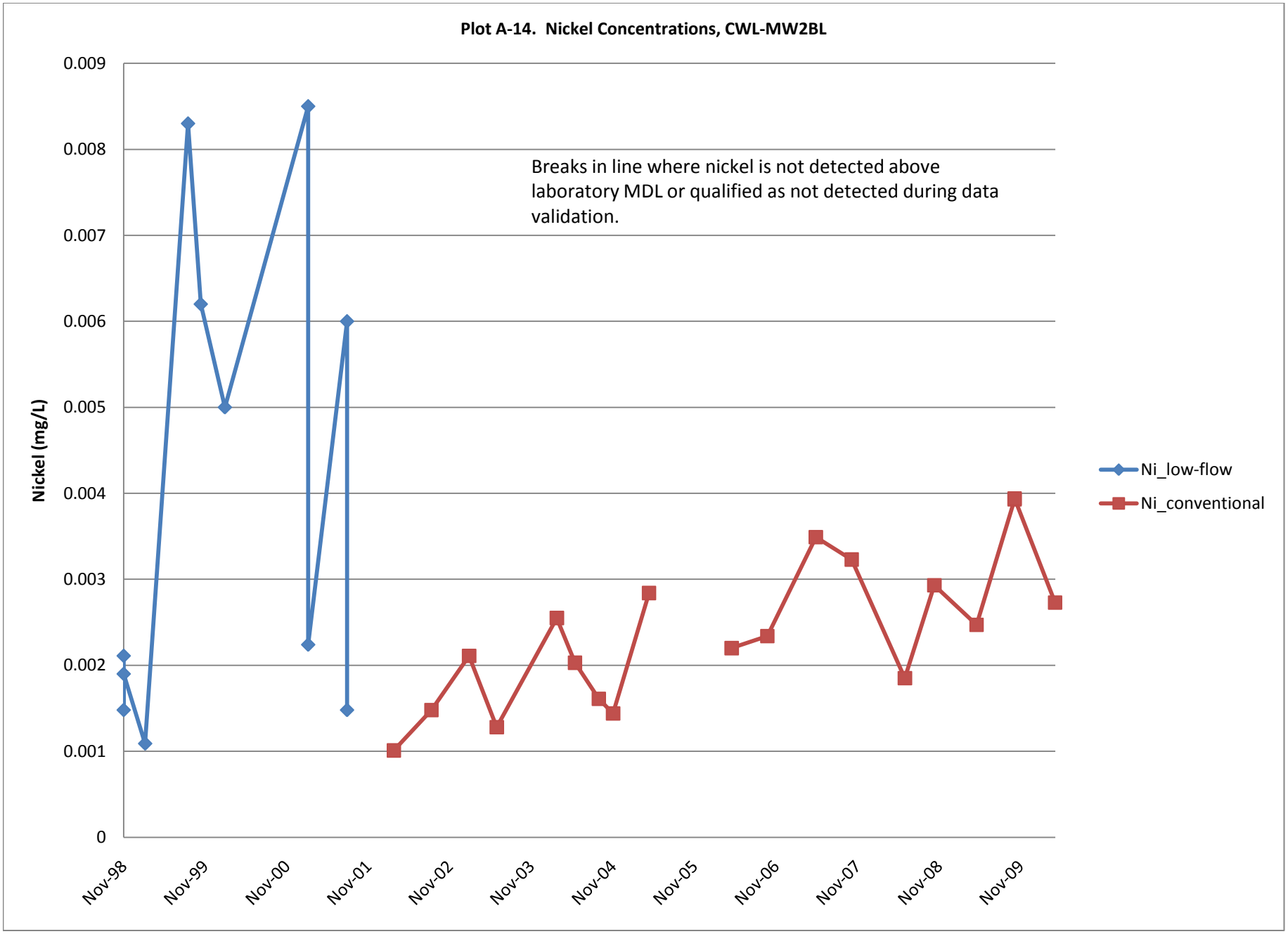

Plot A-9. Water Level Elevation, CWL-MW6U
Elevation (famsl)
4932
4930
4928
4926
4924
4922
4920
4918
4916
4914
4912
4910
Oct-04
Jan-05
Apr-05
Jul-05
Oct-05
Jan-06
Apr-06
Jul-06
Oct-06
Jan-07
Apr-07
Jul-07
Oct-07
Jan-08
Apr-08
Jul-08
Oct-08
Jan-09
Apr-09
Jul-09
Oct-09
Jan-10
WL_GWPP
Bottom of Well Screen
WL_GWPP = water level measurments performed in accordance with the Groundwater Protection Programs Groundwater Level Data Acquistion and Management.

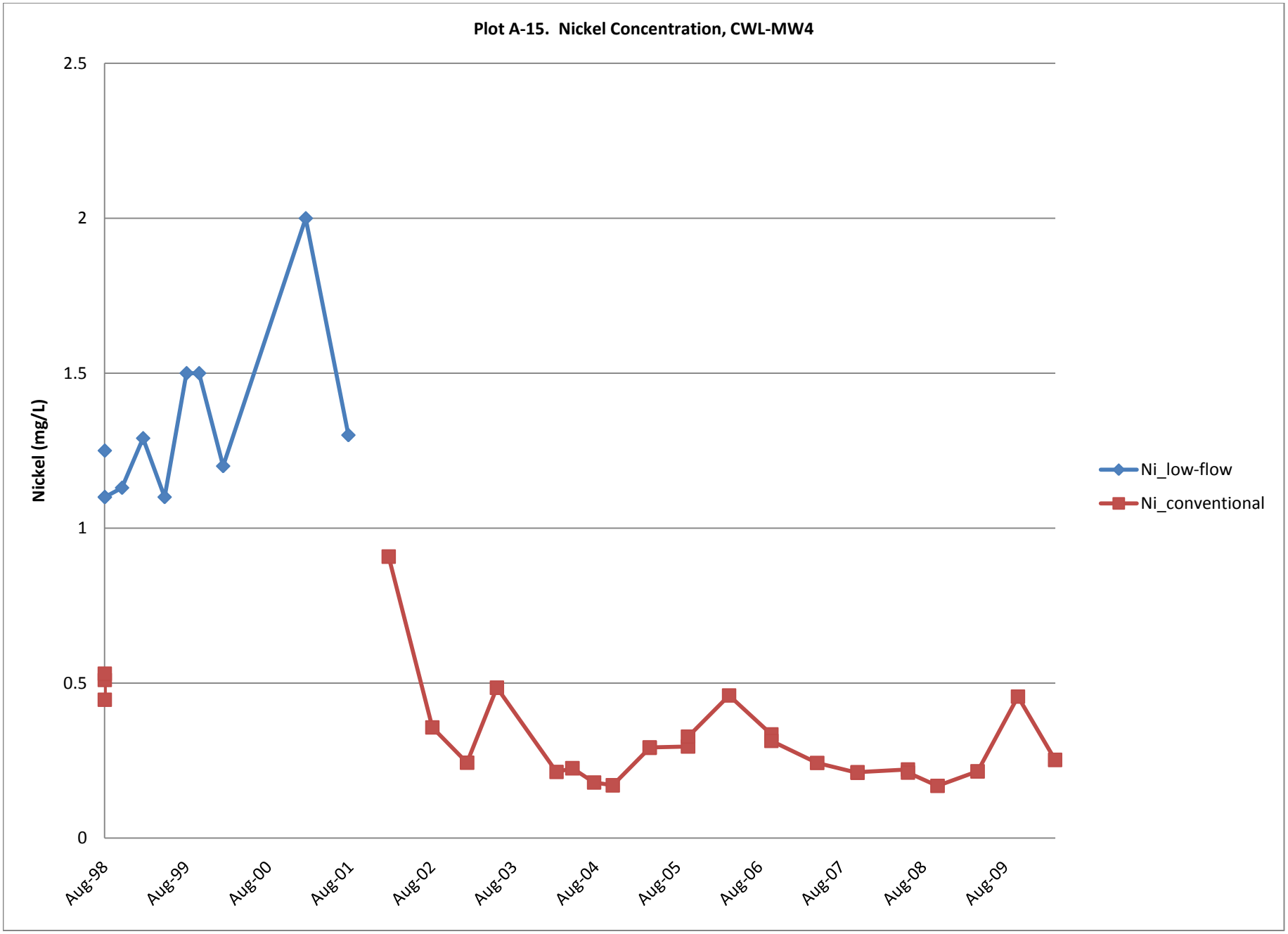

Plot A-10. Trichloroethene Concentrations, CWL-MW5L
Trichloroethene (µg/L)
6
5
4
3
2
1
0
MCL = 5.0 µg/L
Breaks in line where TCE is not detected above laboratory MDL or qualified as not detected during data validation.
Nov-98
Nov-99
Nov-00
Nov-01
Nov-02
Nov-03
Nov-04
Nov-05
Nov-06
Nov-07
Nov-08
Nov-09
TCE_low-flow
EPA MCL

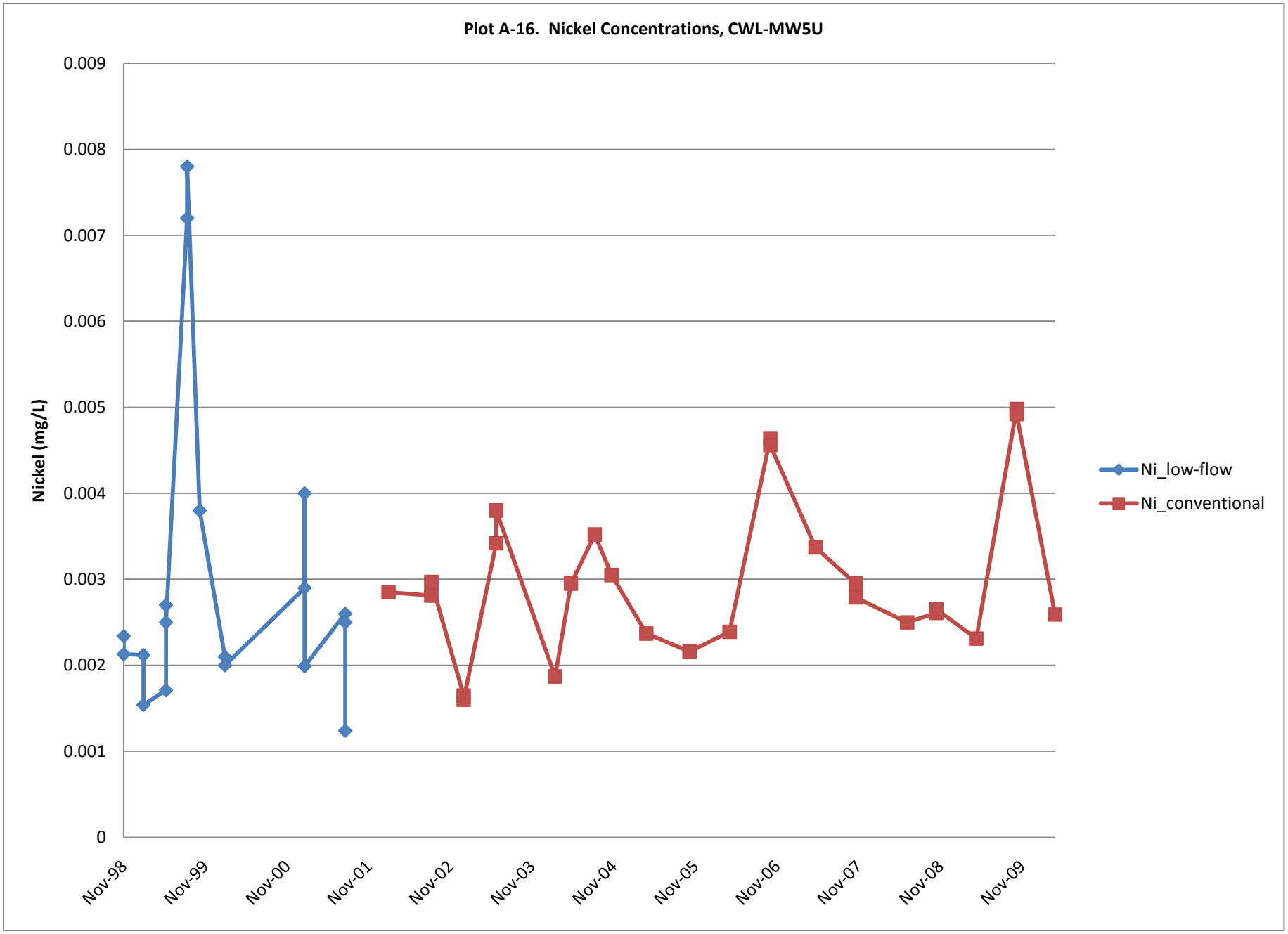

Plot A-11. Trichloroethene Concentrations, CWL-MW5U
Trichloroethene (µg/L)
6
5
4
3
2
1
0
MCL = 5.0 µg/L
Breaks in line where TCE is not detected above laboratory MDL
or qualified as not detected during data validation.
Nov-98
Nov-99
Nov-00
Nov-01
Nov-02
Nov-03
Nov-04
Nov-05
Nov-06
Nov-07
Nov-08
Nov-09
TCE_low-flow
EPA MCL
TCE_conventional

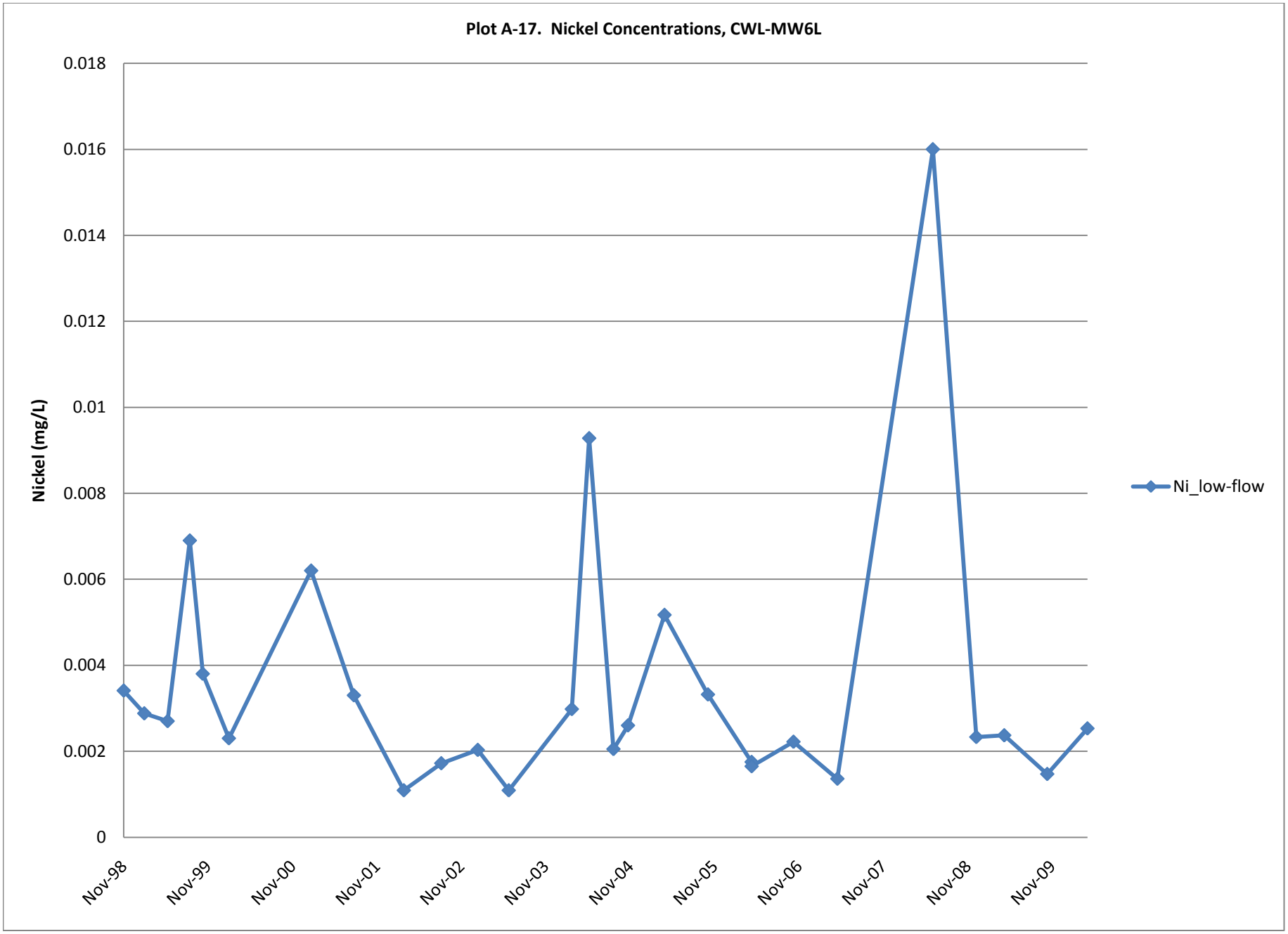

Plot A-12. Trichloroethene Concentrations, CWL-MW6L
Trichloroethene (µg/L)
6
5
4
3
2
1
0
MCL = 5.0 µg/L
Breaks in line where TCE is not detected above laboratory MDL
or qualified as not detected during data validation.
Nov-98
Nov-99
Nov-00
Nov-01
Nov-02
Nov-03
Nov-04
Nov-05
Nov-06
Nov-07
Nov-08
Nov-09
TCE_low-flow
EPA MCL

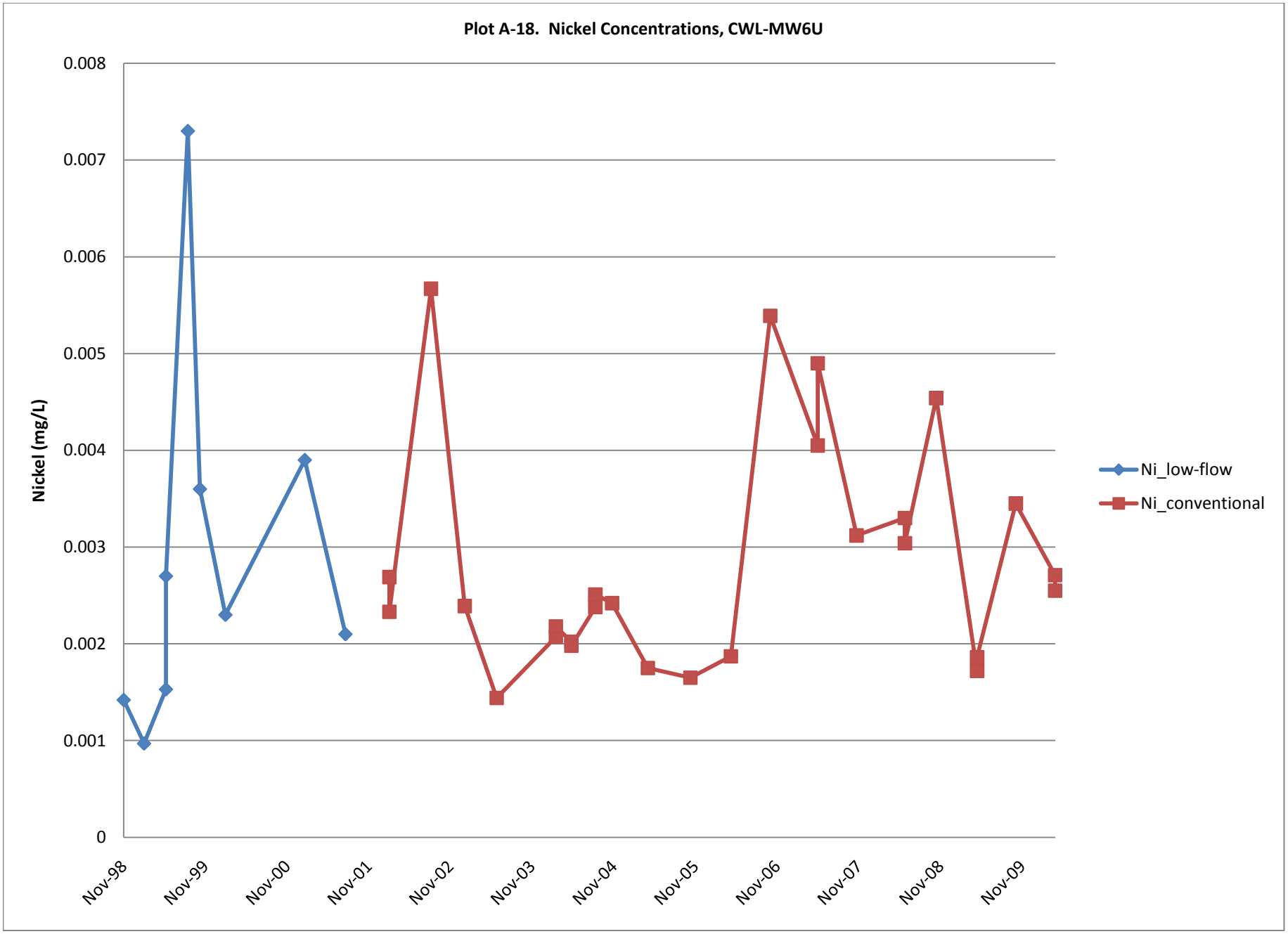

Plot A-13. Chromium Concentrations, CWL-MW4
Chromium (mg/L)
0.2
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
MCL = 0.1 mg/L
Breaks in line where chromium is not detected above laboratory MDL or qualified as not detected during data validation.
Aug-98
Aug-99
Aug-00
Aug-01
Aug-02
Aug-03
Aug-04
Aug-05
Aug-06
Aug-07
Aug-08
Aug-09
Cr_low-flow
EPA MCL
Cr_conventional


Plot A-14. Nickel Concentrations, CWL-MW2BL
Nickel (mg/L)
0.009
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
Breaks in line where nickel is not detected above laboratory MDL or qualified as not detected during data validation.
Nov-98
Nov-99
Nov-00
Nov-01
Nov-02
Nov-03
Nov-04
Nov-05
Nov-06
Nov-07
Nov-08
Nov-09
Ni_low-flow
Ni_conventional


Plot A-15. Nickel Concentration, CWL-MW4
Nickel (mg/L)
2.5
2
1.5
1
0.5
0
Aug-98
Aug-99
Aug-00
Aug-01
Aug-02
Aug-03
Aug-04
Aug-05
Aug-06
Aug-07
Aug-08
Aug-09
Ni_low-flow
Ni_conventional


Plot A-16. Nickel Concentrations, CWL-MW5U
Nickel (mg/L)
0.009
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
Nov-98
Nov-99
Nov-00
Nov-01
Nov-02
Nov-03
Nov-04
Nov-05
Nov-06
Nov-07
Nov-08
Nov-09
Ni_low-flow
Ni_conventional


Plot A-17. Nickel Concentrations, CWL-MW6L
Nickel (mg/L)
0.018
0.016
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
Nov-98
Nov-99
Nov-00
Nov-01
Nov-02
Nov-03
Nov-04
Nov-05
Nov-06
Nov-07
Nov-08
Nov-09
Ni_low-flow


Plot A-18. Nickel Concentrations, CWL-MW6U
Nickel (mg/L)
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
Nov-98
Nov-99
Nov-00
Nov-01
Nov-02
Nov-03
Nov-04
Nov-05
Nov-06
Nov-07
Nov-08
Nov-09
Ni_low-flow
Ni_conventional

ATTACHMENT A

FIELD MEASUREMENT LOGS AND DOCUMENTATION

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: CWL- GWM	Project No.:
Well I.D.: CWL- MW2BL	Date: 4-14-10
Weather	
Method: X Portable pump _____ Dedicated pump	Pump depth: 544.5'

PURGE MEASUREMENTS

Depth to Water (FT)	Time 24 hr	Vol. L gls	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	DO mg/L ~~Color and appearance~~
498.84	0720		Start							
499.03	0810	40	18.01	1103	221.5	6.72		0.25	80.2	7.21
499.05	0851	80	20.84	1105	216.5	6.72		0.20	82.2	7.38
499.06	0944	120	21.53	1101	210.2	6.71		0.18	81.3	7.16
499.07	1025	160	21.69	1105	207.3	6.70		0.09	80.8	7.25
499.06	1106	200	21.76	1104	205.9	6.70		0.11	81.3	7.14
499.00	1122	205	21.97	1102	205.1	6.70		0.07	81.6	7.12
499.00	1140	210	22.14	1105	204.5	6.70		0.08	83.9	7.32
499.06	1202	215	21.73	1106	204.6	6.70		0.14	84.0	7.39
499.07	1227	220	21.85	1108	204.7	6.70		0.16	78.6	6.98
499.02	1239	222	21.99	1106	204.7	6.69		0.15	80.6	7.08
499.00	1252	224	22.10	1107	204.5	6.70		0.12	80.1	7.09
	1259		Sampling							

