



**National Nuclear Security Administration**

Sandia Site Office  
P.O. Box 5400  
Albuquerque, New Mexico 87185-5400



SEP 26 2007

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. James Bearzi, Bureau Chief  
Hazardous Waste Bureau  
New Mexico Environment Department  
2905 Rodeo Park Road East  
Building 1  
Santa Fe, NM 87505



Dear Mr. Bearzi:

On behalf of the Department of Energy (DOE) and Sandia Corporation (Sandia), DOE is submitting the September 2007 Consolidated Quarterly Report for the Environmental Restoration Project (covers May through July) that addresses all quarterly reporting requirements required under 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 for Sandia National Laboratories/New Mexico (SNL/NM), EPA ID No. NM5890110518.

Pursuant to perchlorate screening, detectable concentrations (above 4.0 micrograms/liter) continue to be found at monitoring well CYN-MW6 (located at the Burn Site groundwater area). We will continue to sample and monitor the trend, plus provide the results in the next quarterly report due by the end of December 2007. We continue to recommend monitoring through December 2007 and cordially request letting us know of any concerns or alternate frequency for continued monitoring.

If you have any questions, please contact me at (505) 845-6036 or Joe Estrada of my staff at (505) 845-5326. For perchlorate or Chemical Waste Landfill groundwater related items, please contact John Gould of my staff at (505) 845-6089.

Sincerely,

Patty Wagner  
Manager

Enclosure

cc w/enclosure:

W. Moats, NMED (via Certified Mail)  
L. King, USEPA, Region VI (via Certified Mail)  
T. Skibitski, NMED-OB (c/o D. Sleeman)  
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Records Center, SNL/NM, Org. 6765, MS 1089

## CERTIFICATION STATEMENT FOR APPROVAL AND FINAL RELEASE OF DOCUMENTS

Document title: Consolidated EPA Quarterly Report, September 2007

Document author: Paul Freshour, 6765

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

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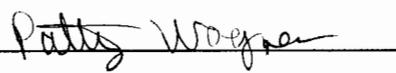
Nuclear Energy & Global Security Technologies  
Division 6700

Sandia National Laboratories/New Mexico  
Albuquerque, New Mexico 87185

Operator

Sept 19, 2007  
Date

and

Signature: 

Patty Wagner

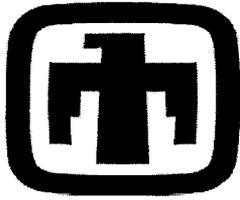
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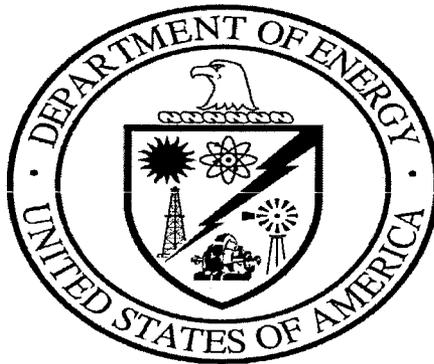
**Environmental Restoration Project**

A Department of Energy Environmental Cleanup Program

**CONSOLIDATED  
Quarterly Report**

**May-June-July**

**SEPTEMBER 2007**



United States Department of Energy  
Sandia Site Office

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Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

CONSOLIDATED  
QUARTERLY REPORT

SEPTEMBER 2007

SANDIA NATIONAL LABORATORIES/NEW MEXICO (SNL/NM)  
ENVIRONMENTAL RESTORATION PROJECT

**DOE:** SANDIA SITE OFFICE  
**CONTRACTOR:** SANDIA CORPORATION  
**PROJECT MANAGER:** J. PAUL FRESHOUR

**NUMBER OF POTENTIAL RELEASE SITES SUBJECT TO THIS PERMIT:** 64  
**SUSPECT WASTE:** radionuclides, metals, organics, and explosives

**OVERVIEW**

This Consolidated Quarterly Report for the Sandia National Laboratories Environmental Project addresses all quarterly reporting requirements required under 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. This Quarterly Report covers the periods from May to July 2007. The following entities are addressed in these Sections:

**SECTION I**

ER Quarterly

**SECTION II**

Chemical Waste Landfill

**SECTION III**

Perchlorate Screening

# SECTION I

## 1.0 Introduction

The technical status of each ongoing activity in the Environmental Restoration (ER) Project is discussed in an Activity Data Sheet (ADS), which corresponds to an Operable Unit (OU) for assessment and remediation, or to a specific functional area of the project in the case of Project Management and Technical Support.