COC number(s): 612862

Sample number(s): 088581, 088582

~ 4.00 gals. purged from tubing 0729

Purge Volume Calculations

Well Diameter

2" well: 0.16 gal/ft X____ (height of water column) = _____ gallons

4" well: 0.65 gal/ft X____ (height of water column) = _____ gallons

6" well: 1.47 gal/ft X____ (height of water column) = _____ gallons

Tubing Diameter

1/4" OD: 2.4 ml/ft X____ (length of tubing) = _____ millileters

3/8" OD: 9.7 ml/ft X____ (length of tubing) = _____ millileters

1/2" ODl: 2 1.6 ml/ft X____ (length of tubing)) = _____ millileters

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: CWL-GWM	Project No.:
Well I.D.: CWL-MW4	Date: 4-5-10
Weather	
Method: X Portable pump _____ Dedicated pump	Pump depth: 499.7'

PURGE MEASUREMENTS

Depth to Water (FT)	Time 24 hr	Vol L (gls)	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	DO mg/L ~~Color and appearance~~
497.43	0809		START							
499.05	0825	2	16.89	872	101.5	6.30		10.9	16.4	1.57
498.71	0832	4	17.73	898	24.8	6.49		5.79	8.5	0.81
498.70	0840	6	17.85	921	3.8	6.59		18.0	9.5	0.89
498.70	0848	8	17.93	954	9.6	6.80		16.4	39.1	3.73
498.70	0856	10	17.98	955	18.0	6.84		57.3	45.1	4.26
498.70	0905	12	18.04	958	29.3	6.85		33.8	40.3	3.79
498.76	0913	14	18.16	959	38.1	6.86		21.6	55.3	5.21
498.78	0921	16	18.27	959	45.4	6.86		12.6	58.9	5.53
498.62	0930	18	18.05	958	52.6	6.86		7.89	48.6	4.57
498.72	0935	19	18.08	959	57.4	6.86		6.65	63.0	5.95
498.73	0939	20	18.15	960	57.8	6.86		4.95	63.6	5.99
498.70	0944	21	18.14	960	59.9	6.86		4.45	63.9	6.03
	0945		Sampling							

COC number(s): 612855

Sample number(s): 088560, 088561

~4.00 gals purged from tubing 0820

Purge Volume Calculations

Well Diameter

2" well: 0.16 gal/ft X____ (height of water column) = _____ gallons

4" well: 0.65 gal/ft X____ (height of water column) = _____ gallons

6" well: 1.47 gal/ft X____ (height of water column) = _____ gallons

Tubing Diameter

1/4" OD: 2.4 ml/ft X____ (length of tubing) = _____ millileters

3/8" OD: 9.7 ml/ft X____ (length of tubing) = _____ millileters

1/2" ODl: 2 1.6 ml/ft X____ (length of tubing)) = _____ millileters

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: CWL-GWM	Project No.:
Well I.D.: CWL-MW5L	Date: 4-13-10
Weather	
Method: _____ Portable pump ___X___ Dedicated pump QED	Pump depth: 495.46'

PURGE MEASUREMENTS

Depth to Water (FT)	Time 24 hr	Vol. ① gls	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	DO mg/L ~~Color and appearance~~
495.51	0825	/	START							
495.52	0841	2	17.35	797	152.7	7.72		0.22	87.8	8.41
495.51	0849	4	17.61	816	159.5	7.59		0.30	83.8	7.98
495.51	0857	6	17.82	1042	169.3	6.84		0.52	78.0	7.50
495.51	0901	7	17.94	1077	172.6	6.75		0.25	82.3	7.78
495.48	0905	8	18.03	1082	174.7	6.74		0.19	83.3	7.85
495.49	0909	9	18.15	1083	177.2	6.74		0.24	83.0	7.82
495.48	0912	10	18.22	1083	177.8	6.74		0.20	83.8	7.99
	0913	/	sampling							

COC number(s): 612861

Sample number(s): 088578, 088579

Purge Volume Calculations

Well Diameter

2" well: 0.16 gal/ft X____ (height of water column) = _____ gallons

4" well: 0.65 gal/ft X____ (height of water column) = _____ gallons

6" well: 1.47 gal/ft X____ (height of water column) = _____ gallons

Tubing Diameter

1/4" OD: 2.4 ml/ft X____ (length of tubing) = _____ millileters

3/8" OD: 9.7 ml/ft X____ (length of tubing) = _____ millileters

1/2" ODl: 2 1.6 ml/ft X____ (length of tubing)) = _____ millileters

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: CWL-GWM	Project No.:
Well I.D.: CWL-MW5U	Date: 4-8-10 4-9-10
Weather	
Method: X Portable pump _____ Dedicated pump	Pump depth: 498.5'

PURGE MEASUREMENTS

Depth to Water (FT)	Time 24 hr	Vol L (gls)	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	DO mg/L ~~Color and appearance~~
490.44	0806		START							
495.83	0822	2	17.14	854	248.1	6.84		0.67	75.7	7.27
496.78	0825	3	17.83	854	239.6	6.92		0.20	73.5	6.97
497.90	0827	4	18.14	854	233.6	6.96		0.68	78.6	7.41
498.35	0829	5	18.14	860	228.9	7.02		0.20	80.1	7.55
498.35	0829	well	DRY							
491.71	0806		START							
496.15	0826	1	17.00	925	179.5	6.92		0.16	68.1	6.52
496.98	0829	2	17.48	919	179.0	6.93		0.23	63.7	6.08
	0830		sampling							

COC number(s): 612859

Sample number(s): 088571, 088572

~400 gals purged from tubing 0818

4-9-10 0822

Purge Volume Calculations

Well Diameter

2" well: 0.16 gal/ft X____ (height of water column) = _____ gallons

4" well: 0.65 gal/ft X____ (height of water column) = _____ gallons

6" well: 1.47 gal/ft X____ (height of water column) = _____ gallons

Tubing Diameter

1/4" OD: 2.4 ml/ft X____ (length of tubing) = _____ millileters

3/8" OD: 9.7 ml/ft X____ (length of tubing) = _____ millileters

1/2" ODl: 2 1.6 ml/ft X____ (length of tubing)) = _____ millileters

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: CWL-GWM	Project No.:
Well I.D.: CWL-MW6L	Date: 4-12-10
Weather	
Method: _____ Portable pump X Dedicated pump QED	Pump depth: 497.24'

PURGE MEASUREMENTS

Depth to Water (FT)	Time 24 hr	Vol. L gls	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	DO mg/L ~~Color and appearance~~
497.49	0821		START							
497.60	0845	2	17.78	683	161.3	7.45		0.24	101.3	9.64
497.60	0900	4	18.19	823	163.2	7.46		0.09	95.2	8.94
497.61	0912	6	18.69	896	163.8	7.30		0.23	77.2	7.19
497.61	0921	7	19.01	923	162.8	7.32		0.34	66.8	6.17
497.57	0930	8	19.44	1026	166.3	6.93		2.82	82.0	7.51
497.61	0940	9	20.18	1046	169.6	6.82		2.79	82.5	7.53
497.60	0947	10	20.53	1047	172.5	6.79		2.90	79.8	7.18
497.58	0955	11	20.59	1042	173.4	6.79		2.77	78.8	7.21
	0956		sampling							

COC number(s): 612860

Sample number(s): 088575, 088576

Purge Volume Calculations

Well Diameter

2" well: 0.16 gal/ft X____ (height of water column) = _____ gallons

4" well: 0.65 gal/ft X____ (height of water column) = _____ gallons

6" well: 1.47 gal/ft X____ (height of water column) = _____ gallons

Tubing Diameter

1/4" OD: 2.4 ml/ft X____ (length of tubing) = _____ millileters

3/8" OD: 9.7 ml/ft X____ (length of tubing) = _____ millileters

1/2" ODl: 2 1.6 ml/ft X____ (length of tubing)) = _____ millileters

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: CWL- GWM	Project No.:
Well I.D.: CWL- MW6U	Date: ~~4~~ - 4-6-10 / 4-7-10
Weather	
Method: X Portable pump _____ Dedicated pump	Pump depth: 498.6'

PURGE MEASUREMENTS

Depth to Water (FT)	Time 24 hr	Vol. L (gls)	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	DO mg/L ~~Color and appearance~~
490.60	0816		START							
495.76	0832	2	16.62	917	247.9	6.80		0.25	67.2	6.53
497.42	0837	4	17.29	917	236.8	6.87		0.15	66.9	6.41
497.99	0839	5	17.35	916	232.7	6.89		0.19	66.6	6.37
497.99	0839		well	DRY						
490.80	0805		START							4/7/10
494.97	0822	1	14.82	908	190.6	6.93		0.38	75.7	7.61
495.75	0825	2	15.65	909	189.9	6.93		0.26	66.4	6.58
496.60	0828	3	16.33	914	189.6	6.93		0.43	59.7	5.82
	0829		Sampling							

COC number(s): 612857

Sample number(s): 088565, 088566

~4.00 gals purged from tubing
0828
4-7-10
0820

Purge Volume Calculations

Well Diameter

2" well: 0.16 gal/ft X____ (height of water column) = _____ gallons
4" well: 0.65 gal/ft X____ (height of water column) = _____ gallons
6" well: 1.47 gal/ft X____ (height of water column) = _____ gallons

Tubing Diameter

1/4" OD: 2.4 ml/ft X____ (length of tubing) = _____ millileters
3/8" OD: 9.7 ml/ft X____ (length of tubing) = _____ millileters
1/2" ODl: 2 1.6 ml/ft X____ (length of tubing)) = _____ millileters

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: CWL-GWM	Project No.:
Well I.D.: CWL-BW3	Date: 4-1-10
Weather	
Method: X Portable pump _____ Dedicated pump	Pump depth: 506.5'

PURGE MEASUREMENTS

Depth to Water (FT)	Time 24 hr	Vol L gls	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	DO mg/L ~~Color and appearance~~
504.07	0823	—	START							
506.35	0836	3.25	purged in tubing vol, No GW to surface							
506.35	0836	well	DRY							
	0919	START								
	0922		17.72	862	79.5	7.02		4.39	62.3	5.90
	0923	sampling								

COC number(s):	612854
Sample number(s):	088556

Purge Volume Calculations

Well Diameter

2" well: 0.16 gal/ft X____ (height of water column) = _____ gallons
4" well: 0.65 gal/ft X____ (height of water column) = _____ gallons
6" well: 1.47 gal/ft X____ (height of water column) = _____ gallons

Tubing Diameter

1/4" OD: 2.4 ml/ft X____ (length of tubing) = _____ millileters
3/8" OD: 9.7 ml/ft X____ (length of tubing) = _____ millileters
1/2" ODI: 2 1.6 ml/ft X____ (length of tubing)) = _____ millileters

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: CWL-GWM	Project No.:
Well I.D.: CWL-BW4A	Date: 4-2-10
Weather	
Method: X Portable pump _____ Dedicated pump	Pump depth: 506.9'

PURGE MEASUREMENTS

Depth to Water (FT)	Time 24 hr	Vol. L gls	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	DO mg/L ~~Color and appearance~~
504.86	0813		START							
506.89	0820	2.5	gal.	purged	NO	G.W.	to	Surface!		
	0939		START							
	0941	2	14.03	948	163.4	6.72		0.52	82.7	8.40
	0942	sampling								
COC number(s):										
Sample number(s):										

Purge Volume Calculations

Well Diameter

2" well: 0.16 gal/ft X____ (height of water column) = _____ gallons
4" well: 0.65 gal/ft X____ (height of water column) = _____ gallons
6" well: 1.47 gal/ft X____ (height of water column) = _____ gallons

Tubing Diameter

1/4" OD: 2.4 ml/ft X____ (length of tubing) = _____ millileters
3/8" OD: 9.7 ml/ft X____ (length of tubing) = _____ millileters
1/2" ODl: 2 1.6 ml/ft X____ (length of tubing)) = _____ millileters

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: CWL-GWM	Project No.:
Well I.D.: CWL-MW2BU	Date: 4-2-10
Weather	
Method: _____ Portable pump ___X___ Dedicated pump QED	Pump depth: 495.05'

PURGE MEASUREMENTS

Depth to Water (FT)	Time 24 hr	Vol. L gls	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	DO mg/L ~~Color and appearance~~
493.72	0843		START							
unable	0904	0	NO H_2O to surface							
COC number(s):										
Sample number(s):										

Purge Volume Calculations

Well Diameter

2" well: 0.16 gal/ft X____ (height of water column) = _____ gallons
4" well: 0.65 gal/ft X____ (height of water column) = _____ gallons
6" well: 1.47 gal/ft X____ (height of water column) = _____ gallons

Tubing Diameter

1/4" OD: 2.4 ml/ft X____ (length of tubing) = _____ millileters
3/8" OD: 9.7 ml/ft X____ (length of tubing) = _____ millileters
1/2" ODl: 2 1.6 ml/ft X____ (length of tubing)) = _____ millileters

ATTACHMENT A-1

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			SNL/NM Project No.: 125778.10.11.01			
Contractor Project Name:			Contractor Project No.:			
pH, TEMPERATURE Meter						
Make & Model: YSI 6920 V2			Serial No.: 08H 100031			
PH Probe Model No.: YSI 6565			Serial No.: YSI 6565 03A			
pH Calibrated to (std): 7.00			pH sloped to (std): 10.00			
Reference Value:	4.00		7.00		10.00	
	Value	Temp	Value	Temp	Value	Temp
1. Time: 0704	4.01	20.6	7.00	20.5	10.01	20.6
2. Time: 1030	4.02	20.9	7.00	20.9	9.99	20.9
3. Time:						
4. Time:						
Standard Lot No.: 031187						
Expiration Date: 12/2010						

Ec Probe Model No.: YSI6560			Serial No.: 08G 100420
Reference Value: 1278 @ 20C			Standard Lot #: 1710737
	Value	Temp	Expiration Date:12/ 2010
1. Time: 0702	1278	20.6	
2. Time: 1026	1279	20.9	
3. Time:			
4. Time:			

Comments:	
Calibration Done by: RL	Date:

ATTACHMENT A-2

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			Project No.: 125778.10.11.01
ORP Probe Model No.: YSI 6565			Serial No.: YSI 6565 03A
Reference value: 200.0			Standard Lot No. A6349
	Value	Temp	Expiration Date: 12/2010
1. Time: 0659	200.1	20.7	
2. Time: 1027	200.2	20.9	
3. Time:			
4. Time			

TURBIDIMETER	
Make & Model No.: HACH 2100P	Serial No.: 030900032367

Reference Value	.1	20	100	800
Standard Lot No. A5265				
1. Time 0827	.10	20.1	101	799
2. Time 0940	.11	20.2	101	796
3. Time				
4. Time				

Comments:	
Calibration Done By: RL	Date: 4-1-10

ATTACHMENT A-3

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 125778.10.11.01
Contractor Project Name:	Contractor Project No.:

ORGANIC VAPOR DETECTOR

Make & Model:		Serial No.:
Cal. Gas: Isobutylene	Conc., ppm:	Bulb, eV:

1. Time:	Value:	Span Setting:
2.		
3.		
4.		

DISSOLVED OXYGEN METER

Make & Model: YSI 6920 V2		Serial No.: YSI 6150 ROX	
DO Probe Serial No.: 08G101303			
Calibration value:	81% Air Saturation @ 5200 ft./ DO mg/L		Atmospheric Pressure in/Hg
1. Time: 0658	79.9	6.99	24.02
2. Time: 1024	80.1	7.06	24.00
3. Time:			
4. Time:			

Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.

Calibration done by: RL	Date: 4-1-10

ATTACHMENT A-1

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 125778.10.11.01
Contractor Project Name:	Contractor Project No.:

pH, TEMPERATURE Meter

Make & Model: YSI 6920 V2			Serial No.: 08H 100031			
PH Probe Model No.: YSI 6565			Serial No.: YSI 6565 03A			
pH Calibrated to (std): 7.00			pH sloped to (std): 10.00			
Reference Value:	4.00		7.00		10.00	
	Value	Temp	Value	Temp	Value	Temp
1. Time: 0648	4.01	20.2	7.00	20.2	10.01	20.2
2. Time: 1000	4.01	20.7	7.00	20.7	10.00	20.7
3. Time:						
4. Time:						
Standard Lot No.: 031187						
Expiration Date: 12/2010						

Ec Probe Model No.: YSI6560			Serial No.: 08G 100420
Reference Value: 1278 @ 20C			Standard Lot #: 1710737
	Value	Temp	Expiration Date:12/ 2010
1. Time: 0645	1278	20.2	
2. Time: 0956	1278	20.7	
3. Time:			
4. Time:			

Comments:

Calibration Done by: RL	Date: 4-2-10

ATTACHMENT A-2

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			Project No.: 125778.10.11.01
ORP Probe Model No.: YSI 6565			Serial No.: YSI 6565 03A
Reference value: 200.0			Standard Lot No. A6349
	Value	Temp	Expiration Date: 12/2010
1. Time: 0644	200.2	20.2	
2. Time: 0958	200.6	20.7	
3. Time:			
4. Time			

TURBIDIMETER				
Make & Model No.: HACH 2100P			Serial No.: 030900032367	
Reference Value	.1	20	100	800
Standard Lot No. A5265				
1. Time 0768	.11	20.1	100	798
2. Time 0944.	.10	20.2	101	801
3. Time				
4. Time				

Comments:	
Calibration Done By: RL	Date: 4-2-10

ATTACHMENT A-3

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 125778.10.11.01
Contractor Project Name:	Contractor Project No.:

ORGANIC VAPOR DETECTOR

Make & Model:		Serial No.:
Cal. Gas: Isobutylene	Conc., ppm:	Bulb, eV:

1. Time:	Value:	Span Setting:
2.		
3.		
4.		

DISSOLVED OXYGEN METER

Make & Model: YSI 6920 V2		Serial No.: YSI 6150 ROX	
DO Probe Serial No.: 08G101303			
Calibration value:	81% Air Saturation @ 5200 ft./ DO mg/L		Atmospheric Pressure in/Hg
1. Time: 0643	81.2	7.34	24.17
2. Time: 0955	81.4	7.36	24.19
3. Time:			
4. Time:			

Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.

Calibration done by: RL	Date: 4-2-10

ATTACHMENT A-1

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 125778.10.11.01
Contractor Project Name:	Contractor Project No.:
pH, TEMPERATURE Meter	
Make & Model: YSI 6920 V2	Serial No.: 08H 100031
PH Probe Model No.: YSI 6565	Serial No.: YSI 6565 03A
pH Calibrated to (std): 7.00	pH sloped to (std): 10.00

Reference Value:	4.00		7.00		10.00	
	Value	Temp	Value	Temp	Value	Temp
1. Time: 0643	4.01	20.2	7.01	20.2	9.99	20.2
2. Time: 1103	4.03	20.9	7.01	20.9	10.01	20.9
3. Time:						
4. Time:						
Standard Lot No.: 031187						
Expiration Date: 12/2010						

Ec Probe Model No.: YSI6560	Serial No.: 08G 100420
Reference Value: 1278 @ 20C	Standard Lot #: 1710737
	Expiration Date:12/ 2010

	Value	Temp
1. Time: 0638	1279	20.2
2. Time: 1058	1280	20.9
3. Time:		
4. Time:		

Comments:

Calibration Done by: RL	Date: 4-5-10

ATTACHMENT A-2

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	Project No.: 125778.10.11.01
ORP Probe Model No.: YSI 6565	Serial No.: YSI 6565 03A
Reference value: 200.0	Standard Lot No. A6349
	Expiration Date: 12/2010

	Value	Temp
1. Time: 0640	200.2	20.2
2. Time: 1100	201.0	20.9
3. Time:		
4. Time		

TURBIDIMETER

Make & Model No.: HACH 2100P	Serial No.: 030900032367

Reference Value	.1	20	100	800
Standard Lot No. A5265				
1. Time 0759	.11	20.1	102	799
2. Time 1001	.10	20.1	101	796
3. Time				
4. Time				

Comments:

Calibration Done By: RL	Date: 4-5-10

ATTACHMENT A-3

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 125778.10.11.01
Contractor Project Name:	Contractor Project No.:

ORGANIC VAPOR DETECTOR

Make & Model:		Serial No.:
Cal. Gas: Isobutylene	Conc., ppm:	Bulb, eV:
1. Time:	Value:	Span Setting:
2.		
3.		
4.		

DISSOLVED OXYGEN METER

Make & Model: YSI 6920 V2		Serial No.: YSI 6150 ROX	
DO Probe Serial No.: 08G101303			
Calibration value:	81% Air Saturation @ 5200 ft./ DO mg/L		Atmospheric Pressure in/Hg
1. Time: 0637	80.9	7.17	24.25
2. Time: 1056	81.0	7.20	24.25
3. Time:			
4. Time:			
Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.			
Calibration done by: RL		Date: 4-5-10	

ATTACHMENT A-1

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 125778.10.11.01
Contractor Project Name:	Contractor Project No.:

pH, TEMPERATURE Meter

Make & Model: YSI 6920 V2			Serial No.: 08H 100031			
PH Probe Model No.: YSI 6565			Serial No.: YSI 6565 03A			
pH Calibrated to (std): 7.00			pH sloped to (std): 10.00			
Reference Value:	4.00		7.00		10.00	
	Value	Temp	Value	Temp	Value	Temp
1. Time: 0647	4.01	19.9	7.01	19.9	10.00	19.9
2. Time: 1056	4.01	20.1	7.00	20.1	10.01	20.1
3. Time: 0653	4.03	19.6	7.01	19.6	9.99	19.6
4. Time: 1001	4.01	20.0	7.00	20.0	9.99	20.0
Standard Lot No.: 031187						
Expiration Date: 12/2010						

Ec Probe Model No.: YSI6560			Serial No.: 08G 100420
Reference Value: 1278 @ 20C			Standard Lot #: 1710737
	Value	Temp	Expiration Date:12/ 2010
1. Time: 0643	1278	19.9	
2. Time: 1051	1279	20.1	
3. Time: 0649	1281	19.6	
4. Time: 0957	1279	20.0	

Comments:

Calibration Done by: RL RL	Date: 4-6-10 4-7-10

ATTACHMENT A-2

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	Project No.: 125778.10.11.01
ORP Probe Model No.: YSI 6565	Serial No.: YSI 6565 03A
Reference value: 200.0	Standard Lot No. A6349

	Value	Temp	Expiration Date: 12/2010
1. Time: 0645	200.7	19.9	
2. Time: 1054	200.6	20.1	
3. Time: 0651	199.8	19.6	
4. Time 0958	199.9	20.0	

TURBIDIMETER

Make & Model No.: HACH 2100P	Serial No.: 030900032367

Reference Value	.1	20	100	800
Standard Lot No. A5265				
1. Time 0811	.10	20.1	100	797
2. Time 0847	.10	20.2	101	798
3. Time 0800	.11	20.2	100	796
4. Time 0839	.10	20.1	101	798

Comments:

Calibration Done By: RL RL	Date: 4-6-10 4-7-10

ATTACHMENT A-3

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 125778.10.11.01
Contractor Project Name:	Contractor Project No.:

ORGANIC VAPOR DETECTOR

Make & Model:		Serial No.:
Cal. Gas: Isobutylene	Conc., ppm:	Bulb, eV:

1. Time:	Value:	Span Setting:
2.		
3.		
4.		

DISSOLVED OXYGEN METER

Make & Model: YSI 6920 V2	Serial No.: YSI 6150 ROX
DO Probe Serial No.: 08G101303	

Calibration value:	81% Air Saturation @ 5200 ft./ DO mg/L		Atmospheric Pressure in/Hg
1. Time: 0641	81.0	7.20	24.44
2. Time: 1050	81.2	7.26	24.42
3. Time: 0647	80.8	7.11	24.50
4. Time: 0955	81.1	7.14	24.57

Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.

Calibration done by: RL RL	Date: 4-6-10 4-7-10

ATTACHMENT A-1

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 125778.10.11.01
Contractor Project Name:	Contractor Project No.:

pH, TEMPERATURE Meter

Make & Model: YSI 6920 V2	Serial No.: 08H 100031
PH Probe Model No.: YSI 6565	Serial No.: YSI 6565 03A
pH Calibrated to (std): 7.00	pH sloped to (std): 10.00

Reference Value:	4.00		7.00		10.00	
	Value	Temp	Value	Temp	Value	Temp
1. Time: 0644	3.99	20.6	7.00	20.6	10.01	20.6
2. Time: 1001	4.00	20.8	6.99	20.8	10.01	20.8
3. Time: 0637	3.99	20.1	6.99	20.1	10.00	20.1
4. Time: 0954	4.00	20.2	7.00	20.2	10.00	20.2
Standard Lot No.: 031187						
Expiration Date: 12/2010						

Ec Probe Model No.: YSI6560	Serial No.: 08G 100420
Reference Value: 1278 @ 20C	Standard Lot #: 1710737

	Value	Temp	Expiration Date: 12/ 2010
1. Time: 0639	1278	20.6	
2. Time: 0957	1279	20.8	
3. Time: 0634	1276	20.1	
4. Time: 0958	1277	20.2	

Comments:

Calibration Done by: RL RL	Date: 4-8-10 4-9-10

ATTACHMENT A-2

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	Project No.: 125778.10.11.01
ORP Probe Model No.: YSI 6565	Serial No.: YSI 6565 03A
Reference value: 200.0	Standard Lot No. A6349
	Expiration Date: 12/2010

	Value	Temp
1. Time: 0641	200.8	20.6
2. Time: 0959	200.6	20.8
3. Time: 0632	201.0	20.1
4. Time 0952	200.8	20.2

TURBIDIMETER

Make & Model No.: HACH 2100P	Serial No.: 030900032367

Reference Value	.1	20	100	800
Standard Lot No. A5265				
1. Time 0759	.11	20.2	101	797
2. Time 0837	.10	20.1	102	795
3. Time 0754	.11	20.1	100	796
4. Time 0848	.11	20.2	102	798

Comments:

Calibration Done By: RL RL	Date: 4-8-10 4-9-10

ATTACHMENT A-3

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 125778.10.11.01
Contractor Project Name:	Contractor Project No.:

ORGANIC VAPOR DETECTOR

Make & Model:		Serial No.:
Cal. Gas: Isobutylene	Conc., ppm:	Bulb, eV:

1. Time:	Value:	Span Setting:
2.		
3.		
4.		

DISSOLVED OXYGEN METER

Make & Model: YSI 6920 V2		Serial No.: YSI 6150 ROX	
DO Probe Serial No.: 08G101303			
Calibration value:	81% Air Saturation @ 5200 ft./ DO mg/L		Atmospheric Pressure in/Hg
1. Time: 0637	81.7	7.34	24.40
2. Time: 0954	81.6	7.34	24.40
3. Time: 0630	81.8	7.62	24.54
4. Time: 0949	81.6	7.60	24.52
Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.			
Calibration done by: RL RL		Date: 4-8-10 4-9-10	

ATTACHMENT A-1

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 125778.10.11.01
Contractor Project Name:	Contractor Project No.:

pH, TEMPERATURE Meter

Make & Model: YSI 6920 V2			Serial No.: 08H 100031			
PH Probe Model No.: YSI 6565			Serial No.: YSI 6565 03A			
pH Calibrated to (std): 7.00			pH sloped to (std): 10.00			
Reference Value:	4.00		7.00		10.00	
	Value	Temp	Value	Temp	Value	Temp
1. Time: 0645	3.99	20.7	7.00	20.7	10.01	20.7
2. Time: 1119	4.02	20.9	7.01	20.9	10.01	20.9
3. Time:						
4. Time:						
Standard Lot No.: 031187						
Expiration Date: 12/2010						

Ec Probe Model No.: YSI6560			Serial No.: 08G 100420
Reference Value: 1278 @ 20C			Standard Lot #: 1710737
	Value	Temp	Expiration Date:12/ 2010
1. Time: 0640	1278	20.7	
2. Time: 1115	1281	20.9	
3. Time:			
4. Time:			

Comments:

Calibration Done by: RL	Date: 4-12-10

ATTACHMENT A-2

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	Project No.: 125778.10.11.01
ORP Probe Model No.: YSI 6565	Serial No.: YSI 6565 03A
Reference value: 200.0	Standard Lot No. A6349

	Value	Temp	
1. Time: 0642	200.7	20.7	Expiration Date: 12/2010
2. Time: 1117	201.1	20.9	
3. Time:			
4. Time			

TURBIDIMETER

Make & Model No.: HACH 2100P	Serial No.: 030900032367

Reference Value	.1	20	100	800
Standard Lot No. A5265				
1. Time 0817	.10	20.1	101	797
2. Time 1011	.11	20.2	101	796
3. Time				
4. Time				

Comments:

Calibration Done By: RL	Date: 4-12-10

ATTACHMENT A-3

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 125778.10.11.01
Contractor Project Name:	Contractor Project No.:

ORGANIC VAPOR DETECTOR

Make & Model:		Serial No.:
Cal. Gas: Isobutylene	Conc., ppm:	Bulb, eV:

1. Time:	Value:	Span Setting:
2.		
3.		
4.		

DISSOLVED OXYGEN METER

Make & Model: YSI 6920 V2	Serial No.: YSI 6150 ROX
DO Probe Serial No.: 08G101303	

Calibration value:	81% Air Saturation @ 5200 ft./ DO mg/L		Atmospheric Pressure in/Hg
1. Time: 0638	81.4	7.28	24.32
2. Time: 1114	81.6	7.26	24.33
3. Time:			
4. Time:			

Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.

Calibration done by: RL	Date: 4-12-10

ATTACHMENT A-1

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 125778.10.11.01
Contractor Project Name:	Contractor Project No.:

pH, TEMPERATURE Meter

Make & Model: YSI 6920 V2			Serial No.: 08H 100031			
PH Probe Model No.: YSI 6565			Serial No.: YSI 6565 03A			
pH Calibrated to (std): 7.00			pH sloped to (std): 10.00			
Reference Value:	4.00		7.00		10.00	
	Value	Temp	Value	Temp	Value	Temp
1. Time: 0647	4.01	20.1	7.01	20.1	9.99	20.1
2. Time: 1057	4.02	20.6	7.01	20.6	10.01	20.6
3. Time:						
4. Time:						
Standard Lot No.: 031187						
Expiration Date: 12/2010						

Ec Probe Model No.: YSI6560			Serial No.: 08G 100420
Reference Value: 1278 @ 20C			Standard Lot #: 1710737
	Value	Temp	Expiration Date:12/ 2010
1. Time: 0642	1279	20.1	
2. Time: 1052	1280	20.6	
3. Time:			
4. Time:			

Comments:

Calibration Done by: RL	Date: 4-13-10

ATTACHMENT A-2

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			Project No.: 125778.10.11.01
ORP Probe Model No.: YSI 6565			Serial No.: YSI 6565 03A
Reference value: 200.0			Standard Lot No. A6349
	Value	Temp	Expiration Date: 12/2010
1. Time: 0644	199.9	20.1	
2. Time: 1054	200.4	20.6	
3. Time:			
4. Time			

TURBIDIMETER	
Make & Model No.: HACH 2100P	Serial No.: 030900032367

Reference Value	.1	20	100	800
Standard Lot No. A5265				
1. Time 0820	.10	20.2	102	799
2. Time 0941	.11	20.1	101	801
3. Time				
4. Time				

Comments:	
Calibration Done By: RL	Date: 4-13-10

ATTACHMENT A-3

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 125778.10.11.01
Contractor Project Name:	Contractor Project No.:

ORGANIC VAPOR DETECTOR

Make & Model:		Serial No.:
Cal. Gas: Isobutylene	Conc., ppm:	Bulb, eV:
1. Time:	Value:	Span Setting:
2.		
3.		
4.		

DISSOLVED OXYGEN METER

Make & Model: YSI 6920 V2		Serial No.: YSI 6150 ROX	
DO Probe Serial No.: 08G101303			
Calibration value:	81% Air Saturation @ 5200 ft./ DO mg/L		Atmospheric Pressure in/Hg
1. Time: 0641	81.9	7.33	24.45
2. Time: 1050	81.7	7.31	24.47
3. Time:			
4. Time:			
Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.			
Calibration done by: RL		Date: 4-13-10	

ATTACHMENT A-1

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 125778.10.11.01
Contractor Project Name:	Contractor Project No.:

pH, TEMPERATURE Meter

Make & Model: YSI 6920 V2			Serial No.: 08H 100031			
PH Probe Model No.: YSI 6565			Serial No.: YSI 6565 03A			
pH Calibrated to (std): 7.00			pH sloped to (std): 10.00			
Reference Value:	4.00		7.00		10.00	
	Value	Temp	Value	Temp	Value	Temp
1. Time: 0652	4.01	19.8	7.01	19.8	9.99	19.8
2. Time: 1409	4.03	21.0	7.00	21.0	10.01	21.0
3. Time:						
4. Time:						
Standard Lot No.: 031187						
Expiration Date: 12/2010						

Ec Probe Model No.: YSI6560			Serial No.: 08G 100420
Reference Value: 1278 @ 20C			Standard Lot #: 1710737
	Value	Temp	Expiration Date:12/ 2010
1. Time: 0649	1277	19.8	
2. Time: 1404	1283	21.0	
3. Time:			
4. Time:			

Comments:

Calibration Done by: RL	Date: 4-14-10

ATTACHMENT A-2

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	Project No.: 125778.10.11.01
ORP Probe Model No.: YSI 6565	Serial No.: YSI 6565 03A
Reference value: 200.0	Standard Lot No. A6349

	Value	Temp	
1. Time: 0650	199.8	19.8	Expiration Date: 12/2010
2. Time: 1406	200.6	21.0	
3. Time:			
4. Time			

TURBIDIMETER

Make & Model No.: HACH 2100P	Serial No.: 030900032367

Reference Value	.1	20	100	800
Standard Lot No. A5265				
1. Time 0806	.09	20.0	101	796
2. Time 1309	.10	20.2	102	798
3. Time				
4. Time				

Comments:

Calibration Done By: RL	Date: 4-14-10

ATTACHMENT A-3

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 125778.10.11.01
Contractor Project Name:	Contractor Project No.:

ORGANIC VAPOR DETECTOR

Make & Model:		Serial No.:
Cal. Gas: Isobutylene	Conc., ppm:	Bulb, eV:
1. Time:	Value:	Span Setting:
2.		
3.		
4.		

DISSOLVED OXYGEN METER

Make & Model: YSI 6920 V2		Serial No.: YSI 6150 ROX	
DO Probe Serial No.: 08G101303			
Calibration value:	81% Air Saturation @ 5200 ft./ DO mg/L		Atmospheric Pressure in/Hg
1. Time: 0647	82.1	7.52	24.58
2. Time: 1401	82.0	7.50	24.59
3. Time:			
4. Time:			
Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.			
Calibration done by: RL		Date: 4-14-10	

Portable Pump and Tubing / Water Level Indicator
Decontamination Log Form

Project Name: CWL	Monitoring Well ID # CWL-BW3	Date: 04/01/10

The following equipment was decontaminated at completion of sampling activities in accordance with FOP-05-03

Pump and Tubing Bundle ID #: Pump 2	Water Level Indicator ID#: 56159
Personnel Performing Decontamination: Print Name: William Gibson Initial: WJG Print Name: Robert Lynch Initial: RL	Personnel Performing Decontamination: Print Name William Gibson Initial: WJG Print Name: Robert Lynch Initial RL

Condition of Equipment

Pump: Good Tubing Bundle: Great Water Level Indicator: Good

List of Decontamination Materials

Distilled or **Deionized** (circle one) **Source: Culligan** **Lot Number: 032310**	**HNO_3** **Grade: Reagent** **UN #: 2031** **Manufacture: Fisher** **Lot Number: 002735**

Portable Pump and Tubing / Water Level Indicator
Decontamination Log Form

Project Name: CWL	Monitoring Well ID # CWL-BW~~2~~4A RL	Date: 04/02/10

The following equipment was decontaminated at completion of sampling activities in accordance with FOP-05-03

Pump and Tubing Bundle ID #: Pump 2	Water Level Indicator ID#: 56159
Personnel Performing Decontamination: Print Name: William Gibson WJG Initial: Print Name: Robert Lynch RL Initial:	Personnel Performing Decontamination: Print Name William Gibson WJG Initial: Print Name: Robert Lynch RL Initial

Condition of Equipment

Pump: Good Tubing Bundle: Great Water Level Indicator: Good

List of Decontamination Materials

Distilled or **Deionized** (circle one) **Source: Culligan** **Lot Number: 032310**	**HNO_3** **Grade: Reagent** **UN #: 2031** **Manufacture: Fisher** **Lot Number: 002735**

Portable Pump and Tubing / Water Level Indicator
Decontamination Log Form

Project Name: CWL	Monitoring Well ID # CWL-MW4	Date: 04/05/10

The following equipment was decontaminated at completion of sampling activities in accordance with FOP-05-03

Pump and Tubing Bundle ID #: Pump 2	Water Level Indicator ID#: 56159
Personnel Performing Decontamination: Print Name: Alfred Santillanes Initial: AS Print Name: Robert Lynch Initial: RL	Personnel Performing Decontamination: Print Name Alfred Santillanes Initial: AS Print Name: Robert Lynch Initial RL

Condition of Equipment

Pump: Good Tubing Bundle: Great Water Level Indicator: Good

List of Decontamination Materials

Distilled or **Deionized** (circle one) **Source: Culligan** **Lot Number: 032310**	**HNO_3** **Grade: Reagent** **UN #: 2031** **Manufacture: Fisher** **Lot Number: 002735**

Portable Pump and Tubing / Water Level Indicator
Decontamination Log Form

Project Name: CWL	Monitoring Well ID # CWL-MW6U	Date: 04/07/10

The following equipment was decontaminated at completion of sampling activities in accordance with FOP-05-03

Pump and Tubing Bundle ID #: Pump 2	Water Level Indicator ID#: 56159
Personnel Performing Decontamination: Print Name: William Gibson Initial: Print Name: Robert Lynch Initial:	Personnel Performing Decontamination: Print Name William Gibson Initial: Print Name: Robert Lynch Initial

Condition of Equipment

Pump: Good Tubing Bundle: Great Water Level Indicator: Good

List of Decontamination Materials

Distilled or **Deionized** (circle one) **Source: Culligan** **Lot Number: 032310**	**HNO_3** **Grade: Reagent** **UN #: 2031** **Manufacture: Fisher** **Lot Number: 002735**

Portable Pump and Tubing / Water Level Indicator
Decontamination Log Form

Project Name: CWL	Monitoring Well ID # CWL-MW5U	Date: 04/08/10

The following equipment was decontaminated at completion of sampling activities in accordance with FOP-05-03

Pump and Tubing Bundle ID #: Pump 2	Water Level Indicator ID#: 56159
Personnel Performing Decontamination: Print Name: Alfred Santillanes Initial: Print Name: Robert Lynch Initial:	Personnel Performing Decontamination: Print Name Alfred Santillanes Initial: Print Name: Robert Lynch Initial

Condition of Equipment

Pump: Good Tubing Bundle: Great Water Level Indicator: Good

List of Decontamination Materials

Distilled or **Deionized** (circle one) **Source: Culligan** **Lot Number: 032310**	**HNO_3** **Grade: Reagent** **UN #: 2031** **Manufacture: Fisher** **Lot Number: 002735**

Portable Pump and Tubing / Water Level Indicator
Decontamination Log Form

Project Name: CWL	Monitoring Well ID # CWL-MW~~1~~2BL TA	Date: 04/15/10

The following equipment was decontaminated at completion of sampling activities in accordance with FOP-05-03

Pump and Tubing Bundle ID #: Pump 2	Water Level Indicator ID#: 56159
Personnel Performing Decontamination: Print Name: Alfred Santillanes Initial: Print Name: Robert Lynch Initial:	Personnel Performing Decontamination: Print Name Alfred Santillanes ~~Initial~~: Print Name: Robert Lynch Initial

Condition of Equipment

Pump: Good Tubing Bundle: Great Water Level Indicator: Good

List of Decontamination Materials

Distilled or **Deionized** (circle one) **Source: Culligan** **Lot Number: 032310**	**HNO_3** **Grade: Reagent** **UN #: 2031** **Manufacture: Fisher** **Lot Number: 002735**

ER WASTE GENERATION LOG

(Version: 5/2/01) Return completed form with a copy of the Chain of Custody toCraig Wood MS-1087 Fax 284-2616

Form Generator: William Gibson **Phone:** 284-5232 **Task Leader:** Don Schofield

Signature: William J Gibson To the best of my knowledge this information is correct & accurate.

Container I.D. # (site-date-sequence)	CWL-BW3-040110		CWL-BW4A-040210		CWL-040110-PPE	
Container Certification # (i.e.SNL/NM######)	NA		NA		NA	
Project Name	CWL-GWM		CWL-GWM		CWL-GWM	
Site Number	NA		NA		NA	
Waste Mgt. Case #	125778.10.11.01		125778.10.11.01		125778.10.11.01	
Initial Label Type	Haz-Waste		Haz-Waste		Haz-Waste	
Waste Matrix (i.e. Water, Cuttings, Soil, Samples, Metal, etc.)	Purge/Decon water		Purge/Decon Water		PPE gloves & wipes	
Container Type / Vol (always use Certified containers)	CHPD	55gal.	CHPD	55gal.	Bucket	5 gal.
Volume of Waste	35 gals		35 gals		3-gal	
Total Container Weight	350 lbs.		350 lbs.		5 lbs.	
Waste Char. Samples (COC#: Sample#-Fraction) **SMO** Hazardous [ ]	COC# 612854 SMO# 088556		COC# 612855 SMO# 088558		COC# SMO#	
SMO Radioactive [ ]	NA		NA		NA	
ERCL Haz [ ] Rad [ ]	NA		NA		NA	
RPSD Rad [ ] (Amir's on-site Rad Lab)	NA		NA		NA	
Container Exterior RAD SURVEY #	Survey: NA Swipes:		Survey: NA Swipes:		Survey: NA Swipes:	
Container Contents RAD SURVEY #	Survey: NA Swipes:		Survey: NA Swipes:		Survey: NA Swipes:	
Accumulation Date	Start 04/01/10 Full 04/01/10		Start 04/02/10 Full 04/02/10		Start 04/01/10 Full 04/14/10	
Date Moved to Waste Accumulation Area	04/01/10		04/02/10		04/14/10	
Accumulation Area Name	9925		9925		9925	
ERwm Memo #						
Comments	Decon after CWL-BW3 purge, CoC 612854, Well dry at 3 gal.		Decon after CWL-BW4A Purge, CoC 612855, Well dry at 2.5 gal.			

(OHSD)= open head steel drum; (CHSD)= closed head steel drum; (CHPD)= closed head poly drum; (OHPD)= open head poly drum; (OHPB)= open head poly bucket; (RL-Off)= roll off; (WGLR)= wrangler bag; (744)= 7'x4'x4' steel box; (BB)= Burrito bag.

NOTE: Complete all information, mark boxes NA if Not Applicable. Shaded area is for ERwm use only.

ER WASTE GENERATION LOG

(Version: 5/2/01) Return completed form with a copy of the Chain of Custody toCraig Wood MS-1087 Fax 284-2616

Form Generator: Alfred Santillanes **Phone:** 284-5232 **Task Leader:** Don Schofield

Signature: _____ To the best of my knowledge this information is correct & accurate.

Container I.D. # (site-date-sequence)	CWL-MW4-040510		CWL-040510			
Container Certification # (i.e.SNL/NM#####)	NA		NA			
Project Name	CWL-GWM		CWL-GWM			
Site Number	NA		NA			
Waste Mgt. Case #	125778.10.11.01		125778.10.11.01			
Initial Label Type	HAZ-Waste		HAZ-Waste			
Waste Matrix (i.e. Water, Cuttings, Soil, Samples, Metal, etc.)	Purge water		Decon water			
Container Type / Vol (always use Certified containers)	CHPD	55gal.	CHPD	55gal.		
Volume of Waste	15 gals		30 gals			
Total Container Weight	150 lbs.		300 lbs.			
Waste Char. Samples (COC#: Sample#-Fraction) **SMO** Hazardous [ ]	COC# 612855 SMO# 088560		COC# 612855 SMO# 088560		COC# SMO#	
SMO Radioactive [ ]	NA		NA		NA	
ERCL Haz [ ] Rad [ ]	NA		NA		NA	
RPSD Rad [ ] (Amir's on-site Rad Lab)	NA		NA		NA	
Container Exterior RAD SURVEY #	Survey: NA Swipes:		Survey: NA Swipes:		Survey: NA Swipes:	
Container Contents RAD SURVEY #	Survey: NA Swipes:		Survey: NA Swipes:		Survey: NA Swipes:	
Accumulation Date	Start 04/05/10 Full 04/05/10		Start 04/05/10 Full 04/05/10		Start Full	
Date Moved to Waste Accumulation Area	04/05/10		04/05/10			
Accumulation Area Name	9925		9925		9925	
ERwm Memo #						
Comments			Decon pump after CWL-MW4 purge;CoC 612855			

(OHSD)= open head steel drum; (CHSD)= closed head steel drum; (CHPD)= closed head poly drum; (OHPD)= open head poly drum; (OHPB)= open head poly bucket; (RL-Off)= roll off; (WGLR)= wrangler bag; (744)= 7'x4'x4' steel box; (BB)= Burrito bag.

NOTE: Complete all information, mark boxes NA if Not Applicable. Shaded area is for ERwm use only.

ER WASTE GENERATION LOG

(Version: 5/2/01) Return completed form with a copy of the Chain of Custody toCraig Wood MS-1087 Fax 284-2616

Form Generator: William Gibson **Phone:** 284-5232 **Task Leader:** Don Schofield

Signature: _____ To the best of my knowledge this information is correct & accurate.

Container I.D. # (site-date-sequence)	CWL-MW6U-040610		CWL-040710			
Container Certification # (i.e.SNL/NM######)	NA		NA			
Project Name	CWL-GWM		CWL-GWM			
Site Number	NA		NA			
Waste Mgt. Case #	125778.10.11.01		125778.10.11.01			
Initial Label Type	HAZ-Waste		HAZ-Waste			
Waste Matrix (i.e. Water, Cuttings, Soil, Samples, Metal, etc.)	Purge water		Decon water			
Container Type / Vol (always use Certified containers)	CHPD	55gal.	CHPD	55gal.		
Volume of Waste	16 gals		30 gals			
Total Container Weight	160 lbs.		300 lbs.			
Waste Char. Samples (COC#: Sample#-Fraction) SMO Hazardous [ ]	COC# 612857 SMO# 087865, 087866		COC# 612857 SMO# 087865, 087866		COC# SMO#	
SMO Radioactive [ ]	NA		NA		NA	
ERCL Haz [ ] Rad [ ]	NA		NA		NA	
RPSD Rad [ ] (Amir's on-site Rad Lab)	NA		NA		NA	
Container Exterior RAD SURVEY #	Survey: NA Swipes:		Survey: NA Swipes:		Survey: NA Swipes:	
Container Contents RAD SURVEY #	Survey: NA Swipes:		Survey: NA Swipes:		Survey: NA Swipes:	
Accumulation Date	Start 04/06/10 Full 04/07/10		Start 04/07/10 Full 04/07/10		Start Full	
Date Moved to Waste Accumulation Area	04/07/10		04/07/10			
Accumulation Area Name	9925		9925		9925	
ERwm Memo #						
Comments			Decon pump after CWL-MW6U purge;CoC 612857			

(OHSD)= open head steel drum; (CHSD)= closed head steel drum; (CHPD)= closed head poly drum; (OHPD)= open head poly drum; (OHPB)= open head poly bucket; (RL-Off)= roll off; (WGLR)= wrangler bag; (744)= 7'x4'x4' steel box; (BB)= Burrito bag.

NOTE: Complete all information, mark boxes NA if Not Applicable. Shaded area is for ERwm use only.

ER WASTE GENERATION LOG

(Version: 5/2/01) Return completed form with a copy of the Chain of Custody toCraig Wood MS-1087 Fax 284-2616

Form Generator: Alfred Santillanes **Phone:** 284-5232 **Task Leader:** Don Schofield

Signature: _____ To the best of my knowledge this information is correct & accurate.