## 2.0 Work Completed in This Quarter (May - July 2007)

### 2.1 ADS 1285 Technical Support

#### 2.1.1 ER Site Tracking (ERST)

- May 2007: ER Site Review for Renewal of Land Use Permit #225: CINT Utility Easement.
- June 2007: ER Site Review for Renewal of Land Use Permit #231: Parking Lot West of Building 894.
- July 2007: ER Site Review for Renewal of Land Use Permit #228: Lightning Detection System.

#### 2.1.2 Risk Assessment

- No risk assessments were completed for this quarter.

#### 2.1.3 Environmental Restoration Field Office (ERFO) Support

- \*Groundwater Monitoring and Sampling (GWM).
  - Third Quarter GWM
    - Semi-annual Chemical Waste Landfill (CWL) GWM (started in April) and Tijeras Arroyo GWM (TAG) were completed in May. Tech Area V (TAV) GWM was conducted in May and June. Canyons (CYN) GWM was completed in June. MWL-MW4 was sampled June 4, 2007 following repairs to the packer and replacement of the dedicated pump.
  - Fourth Quarter GWM
    - Groundwater sampling for Fourth Quarter Tijeras Arroyo Groundwater project was completed in July.

\*Quarterly GWM unless otherwise noted.

- Waste management was supported in discharging 4028 gallons of purge and decontamination water to the sanitary sewer from May through July:
 

GWPP:	1259 gal
TAV:	1038 gal
CWL:	826 gal
CYN:	478 gal
<u>MWL:</u>	<u>427 gal</u>
Total:	4028 gal
- GWM/ERFO crew pulled and replaced MWL-MW4 well pump.
- GWM/ERFO crew assisted in assembly of test fixtures in support of Colorimeter Project (Org. 06765).

#### **2.1.4 Geographic Information System (GIS) Program**

Requests received (May 1, 2007 to July 31, 2007)

GPS:	0
Data:	5
Maps	25
Total:	30

Requests completed (May 1, 2007 to July 31, 2007)

GPS:	3
Data:	5
Maps:	28
Total:	36 completed out of 30 received (completion rate 120%)

#### **2.1.5 Environmental Restoration Data Management System (ERDMS)**

- There are now 2,581,005 data records in the ERDMS.
- 53 analytical data packages containing 9,601 new data points were processed and loaded into the ERDMS.
- 6,377 new data validation qualifiers and descriptive flags were entered into the ERDMS.
- 23 tables were generated in support of CAMU (Corrective Action Management Unit), groundwater monitoring, MWL (Mixed Waste Landfill).
- 68 data packages were submitted to the Records Center.
- Database clean-up activities continued.

### 2.1.6 Customer Funded Record Center

- 112 ER records were received and 130 records were processed into the records management system. The difference is due to records received at the end of one month but not processed until the next month.
- 79 records of the 456 customer requests were retrieved for reviews at the record center. 0 pages were copied.
- Site Closure: Customer Funded Record Center - RC analysts continue to work with ER staff to identify NFA references and records that still need to be submitted to the RC.
- Imaging: Records Center staff has imaged 791 records during this quarter.
- 4648 records were sent to Inactive Storage.

### 2.1.7 SMO/Data Validation

- The SMO packaged and shipped 317 samples to contract laboratories for 6 ER/LTS projects. The sample volume for this quarter was approximately 25% more, when compared to the previous quarter.
- GEL and Severn Trent met contractual 30-day TAT (greater than 90% of the time) on 30-day requests. The labs also met customer requirements on 15-day rush for final data packages during this quarter.
- 91 data packages were sent through contract verification review with an average TAT of three calendar days. 63% of the data packages were for ER/LTS projects. The volume of ER/LTS packages was the same for the period when compared to last quarter.
- 48 total data packages were validated for ER/LTS. The majority of the data packages were for groundwater monitoring. The average turn-around time (TAT) for packages at validation was four calendar days.

Eighty-five percent of the work processed during this period was in support of groundwater monitoring. Fifteen percent of the work supported CAMU operations and closure.