Container I.D. # (site-date-sequence)	CWL-MW5U-040810		CWL-040910			
Container Certification # (i.e.SNL/NM#####)	NA		NA			
Project Name	CWL-GWM		CWL-GWM			
Site Number	NA		NA			
Waste Mgt. Case #	125778.10.11.01		125778.10.11.01			
Initial Label Type	HAZ-Waste		HAZ-Waste			
Waste Matrix (i.e. Water, Cuttings, Soil, Samples, Metal, etc.)	Purge water		Decon water			
Container Type / Vol (always use Certified containers)	CHPD	55gal.	CHPD	55gal.		
Volume of Waste	20 gals		30 gals			
Total Container Weight	200 lbs.		300 lbs.			
Waste Char. Samples (COC#: Sample#-Fraction) SMO Hazardous [ ]	COC# 612859 SMO# 088571, 088572		COC# 612859 SMO# 088571, 088572		COC# SMO#	
SMO Radioactive [ ]	NA		NA		NA	
ERCL Haz [ ] Rad [ ]	NA		NA		NA	
RPSD Rad [ ] (Amir's on-site Rad Lab)	NA		NA		NA	
Container Exterior RAD SURVEY #	Survey: NA Swipes:		Survey: NA Swipes:		Survey: NA Swipes:	
Container Contents RAD SURVEY #	Survey: NA Swipes: 08		Survey: NA Swipes:		Survey: NA Swipes:	
Accumulation Date	Start 04/~~09~~10 Full 04/09/10		Start 04/09/10 Full 04/09/10		Start Full	
Date Moved to Waste Accumulation Area	04/09/10		04/09/10			
Accumulation Area Name	9925		9925		9925	
ERwm Memo #						
Comments			Decon pump after CWL-MW5U purge;CoC 612859			

(OHSD)= open head steel drum; (CHSD)= closed head steel drum; (CHPD)= closed head poly drum; (OHPD)= open head poly drum; (OHPB)= open head poly bucket; (RL-Off)= roll off; (WGLR)= wrangler bag; (744)= 7'x4'x4' steel box; (BB)= Burrito bag.

NOTE: Complete all information, mark boxes NA if Not Applicable. Shaded area is for ERwm use only.

ER WASTE GENERATION LOG

(Version: 5/2/01) Return completed form with a copy of the Chain of Custody toCraig Wood MS-1087 Fax 284-2616

Form Generator: William Gibson **Phone:** 844-5130 **Task Leader:** Don Schofield

Signature: William Gibson To the best of my knowledge this information is correct & accurate.

Container I.D. # (site-date-sequence)	QED-CWL-MW6L-041210		QED-CWL-MW5L-041310			
Container Certification # (i.e.SNL/NM#####)	NA		NA			
Project Name	CWL-GWM		CWL-GWM			
Site Number	NA		NA			
Waste Mgt. Case #	125778.10.11.01		125778.10.11.01			
Initial Label Type	Haz-Waste		Haz-Waste			
Waste Matrix (i.e. Water, Cuttings, Soil, Samples, Metal, etc.)	Purge water		Purge water			
Container Type / Vol (always use Certified containers)	CHPD	55gal.	CHPD	55gal.		
Volume of Waste	4 gals		4 gal			
Total Container Weight	35 lbs.		32 lbs.			
Waste Char. Samples (COC#: Sample#-Fraction) **SMO** Hazardous [ ]	COC# 612860 SMO# 088575		COC# 612861 SMO# 088578			
SMO Radioactive [ ]	NA		NA		NA	
ERCL Haz [ ] Rad [ ]	NA		NA		NA	
RPSD Rad [ ] (Amir's on-site Rad Lab)	NA		NA		NA	
Container Exterior RAD SURVEY #	Survey: NA Swipes:		Survey: NA Swipes:		Survey: NA Swipes:	
Container Contents RAD SURVEY #	Survey: NA Swipes:		Survey: NA Swipes:		Survey: NA Swipes:	
Accumulation Date	Start 04/12/10 Full 04/12/10		Start 04/13/10 Full 04/13/10		Start Full	
Date Moved to Waste Accumulation Area	04/12/10		04/13/10			
Accumulation Area Name	9925		9925			
ERwm Memo #						
Comments						

(OHSD)= open head steel drum; (CHSD)= closed head steel drum; (CHPD)= closed head poly drum; (OHPD)= open head poly drum; (OHPB)= open head poly bucket; (RL-Off)= roll off; (WGLR)= wrangler bag; (744)= 7'x4'x4' steel box; (BB)= Burrito bag.

NOTE: Complete all information, mark boxes NA if Not Applicable. Shaded area is for ERwm use only.

ER WASTE GENERATION LOG

(Version: 5/2/01) Return completed form with a copy of the Chain of Custody toCraig Wood MS-1087 Fax 284-2616

Form Generator: William Gibson **Phone:** 284-5232 **Task Leader:** Don Schofield

Signature: William J Gibson To the best of my knowledge this information is correct & accurate.

Container I.D. # (site-date-sequence)	CWL-MW2BL-041410-01		CWL-MW2BL-041410-02		CWL-MW2BL-041410-03	
Container Certification # (i.e.SNL/NM######)	NA		NA		NA	
Project Name	CWL-GWM		CWL-GWM		CWL-GWM	
Site Number	NA		NA		NA	
Waste Mgt. Case #	125778.10.11.01		125778.10.11.01		125778.10.11.01	
Initial Label Type	HAZ-Waste		HAZ-Waste		HAZ-Waste	
Waste Matrix (i.e. Water, Cuttings, Soil, Samples, Metal, etc.)	Purge water		Purge water		Purge water	
Container Type / Vol (always use Certified containers)	CHPD	55gal.	CHPD	55gal.	CHPD	55gal.
Volume of Waste	40 gals		40 gals		40 gals	
Total Container Weight	400 lbs.		400 lbs.		400 lbs.	
Waste Char. Samples (COC#: Sample#-Fraction) SMO Hazardous [ ]	COC# 612862 SMO# 088581, 088582		COC# 612862 SMO# 088581, 088582		COC# 612862 SMO# 088581, 088582	
SMO Radioactive [ ]	NA		NA		NA	
ERCL Haz [ ] Rad [ ]	NA		NA		NA	
RPSD Rad [ ] (Amir's on-site Rad Lab)	NA		NA		NA	
Container Exterior RAD SURVEY #	Survey: NA Swipes:		Survey: NA Swipes:		Survey: NA Swipes:	
Container Contents RAD SURVEY #	Survey: NA Swipes:		Survey: NA Swipes:		Survey: NA Swipes:	
Accumulation Date	Start 04/14/10 Full 04/14/10		Start 04/14/10 Full 04/14/10		Start 04/14/10 Full 04/14/10	
Date Moved to Waste Accumulation Area	04/14/10		04/14/10		04/14/10	
Accumulation Area Name	9925		9925		9925	
ERwm Memo #						
Comments						

(OHSD)= open head steel drum; (CHSD)= closed head steel drum; (CHPD)= closed head poly drum; (OHPD)= open head poly drum; (OHPB)= open head poly bucket; (RL-Off)= roll off; (WGLR)= wrangler bag; (744)= 7'x4'x4' steel box; (BB)= Burrito bag.

NOTE: Complete all information, mark boxes NA if Not Applicable. Shaded area is for ERwm use only.

ER WASTE GENERATION LOG

(Version: 5/2/01) Return completed form with a copy of the Chain of Custody toCraig Wood MS-1087 Fax 284-2616

Form Generator: William Gibson **Phone:** 284-5232 **Task Leader:** Don Schofield

Signature: _____ To the best of my knowledge this information is correct & accurate.

Container I.D. # (site-date-sequence)	CWL-MW2BL-041410-04		CWL-MW2BL-041410-05		CWL-MW2BL-041410-06	
Container Certification # (i.e.SNL/NM######)	NA		NA		NA	
Project Name	CWL-GWM		CWL-GWM		CWL-GWM	
Site Number	NA		NA		NA	
Waste Mgt. Case #	125778.10.11.01		125778.10.11.01		125778.10.11.01	
Initial Label Type	HAZ-Waste		HAZ-Waste		HAZ-Waste	
Waste Matrix (i.e. Water, Cuttings, Soil, Samples, Metal, etc.)	Purge water		Purge water		Purge water	
Container Type / Vol (always use Certified containers)	CHPD	55gal.	CHPD	55gal.	CHPD	55gal.
Volume of Waste	40 gals		40 gals		28 gals	
Total Container Weight	400 lbs.		400 lbs.		280 lbs.	
Waste Char. Samples (COC#: Sample#-Fraction) **SMO Hazardous [ ]**	COC# 612862 SMO# 088581, 088582		COC# 612862 SMO# 088581, 088582		COC# 612862 SMO# 088581, 088582	
SMO Radioactive [ ]	NA		NA		NA	
ERCL Haz [ ] Rad [ ]	NA		NA		NA	
RPSD Rad [ ] (Amir's on-site Rad Lab)	NA		NA		NA	
Container Exterior RAD SURVEY #	Survey: NA Swipes:		Survey: NA Swipes:		Survey: NA Swipes:	
Container Contents RAD SURVEY #	Survey: NA Swipes:		Survey: NA Swipes:		Survey: NA Swipes:	
Accumulation Date	Start 04/14/10 Full 04/14/10		Start 04/14/10 Full 04/14/10		Start 04/14/10 Full 04/14/10	
Date Moved to Waste Accumulation Area	04/14/10		04/14/10		04/14/10	
Accumulation Area Name	9925		9925		9925	
ERwm Memo #						
Comments						

(OHSD)= open head steel drum; (CHSD)= closed head steel drum; (CHPD)= closed head poly drum; (OHPD)= open head poly drum; (OHPB)= open head poly bucket; (RL-Off)= roll off; (WGLR)= wrangler bag; (744)= 7'x4'x4' steel box; (BB)= Burrito bag.

NOTE: Complete all information, mark boxes NA if Not Applicable. Shaded area is for ERwm use only.

ER WASTE GENERATION LOG

(Version: 5/2/01) Return completed form with a copy of the Chain of Custody toCraig Wood MS-1087 Fax 284-2616

Form Generator: William Gibson **Phone:** 284-5232 **Task Leader:** Don Schofield

Signature: William J Gibson To the best of my knowledge this information is correct & accurate.

Container I.D. # (site-date-sequence)	CWL-041510		CWL-MW6L-041410		CWL-MW5L-041410	
Container Certification # (i.e.SNL/NM#####)	NA		NA		NA	
Project Name	CWL-GWM		CWL-GWM		CWL-GWM	
Site Number	NA		NA		NA	
Waste Mgt. Case #	125778.10.11.01		125778.10.11.01		125778.10.11.01	
Initial Label Type	HAZ-Waste		HAZ-Waste		HAZ-Waste	
Waste Matrix (i.e. Water, Cuttings, Soil, Samples, Metal, etc.)	Decon water		Tubing		Tubing	
Container Type / Vol (always use Certified containers)	CHPD	55gal.	OHPD	20 gal.	OHPD	20 gal.
Volume of Waste	30 gals		NA		NA	
Total Container Weight	300 lbs.		20 lbs.		20 lbs.	
Waste Char. Samples (COC#: Sample#-Fraction) **SMO** Hazardous [ ]	COC# 612862 SMO# 088581, 088582		COC# 612860 SMO# 088575		COC# 612861 SMO# 088578	
SMO Radioactive [ ]	NA		NA		NA	
ERCL Haz [ ] Rad [ ]	NA		NA		NA	
RPSD Rad [ ] (Amir's on-site Rad Lab)	NA		NA		NA	
Container Exterior RAD SURVEY #	Survey: NA Swipes:		Survey: NA Swipes:		Survey: NA Swipes:	
Container Contents RAD SURVEY #	Survey: NA Swipes:		Survey: NA Swipes:		Survey: NA Swipes:	
Accumulation Date	Start 04/15/10 Full 04/15/10		Start 04/14/10 Full 04/14/10		Start 04/14/10 Full 04/14/10	
Date Moved to Waste Accumulation Area	04/15/10		04/14/10		04/14/10	
Accumulation Area Name	9925		9925		9925	
ERwm Memo #						
Comments	Decon pump after CWL-MW2BL purge;CoC 612862		QED pump tubing		QED pump tubing	

(OHSD)= open head steel drum; (CHSD)= closed head steel drum; (CHPD)= closed head poly drum; (OHPD)= open head poly drum;

(OHPB)= open head poly bucket; (RL-Off)= roll off; (WGLR)= wrangler bag; (744)= 7'x4'x4' steel box; (BB)= Burrito bag.

NOTE: Complete all information, mark boxes NA if Not Applicable. Shaded area is for ERwm use only.

ENVIRONMENTAL RESTORATION
TAILGATE SAFETY MEETING FORM

Date: 04/01/10 Sheet ___of ___

ER Site #(s): CWL -GWM Well=CWL-BW3 Operable Units(s) _____
Applicable documentation:
Site Work Plan: PHS :9631246780-010, HASP 222696
FOP's : 94-01,94-25,94-26,94-28,94-30,94-34,94-46,94-47,94-48,95-02

MEETING CONDUCTED BY: Robert Lynch
NAME PRINTED SIGNATURE

SAFETY TOPICS PRESENTED

Protective Cloting/Equipment: Level-D, when sampling

Chemical Hazards: Acids in Sample containers, safety glasses and latex gloves when sampling

Radiological Hazards: None

Physical Hazards: Elements, slip, trip, falls, possible biological

Emergency Procedures: Aide, Call, Transport

Hospital/Clinic: Sandia Medical Phone: ( )844-0911/ 911 Paramedic Phone: ( )911

Hospital Address: 7th & F street

Special Equipment: Sampling pumps

Other: _____

ATTENDEES

NAME PRINTED: William Gibson SIGNATURE: _____
NAME PRINTED: ALFRED SANTILLANES SIGNATURE: _____
NAME PRINTED: _____ SIGNATURE: _____
NAME PRINTED: _____ SIGNATURE: _____
NAME PRINTED: _____ SIGNATURE: _____

UNK: Unknown: NA: Not applicable: ND: Not done.

ENVIRONMENTAL RESTORATION
TAILGATE SAFETY MEETING FORM

Date: 04/02/10 Sheet ___of ___

ER Site #(s): CWL -GWM Well=CWL-BW4A / MW2B Operable Units(s) _____
Applicable documentation:
Site Work Plan: PHS :9631246780-010, HASP 222696
FOP's : 94-01,94-25,94-26,94-28,94-30,94-34,94-46,94-47,94-48,95-02

MEETING CONDUCTED BY: Robert Lynch
NAME PRINTED SIGNATURE

SAFETY TOPICS PRESENTED

Protective Cloting/Equipment: Level-D, when sampling

Chemical Hazards: Acids in Sample containers, safety glasses and latex gloves when sampling

Radiological Hazards: None

Physical Hazards: Elements, slip, trip, falls, possible biological

Emergency Procedures: Aide, Call, Transport

Hospital/Clinic: Sandia Medical Phone: ( )844-0911/ 911 Paramedic Phone: ( )911

Hospital Address: 7th & F street

Special Equipment: Sampling pumps

Other: _____

ATTENDEES

NAME PRINTED: _____ SIGNATURE: _____

NAME PRINTED: _____ SIGNATURE: _____

NAME PRINTED: _____ SIGNATURE: _____

NAME PRINTED: _____ SIGNATURE: _____

NAME PRINTED: _____ SIGNATURE: _____

UNK: Unknown: NA: Not applicable: ND: Not done.

ENVIRONMENTAL RESTORATION
TAILGATE SAFETY MEETING FORM

Date: 04/05/10 Sheet ___ of ___

ER Site #(s): CWL -GWM Well=CWL-MW4 Operable Units(s) _____
Applicable documentation:
Site Work Plan: PHS :9631246780-010, HASP 222696
FOP's : 94-01,94-25,94-26,94-28,94-30,94-34,94-46,94-47,94-48,95-02

MEETING CONDUCTED BY: Robert Lynch _____
NAME PRINTED SIGNATURE

SAFETY TOPICS PRESENTED

Protective Cloting/Equipment: Level-D, when sampling

Chemical Hazards: Acids in Sample containers, safety glasses and latex gloves when sampling

Radiological Hazards: None

Physical Hazards: Elements, slip, trip, falls, possible biological

Emergency Procedures: Aide, Call, Transport

Hospital/Clinic: Sandia Medical Phone: ( )844-0911/ 911 Paramedic Phone: ( )911

Hospital Address: 7th & F street

Special Equipment: Sampling pumps

Other: _____

ATTENDEES

NAME PRINTED: ALFRED SANTILLANES SIGNATURE: _____

NAME PRINTED: _____ SIGNATURE: _____

NAME PRINTED: _____ SIGNATURE: _____

NAME PRINTED: _____ SIGNATURE: _____

NAME PRINTED: _____ SIGNATURE: _____

UNK: Unknown: NA: Not applicable: ND: Not done.

ENVIRONMENTAL RESTORATION
TAILGATE SAFETY MEETING FORM

Date: 04/06/10 4/7/10 Sheet ___ of ___

ER Site #(s): CWL -GWM Well=CWL-MW6U Operable Units(s) _____
Applicable documentation:
Site Work Plan: PHS :9631246780-010, HASP 222696
FOP's : 94-01,94-25,94-26,94-28,94-30,94-34,94-46,94-47,94-48,95-02

MEETING CONDUCTED BY: Robert Lynch
NAME PRINTED SIGNATURE

SAFETY TOPICS PRESENTED

Protective Cloting/Equipment: Level-D, when sampling

Chemical Hazards: Acids in Sample containers, safety glasses and latex gloves when sampling

Radiological Hazards: None

Physical Hazards: Elements, slip, trip, falls, possible biological

Emergency Procedures: Aide, Call, Transport

Hospital/Clinic: Sandia Medical Phone: ( )844-0911/ 911 Paramedic Phone: ( )911

Hospital Address: 7th & F street

Special Equipment: Sampling pumps

Other: _____

ATTENDEES

NAME PRINTED: ALFREDO SANTILLANES SIGNATURE:
NAME PRINTED: William Gibson SIGNATURE:
4/7/10 NAME PRINTED: ALFREDO SANTILLANES SIGNATURE:
NAME PRINTED: William Gibson SIGNATURE:
NAME PRINTED: _____ SIGNATURE: _____

UNK: Unknown: NA: Not applicable: ND: Not done.

ENVIRONMENTAL RESTORATION
TAILGATE SAFETY MEETING FORM

Date: 04/08/10 4-9-10 Sheet ___ of ___

ER Site #(s): CWL -GWM Well=CWL-MW5U Operable Units(s) _____
Applicable documentation:
Site Work Plan: PHS :9631246780-010, HASP 222696
FOP's : 94-01,94-25,94-26,94-28,94-30,94-34,94-46,94-47,94-48,95-02

MEETING CONDUCTED BY: Robert Lynch
NAME PRINTED SIGNATURE

SAFETY TOPICS PRESENTED

Protective Cloting/Equipment: Level-D, when sampling

Chemical Hazards: Acids in Sample containers, safety glasses and latex gloves when sampling

Radiological Hazards: None

Physical Hazards: Elements, slip, trip, falls, possible biological

Emergency Procedures: Aide, Call, Transport

Hospital/Clinic: Sandia Medical Phone: ( )844-0911/ 911 Paramedic Phone: ( )911

Hospital Address: 7th & F street

Special Equipment: Sampling pumps

Other: _____

ATTENDEES

NAME PRINTED: ALFRED SANTILLANES SIGNATURE:

NAME PRINTED: _____ SIGNATURE: _____

4/9/10 NAME PRINTED: ALFRED SANTILLANES SIGNATURE:

NAME PRINTED: _____ SIGNATURE: _____

NAME PRINTED: _____ SIGNATURE: _____

UNK: Unknown: NA: Not applicable: ND: Not done.

ENVIRONMENTAL RESTORATION
TAILGATE SAFETY MEETING FORM

Date: 04/12/10 Sheet ___ of ___

ER Site #(s): CWL -GWM Well=CWL-MW6L Operable Units(s) _____
Applicable documentation:
Site Work Plan: PHS :9631246780-010, HASP 222696
FOP's : 94-01,94-25,94-26,94-28,94-30,94-34,94-46,94-47,94-48,95-02

MEETING CONDUCTED BY: Robert Lynch
NAME PRINTED SIGNATURE

SAFETY TOPICS PRESENTED

Protective Cloting/Equipment: Level-D, when sampling

Chemical Hazards: Acids in Sample containers, safety glasses and latex gloves when sampling

Radiological Hazards: None

Physical Hazards: Elements, slip, trip, falls, possible biological

Emergency Procedures: Aide, Call, Transport

Hospital/Clinic: Sandia Medical Phone: ( )844-0911/ 911 Paramedic Phone: ( )911

Hospital Address: 7th & F street

Special Equipment: Sampling pumps

Other: _____

ATTENDEES

NAME PRINTED: Alfred Santillanes SIGNATURE:
NAME PRINTED: William Gibson SIGNATURE:
NAME PRINTED: _____ SIGNATURE: _____
NAME PRINTED: _____ SIGNATURE: _____
NAME PRINTED: _____ SIGNATURE: _____

UNK: Unknown: NA: Not applicable: ND: Not done.

ENVIRONMENTAL RESTORATION
TAILGATE SAFETY MEETING FORM

Date: 04/13/10 Sheet ___of___

ER Site #(s): CWL -GWM Well=CWL-MW5L Operable Units(s) _____
Applicable documentation:
Site Work Plan: PHS :9631246780-010, HASP 222696
FOP's : 94-01,94-25,94-26,94-28,94-30,94-34,94-46,94-47,94-48,95-02

MEETING CONDUCTED BY: Robert Lynch _____
NAME PRINTED SIGNATURE

SAFETY TOPICS PRESENTED

Protective Cloting/Equipment: Level-D, when sampling

Chemical Hazards: Acids in Sample containers, safety glasses and latex gloves when sampling

Radiological Hazards: None

Physical Hazards: Elements, slip, trip, falls, possible biological

Emergency Procedures: Aide, Call, Transport

Hospital/Clinic: Sandia Medical Phone: ( )844-0911/ 911 Paramedic Phone: ( )911

Hospital Address: 7th & F street

Special Equipment: Sampling pumps

Other: _____

ATTENDEES

NAME PRINTED: William Gibson SIGNATURE: _____
NAME PRINTED: ALFRED SANTILLANES SIGNATURE: _____
NAME PRINTED: _____ SIGNATURE: _____
NAME PRINTED: _____ SIGNATURE: _____
NAME PRINTED: _____ SIGNATURE: _____

UNK: Unknown: NA: Not applicable: ND: Not done.

ENVIRONMENTAL RESTORATION
TAILGATE SAFETY MEETING FORM

Date: 04/14/10 Sheet ___of___

ER Site #(s): CWL -GWM Well=CWL-MW2BL Operable Units(s) _____
Applicable documentation:
Site Work Plan: PHS :9631246780-010, HASP 222696
FOP's : 94-01,94-25,94-26,94-28,94-30,94-34,94-46,94-47,94-48,95-02

MEETING CONDUCTED BY: Robert Lynch
NAME PRINTED SIGNATURE

SAFETY TOPICS PRESENTED

Protective Cloting/Equipment: Level-D, when sampling

Chemical Hazards: Acids in Sample containers, safety glasses and latex gloves when sampling

Radiological Hazards: None

Physical Hazards: Elements, slip, trip, falls, possible biological

Emergency Procedures: Aide, Call, Transport

Hospital/Clinic: Sandia Medical Phone: ( )844-0911/ 911 Paramedic Phone: ( )911

Hospital Address: 7th & F street

Special Equipment: Sampling pumps

Other: _____

ATTENDEES

NAME PRINTED: ALFRED SANTILLANES SIGNATURE:
NAME PRINTED: William Gibson SIGNATURE:
NAME PRINTED: _____ SIGNATURE: _____
NAME PRINTED: _____ SIGNATURE: _____
NAME PRINTED: _____ SIGNATURE: _____

UNK: Unknown: NA: Not applicable: ND: Not done.