### 2.2 ADS 1289 Mixed Waste Landfill (MWL)

- On May 1, 2007 New Mexico Environmental Department (NMED) Hazardous Waste Bureau (HWB) conducted a Public Technical Discussion Meeting regarding a Soil Gas Sampling and Analysis Program (SAP) proposed for Mixed Waste Landfill (MWL) at Sandia National Laboratories (SNL). At that meeting, HWB Bureau Chief, James Bearzi summarized the current status of the clean-up plan for the MWL and requested comments and recommendation regarding the SAP resulting from the meeting to be submitted in writing to NMED by close of business May 15, 2007. Activists within the public are requesting significantly more sampling than was originally proposed.

- The packer separating the two screened intervals of MWL-MW4 was serviced on May 15, 2007. The dedicated Bennett pump installed in the well showed considerable corrosion (rust), and was replaced with a refurbished pump, and the tubing bundle for the pump and packer was replaced.
- MWL-MW4 was sampled June 4, 2007, following repairs to the packer and replacement of the dedicated pump. The remaining MWL wells were sampled in April 2007. No parameters exceeded established MCLs, except Cr from MWL-MW1. Cr was detected in the unfiltered sample at a concentration of 0.426 mg/L. The groundwater monitoring data are being summarized in an annual MWL groundwater monitoring report to be submitted to NMED later this year.
- Routine neutron moisture logging of the MWL vadose zone was conducted on May 21, 2007 to obtain baseline data regarding moisture content profiles with depth beneath the landfill.
- NMED requested on March 23, 2007 that well MWL-BW1 be plugged and abandoned (P&A'd) and replaced. A P&A and Well Replacement Plan for MWL-BW1 was submitted to NMED on April 17, 2007. A Notice of Disapproval was received from NMED on June 19, 2007 regarding the MWL P&A and Replacement Plan. DOE/Sandia revised the plan and resubmitted it to NMED on August 8, 2007.
- NMED Requested well replacement and P&A Plans for MWL-MW1 and MWL-MW3 on July 2, 2007 because data indicate these wells show corrosion of their stainless steel screens, and/or are going dry. A draft P&A and Well Replacement Plan for these wells was submitted for SNL Management review on July 31, 2007.
- DOE audited the MWL surface runoff controls and raised several concerns regarding the berms around the site. A subsequent visit by the engineer who prepared the runoff calculations for the MWL's Storm Water Pollution Prevention Plan confirmed that the berms meet the requirements of the SWPPP.
- Two FOIAs were received from Citizen Action in May 2007. FOIA 07-107A requested additional information on the MWL subgrade; FOIA 07-136C requested information on an early internal memorandum regarding the regulatory driver for groundwater monitoring at the MWL. Responses to both FOIAs were submitted in July 2007.

### 2.3 ADS 1295 Drain and Septic Systems (DSS)

- Forty-one DSS sites are awaiting regulatory approval for the September 2005 and March 2006 permit modification requests.
- The Permit Modification process for the remaining DSS site, AOC 1101 (Building 885 Septic System (TA-I) is expected to occur in early CY08. It will be one of five sites included in the Permit Modification request.

## 2.4 ADS 1326 Project Management

- Operable units with only regulatory and administrative closure activities remaining will be closed and those activities will be tracked and managed under the PM ADS.

### Technical Area II

- Two Technical Area II sites are awaiting regulatory approval of the September 2005 permit modification request:

SWMU 1: Radioactive Waste Landfill

SWMU 3: Chemical Disposal Pits

### Technical Areas III and V (Including LWDS)

- Five Technical Area 3/5 sites are awaiting regulatory approval of the September 2005 and March 2006 permit modification requests:

SWMU 4: LWDS Surface Impoundments

SWMU 5: LWDS Drainfield

SWMU 52: LWDS Holding Tanks

SWMU 78: Gas Cylinder Disposal Pit

SWMU 196: Building 6597 Cistern

- The Permit Modification process for the remaining Technical Area 3/5 site, SWMU 105 (Mercury Spill at Building 6536), is expected to occur in early CY08. It will be one of five sites included in the Permit Modification request.

### Tijeras Arroyo

- Four Tijeras Arroyo sites are awaiting regulatory approval of the September 2005 and March 2006 permit modification requests:

SWMU 45: Liquid Discharge

SWMU 46: Old Acid Waste Line Outfall

SWMU 233: Storm Drain System Outfall

SWMU 234: Storm Drain System Outfall

### Central Coyote Test Area

- One Central Coyote Test site is awaiting regulatory approval of the March 2006 permit modification request:

SWMU 68: Old Burn Site.