ATTACHMENT B
ANALYSIS REQUEST/CHAIN-OF-CUSTODY FORMS

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Page 1 of 1

Batch No. N/A

SMO Use

AR/COC 612862

Dept. No./Mail Stop:	6765/0719	Date Samples Shipped: 7/15/10		Project/Task No. 125778.10.11.01	☐ Waste Characterization
Project/Task Manager:	John Cochran	Carrier/Waybill No.		SMO Authorization:	-Send preliminary/copy report to:
Project Name:	CWL GWM	Lab Contact:	Edie Kent/803-556-8171	Contract #: PO 691436	
Record Center Code:	ER/1267 074/DAT	Lab Destination:	GEL		☐ Released by COC No.:_____
Logbook Ref. No.:	ER 049	SMO Contact/Phone:	Pam Puissant/505-844-3185		☑ Validation Required
Service Order No.	CF 025-10	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To:Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
088581-001	CWL-MW2BL	544.5	NA	041410\1259	GW	G	3 x 40ml	HCL	G	SA	APP IX VOC (SW846-8260)	
088581-009	CWL-MW2BL	544.5	NA	041410\1300	GW	P	500 ml	HNO3	G	SA	APP IX Metals+Al,Ca,Fe,Mg,Mn,K,Na	
088582-001	CWL-FB6	NA	NA	041410\1231	DIW	G	3x40ml	HCL	G	FB	APP IX VOC (SW846-8260)	
088583-001	CWL-TB10	NA	NA	041410\1259	DIW	G	3x40ml	HCL	G	TB	APP IX VOC (SW846-8260)	

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☐ 15 Day ☑ 30 Day

Return Samples By: ☐ **Negotiated TAT**

Sample Tracking: Smo Use

Date Entered(mm/dd/yy):

Entered by:

QC Inits:

Special Instructions/QC Requirements

EDD ☑ **Yes** ☐ **No**

Level D Package ☐ **Yes** ☑ **No**

***Send report to:**

Tim Jackson/Org 4133/MS 0729/505-284-2547

Sampling complete for CWL 3rd Qtr 2010

Fraction 9 EPA Method SW846-6020/7470

***Please list as separate report.**

Abnormal Conditions on Receipt

Lab Use

	Name	Signature	Init	Company/Organization/Phone/Cellular
Sample Team Members	Alfred Santillanes	[signature]	AS	Weston/4133/844-5130/228-0710
	Robert Lynch	[signature]	RL	Weston/4133/844-4013/250-7090
	William J Gibson	[signature]		Weston/4133/844-4013/239-7367

1.Relinquished by [signature]	Org. 4133	Date 7/15/10	Time 1038	4.Relinquished by	Org.	Date	Time
1. Received by [signature]	Org. 4133	Date 7/15/10	Time 1038	4. Received by	Org.	Date	Time
2.Relinquished by	Org.	Date	Time	5.Relinquished by	Org.	Date	Time
2. Received by	Org.	Date	Time	5. Received by	Org.	Date	Time
3.Relinquished by	Org.	Date	Time	6.Relinquished by	Org.	Date	Time
3. Received by	Org.	Date	Time	6. Received by	Org.	Date	Time

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

AR/COC **612855**

Dept. No./Mail Stop:	6765/0719	SMO Use: Date Samples Shipped:	4/5/10	Project/Task No. 125778.10.11.01	☐ Waste Characterization
Project/Task Manager:	John Cochran	Carrier/Waybill No.	1118 28	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	CWL GWM	Lab Contact:	Edie Kent/803-556-8171	Contract #: PO 691436	
Record Center Code:	ER/1267 074/DAT	Lab Destination:	GEL		☐ Released by COC No.:
Logbook Ref. No.:	ER 049	SMO Contact/Phone:	Pam Puissant/505-844-3185		☑ Validation Required
Service Order No.	CF 025-10	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
088560-001	CWL-MW4	499.7	NA	040510/0945	GW	G	3 x 40ml	HCL	G	SA	APP IX VOC (SW846-8260)	
088560-009	CWL-MW4	499.7	NA	040510/0946	GW	P	500 ml	HNO3	G	SA	APP IX Metals+Al,Ca,Fe,Mg,Mn,K,Na	
088561-001	CWL-FB1	NA	NA	040510/0858	DIW	G	3x40ml	HCL	G	FB	APP IX VOC (SW846-8260)	
088562-001	CWL-TB3	NA	NA	040510/0945	DIW	G	3x40ml	HCL	G	TB	APP IX VOC (SW846-8260)	

RMMA	☐ Yes ☑ No Ref. No.	Sample Tracking Smo Use	Special Instructions/QC Requirements
Sample Disposal	☐ Return to Client ☑ Disposal by lab	Date Entered(mm/dd/yy):	EDD ☑ Yes ☐ No
Turnaround Time	☐ 7 Day ☐ 15 Day ☑ 30 Day	Entered by:	Level D Package ☐ Yes ☑ No
Return Samples By:	☐ Negotiated TAT	QC inits.	*Send report to:

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	Alfred Santillanes	[signature]	AS	Weston/4133/844-5130/228-0710
	Robert Lynch	[signature]	RL	Weston/4133/844-4013/250-7090

Tim Jackson/Org 4133/MS 0729/505-284-2547

Fraction 009 EPA Method SW846-6020/7470

*Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

1.Relinquished by [signature]	Org. 4133	Date 4/5/10	Time 1030	4.Relinquished by	Org.	Date	Time
1. Received by [signature] SMO	Org. 4133	Date 4/5/10	Time 1030	4. Received by	Org.	Date	Time
2.Relinquished by	Org.	Date	Time	5.Relinquished by	Org.	Date	Time
2. Received by	Org.	Date	Time	5. Received by	Org.	Date	Time
3.Relinquished by	Org.	Date	Time	6.Relinquished by	Org.	Date	Time
3. Received by	Org.	Date	Time	6. Received by	Org.	Date	Time

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

AR/COC 612861

SMO Use

Dept. No./Mail Stop:	6765/0719	Date Samples Shipped:	4/13/10	Project/Task No. 125778.10.11.01	☐ Waste Characterization -Send preliminary/copy report to:
Project/Task Manager:	John Cochran	Carrier/Waybill No.	12371	SMO Authorization:	
Project Name:	CWL GWM	Lab Contact:	Edie Kent/803-556-8171	Contract #: PO 691436	☐ Released by COC No.:
Record Center Code:	ER/1267 074/DAT	Lab Destination:	GEL	See Bottle order	☑ Validation Required
Logbook Ref. No.:	ER 049	SMO Contact/Phone:	Pam Puissant/505-844-3185		
Service Order No.	CF 025-10	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable) P.O. Box 5800 MS 0154 Albuquerque, NM 87185-0154
Location	Tech Area				
Building	Room				

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
088578-001	CWL-MW5L	544.78	NA	04/13/10 0913	GW	G	3 x 40ml	HCL	G	SA	APP IX VOC (SW846-8260)	
088578-009	CWL-MW5L	544.78	NA	04/13/10 0914	GW	P	500 ml	HNO3	G	SA	APP IX Metals+Fe (SW846-6020/7470)	
088579-001	CWL-FB5	NA	NA	04/13/10 0851	DIW	G	3x40ml	HCL	G	FB	APP IX VOC (SW846-8260)	
088580-001	CWL-TB9	NA	NA	04/13/10 0913	DIW	G	3x40ml	HCL	G	TB	APP IX VOC (SW846-8260)	

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☐ 15 Day ☑ 30 Day

Return Samples By: ☐ Negotiated TAT

Sample Tracking — Smo Use
Date Entered(mm/dd/yy):
Entered by:

Special Instructions/QC Requirements
EDD ☑ Yes ☐ No
Level D Package ☐ Yes ☑ No
*Send report to:
Tim Jackson/Org 4133/MS 0729/505-284-2547
*Please list as separate report.

Abnormal Conditions on Receipt — Lab Use

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	Alfred Santillanes			Weston/4133/844-5130/228-0710
	Robert Lynch			Weston/4133/844-4013/250-7090
	William J Gibson			Weston/4133/844-4013/239-7367

QC Inits

1.Relinquished by	Org. 4133	Date 4-13-10	Time 0925	4.Relinquished by	Org.	Date	Time
1. Received by	Org. 4133	Date 4-13-10	Time 0925	4. Received by	Org.	Date	Time
2.Relinquished by	Org. 4133	Date 4-13-10	Time 1000	5.Relinquished by	Org.	Date	Time
2. Received by	Org. 4133	Date 4-13-10	Time 1000	5. Received by	Org.	Date	Time
3.Relinquished by	Org.	Date	Time	6.Relinquished by	Org.	Date	Time
3. Received by	Org.	Date	Time	6. Received by	Org.	Date	Time

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Page 1 of 1

Batch No. N/A

SMO/Use

AR/COC 612859

Dept. No./Mail Stop:	6765/0719	Date Samples Shipped:	4/12/10	Project/Task No. 125778.10.11.01	☐ Waste Characterization
Project/Task Manager:	John Cochran	Carrier/Waybill No.	/ /	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	CWL GWM	Lab Contact:	Edie Kent/803-556-8171	Contract #: PO 691436	
Record Center Code:	ER/1267 074/DAT	Lab Destination:	GEL	500 BOTTLE ORDER	☐ Released by COC No.:
Logbook Ref. No.:	ER 049	SMO Contact/Phone:	Pam Puissant/505-844-3185		☑ Validation Required
Service Order No.	CF 025-10	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To:Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
088571-001	CWL-MW5U	498.5	NA	04/09/10 0829	GW	G	3 x 40ml	HCL	G	SA	APP IX VOC (SW846-8260)	
088571-009	CWL-MW5U	498.5	NA	04/09/10 0830	GW	P	500 ml	HNO3	G	SA	APP IX Metals+Al,Ca,Fe,Mg,Mn,K,Na	
088572-001	CWL-MW5U	498.5	NA	04/09/10 0829	GW	G	3x40ml	HCL	G	DU	APP IX VOC (SW846-8260)	
088572-009	CWL-MW5U	498.5	NA	04/09/10 0830	GW	P	500 ml	HNO3	G	DU	APP IX Metals+Al,Ca,Fe,Mg,Mn,K,Na	
088573-001	CWL-FB3	NA	NA	04/09/10 0826	DIW	G	3x40ml	HCL	G	FB	APP IX VOC (SW846-8260)	
088574-001	CWL-TB7	NA	NA	04/09/10 0829	DIW	G	3x40ml	HCL	G	TB	APP IX VOC (SW846-8260)	

RMMA	☐ Yes ☑ No Ref. No.	Sample Tracking	Smo Use
Sample Disposal	☐ Return to Client ☑ Disposal by lab	Date Entered(mm/dd/yy)	
Turnaround Time	☐ 7 Day ☐ 15 Day ☑ 30 Day	Entered by:	
Return Samples By:	☐ Negotiated TAT	QC inits	

Special Instructions/QC Requirements

EDD ☑ Yes ☐ No

Level D Package ☐ Yes ☑ No

*Send report to:

Tim Jackson/Org 4133/MS 0729/505-284-2547

Fractions 9 EPA Method SW846-6020/7470

Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

	Name	Signature	Init	Company/Organization/Phone/Cellular
Sample Team Members	Alfred Santillanes	[signature]	[illegible]	Weston/4133/844-5130/228-0710
	Robert Lynch	[signature]	RL	Weston/4133/844-4013/250-7090

1.Relinquished by [signature]	Org. 4133	Date 4/12/10	Time 1045	4.Relinquished by	Org.	Date	Time
1. Received by [signature]	Org. 4133	Date 4/12/10	Time 1045	4. Received by	Org.	Date	Time
2.Relinquished by	Org.	Date / /	Time	5.Relinquished by	Org.	Date	Time
2. Received by	Org.	Date	Time	5. Received by	Org.	Date	Time
3.Relinquished by	Org.	Date	Time	6.Relinquished by	Org.	Date	Time
3. Received by	Org.	Date	Time	6. Received by	Org.	Date	Time

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC 612860

Dept. No./Mail Stop:	6765/0719	Date Samples Shipped: 4/12/10		Project/Task No. 125778.10.11.01	☐ Waste Characterization
Project/Task Manager:	John Cochran	Carrier/Waybill No:		SMO Authorization: [signature] SMO	-Send preliminary/copy report to:
Project Name:	CWL GWM	Lab Contact:	Edie Kent/803-556-8171	Contract #: PO 691436	
Record Center Code:	ER/1267 074/DAT	Lab Destination:	GEL	SOO BOTTLE ORDER	☐ Released by COC No.:
Logbook Ref. No.:	ER 049	SMO Contact/Phone:	Pam Puissant/505-844-3185		☑ Validation Required
Service Order No.	CF 025-10	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
088575-001	CWL-MW6L	551.58	NA	041210\0956	GW	G	3 x 40ml	HCL	G	SA	APP IX VOC (SW846-8260)	
088575-009	CWL-MW6L	551.58	NA	041210\0957	GW	P	500 ml	HNO3	G	SA	APP IX Metals+Fe (SW846-6020/7470)	
088576-001	CWL-FB4	NA	NA	041210\0924	DIW	G	3x40ml	HCL	G	FB	APP IX VOC (SW846-8260)	
088577-001	CWL-TB8	NA	NA	041210\0956	DIW	G	3x40ml	HCL	G	TB	APP IX VOC (SW846-8260)	

RMMA	☐ Yes ☑ No Ref. No.	Sample Tracking	Smo Use
Sample Disposal	☐ Return to Client ☑ Disposal by lab	Date Entered(mm/dd/yy)	
Turnaround Time	☐ 7 Day ☐ 15 Day ☑ 30 Day	Entered by:	
Return Samples By:	☐ Negotiated TAT	QC Inits	

Special Instructions/QC Requirements

EDD ☑ Yes ☐ No

Level D Package ☐ Yes ☑ No

*Send report to:

Tim Jackson/Org 4133/MS 0729/505-284-2547

*Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	Alfred Santillanes	[signature]	AS	Weston/4133/844-5130/228-0710
	Robert Lynch	[signature]		Weston/4133/844-4013/250-7090
	William J Gibson	[signature]	WJG	Weston/4133/844-4013/239-7367

1.Relinquished by [signature]	Org. 4133	Date 4/12/10	Time 1045	4.Relinquished by	Org.	Date	Time
1. Received by [signature] SMO	Org. 4133	Date 4/12/10	Time 1045	4. Received by	Org.	Date	Time
2.Relinquished by	Org.	Date	Time	5.Relinquished by	Org.	Date	Time
2. Received by	Org.	Date	Time	5. Received by	Org.	Date	Time
3.Relinquished by	Org.	Date	Time	6.Relinquished by	Org.	Date	Time
3. Received by	Org.	Date	Time	6. Received by	Org.	Date	Time

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC 612857

Dept. No./Mail Stop:	6765/0719	Date Samples Shipped:	4/7/10	Project/Task No. 125778.10.11.01	☐ Waste Characterization
Project/Task Manager:	John Cochran	Carrier/Waybill No.		SMO Authorization:	-Send preliminary/copy report to:
Project Name:	CWL GWM	Lab Contact:	Edie Kent/803-556-8171	Contract #: PO 691436	
Record Center Code:	ER/1267 074/DAT	Lab Destination:	GEL		☐ Released by COC No.:
Logbook Ref. No.:	ER 049	SMO Contact/Phone:	Pam Puissant/505-844-3185	SUB BOTTLE ORDER	☑ Validation Required
Service Order No.	CF 025-10	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
088565-001	CWL-MW6U	498.6	NA	04/07/10 0829	GW	G	3 x 40ml	HCL	G	SA	APP IX VOC (SW846-8260)	
088565-009	CWL-MW6U	498.6	NA	04/07/10 0830	GW	P	500 ml	HNO3	G	SA	APP IX Metals+Fe (SW846-6020/7470)	
088566-001	CWL-MW6U	498.6	NA	04/07/10 0829	GW	G	3x40ml	HCL	G	DU	APP IX VOC (SW846-8260)	
088566-009	CWL-MW6U	498.6	NA	04/07/10 0830	GW	P	500 ml	HNO3	G	DU	APP IX Metals+Fe (SW846-6020/7470)	
088567-001	CWL-FB2	NA	NA	04/07/10 0823	DIW	G	3x40ml	HCL	G	FB	APP IX VOC (SW846-8260)	
088568-001	CWL-TB5	NA	NA	04/07/10 0829	DIW	G	3x40ml	HCL	G	TB	APP IX VOC (SW846-8260)	

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☐ 15 Day ☑ 30 Day

Return Samples By: ☐ Negotiated TAT

Sample Tracking Smo Use

Date Entered(mm/dd/yy)

Entered by:

QC inits.

Special Instructions/QC Requirements

EDD ☑ Yes ☐ No

Level D Package ☐ Yes ☑ No

***Send report to:**

Tim Jackson/Org 4133/MS 0729/505-284-2547

**Please list as separate report.*

Abnormal Conditions on Receipt

Lab Use

Sample Team Members

Name	Signature	Init	Company/Organization/Phone/Cellular
Alfred Santillanes	[signature]	AS	Weston/4133/844-5130/228-0710
Robert Lynch	[signature]	RL	Weston/4133/844-4013/250-7090
William J Gibson	[signature]	WJG	Weston/4133/844-4013/239-7367

1.Relinquished by [signature]	Org. 4133	Date 4/7/10	Time 1010	4.Relinquished by	Org.	Date	Time
1. Received by [signature]	Org. 4133	Date 4/7/10	Time 1010	4. Received by	Org.	Date	Time
2.Relinquished by	Org.	Date	Time	5.Relinquished by	Org.	Date	Time
2. Received by	Org.	Date	Time	5. Received by	Org.	Date	Time
3.Relinquished by	Org.	Date	Time	6.Relinquished by	Org.	Date	Time
3. Received by	Org.	Date	Time	6. Received by	Org.	Date	Time

Prior to CWL-MW 60

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Page 1 of 1

Internal Lab

Batch No. N/A

SMO Use

AR/COC 612856

Dept. No./Mail Stop:	6765/0719	Date Samples Shipped:	4/5/10	Project/Task No. 125778.10.11.01	☐ Waste Characterization
Project/Task Manager:	John Cochran	Carrier/Waybill No.	117828	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	CWL GWM.	Lab Contact:	Edie Kent/803-556-8171	Contract #: PO 691436	
Record Center Code:	ER/1267 074/DAT	Lab Destination:	GEL	See bottle order	☐ Released by COC No.:
Logbook Ref. No.:	ER 049	SMO Contact/Phone:	Pam Puissant/505-844-3185		☑ Validation Required
Service Order No.	CF 025-10	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
088563-001	CWL-EB1	NA	NA	04/05/10 1105	DIW	G	3 x 40ml	HCL	G	EB	APP IX VOC (SW846-8260)	
088563-009	CWL-EB1	NA	NA	04/05/10 1106	DIW	P	500 ml	HNO3	G	EB	APP IX Metals+Fe (SW846-6020/7470)	
088564-001	CWL-TB4	NA	NA	04/05/10 1105	DIW	G	3x40ml	HCL	G	TB	APP IX VOC (SW846-8260)	

RMMA	☐ Yes ☑ No Ref. No.	**Sample Tracking**	Smo Use
Sample Disposal	☐ Return to Client ☑ Disposal by lab	Date Entered(mm/dd/yy)	
Turnaround Time	☐ 7 Day ☐ 15 Day ☑ 30 Day	Entered by:	
Return Samples By:	☐ Negotiated TAT	QC inits.	

Special Instructions/QC Requirements

EDD ☑ Yes ☐ No

Level D Package ☐ Yes ☑ No

***Send report to:**

Tim Jackson/Org 4133/MS 0729/505-284-2547

Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	Alfred Santillanes	[signature]	[illegible]	Weston/4133/844-5130/228-0710
	Robert Lynch	[signature]	[illegible]	Weston/4133/844-4013/250-7090
	Tim Jackson	[signature]	TJ	Gram/4133/284-2547

1.Relinquished by	[signature]	Org. 4133	Date 4/5/10	Time 1140	4.Relinquished by	Org.	Date	Time
1. Received by	[signature]	Org. 4133	Date 4/5/10	Time 1140	4. Received by	Org.	Date	Time
2.Relinquished by		Org.	Date	Time	5.Relinquished by	Org.	Date	Time
2. Received by		Org.	Date	Time	5. Received by	Org.	Date	Time
3.Relinquished by		Org.	Date	Time	6.Relinquished by	Org.	Date	Time
3. Received by		Org.	Date	Time	6. Received by	Org.	Date	Time

Prior to CWL-MW5U

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC 612858

Dept. No./Mail Stop:	6765/0719	Date Samples Shipped: 4/8/10	Project/Task No. 125778.10.11.01	☐ Waste Characterization -Send preliminary/copy report to:
Project/Task Manager:	John Cochran	Carrier/Waybill No:	SMO Authorization: [signature] SMO	
Project Name:	CWL GWM	Lab Contact: Edie Kent/803-556-8171	Contract #: PO 691436	☐ Released by COC No.:
Record Center Code:	ER/1267 074/DAT	Lab Destination: GEL		☑ Validation Required
Logbook Ref. No.:	ER 049	SMO Contact/Phone: Pam Puissant/505-844-3185		
Service Order No.	CF 025-10	Send Report to SMO: Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable) P.O. Box 5800 MS 0154 Albuquerque, NM 87185-0154
Location	Tech Area			
Building	Room			

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
088569-001	CWL-EB2	NA	NA	04/07/10 1110	DIW	G	3 x 40ml	HCL	G	EB	APP IX VOC (SW846-8260)	
088569-009	CWL-EB2	NA	NA	04/07/10 1111	DIW	P	500 ml	HNO3	G	EB	APP IX Metals+Al,Ca,Fe,Mg,Mn,K,Na	
088570-001	CWL-TB6	NA	NA	04/07/10 1110	DIW	G	3x40ml	HCL	G	TB	APP IX VOC (SW846-8260)	

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☐ 15 Day ☑ 30 Day

Return Samples By: ☐ Negotiated TAT

Sample Tracking Smo Use

Date Entered(mm/dd/yy)

Entered by: QC inits.

Special Instructions/QC Requirements

EDD ☑ Yes ☐ No

Level D Package ☐ Yes ☑ No

*Send report to:

Tim Jackson/Org 4133/MS 0729/505-284-2547

Fraction 9 EPA Method SW846-6020/7470

*Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	Alfred Santillanes	[signature]		Weston/4133/844-5130/228-0710
	Robert Lynch	[signature]		Weston/4133/844-4013/250-7090
	William J Gibson	[signature]		Weston/4133/844-4013/239-7367

Relinquished by [signature]	Org. 4133	Date 4/8/10	Time 0940	4. Relinquished by	Org.	Date	Time
Received by [signature] SMO	Org. 4133	Date 4/8/10	Time 0940	4. Received by	Org.	Date	Time
Relinquished by	Org.	Date	Time	5. Relinquished by	Org.	Date	Time
Received by	Org.	Date	Time	5. Received by	Org.	Date	Time
Relinquished by	Org.	Date	Time	6. Relinquished by	Org.	Date	Time
Received by	Org.	Date	Time	6. Received by	Org.	Date	Time

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Page 1 of 1

Batch No. N/A

SMO Use

AR/COC 612854

Dept. No./Mail Stop:	6765/0719	Date Samples Shipped:	4/5/10	Project/Task No. 125778.10.11.01	☑ Waste Characterization
Project/Task Manager:	John Cochran	Carrier/Waybill No.	11 1828	SMO Authorization:	-Send preliminary/copy report to:Tim Jackson
Project Name:	CWL GWM	Lab Contact:	Edie Kent/803-556-8171	Contract #: PO 691436	
Record Center Code:	ER/1267 074/DAT	Lab Destination:	GEL	500 BOTTLE ORDER	☐ Released by COC No.:_____
Logbook Ref. No.:	ER 049	SMO Contact/Phone:	Pam Puissant/505-844-3185		☐ Validation Required
Service Order No.	CF 025-10	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To:Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
088556-001	CWL-BW3	506.5	NA	04/01/10 0922	WW	G	3x40ml	HCL	G	SA	APP IX VOC (SW846-8260)	
088556-009	CWL-BW3	506.5	NA	04/01/10 0923	WW	P	500ml	HNO3	G	SA	APP IX Metals+Fe (SW846-6020/7470)	
088557-001	CWL-TB1	NA	NA	04/01/10 0922	DIW	G	3x40ml	HCL	G	TB	APP IX VOC (SW846-8260)	
088558-001	CWL-BW4A	506.9	NA	04/02/10 0942	WW	G	3x40ml	HCL	G	SA	APP IX VOC (SW846-8260)	
088558-009	CWL-BW4A	506.9	NA	04/02/10 0943	WW	P	500ml	HNO3	G	SA	APP IX Metals+Fe (SW846-6020/7470)	
088559-001	CWL-TB2	NA	NA	04/02/10 0942	DIW	G	3x40ml	HCL	G	TB	APP IX VOC (SW846-8260)	

RMMA	☐ Yes ☑ No Ref. No.	Sample Tracking	Smo Use
Sample Disposal	☐ Return to Client ☑ Disposal by lab	Date Entered(mm/dd/yy):	
Turnaround Time	☐ 7 Day ☐ 15 Day ☑ 30 Day	Entered by:	
Return Samples By:	☐ Negotiated TAT	QC inits.	

Special Instructions/QC Requirements

EDD ☐ Yes ☐ No

Level D Package ☐ Yes ☑ No

*Send report to:

Tim Jackson/Org 4133/MS 0729/505-284-2547

SA Samples for waste characterization only

Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

	Name	Signature	Init	Company/Organization/Phone/Cellular
Sample Team Members	Alfred Santillanes			Weston/4133/844-5130/228-0710
	Robert Lynch			Weston/4133/844-4013/250-7090
	William J Gibson			Weston/4133/844-4013/239-7367

1.Relinquished by		Org. 4133	Date 4/5/10	Time 1028	4.Relinquished by	Org.	Date	Time
1. Received by		Org. 4133	Date 4/5/10	Time 1028	4. Received by	Org.	Date	Time
2.Relinquished by		Org.	Date	Time	5.Relinquished by	Org.	Date	Time
2. Received by		Org.	Date	Time	5. Received by	Org.	Date	Time
3.Relinquished by		Org.	Date	Time	6.Relinquished by	Org.	Date	Time
3. Received by		Org.	Date	Time	6. Received by	Org.	Date	Time

ATTACHMENT C

DATA VALIDATION REPORTS FOR GROUNDWATER ANALYTICAL RESULTS
August 2009 - January 2010

Sample Findings Summary

Site: CWL GWM

AR/COC: 612854, 612855, 612856, 612857, 612858

Data Type: Organic, Metals

	VOC	75-05-8 (acetonitrile)	107-02-8 (acrolein)	78-83-1 (isobutyl alcohol)	107-12-0 (propionitrile)	67-64-1 (acetone)	75-27-4 (bromodichloromethane) ug/L	75-25-2 (bromoform) ug/L	67-66-3 (chloroform) ug/L	124-48-1 (dibromochloromethane) ug/L						
088556-001 CWL-BW3		UJ,I4	UJ,I4	UJ,I4	UJ,I4	UJ,C3										
088557-001 CWL-TB1		UJ,I4	UJ,I4	UJ,I4	UJ,I4	UJ,C3										
088558-001 CWL-BW4A		UJ,I4	UJ,I4	UJ,I4	UJ,I4	UJ,C3										
088559-001 CWL-TB2		UJ,I4	UJ,I4	UJ,I4	UJ,I4	UJ,C3										
088560-001 CWL-MW4		UJ,I4	UJ,I4	UJ,I4	UJ,I4	UJ,C3										
088561-001 CWL-FB1		UJ,I4	UJ,I4	UJ,I4	UJ,I4	UJ,C3										
088562-001 CWL-TB3		UJ,I4	UJ,I4	UJ,I4	UJ,I4	UJ,C3										
088563-001 CWL-EB1		UJ,I4	UJ,I4	UJ,I4	UJ,I4	UJ,C3										
088564-001 CWL-TB4		UJ,I4	UJ,I4	UJ,I4	UJ,I4	UJ,C3										
088565-001 CWL-MW6U		UJ,I4	UJ,I4	UJ,I4	UJ,I4	UJ,C3										
088566-001 CWL-MW6U		UJ,I4	UJ,I4	UJ,I4	UJ,I4	UJ,C3										
088567-001 CWL-FB2		UJ,I4	UJ,I4	UJ,I4	UJ,I4	UJ,C3	2.7U, B2	1.2U, B2	1.2U, B2	3.4U, B2						
088568-001 CWL-TB5		UJ,I4	UJ,I4	UJ,I4	UJ,I4	UJ,C3										
088569-001 CWL-EB2		UJ,I4	UJ,I4	UJ,I4	UJ,I4	UJ,C3										
088570-001 CWL-TB6		UJ,I4	UJ,I4	UJ,I4	UJ,I4	UJ,C3										

Validated By:

Kevin A Lambert

Kevin A. Lambert

Date: 06/11/10

Sample Findings Summary

Site: CWL GWM

AR/COC: 612854, 612855, 612856, 612857, 612858

Data Type: Organic, Metals

	ICP-MS metals	7440-28-0 (thallium) mg/L	7440-50-8 (copper)												
088556-009 CWL-BW3		0.0025UJ,B3,DL2	J+,RP2,DL2												
088558-009 CWL-BW4A			J+,RP2,DL2												
088560-009 CWL-MW4			J+,RP2,DL2												
088563-009 CWL-EB1			UJ,RP2												
088565-009 CWL-MW6U			UJ,RP2												
088566-009 CWL-MW6U			UJ,RP2												
088569-009 CWL-EB2			UJ,RP2												

ANALYTICAL QUALITY ASSOCIATES, INC.

616 Maxine NE
Albuquerque, NM 87123
505-299-5201
www.aqainc.net

Memorandum

Date: June 11, 2010

To: File

From: Kevin Lambert

Subject: GC/MS Organic Data Review and Validation – SNL
Site: CWL GWM
AR/COC: 612854, 612855, 612856, 612857, and 612858
SDG: 250538
Laboratory: GEL
Project/Task: 146422.10.11.01
Analysis: VOCs

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. Data are evaluated using SNL/NM SMO AOP 00-03 Rev 2.

Summary

Fifteen samples were prepared and analyzed with accepted procedures using method EPA 8260B (VOCs). All compounds were successfully analyzed. Problems were identified with the data package that result in the qualification of data.

1. The initial calibration response factors (RFs) for acetonitrile, acrolein, isobutyl alcohol, and propionitrile were <0.05 but ≥0.01. All associated sample results were non-detects and will be **qualified "UJ, I4."**

2. The calibration verification percent difference for acetone was >40% but ≤60% with negative bias. The associated sample results were non-detects and will be **qualified "UJ,C3."**

3. In the equipment blank (EB), sample 250538-011, associated with samples -014, -016, and -018, bromodichloromethane, bromoform, chloroform, and dibromochloromethane were detected at concentrations > the practical quantitation limits (PQLs). The bromodichloromethane, bromoform, chloroform, and dibromochloromethane results for sample -018 were detects <5X the EB concentrations but > the PQLs and will be **qualified respectively "2.7U,B2," "1.2U,B2," 1.2U,B2," and "3.4U,B2"** at the reported values (ug/L). All other associated sample results were non-detects and will not be qualified.

Data are acceptable and reported QC measures appear to be adequate. The following sections discuss the data review and validation.

Holding Times

The samples were extracted and analyzed within the prescribed holding times and properly preserved.

Instrument Tune

All instrument tune requirements were met.

Calibration

The initial calibration and continuing calibration data met QC acceptance criteria except as noted above in the summary section and as follows.

The calibration verification percent differences for 2-butanone, 2-hexanone, and 4-methyl-2-pentanone were >20% but ≤40% with negative bias (see VOC Organic Worksheet). All associated sample results were non-detects, and no other calibration infractions occurred for these analytes. Therefore, the associated sample results will not be qualified.

Blanks

No target analytes were detected in the blanks except as noted above in the summary section and as follows.

In the field blank (FB), sample -009, associated with sample -007, bromodichloromethane, bromoform, chloroform, and dibromochloromethane were detected at concentrations > the PQLs. All associated sample results were non-detects and will not be qualified.

In the FB, sample -018, associated with samples -014 and 016, bromodichloromethane, bromoform, chloroform, and dibromochloromethane were detected at concentrations > the PQLs. However, it should be noted that the associated sample results for the FB have already been qualified non-detect due to EB contamination and, thus, do not affect the field sample results.

Surrogates

All surrogate recoveries met QC acceptance criteria.

Internal Standards

All internal standards met QC acceptance criteria.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The MS/MSD analyses met QC acceptance criteria.

Laboratory Control Sample (LCS)

All LCS recoveries met QC acceptance criteria.

Detection Limits/Dilutions

All detection limits were properly reported. The samples were not diluted.

Tentatively Identified Compounds (TICs)

TIC reports were not required.

Other QC

Trip blanks, FBs, EB, and field duplicate pair were submitted on the AR/COC(s). There are no "required" review criteria for field duplicate analyses comparability; no data will be qualified as a result. It should be noted that the EB on AR/COC# 612858 is associated with samples on AR/COC# 612859 from another SNL SDG.

No other specific issues that affect data quality were identified.

ANALYTICAL QUALITY ASSOCIATES, INC.

616 Maxine NE
Albuquerque, NM 87123
505-299-5201
www.aqainc.net

Memorandum

Date: June 11, 2010

To: File

From: Kevin Lambert

Subject: Inorganic Data Review and Validation – SNL
Site: CWL GWM
AR/COC: 612854, 612855, 612856, 612857, and 612858
SDG: 250538
Laboratory: GEL
Project/Task: 146422.10.11.01
Analysis: Metals

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. This validation was performed according to SNL/NM ER Project AOP 00-03 Rev 2.

Summary

Seven samples were prepared and analyzed with approved procedures using methods EPA 6020 (ICP-MS metals) and EPA 7470A (CVAA mercury). Data were reported for all required analytes. Problems were identified with the data package that result in the qualification of data.

1. ICP-MS metals:
   The Tl CRI recovery associated with sample 250538-002 and the Cu CRI recovery associated with all samples were >130%. The Tl result for sample -002 and the Cu results for samples -002, -005, and -008 were detects at <5X the practical quantitation limit (PQL) and will be **qualified "J+,DL2."** All other associated sample results were non-detects and will not be qualified.

   Tl was detected in a continuing calibration blank (CCB) associated with sample -002 at a concentration ≥ the method detection limit (MDL) but < the PQL. The associated sample result was a detect <5X the CCB result and will be **qualified "0.0025U,B3"** at 5X the CCB value (mg/L). However, it should be noted that Tl result has already been qualified due to poor CRI recovery and will be **qualified "0.0025UJ"** with all appropriate reason code(s).

   The original Cu result and/or replicate Cu result were > the PQL but <5X the PQL, and the difference between the original and replicate Cu result was > the PQL. The Cu results for samples -002, -005, and -008 were detects and will be **qualified "J, RP2."** However, it should be noted that the associated Cu results have already been qualified due to poor CRI

recovery and will be **qualified "J+"** with all appropriate reason code(s). All other associated Cu results were non-detects and will be **qualified "UJ, RP2."**

Data are acceptable and reported QC measures appear to be adequate. The following sections discuss the data review and validation.

Holding Times and Preservation

The samples were analyzed within the prescribed holding times and properly preserved.

Calibration

All initial and continuing calibration QC acceptance criteria were met.

Reporting Limit Verification

All CRA/CRI recoveries met QC acceptance criteria.

Blanks

No target analytes were detected in the blanks except as noted above in the summary section and as follows.

Cu was detected in the method blank (MB) at concentration ≥ the MDL but < the PQL. The associated sample results were either non-detects or detects >5X the MB result and will not be qualified.

Matrix Spike (MS)

All MS recoveries met QC acceptance criteria except as follows.

ICP-MS metals:
The MS had a Ca and Na concentrations >4X the analyte spike concentrations and the MS recoveries did not meet QC acceptance criteria. However, according to AOP criteria, Ca and Na are not required MS analytes. No sample data will be qualified as a result.

Laboratory Replicate

The replicate analyses met all QC acceptance criteria except as noted above in the summary section.

Laboratory Control Sample (LCS)

All LCS recoveries met QC acceptance criteria.

Detection Limits/Dilutions

All detection limits were properly reported. No samples were diluted except as follows.

ICP-MS metals:
All samples were diluted 5X for several target analytes due to high concentrations and repeated instrument QC failures when analyzing undiluted results.

All associated batch QC samples were analyzed at dilution factors that resulted in relative dilution factors to the samples that were ≤5X. No sample data will be qualified as a result.

ICP Interference Check Sample (ICS A and AB)

The results of the ICS A and AB analyses were not evaluated because the concentrations of Al, Ca, Fe, and Mg in the samples were < those in the ICS solutions. No sample data will be qualified as a result.

ICP Serial Dilution

The serial dilution analyses met all QC acceptance criteria.

Other QC

An EB and field duplicate pair were submitted on the AR/COC(s). There are no "required" review criteria for field duplicate analyses comparability; no data will be qualified as a result. It should be noted that the EB on AR/COC# 612858 is associated with samples on AR/COC# 612859 from another SNL SDG.

No other specific issues that affect data quality were identified.

Sample Findings Summary - Revised (2)

Site: CWL GWM

AR/COC: 612859, 612860, 612861, and 612862

Organic, Metals

Sample ID	EPA 8260B (VOCs):	74-87-3 (chloromethane)	67-66-3 (chloroform)	75-05-8 (acetonitrile)	107-02-8 (acrolein)	78-83-1 (isobutyl alcohol)	107-12-0 (propionitrile)	EPA 6020 (ICP-MS):	7440-28-0 (Tl)	7440-62-2 (V)	7429-90-5 (Al)	EPA 7470A (CVAA):					
088571-001 CWL-MW5U		1.0U,B2 (µg/L)		UJ,I4	UJ,I4	UJ,I4	UJ,I4					All Acceptance criteria met. No sample data will be qualified.					
088572-001 CWL-MW5U				UJ,I4	UJ,I4	UJ,I4	UJ,I4										
088573-001 CWL-FB3				UJ,I4	UJ,I4	UJ,I4	UJ,I4										
088574-001 CWL-TB7				UJ,I4	UJ,I4	UJ,I4	UJ,I4										
088575-001 CWL-MW6L				UJ,I4	UJ,I4	UJ,I4	UJ,I4										
088576-001 CWL-FB4				UJ,I4	UJ,I4	UJ,I4	UJ,I4										
088577-001 CWL-TB8				UJ,I4	UJ,I4	UJ,I4	UJ,I4										
088578-001 CWL-MW5L			1.0U,B2 (µg/L)	UJ,I4	UJ,I4	UJ,I4	UJ,I4										
088579-001 CWL-FB5				UJ,I4	UJ,I4	UJ,I4	UJ,I4										
088580-001 CWL-TB9				UJ,I4	UJ,I4	UJ,I4	UJ,I4										
088581-001 CWL-MW2BL			1.0U,B2 (µg/L)	UJ,I4	UJ,I4	UJ,I4	UJ,I4										
088582-001 CWL-FB6				UJ,I4	UJ,I4	UJ,I4	UJ,I4										
088583-001 CWL-TB10				UJ,I4	UJ,I4	UJ,I4	UJ,I4										
088571-009 CWL-MW5U									0.0043U,B3 (mg/L)	R,MS3	R,MS3						
088572-009 CWL-MW5U										R,MS3	R,MS3						
088575-009 CWL-MW6L										R,MS3							
088578-009 CWL-MW5L										R,MS3							
088581-009 CWL-MW2BL										R,MS3	R,MS3						

Validated By: David Schwent

Date: 05/26/10 (Revised 7-26-10 DJS)

ANALYTICAL QUALITY ASSOCIATES, INC.

616 Maxine NE
Albuquerque, NM 87123
505-299-5201
www.aqainc.net

Memorandum – Revised (2)

DATE: July 26, 2010

TO: File

FROM: David Schwent

SUBJECT: Organic GC/MS Data Review and Validation - SNL
Site: CWL GWM
AR/COC: 612859, 612860, 612861, and 612862
SDG: 250927
Laboratory: GEL
Project/Task No: 146422.10.11.01

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. This validation was performed according to SNL/NM ER Project AOP 00-03 Rev 2.

Summary

All samples were prepared and analyzed with approved procedures using method EPA 8260B (VOCs). Problems were identified with the data package that result in the qualification of data.

Blanks: In the equipment blank (EB) (sample 250538-020) and the field blank (FB) (sample 250927-005), associated with samples 250927-001 and -003, chloromethane was detected at concentrations method detection limit (MDL) but < the practical quantitation limit (PQL). The associated result of sample -001 was a detect <5X the EB and FB concentrations and < the PQL and will be qualified "1.0U,B2" at the value of the PQL (µg/L).

Blanks: In the FB (sample 250927-013), associated with sample -011, chloroform was detected at a concentration > the PQL. The associated result of sample -011 was a detect <5X the FB concentration and < the PQL and will be qualified "1.0U,B2" at the value of the PQL (µg/L).

Blanks: In the FB (sample 250927-017), associated with sample -015, chloroform was detected at a concentration > the PQL. The associated result of sample -015 was a detect <5X the FB concentration and < the PQL and will be qualified "1.0U,B2" at the value of the PQL (µg/L).

Calibration: The initial calibration response factors (RFs) of acetonitrile, acrolein, isobutyl alcohol, and propionitrile were <0.05 but ≥0.01. All associated sample results were non-detects (NDs) and will be qualified "UJ,I4."

Data are acceptable. QC measures appear to be adequate. The following sections discuss the data review and validation.

Holding Times/Preservation

All samples were analyzed within the prescribed holding times and properly preserved.

Instrument Tune

All instrument tune requirements were met.

Calibration

All initial and continuing calibration QC acceptance criteria were met, except the following. The initial calibration verification (ICV) percent difference (%D) of pentachloroethane was >20% but ≤40% with negative bias. However, all associated sample results were NDs and no other calibration QC acceptance criteria were exceeded. Therefore, no sample data will be qualified as a result. The ICV and/or continuing calibration verification (CCV) %Ds of five target analytes were >20% with positive bias (see VOC Data Validation Worksheet). However, all associated sample results were NDs and will not be qualified.

Blanks

No target analytes were detected in the blanks, except as noted above in the summary section and the following. In the EB (sample 250538-020) and one or more of the FBs, samples 250927-005, -009, -013, and -017, bromodichloromethane, bromoform, chloroform, chloromethane, and dibromochloromethane were detected at concentrations > the MDLs. However, all associated sample results, except the results qualified above in the summary section, were NDs and will not be qualified.

Internal Standards (ISs)

All IS area and RT QC acceptance criteria were met.

Surrogates

All surrogate recovery and retention time QC acceptance criteria were met.

Laboratory Control Sample (LCS)

All LCS QC acceptance criteria were met.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

All MS/MSD (PS/PSD) QC acceptance criteria were met.

Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not requested.

Detection Limits/Dilutions

All detection limits were reported correctly. No samples required dilution.

Other QC

No field duplicates (FDs) were submitted on the AR/COCs.

No other specific issues were identified that affect data quality.

ANALYTICAL QUALITY ASSOCIATES, INC.

616 Maxine NE
Albuquerque, NM 87123
505-299-5201
www.aqainc.net

Memorandum

DATE: May 26, 2010

TO: File

FROM: David Schwent

SUBJECT: Inorganic Data Review and Validation - SNL
Site: CWL GWM
AR/COC: 612859, 612860, 612861, and 612862
SDG: 250927
Laboratory: GEL
Project/Task No: 146422.10.11.01

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. This validation was performed according to SNL/NM ER Project AOP 00-03 Rev 2.

Summary

The samples were prepared and analyzed with accepted procedures using methods EPA 6020 (ICP-MS) and EPA 7470A (CVAA). Problems were identified with the data package that result in the qualification of data.

ICP-MS Analysis:

Blanks: Tl was detected in the initial calibration blank (ICB) and continuing calibration blank (CCB) at concentrations > the method detection limit (MDL) but < the practical quantitation limit (PQL). The associated result of sample 250927-002 was a detect <5X the greatest calibration blank concentration (the CCB) and will be qualified "0.0043U,B3" at 5X the value of the CCB (mg/l). All other associated sample results were non-detects (NDs) and will not be qualified.

Blanks: V was detected in the ICB at a negative concentration with an absolute value > the MDL but < the PQL. All associated sample result were NDs and will be qualified "UJ,B4."

MS: The MS %Rs of Al and V were <30%. All associated sample results were NDs and will be qualified "R,MS3." It should be noted that V was previously qualified due to blank contamination, resulting in the final qualifier showed on the sample finding summary.

Data are acceptable. QC measures appear to be adequate. The following sections discuss the data review and validation.

Holding Times/Preservation

All Analyses: All samples were analyzed within the prescribed holding times and properly preserved.

ICP-MS Instrument Tune

ICP-MS Analysis: All instrument tune requirements were met.

Calibration

All Analyses: All initial and continuing calibration QC acceptance criteria were met.

Reporting Limit Verification

ICP-MS Analysis: All CRI recoveries met QC acceptance criteria, the following. The CRI %R of Tl was > the QC acceptance limit. However, all associated sample results were NDs and will not be qualified. It should be noted that the Tl result of sample -002 was qualified "U" (ND) due to blank contamination.

CVAA Analysis: All CRA recoveries met QC acceptance criteria.

Blanks

ICP-MS Analysis: No target analytes were detected in the blanks, except as noted above in the summary

CVAA Analysis: No target analytes were detected in the blanks.

ICP-MS Internal Standards

ICP-MS Analysis: All ICP-MS internal standards intensities met QC acceptance criteria.

Matrix Spike (MS)

All Analyses: All MS QC acceptance criteria were met, except as noted above in the summary section.

Laboratory Replicate

All Analyses: All replicate QC acceptance criteria were met.

Laboratory Control Sample (LCS)

All Analyses: All LCS QC acceptance criteria were met.

Detection Limits/Dilutions

ICP-MS Analysis: All detection limits were properly reported. All samples were diluted 5X for many target analytes due to high native sample concentrations of an internal standard. All associated batch QC samples were diluted at dilution factors that resulted in relative dilution factors to the sample that were ≤5X. No sample data will be qualified as a result. No other samples required dilution.

CVAA Analysis: All detection limits were properly reported. No samples required dilution.

ICP Interference Check Sample (ICS A and AB)

ICP-MS Analysis: All ICS A and AB QC acceptance criteria were met, except the following. For samples -008, -012, and -016, the sample Ca concentrations were > the ICS A Ca concentration and the ICS A results for Ba and Cd were > the MDL. However, all associated sample results were either NDs or detects >50X the ICS A result and will not be qualified.

ICP Serial Dilution

ICP-MS Analysis: The serial dilution analysis met all QC acceptance criteria.

Other QC

All Analyses: No equipment blanks (EBs), field blanks (FBs),or field duplicates (FDs) were submitted on the AR/COCs.

No other specific issues that affect data quality were identified.

Sample Findings Summary

Site: CWL GWM **AR/COC:** 612859, 612860, 612861, and 612862 **Metals**

Sample ID	EPA 6020 (ICP-MS):	7440-62-2 (V)													
088571-R09 CWL-MW5U		UJ,MS3													
088572-R09 CWL-MW5U		UJ,MS3													
088575-R09 CWL-MW6L															
088578-R09 CWL-MW5L															
088581-R09 CWL-MW2BL		UJ,MS3													

Validated By: David Schwent **Date:** 07/07/10

ANALYTICAL QUALITY ASSOCIATES, INC.

616 Maxine NE
Albuquerque, NM 87123
505-299-5201
www.aqainc.net

Memorandum

DATE: July 7, 2010

TO: File

FROM: David Schwent

SUBJECT: Inorganic Data Review and Validation - SNL
Site: CWL GWM
AR/COC: 612859, 612860, 612861, and 612862
SDG: 254619
Laboratory: GEL
Project/Task No: 146422.10.11.01

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. This validation was performed according to SNL/NM ER Project AOP 00-03 Rev 2.

Summary

The samples were prepared and analyzed with accepted procedures using method EPA 6020 (ICP-MS). Problems were identified with the data package that result in the qualification of data.

ICP-MS Analysis:

MS: The MS percent recovery (%R) of V was <75% but ≥30%. All associated sample results were non-detects (NDs) and will be qualified "UJ,MS3."

Data are acceptable. QC measures appear to be adequate. The following sections discuss the data review and validation.

Holding Times/Preservation

All samples were analyzed within the prescribed holding times and properly preserved.

ICP-MS Instrument Tune

All instrument tune requirements were met.

Calibration

All initial and continuing calibration QC acceptance criteria were met.