### Southwest Test Area

- One Southwest Test site is awaiting regulatory approval of the March 2006 permit modification request:

SWMU 91: Lead Firing Site.

2.5 ADS 1330 Site-Wide Hydrogeologic Characterization

TA-3/5 Groundwater

- Quarterly sampling was performed.

Burn Site Groundwater

- Quarterly sampling was performed.

Tijeras Arroyo Groundwater

- Groundwater sampling was performed.

Mixed Waste Landfill Groundwater

- Annual groundwater sampling was performed.

Chemical Waste Landfill Groundwater

- Semi-annual groundwater sampling was performed.

2.6 ADS 1332 Foothills Test Area

- The NMED issued a Certificate of Completion for Corrective Action Complete (CAC) with controls for SWMU 58 in June. Controls were required for several features that are a part of SWMUs 8 and 58 including:
  - Feature 58B (Burn Pit) within 8Y (Debris Pile)
  - Feature 58FF (Pile of Fire Bricks)
  - Feature 58OO (Open Borehole)
  - Feature 8GGG (Arroyo Area)
  - Feature 58X (Blast-Loading-on-Pavement Tests)
  - Feature 58TT (Fire Brick Area No. 2)
- The Permit Modification process for the remaining three sites in the Foothills Test Area is expected to be delayed to early in CY08. This includes SWMU 28-2 (Mine Shaft), SWMU 8 [Open Dump (Coyote Canyon Blast Area)] and SWMU 58 (Coyote Canyon Blast Area). These sites will be three of five sites included in the Permit Modification request.

## 2.7 ADS 1345 Corrective Action Management Unit (CAMU)

### CAMU Post-Closure Care Operations

Vadose-zone monitoring, leachate removal, and post-closure inspections continued as required in the permit. Activities included the following:

- Weekly pumping of leachate from the leachate collection and removal system.
- Weekly inspection of the less-than-90-day area.
- Quarterly inspection of the site, (June 2007), including containment cell cover, storm water diversion structures, security fences, gates, and signs.
- Quarterly monitoring of the VZMS was conducted in June 2007.
- Waste management associated with the leachate collection was conducted.
- Composite leachate sampling conducted on 5/29/2007.

### CAMU Waste Management Activities

For this quarter (May – July 2007),

- Waste stored on site at the beginning of this period:
  - 115 gallons of leachate.
  - 5 lbs PPE.
- Waste generated on-site during the period:
  - 244 gallons of leachate.
  - 5 lbs PPE, paper wipes, plastic drum pump.
- Waste removed from site by the Hazardous Waste Management Facility:
  - 201 gallons of leachate on March 28, 2007.
  - 5 lbs PPE, paper wipes and plastic drum pump on March 28, 2007.
- Waste remaining on site at the end of this period:
  - 158 gallons of leachate.
  - 5 lbs PPE.

### Regulatory Activities

- There were no regulatory activities during this reporting period.

## 3.0 Estimate of the percentage of work completed

- See discussions under each ADS.

#### 4.0 Projected Work for the Next Quarter

- Work will continue on the following tasks: groundwater monitoring; waste management; data management; administrative closure; CWL activities; MWL CMI-related activities; and documentation (primarily RSI/NOD responses).

#### 5.0 Summaries of Contacts Pertaining to Corrective Action

##### *May 2007*

- None.

##### *June 2007*

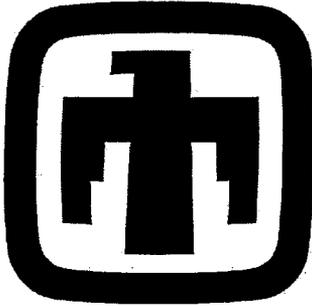
- None.

##### *July 2007*

- None.

#### 6.0 Summary of Changes to Project Implementation

- No significant changes have been made to project implementation during this reporting period.