Reporting Limit Verification

All CRI QC acceptance criteria were met.

Blanks

No target analytes were detected in the blanks, except the following. V was detected in the continuing calibration blank (CCB) at a concentration > the method detection limit (MDL) but < the practical quantitation limit. However, all associated sample results were NDs and will not be qualified.

ICP-MS Internal Standards

All ICP-MS internal standards QC acceptance criteria were met.

Matrix Spike (MS)

All MS QC acceptance criteria were met, except as noted above in the summary section. It should be noted that a post spike (PS) analysis was performed as a second measure of matrix-specific accuracy. However, only the MS analysis was used to evaluate sample data.

Laboratory Replicate

All replicate QC acceptance criteria were met.

Laboratory Control Sample (LCS)

All LCS QC acceptance criteria were met.

Detection Limits/Dilutions

All detection limits were properly reported. Sample -005 was diluted 5X for V as per the laboratory SOP. All associated batch QC samples were diluted at dilution factors that resulted in relative dilution factors to the sample that were ≤5X. No sample data will be qualified as a result. No other samples required dilution.

ICP Interference Check Sample (ICS A and AB)

Results of the ICS A and AB analyses were not evaluated because the concentrations of Al in the samples were < the concentration of Al in the ICS solution. No sample data will be qualified as a result.

ICP Serial Dilution

All serial dilution QC acceptance criteria were met.

Other QC

No field blanks (FBs) were submitted on the AR/COCs. All relative percent differences (RPDs) of the field duplicate (FD), sample -004, were <20%. There are no "required" review criteria for FD analysis comparability. No sample data will be qualified as a result.

No other specific issues that affect data quality were identified.

Environmental Restoration Project Consolidated Quarterly Report

Section III

Perchlorate Screening Quarterly Monitoring Report Second Quarter of Calendar Year 2010 (April, May, and June 2010)

September 2010

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.

Section III:

Perchlorate Screening Quarterly Monitoring Report Second Quarter of Calendar Year 2010 (April, May, and June 2010)

Executive Summary

Section IV.B of the Compliance Order on Consent (the Order), between the New Mexico Environment Department (NMED), the U.S. Department of Energy (DOE), and Sandia Corporation (Sandia) for Sandia National Laboratories/New Mexico (SNL/NM), effective on April 29, 2004, stipulates that a select group of groundwater monitoring wells be sampled for perchlorate at SNL/NM (NMED April 2004). This report summarizes the perchlorate monitoring completed during the second quarter of Calendar Year 2010 (CY2010) (April, May, and June 2010) in response to the requirements of the Order. During the second quarter of CY2010, groundwater samples were collected from TA1-W-03, TA1-W-06, TA1-W-08, TA2-W-01, and TA2-W-27.

TA1-W-06, TA1-W-08, TA2-W-01, and TA2-W-27 are in the Tijeras Arroyo Groundwater (TAG) Investigation study area and were sampled for the fourth time for perchlorate based on requirements stipulated in an April 2009 letter from the NMED (NMED April 2009). TA1-W-03 is also in the TAG Investigation study area and was sampled for perchlorate for the second time during this reporting period.

All samples were submitted to General Engineering Laboratories (GEL) for perchlorate analysis using U.S. Environmental Protection Agency (EPA) Method 314.0 (EPA November 1999). No perchlorate was detected in the environmental samples from TA1-W-03, TA1-W-06, TA1-W-08, TA2-W-01, or TA2-W-27 at a method detection limit of 4 micrograms per liter (μg/L). No perchlorate has been detected during four consecutive quarterly sampling events at TA1-W-06, TA1-W-08, TA2-W-01, or TA2-W-27, so these wells will be removed from the perchlorate screening well network.

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Appendices

Appendix A. Analytical Laboratory Certificates of Analysis for the Perchlorate Data

Appendix B. Data Validation Sample Findings Summary Sheets for the Perchlorate Data

1.0 Introduction

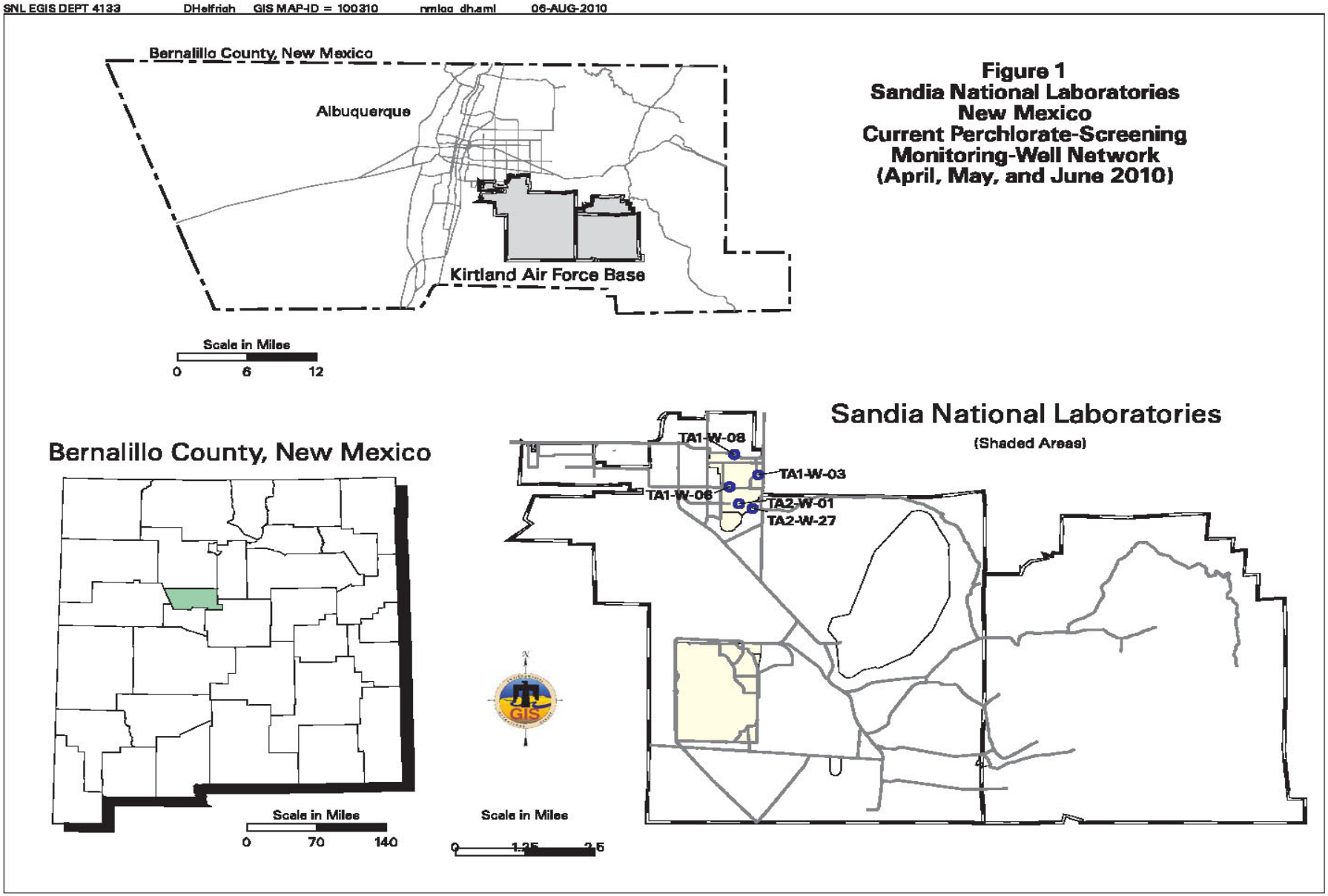
Section IV.B of the Compliance Order on Consent (the Order), between the New Mexico Environment Department (NMED), the U.S. Department of Energy (DOE), and Sandia Corporation (Sandia) for Sandia National Laboratories/New Mexico (SNL/NM), effective on April 29, 2004, stipulates that a select group of groundwater monitoring wells be sampled for perchlorate at SNL/NM (NMED April 2004). This report summarizes the perchlorate screening monitoring completed during the second quarter of Calendar Year 2010 (CY2010) (April, May, and June 2010) in response to the requirements of the Order. The outline of this report is based on the required elements of a "Periodic Monitoring Report" described in Section X.D. of the Order (NMED April 2004).

In November 2005, DOE/Sandia submitted a letter report on the status of perchlorate screening in groundwater at SNL/NM monitoring wells (SNL/NM November 2005). The purpose of that letter report was to summarize previous correspondence and sampling results, and to outline proposed future work to comply with NMED requirements for perchlorate screening in groundwater. Per the letter report, quarterly reports will be submitted for wells actively in the perchlorate-screening monitoring-well network. Based on the NMED response (NMED January 2006), DOE/Sandia will submit each quarterly report within 90 days following the quarter that the data represent. In November 2008, DOE/Sandia received approval from NMED to proceed to semiannual reporting (NMED November 2008), and then upon further consideration NMED once more required quarterly reporting (NMED April 2009).

This report is the eighteenth to be submitted since the November 2005 letter report; the previous reports were submitted for the Fourth Quarter of Calendar Year 2005 through the First Quarter of Calendar Year 2010 (SNL/NM February 2006, June 2006, September 2006, December 2006, March 2007, June 2007, September 2007, December 2007, March 2008, June 2008, September 2008, December 2008, June 2009, September 2009, December 2009, March 2010, and June 2010).

Groundwater monitoring wells TA1-W-06, TA1-W-08, TA2-W-01, and TA2-W-27 have been sampled four consecutive quarters; and TA1-W-03 has been sampled twice (Figure 1). The Order requires that new wells be sampled for perchlorate for a minimum of four quarters (NMED April 2004). Reporting will continue as long as a groundwater monitoring well remains in the perchlorate-screening monitoring well network unless negotiated otherwise with NMED.

Figure 1. Sandia National Laboratories, New Mexico Current Perchlorate-Screening Monitoring-Well Network (April, May, and June 2010)



2.0 Scope of Activities

This report provides perchlorate screening results from the second quarter of CY2010 (April, May, and June 2010) for the wells currently active in the perchlorate screening program as shown on Figure 1 and listed in Table 1. Per the requirements of Table XI-1 of the Order, a well with four consecutive quarters of non-detect results at the screening level/method detection limit (MDL) of 4 micrograms per liter (μg/L) is removed from the requirement of continued monitoring for perchlorate. Data from numerous wells identified in the Order have satisfied this requirement and, therefore, these wells have been removed from the perchlorate screening program. Data for these wells were provided in previous reports, and are not discussed in this current report. Wells discussed in previous perchlorate screening reports include: CYN-MW1D, CYN-MW5, CYN-MW7, CYN-MW8, LWDS-MW1, MRN-2, MRN-3D, MWL-BW1, MWL-BW2, MWL-MW1, MWL-MW7, MWL-MW8, MWL-MW9, NWTA3-MW2, and SWTA3-MW4.

Table 1
Current Perchlorate-Screening Monitoring-Well Network
Second Quarter of CY2010
(April, May, and June 2010)

Well	Date Sampled	Number of Consecutive Sampling Events[a]	Remaining Number of Sampling Events[b]	Sampling Equipment
TA1-W-03	03-MAY-2010	2	2	Bennett™ Pump
TA1-W-06	04-MAY-2010	4	0	Bennett™ Pump
TA1-W-08	05-MAY-2010	4	0	Bennett™ Pump
TA2-W-01	06-MAY-2010	4	0	Bennett™ Pump
TA2-W-27	11-MAY-2010	4	0	Bennett™ Pump

Notes
[a] Includes this sampling event.
[b] Per the requirements of Table XI-1 of the Order (NMED April 2004) a well will be removed from the perchlorate-screening monitoring-well network after four quarters unless perchlorate is detected above the screening level/MDL of 4 μg/L. If perchlorate is detected above the screening level/MDL in a specific well, monitoring will continue at that well at a frequency negotiated with the NMED.

DOE/Sandia performed groundwater sampling at five wells on the dates listed in Table 1; these wells were specifically required by NMED's April 2009 letter (NMED April 2009). Groundwater sampling activities were conducted in conformance with procedures outlined in the investigation-specific sampling and analysis plan (SAP) entitled:

- "Tijeras Arroyo Groundwater Investigation, Mini-SAP for FY10, 3rd Quarter Sampling, May 2010" (SNL/NM April 2010),

As described in the Mini-SAP, groundwater sampling was performed in conformance with current Sandia Environmental Management, Long Term Environmental Stewardship (LTES) Project field operating procedures (FOPs). A portable Bennett™ groundwater sampling system was used to collect the groundwater samples. The sampling pump and tubing bundle were decontaminated prior to installation into monitoring wells in accordance with procedures described in FOP 05-03, "LTES Groundwater Sampling Equipment Decontamination" (SNL/NM August 2007a). Wells TA1-W-03, TA1-W-06, TA1-W-08, TA2-W-01, and TA2-W-27 were purged a minimum of one saturated screen volume before sampling in conformance with FOP 05-01, "LTES Groundwater Monitoring Well Sampling and Field Analytical Measurements" (SNL/NM August 2007b).

Field water-quality measurements for turbidity, potential of hydrogen (pH), temperature, specific conductance (SC), oxidation-reduction potential (ORP), and dissolved oxygen (DO) were obtained from the well prior to collecting groundwater samples. Groundwater temperature, SC, ORP, DO, and pH were measured with a YSI™ Model 620 Water Quality Meter. Turbidity was measured with a HACH™ Model 2100P turbidity meter. Purging continued until four stable measurements for turbidity, pH, temperature, and SC were obtained. Groundwater stability is considered acceptable when:

- Turbidity measurements are within 10 percent, or less than 5 nephelometric turbidity units (NTUs)
- pH is within 0.1 units,
- Temperature is within 1.0 degrees Celsius, and
- SC is within 5 percent.

Field Measurement Logs documenting details of well purging and water quality measurements were submitted to the Sandia Customer-Funded Records Center.

The groundwater samples were submitted to General Engineering Laboratories (GEL) for chemical analysis for perchlorate using U.S. Environmental Protection Agency (EPA) Method 314.0 (EPA November 1999). The sample identification, Analysis Request/Chain-of-Custody (ARCOC) form number, and the associated groundwater investigation are provided in Table 2. The analytical report from GEL, including certificates of analyses (COA) (Appendix A), analytical methods, MDLs, practical quantitation limits (PQLs), dates of analyses, results of quality control (QC) analyses, and data validation findings (Appendix B) have been submitted to the Sandia Customer-Funded Records Center.

Table 2
Sample Details for the Second Quarter of CY2010 Perchlorate Sampling

Well	Sample Identification	ARCOC Number	Associated Groundwater Investigation
TA1-W-03	088976-020	612995	TAG
TA1-W-06	088977-020	612996	TAG
TA1-W-08	088979-020 088980-020	612998	TAG
TA2-W-01	088981-020	612999	TAG
TA2-W-27	088982-020	613000	TAG

Notes

ARCOC = Analysis request and chain of custody.
TAG = Tijeras Arroyo Groundwater.

3.0 Regulatory Criteria

In a given monitoring well, four consecutive non-detects (NDs) using the screening level/MDL of 4 μg/L are considered by the NMED to be evidence of the absence of perchlorate, such that additional monitoring for perchlorate in that well is not required. If perchlorate is detected using the screening level/MDL of 4 μg/L in a specific well, then monitoring will continue at that well at a frequency negotiated with the NMED. The Order (NMED April 2004) also requires that for detections equal to or greater than 4 μg/L, the DOE/Sandia will evaluate the nature and extent of perchlorate contamination, based on a screening level/MDL of 4 μg/L, and requires that the results of this evaluation be incorporated into a Corrective Measures Evaluation (CME). Section VII.C of the Order clarifies that the CME process will be initiated where there was a release to the environment and where corrective measures are necessary to protect human health or the environment.

In April 2009, DOE/Sandia received a letter from the NMED requiring DOE/Sandia to characterize the nature and extent of the perchlorate contamination in soils and groundwater in the BSG study area (NMED April 2009). A characterization work plan was prepared and submitted to the NMED (SNL/NM November 2009), approved by the NMED (NMED February 2010), and implemented in July 2010. In the April 2009 letter the NMED had also requested that DOE/Sandia monitor perchlorate concentrations for a minimum of four quarters at several Tijeras Arroyo Groundwater monitoring wells, including TA1-W-03, TA1-W-06, TA1-W-08, TA2-W-01, and TA2-W-27 (NMED April 2009).

4.0 Monitoring Results

Table 3 summarizes current and historical perchlorate results for wells currently in the perchlorate-screening monitoring network. The analytical laboratory COA for the first quarter of CY2010 perchlorate data is included as Appendix A. Consistent with historical analytical results, perchlorate was not detected above the screening level in TA1-W-03, TA1-W-06, TA1-W-08, TA2-W-01, or TA2-W-27.

Table 4 summarizes field water quality measurements collected immediately before the analytical sample was collected. Field water quality measurements include turbidity, pH, temperature, SC, ORP, and DO.

The analytical data were reviewed and qualified in accordance with Administrative Operating Procedure (AOP) 00-03 Revision 2, "Data Validation Procedure for Chemical and Radiochemical Data" (SNL/NM July 2007). No validation qualifiers were assigned to the analytical results, and no problems were identified with the analytical data that resulted in the qualification of the data as unusable. The data are acceptable and reported quality control measures are adequate. The data validation sample findings summary sheets for the perchlorate data are included as Appendix B.

No variances or nonconformances in field activities or field conditions from requirements in the groundwater monitoring mini-SAP (SNL/NM April 2010) were identified during the second quarter of CY2010 sampling activities.

5.0 Summary and Conclusions

Based on the analytical data presented in Table 3 and in previous reports, the following statements can be made:

- No perchlorate was detected in the environmental samples from groundwater monitoring wells TA1-W-03, TA1-W-06, TA1-W-08, TA2-W-01, or TA2-W-27 at a screening level/MDL of 4 μg/L.
- Since June 2004 (the start of sampling required by the Order), perchlorate has only been detected above the screening level/MDL (4 μg/L) in one of the wells (CYN-MW6, currently sampled during the first and third quarters of the CY) in the perchlorate-screening monitoring-well network.

DOE/Sandia will continue semiannual monitoring of perchlorate in CYN-MW6 and quarterly monitoring of perchlorate in TA1-W-03. No perchlorate has been detected during four consecutive quarterly sampling events at TA1-W-06, TA1-W-08, TA2-W-01, and TA2-W-27, so these wells will be removed from the perchlorate screening well network.

Table 3
Summary of Perchlorate Screening Analytical Results for the Current Monitoring-Well Network, as of Second Quarter of CY2010.

Well ID	Sample Date	ARCOC No.	Sample No.	Perchlorate Result[a] (µg/L)	MDL[b] (µg/L)	PQL[c] (µg/L)	MCL[d] (µg/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Analytical Method[g]	Comments
TA1-W-03	26-Feb-10	612604	088220-020	ND	4.0	12	NE	U		EPA 314.0	
	03-May-10	612995	088976-020	ND	4.0	12	NE	U		EPA 314.0	
TA1-W-06	21-Jul-09	612301	087550-020	ND	4.0	12	NE	U		EPA 314.0	
			087551-020	ND	4.0	12	NE	U		EPA 314.0	Duplicate sample
	28-Oct-09	612463	087872-020	ND	4.0	12	NE	U		EPA 314.0	
	11-Jan-10	612513	088014-020	ND	4.0	12	NE	U		EPA 314.0	
	04-May-10	612996	088977-020	ND	4.0	12	NE	U		EPA 314.0	
TA1-W-08	22-Jul-09	612302	087553-020	ND	4.0	12	NE	U		EPA 314.0	
	29-Oct-09	612464	087873-020	ND	4.0	12	NE	U		EPA 314.0	
	12-Jan-10	612514	088015-020	ND	4.0	12	NE	U		EPA 314.0	
	05-May-10	612998	088979-020	ND	4.0	12	NE	U		EPA 314.0	
			088980-020	ND	4.0	12	NE	U		EPA 314.0	Duplicate sample
TA2-W-01	30-Jul-09	612306	087562-020	ND	4.0	12	NE	U		EPA 314.0	
	30-Oct-09	612466	087875-020	ND	4.0	12	NE	U		EPA 314.0	
			087876-020	ND	4.0	12	NE	U		EPA 314.0	Duplicate sample
	13-Jan-10	612515	088016-020	ND	4.0	12	NE	U		EPA 314.0	
	06-May-10	612999	088981-020	ND	4.0	12	NE	U		EPA 314.0	
TA2-W-27	03-Aug-09	612308	087566-020	ND	4.0	12	NE	U		EPA 314.0	
			087567-020	ND	4.0	12	NE	U		EPA 314.0	Duplicate sample
	02-Nov-09	612467	087877-020	ND	4.0	12	NE	U		EPA 314.0	
	14-Jan-10	612517	088020-020	ND	4.0	12	NE	U		EPA 314.0	
			088021-020	ND	4.0	12	NE	U		EPA 314.0	Duplicate sample
	11-May-10	613000	088982-020	ND	4.0	12	NE	U		EPA 314.0	

Notes

[a]Result

ND = not detected (at method detection limit).

µg/L = micrograms per liter.

Table 3 (concluded)
Summary of Perchlorate Screening Analytical Results for the Current Monitoring-Well Network, as of Second Quarter of CY2010.

Notes (continued)

[b]MDL
Method detection limit. The minimum concentration that can be measured and reported with 99% confidence that the analyte is greater than zero, MDL is matrix-specific.

[c]PQL
Practical quantitation limit. The lowest concentration of analytes 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]MCL
Maximum contaminant level. Established by the U.S. Environmental Protection Agency Primary Water Regulations [40 CFR 141.11(b)], and subsequent amendments of the New Mexico Environmental Improvement Board in Title 20, Chapter 7, Part 1 of the New Mexico Administrative Code (20MAC 7.1).
NE = Not established.

[e]Lab Qualifier
U = Analyte is absent or below the method detection limit.

[f]Validation Qualifier
If cell is blank, then all quality control samples meet acceptance criteria with respect to submitted samples and no qualifier was assigned.

[g]Analytical Method
EPA 314.0: U.S. Environmental Protection Agency, November 1999, "Perchlorate in Drinking Water Using Ion Chromatography," EPA 815/R-00-014 (EPA November 1999).

ID = Identification
ARCOC = Analysis Request/Chain of Custody
CY = Calendar Year

Table 4
Perchlorate Screening Groundwater Monitoring
Field Water Quality Measurements[a], Second Quarter of CY2010

Well ID	Sample Date	Temperature (^{0}C)	Specific Conductivity (μmho/cm)	Oxidation Reduction Potential (mV)	pH	Turbidity (NTU)	Dissolved Oxygen (% Sat)	Dissolved Oxygen (mg/L)
TA1-W-03	03-May-10	15.83	1585	300.2	7.35	0.36	82.0	8.08
TA1-W-06	04-May-10	19.79	812	276.3	7.37	1.81	85.7	7.81
TA1-W-08	05-May-10	19.87	1813	264.4	7.26	0.23	81.0	7.34
TA2-W-01	06-May-10	19.71	597	244.9	7.40	2.30	85.8	7.83
TA2-W-27	11-May-10	19.67	784	289.8	7.34	0.22	90.0	8.26

Notes

[a]	Field measurements made immediately before the groundwater sample was collected.
^{O}C	degrees Celsius.
% Sat	percent saturation.
μmho/cm	micromhos per centimeter.
CY	Calendar Year
ID	Identification
mg/L	milligrams per liter.
mV	millivolts.
NTU	nephelometric turbidity units.
pH	potential of hydrogen (negative logarithm of the hydrogen ion concentration).

Based on recent requirements (NMED April 2009), DOE/Sandia has prepared and submitted a work plan that describes efforts to characterize the nature and extent of the perchlorate contamination in soils and groundwater in the BSG study area. In February 2010 NMED approved the work plan (NMED February 2010) and the activities described in the work plan were implemented in July 2010. The four new wells installed in the BSG study area (CYN-MW9, CYN-MW10, CYN-MW11, and CYN-MW12) will be added to the perchlorate screening well network and quarterly sampling results will be reported in the next quarterly report (December 2010).

6.0 References

EPA (see US Environmental Protection Agency).

New Mexico Environment Department (NMED) April 2004. "Compliance Order on Consent Pursuant to the New Mexico Hazardous Waste Act 74-4-10: Sandia National Laboratories Consent Order," New Mexico Environment Department, April 24, 2004.

New Mexico Environment Department (NMED) January 2006. "RE: Monitoring Groundwater for Perchlorate, Report of November 22, 2005. Sandia National Laboratories EPA ID# NM5890110518." Letter to Patty Wagner (SSO/NNSA) and Peter Davies (SNL/NM) from James Bearzi. January 27, 2006.

New Mexico Environment Department (NMED) November 2008. "RE: Perchlorate Issues" Personal Communication (electronic mail) to John Cochran (SNL/NM) from Sid Brandwein (NMED/HWB). November 07, 2008.

New Mexico Environment Department (NMED) April 2009. RE: Perchlorate Contamination in Groundwater, Sandia National Laboratories, EPA ID# NM5890110518." Letter to Kimberly Davis (SSO/NNSA) and Francis Nimick (SNL/NM) from James Bearzi. April 30, 2009.

New Mexico Environment Department (NMED) February 2010. RE: Notice of Conditional Approval, Burn Site Groundwater Characterization Work Plan, November 2009, Sandia National Laboratories, EPA ID# NM5890110518, SNL-09-017." Letter to Patty Wagner (SSO/NNSA) and Marianne Walck (SNL/NM) from James Bearzi. February 12, 2010.

Sandia National Laboratories, New Mexico (SNL/NM) November 2005. To James Bearzi (NMED), "Letter Report on the Status of Perchlorate Screening in Groundwater at Sandia Monitoring Wells" Sandia National Laboratories, New Mexico Environmental Restoration Project. November 22, 2005.

Sandia National Laboratories, New Mexico (SNL/NM) February 2006. "Perchlorate Screening Quarterly Monitoring Report, Fourth Quarter of Calendar Year 2005 (October, November, and December 2005)". Sandia National Laboratories, New Mexico Environmental Restoration Project. February 24, 2006.

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Calendar Year 2007 (October, November, and December 2007)". Sandia National Laboratories, New Mexico Environmental Restoration Project. March 26, 2008.

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U.S. Environmental Protection Agency (EPA) November 1999, "Perchlorate in Drinking Water Using Ion Chromatography," EPA 815/R-00-014. November 1999.

Appendix A

Analytical Laboratory Certificates of Analysis for the Perchlorate Data

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Page 1 of 1

Batch No. N/A

SMO Use

AR/COC 612995

Dept. No./Mail Stop:	4133/1126	Date Samples Shipped:	5/3/10	Project/Task No. 125778.10.11.01	☐ Waste Characterization
Project/Task Manager:	Don Schofield	Carrier/Waybill No.	713085	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	TAG-GWM	Lab Contact:	Edie Kent/803-556-8171	Contract #: PO 691436	
Record Center Code:	ER/1306/DAT	Lab Destination:	GEL		☐ Released by COC No.:
Logbook Ref. No.:	NA	SMO Contact/Phone:	Pam Puissant/505-844-3185	SEE BOTTLE ORDER	☑ Validation Required
Service Order No.	CFO# 010-10	Send Report to SMO:	Lorraine Herrera /505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154 252183/.

Reference LOV(available at SMO) 5/3/10

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preservative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
088976-020	TA1-W-03	358	N/A	05/03/10 0937	GW	P	~~250~~ 500 ml	4C	G	SA	Perchlorate (314.0)	001

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☐ 15 Day ☑ 30 Day

Return Samples By: ☐ Negotiated TAT

Sample Tracking — Smo Use
Date Entered(mm/dd/yy)
Entered by
QC Inits.

Special Instructions/QC Requirements
EDD ☑ Yes ☐ No
Level D Package ☐ Yes ☑ No
*Send report to:
Tim Jackson/ORG. 4133/MS 0729/ 284-2547

Abnormal Conditions on Receipt

Lab Use

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	Robert Lynch	[signature]	RL	Weston/4133/844-4013/250-7090
	Alfred Santillanes	[signature]		Weston/4133/844-5130/228-0710

*Please list as separate report.

1.Relinquished by [signature]	Org. 4133	Date 5/3/10	Time 1000	4.Relinquished by	Org.	Date	Time
1. Received by [signature]	Org. 4133	Date 5/3/10	Time 1000	4. Received by	Org.	Date	Time
2.Relinquished by [signature]	Org. 4133	Date 5/3/10	Time 1150	5.Relinquished by	Org.	Date	Time
2. Received by [signature]	Org GEL	Date 5-4-10	Time 0710	5. Received by	Org.	Date	Time
3.Relinquished by	Org.	Date	Time	6.Relinquished by	Org.	Date	Time
3. Received by	Org.	Date	Time	6. Received by	Org.	Date	Time

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : Sandia National Laboratories
Address : MS-0756, Org. 06765, Bldg. 823/Rm. 4276
1515 Eubank SE
Albuquerque, New Mexico 87123
Contact: Ms. Pamela M. Puissant
Project: **Level C, Groundwater Monitoring**

Report Date: May 25, 2010

Client Sample ID:	088976-020	Project:	SNLSGWater
Sample ID:	252183001	Client ID:	SNLS003
Matrix:	AQUEOUS		
Collect Date:	03-MAY-10 09:37		
Receive Date:	04-MAY-10	Client Desc.:	TA1-W-03
Collector:	Client	Vol. Recv.:	

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Ion Chromatography										
EPA 314.0 Perchlorate by IC "As Received"										
Perchlorate	U	ND	0.004	0.012	mg/L	1	MAR105/17/10	1615	982738	1

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 314.0 DOE-AL	

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Page 1 of 1

Batch No. N/A

SMO Use

AR/COC 612996

Dept. No./Mail Stop:	4133/1126	Date Samples Shipped:	5/4/10	Project/Task No. 125778.10.11.01	☐ Waste Characterization
Project/Task Manager:	Don Schofield	Carrier/Waybill No.	1/3163	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	TAG-GWM	Lab Contact:	Edie Kent/803-556-8171	Contract #: PO 691436	
Record Center Code:	ER/1306/DAT	Lab Destination:	GEL	SMO BOTTLE ORDER	☐ Released by COC No.:
Logbook Ref. No.:	NA	SMO Contact/Phone:	Pam Puissant/505-844-3185		☑ Validation Required
Service Order No.	CFO# 010-10	Send Report to SMO:	Lorraine Herrera /505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
088977-020	TA1-W-06	31B.5	N/A	05/04/10 0929	GW	P	500 ml	4C	G	SA	Perchlorate (314.0)	002

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☐ 15 Day ☑ 30 Day

Return Samples By: ☐ Negotiated TAT

Sample Tracking — Smo Use
Date Entered(mm/dd/yy)
Entered by:
QC Inits

Special Instructions/QC Requirements
EDD ☑ Yes ☐ No
Level D Package ☐ Yes ☑ No
*Send report to:
Tim Jackson/ORG. 4133/MS 0729/ 284-2547

Abnormal Conditions on Receipt

Lab Use

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	Robert Lynch	Robert Lynch	RL	Weston/4133/844-4013/250-7090
	Alfred Santillanes	Alfred Santillanes	AS	Weston/4133/844-5130/228-0710

*Please list as separate report.

1.Relinquished by	Org. 4133	Date 5/4/10	Time 0955		4.Relinquished by	Org.	Date	Time
1. Received by	Org. 4133	Date 5/4/10	Time 0955		4. Received by	Org.	Date	Time
2.Relinquished by	Org. 4133	Date 5/4/10	Time 1135		5.Relinquished by	Org.	Date	Time
2. Received by	Org. GEL	Date 5-6-10	Time 0710		5. Received by	Org.	Date	Time
3.Relinquished by	Org.	Date	Time		6.Relinquished by	Org.	Date	Time
3. Received by	Org.	Date	Time		6. Received by	Org.	Date	Time

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Certificate of Analysis

Company : Sandia National Laboratories
Address : MS-0756, Org. 06765, Bldg. 823/Rm. 4276
1515 Eubank SE
Albuquerque, New Mexico 87123
Contact: Ms. Pamela M. Puissant
Project: **Level C, Groundwater Monitoring**

Report Date: May 25, 2010

Client Sample ID: 088977-020
Sample ID: 252183002
Matrix: AQUEOUS
Collect Date: 04-MAY-10 09:29
Receive Date: 06-MAY-10
Collector: Client

Project: SNLSGWater
Client ID: SNLS003

Client Desc.: TA1-W-06
Vol. Recv.:

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Ion Chromatography										
EPA 314.0 Perchlorate by IC "As Received"										
Perchlorate	U	ND	0.004	0.012	mg/L	1	MAR105/17/10	1718	982738	1

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 314.0 DOE-AL	

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Page 1 of 1

Batch No. N/A

SMO Use

AR/COC 612998

Dept. No./Mail Stop:	4133/1126	Date Samples Shipped:	5/5/10	Project/Task No. 125778.10.11.01	☐ Waste Characterization
Project/Task Manager:	Don Schofield	Carrier/Waybill No:	713164	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	TAG-GWM	Lab Contact:	Edie Kent/803-556-8171	Contract #: PO 691436	
Record Center Code:	ER/1306/DAT	Lab Destination:	GEL	SEE BOTTLE ORDER	☐ Released by COC No.: ____
Logbook Ref. No.:	NA	SMO Contact/Phone:	Pam Puissant/505-844-3185		☑ Validation Required
Service Order No.	CFO# 010-10	Send Report to SMO:	Lorraine Herrera /505-844-3199		Bill To: Sandia National Labs (Accounts Payable) P.O. Box 5800 MS 0154 Albuquerque, NM 87185-0154
Location	Tech Area				
Building	Room				

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preservative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
088979-020	TA1-W-08	320	NA	05/05/10 0905	GW	P	500 ml	4C	G	SA	Perchlorate (314.0)	003
088980-020	TA1-W-08	320	↓	05/05/10 0905	GW	P	500 ml	4C	G	DU	Perchlorate (314.0)	004

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☐ 15 Day ☑ 30 Day

Return Samples By: ☐ Negotiated TAT

Sample Tracking — Smo Use
Date Entered(mm/dd/yy)
Entered by
QC Initls.

Special Instructions/QC Requirements
EDD ☑ Yes ☐ No
Level D Package ☐ Yes ☑ No
*Send report to:
Tim Jackson/ORG. 4133/MS 0729/ 284-2547

*Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	Robert Lynch	Robert Lynch	RL	Weston/4133/844-4013/250-7090
	Alfred Santillanes	Alfred Santillanes	AS	Weston/4133/844-5130/228-0710

1.Relinquished by	Alfred Santillanes	Org. 4133	Date 5/5/10	Time 0732	4.Relinquished by	Org.	Date	Time
1. Received by	[illegible]	Org. 4133	Date 5/5/10	Time 0932	4. Received by	Org.	Date	Time
2.Relinquished by	[illegible]	Org. 4133	Date 5/5/10	Time 1178	5.Relinquished by	Org.	Date	Time
2. Received by	[illegible]	Org. GEL	Date 5-6-10	Time 0710	5. Received by	Org.	Date	Time
3.Relinquished by		Org.	Date	Time	6.Relinquished by	Org.	Date	Time
3. Received by		Org.	Date	Time	6. Received by	Org.	Date	Time

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Company : Sandia National Laboratories
Address : MS-0756, Org. 06765, Bldg. 823/Rm. 4276
1515 Eubank SE
Albuquerque, New Mexico 87123
Contact: Ms. Pamela M. Puissant
Project: **Level C, Groundwater Monitoring**

Report Date: May 25, 2010

Client Sample ID:	088979-020	Project:	SNLSGWater
Sample ID:	252183003	Client ID:	SNLS003
Matrix:	AQUEOUS		
Collect Date:	05-MAY-10 09:05		
Receive Date:	06-MAY-10	Client Desc.:	TA1-W-08
Collector:	Client	Vol. Recv.:	

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Ion Chromatography										
EPA 314.0 Perchlorate by IC "As Received"										
Perchlorate	U	ND	0.004	0.012	mg/L	1	MAR1 05/17/10	1740	982738	1

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 314.0 DOE-AL	

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Address : MS-0756, Org. 06765, Bldg. 823/Rm. 4276
1515 Eubank SE
Albuquerque, New Mexico 87123
Contact: Ms. Pamela M. Puissant
Project: **Level C, Groundwater Monitoring**

Report Date: May 25, 2010

Client Sample ID: 088980-020
Sample ID: 252183004
Matrix: AQUEOUS
Collect Date: 05-MAY-10 09:05
Receive Date: 06-MAY-10
Collector: Client

Project: SNLSGWater
Client ID: SNLS003

Client Desc.: TA1-W-08
Vol. Recv.:

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Ion Chromatography										
EPA 314.0 Perchlorate by IC "As Received"										
Perchlorate	U	ND	0.004	0.012	mg/L	1	MAR105/17/10	1801	982738	1

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 314.0 DOE-AL	

201005632 22

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Page 1 of 1

Batch No. N/A

SMO Use

AR/COC **612999**

Dept. No./Mail Stop:	4133/1126	Date Samples Shipped:	5/6/10	Project/Task No. 125778.10.11.01	☐ Waste Characterization
Project/Task Manager:	Don Schofield	Carrier/Waybill No.	1 1 9 2 2 2	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	TAG-GWM	Lab Contact:	Edie Kent/803-556-8171	Contract #: PO 691436	
Record Center Code:	ER/1306/DAT	Lab Destination:	GEL	SEE BOTTLE ORDER	☐ Released by COC No.:
Logbook Ref. No.:	NA	SMO Contact/Phone:	Pam Puissant/505-844-3185		☑ Validation Required
Service Order No.	CFO# 010-10	Send Report to SMO:	Lorraine Herrera /505-844-3199		Bill To: Sandia National Labs (Accounts Payable) P.O. Box 5800 MS 0154 Albuquerque, NM 87185-0154
Location	Tech Area				
Building	Room				

252183

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
088981-020	TA2-W-01	332.5		050610\0928	GW	P	500 ml	4C	G	SA	Perchlorate (314.0)	

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☐ 15 Day ☑ 30 Day

Return Samples By: ☐ Negotiated TAT

Sample Tracking — Smo Use
Date Entered(mm/dd/yy)
Entered by
QC Inits.

Special Instructions/QC Requirements
EDD ☑ Yes ☐ No
Level D Package ☐ Yes ☑ No
*Send report to:
Tim Jackson/ORG. 4133/MS 0729/ 284-2547

Abnormal Conditions on Receipt

Lab Use

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	Robert Lynch		RL	Weston/4133/844-4013/250-7090
	Alfred Santillanes			Weston/4133/844-5130/228-0710
	~~William J. Gibson~~			~~Weston/4133/844-4010/280-7367~~ RL

*Please list as separate report.

1.Relinquished by		Org. 4133	Date 5/6/10	Time 0950	4.Relinquished by	Org.	Date	Time
1. Received by		Org. 4133	Date 5/6/10	Time 0950	4. Received by	Org.	Date	Time
2.Relinquished by		Org. 4133	Date 5/6/10	Time 1130	5.Relinquished by	Org.	Date	Time
2. Received by		Org. GEL	Date 5-7-10	Time 0710	5. Received by	Org.	Date	Time
3.Relinquished by		Org.	Date	Time	6.Relinquished by	Org.	Date	Time
3. Received by		Org.	Date	Time	6. Received by	Org.	Date	Time

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Certificate of Analysis

Company : Sandia National Laboratories
Address : MS-0756, Org. 06765, Bldg. 823/Rm. 4276
1515 Eubank SE
Albuquerque, New Mexico 87123
Contact: Ms. Pamela M. Puissant
Project: **Level C, Groundwater Monitoring**

Report Date: May 25, 2010

Client Sample ID: 088981-020
Sample ID: 252183006
Matrix: AQUEOUS
Collect Date: 06-MAY-10 09:28
Receive Date: 07-MAY-10
Collector: Client

Project: SNLSGWater
Client ID: SNLS003

Client Desc.: TA2-W-01
Vol. Recv.:

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Ion Chromatography										
EPA 314.0 Perchlorate by IC "As Received"										
Perchlorate	U	ND	0.004	0.012	mg/L	1	MAR1 05/17/10	1843	982738	1

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 314.0 DOE-AL	

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Page 1 of 1

Batch No. N/A

SMO Use

AR/COC 613000

Dept. No./Mail Stop:	4133/1126	Date Samples Shipped:	5/11/10	Project/Task No. 125778.10.11.01	☐ Waste Characterization -Send preliminary/copy report to:
Project/Task Manager:	Don Schofield	Carrier/Waybill No:	113280	SMO Authorization:	
Project Name:	TAG-GWM	Lab Contact:	Edie Kent/803-556-8171	Contract #: PO 691436	☐ Released by COC No.:
Record Center Code:	ER/1306/DAT	Lab Destination:	GEL	See Bottle Order	☑ Validation Required
Logbook Ref. No.:	NA	SMO Contact/Phone:	Pam Puissant/505-844-3185		Bill To: Sandia National Labs (Accounts Payable)
Service Order No.	CFO# 010-10	Send Report to SMO:	Lorraine Herrera /505-844-3199		P.O. Box 5800 MS 0154 Albuquerque, NM 87185-0154 252604
Location	Tech Area				
Building	Room				

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preservative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
088982-020	TA2-W-27	296	N/A	05/11/10 \0920	GW	P	500 ml	4C	G	SA	Perchlorate (314.0)	001

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☐ 15 Day ☑ 30 Day ☐ Negotiated TAT

Return Samples By:

Sample Tracking — Smo Use
Date Entered(mm/dd/yy)
Entered by
QC Initials

Special Instructions/QC Requirements
EDD ☑ Yes ☐ No
Level D Package ☐ Yes ☑ No
*Send report to:
Tim Jackson/ORG. 4133/MS 0729/ 284-2547

Abnormal Conditions on Receipt — Lab Use

Sample Team Members	Name	Signature	init	Company/Organization/Phone/Cellular
	Robert Lynch	Robert Lynch	RL	Weston/4133/844-4013/250-7090
	Alfred Santillanes	Alfred Santillanes	AS	Weston/4133/844-5130/228-0710

*Please list as separate report.

1.Relinquished by	Alfred Santillanes	Org. 4133	Date 5/11/10	Time 0940	4.Relinquished by	Org.	Date	Time
1. Received by	[illegible]	Org. 4133	Date 5/11/10	Time 0940	4. Received by	Org.	Date	Time
2.Relinquished by	[illegible]	Org. 4133	Date 5/11/10	Time 1100	5.Relinquished by	Org.	Date	Time
2. Received by	[illegible]	Org. GEL	Date 5-12-10	Time 0730	5. Received by	Org.	Date	Time
3.Relinquished by		Org.	Date	Time	6.Relinquished by	Org.	Date	Time
3. Received by		Org.	Date	Time	6. Received by	Org.	Date	Time

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Certificate of Analysis

Company : Sandia National Laboratories
Address : MS-0756, Org. 06765, Bldg. 823/Rm. 4276
1515 Eubank SE
Albuquerque, New Mexico 87123
Contact: Ms. Pamela M. Puissant
Project: **Level C, Groundwater Monitoring**

Report Date: June 4, 2010

Client Sample ID: 088982-020
Sample ID: 252664001
Matrix: AQUEOUS
Collect Date: 11-MAY-10 09:20
Receive Date: 12-MAY-10
Collector: Client

Project: SNLSGWater
Client ID: SNLS003

Client Desc.: TA2-W-27
Vol. Recv.:

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
ion Chromatography										
EPA 314.0 Perchlorate by IC "As Received"										
Perchlorate	U	ND	0.004	0.012	mg/L	1	MAR1 05/18/10	1529	984999	1

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 314.0 DOE-AL	

Appendix B

Data Validation Sample Findings Summary Sheets for the Perchlorate Data

ANALYTICAL QUALITY ASSOCIATES, INC.

616 Maxine NE
Albuquerque, NM 87123
505-299-5201
www.aqainc.net

Memorandum

Date: June 15, 2010

To: File

From: Kevin Lambert

Subject: Inorganic Data Review and Validation – SNL
Site: TAG GWM
AR/COC: 612995, 612996, 612997, 612998, and 612999
SDG: 252183
Laboratory: GEL
Project/Task: 146422.10.11.01
Analysis: General Chemistry

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. This validation was performed according to SNL/NM ER Project AOP 00-03 Rev 2.

Summary

Six samples were prepared and analyzed with accepted procedures using methods EPA 314.0 (perchlorate). Data were reported for all required analytes. No problems were identified with the data package that result in the qualification of data.

Data are acceptable and reported QC measures appear to be adequate. The following sections discuss the data review and validation.

Holding Times and Preservation

The samples were analyzed within the prescribed holding times and properly preserved.

Calibration

All initial and continuing calibration met QC acceptance criteria.

Blanks

No target analytes were detected in the blanks.

Laboratory Control Sample (LCS)

All LCS recoveries met QC acceptance criteria.

Matrix Spike (MS)

All MS recoveries met QC acceptance criteria.

Laboratory Replicate

The replicate met all QC acceptance criteria.

Detection Limits/Dilutions

All detection limits were properly reported. No samples were diluted.

Other QC

Equipment blank and a field duplicate pair were submitted on the AR/COC(s). There are no "required" review criteria for field duplicate analyses comparability; no data will be qualified as a result.

No other specific issues that affect data quality were identified.

Sample Findings Summary

Site: TAG GWM **AR/COC:** 612995, 612996, 612997, 612998, 612999 **Data Type:** Gen Chem

Perchlorate analyses met QC acceptance criteria. No data should be qualified.

Validated By: Kevin A. Lambert

Kevin A. Lambert

Date: 06/15/10

ANALYTICAL QUALITY ASSOCIATES, INC.

616 Maxine NE
Albuquerque, NM 87123
505-299-5201
www.aqainc.net

Memorandum

DATE: June 28, 2010

TO: File

FROM: David Schwent

SUBJECT: General Chemistry Data Review and Validation - SNL
Site: TAG GWM
AR/COC: 613000, 613001, and 613002
SDG: 252664
Laboratory: GEL
Project/Task No: 146422.10.11.01

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. This validation was performed according to SNL/NM ER Project AOP 00-03 Rev 2.

Summary

The samples were prepared and analyzed with accepted procedures using EPA 314.0 (perchlorate) and EPA353.2 (nitrate/nitrite by Cd reduction). No problems were identified with the data packages that result in the qualification of data.

Data are acceptable. QC measures appear to be adequate. The following sections discuss the data review and validation.

Holding Times/Preservation

All Analyses: All samples were analyzed within the prescribed holding times and properly preserved.

Calibration

All Analyses: All initial and continuing calibration QC acceptance criteria were met.

Blanks

Nitrate/nitrite Analysis: No target analytes were detected in the blanks, except the following. Nitrate/nitrite was detected in the initial calibration blank (ICB), continuing calibration blank (CCB) and method blank (MB) and concentrations > the method detection limit (MDL) but < the practical quantitation limit (PQL). However, all associated sample results were detects >5X the highest calibration blank concentration and >5X the MB concentration and will not be qualified.

Perchlorate Analysis: No target analytes were detected in the blanks.

Laboratory Control Sample (LCS)

All Analyses: All LCS QC acceptance criteria were met.

Matrix Spike (MS)

All Analyses: All MS (PS) QC acceptance criteria were met.

Replicates

All Analyses: All replicate QC acceptance criteria were met.

Detection Limits/Dilutions

Nitrate/nitrite Analysis: All detection limits were properly reported. Sample 252664-001 was diluted 25X and sample -006 was diluted 10X for nitrate/nitrite due to high concentrations of the target analyte. All associated batch QC samples were analyzed at dilution factors that resulted in relative dilution factors to the samples that were ≤5X. No sample data will be qualified as a result.

Perchlorate Analysis: All detection limits were properly reported. No samples required dilution.

Other QC

All Analyses: No equipment blanks (EBs), field blanks (FBs), or field duplicates (FDs) were submitted on the AR/COCs.

No other specific issues were identified that affect data quality.

Sample Findings Summary

Site: TAG GWM **AR/COC:** 613000, 613001, and 613002 **Organic, Gen Chem**

Sample ID	EPA 8260B (VOCs):	EPA 314.0 (Perchlorate):	EPA 353.2 (Nitrate/nitrite):										
	All Acceptance criteria met. No sample data will be qualified	All Acceptance criteria met. No sample data will be qualified	All Acceptance criteria met. No sample data will be qualified										

Validated By: David Schmoll **Date:** 06/28/10