Sandia National Laboratories/New Mexico

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**CHEMICAL WASTE LANDFILL  
QUARTERLY CLOSURE PROGRESS REPORT**

**JULY 2007**



United States Department of Energy  
Sandia Site Office

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Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

## ACRONYMS AND ABBREVIATIONS

BW	Background well
CFR	Code of Federal Regulations
CMS	corrective measures study
CWL	Chemical Waste Landfill
DOE	U.S. Department of Energy
EPA	U. S. Environmental Protection Agency
ER	Environmental Restoration
HWB	Hazardous Waste Bureau
LE	Landfill Excavation
MW	monitoring well
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
PA	Permit Application
PCCP	Post-Closure Care Plan
RAP	Remedial Action Proposal
RCRA	Resource Conservation and Recovery Act
RSI	Request for Supplemental Information
Sandia	Sandia Corporation
SNL/NM	Sandia National Laboratories/New Mexico
TSCA	Toxic Substances Control Act
VCM	voluntary corrective measure

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## SECTION II. CHEMICAL WASTE LANDFILL

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 Post closure Permit Application (Closure Plan) (SNL/NM December 1992). This section mainly documents activities at the CWL for the time period of May through July 2007 and it also documents groundwater monitoring completed in late April 2007.

### 1.0 INTRODUCTION

All voluntary corrective measures (VCMs) activities for the CWL have been completed. The CWL 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 VC 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 Environmental Restoration (ER) Project public meeting process.

Installation of the cover as an interim measure was requested in April 2004 (SNL/NM 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, with the exception of long-term monitoring, have been completed at the CWL.

Chapter 2.0 addresses closure progress and regulatory deliverables. Chapter 3.0 discusses monitoring activities, and Chapter 4.0 outlines the activities to be conducted during the next quarterly reporting period (August 2007 through October 2007).

### 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 preparing and submitting the Final Resource Conservation and Recovery Act (RCRA) Closure Report, expected to be

submitted in CY 2008 after NMED approval of the CMS Report has been received. 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, for public comment, the draft post-closure care permit for the CWL. Also included in the public notice were the Corrective Measures Study 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 requested that a public hearing be scheduled to address these outstanding issues.

### **3.0 WATER MONITORING ASSESSMENT**

In April and May 2007, samples were collected from background wells (BW) (CWL-BW3 and CWL-BW4A) and monitoring wells (MW) (CWL-MW2BL, CWL-MW2BU, CWL-MW4, CWL-MW5L, CWL-MW5U, CWL-MW6L, and CWL-MW6U). These samples were analyzed for 40 CFR 264 (Appendix IX) VOCs and total metals plus iron. No analytes were detected at concentrations exceeding the associated EPA MCLs. The appendix documents the data results and assessment report for the October 2006 sampling event.

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

### **4.0 PROJECTED ACTIVITIES FOR THE UPCOMING QUARTER**

Because DOE and Sandia have requested a hearing on the CWL post-closure care permit, DOE and Sandia anticipate that a resolution conference with the NMED will be arranged in the next quarter, with the intent of resolving comments in advance of a hearing and leading to a withdrawal of the request for a hearing.

## REFERENCES

Bearzi, J.P. (New Mexico Environment Department), October 2005. Letter to P. Wagner (U.S. Department of Energy) and P.B. Davies (Sandia Corporation), "Notice of Approval: Chemical Waste Landfill Site Operational Boundary Closure Addendum to the Landfill Excavation Corrective Measure Final Report; August 2005, Sandia National Laboratories, NM5890110518, HWB-SNL-05-021." October 25, 2005.

Cooke, G. (U.S. Environmental Protection Agency Region 6), June 2002. Letter to M.J. Zamorski (U.S. Department of Energy), "Approval of the TSCA Risk-Based Approach Request for the CWL." June 26, 2002.

Kieling, J.E. (New Mexico Environment Department), December 2003. Letter to K.L. Boardman (U.S. Department of Energy) and P.B. Davies (Sandia Corporation), "Chemical Waste Landfill Corrective Measures Study, May 2003, Sandia National Laboratories, NM5890110518, HWB-SNL-03-013." December 12, 2003.

Kieling, J.E. (New Mexico Environment Department), September 2004. Letter to P. Wagner (U.S. Department of Energy) and P.B. Davies (Sandia Corporation), "Approval With Conditions of the Landfill Cover Interim Measure at the Chemical Waste Landfill, Sandia National Laboratories, NM5890110518, HWB-SNL-03-013." September 22, 2004.

Moats, W.P. (New Mexico Environment Department), December 2003. Letter to K.L. Boardman (U.S. Department of Energy) and P.B. Davies (Sandia Corporation), "Final Approval, Landfill Excavation Voluntary Corrective Measures, Final Report, April 2003, Sandia National Laboratories, NM5890110518 HWB-SNL-03-012." December 16, 2003.

Sandia National Laboratories/New Mexico (SNL/NM), December 1992. "The Chemical Waste Landfill Final Closure Plan and Postclosure Permit Application," Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), October 2001. "Risk-Based Approval Request, 40 CFR 761.61 (c) Risk-Based Method For Management of PCB Materials," Chemical Waste Landfill Remediation and Corrective Action Management Unit, Sandia National Laboratories, Albuquerque, New Mexico. October 24, 2001.

Sandia National Laboratories/New Mexico (SNL/NM), April 2003. "Chemical Waste Landfill – Landfill Excavation Voluntary Corrective Measure – Final Report," Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), April 2004. "Request for Approval to Install the Vegetative Soil Cover Presented in the RAP as an Interim Measure," Sandia National Laboratories, Albuquerque, New Mexico. April 19, 2004.

Sandia National Laboratories/New Mexico (SNL/NM), August 2005. "Chemical Waste Landfill Site Operational Boundary Closure Addendum to the Landfill Excavation Voluntary Corrective Measure Final Report," Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), February 2006. "Chemical Waste Landfill Quarterly Closure Progress Report," Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), November 2006. "Chemical Waste Landfill Toxic Substances Control Act Final Report." Sandia National Laboratories, Albuquerque, New Mexico. November 2, 2006.

**APPENDIX**

**CHEMICAL WASTE LANDFILL  
SEMIANNUAL GROUNDWATER MONITORING  
ASSESSMENT REPORT  
April - June 2007**

Sandia National Laboratories/New Mexico  
Environmental Restoration Project  
Department 6765  
Albuquerque, New Mexico 87185

July 2007

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Attachment C—Data Validation Reports for Groundwater Analytical Results, April - June 2007

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## ABBREVIATIONS AND ACRONYMS

BW	background well
CFR	Code of Federal Regulations
CWL	Chemical Waste Landfill
EB	equipment blank
EPA	U.S. Environmental Protection Agency
FB	field blank
FOP	Field Operating Procedure
FY07	Fiscal Year 2007
MCL	maximum contaminant level
MDL	method detection limit
µg/L	microgram per liter
mL	milliliter
MW	monitoring well
NMED	New Mexico Environment Department
pH	potential of hydrogen
QC	quality control
RPD	relative percent difference
Sandia	Sandia Corporation
SC	specific conductance
SNL/NM	Sandia National Laboratories/New Mexico
TB	trip blank
TCE	trichloroethene
VCM	Voluntary Corrective Measure
VE	Vapor Extraction
VOC	volatile organic compound

## 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* (SNL/NM December 1992). The activities associated with the groundwater monitoring task are summarized as follows.

Sandia Corporation (Sandia) performed Fiscal Year 2007 (FY07) semiannual groundwater sampling at the CWL, Sandia National Laboratories/New Mexico (SNL/NM) (Figure A-1) between April 25 and May 11, 2007. 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 Final Closure Plan (SNL/NM December 1992).

In March 1998, the New Mexico Environment Department (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, Revision 4 (Bearzi May 2000):

- Biannual frequency (every other year) for Appendix IX constituents
- Semiannual frequency (twice a year) for volatile organic compounds (VOC) and metals

This report describes groundwater sampling activities and presents analytical results from the second FY07 semiannual groundwater assessment monitoring period. In April and May 2007, samples were collected from background wells (BW) (CWL-BW3 and CWL-BW4A) and monitoring wells (MW) (CWL-MW2BL, CWL-MW2BU, CWL-MW4, CWL-MW5L, CWL-MW5U, CWL-MW6L, and CWL-MW6U) (Figure A-2). These samples were analyzed for 40 CFR 264 (Appendix IX) VOCs and total metals plus iron. All analytical results from the April and May 2007 sampling of all CWL monitoring wells are included in this report.

Groundwater samples were not collected from CWL-MW1A or CWL-MW3A because these wells partially filled with sediment during the Vapor Extraction (VE) Voluntary Corrective Measure (VCM) while being used as VE wells, do not contain water, and cannot be restored for the purpose of compliance groundwater monitoring. In July 2003, Sandia installed a BaroBall™ in CWL-MW2A at SNL/NM to investigate whether the cause of trichloroethene (TCE) contamination was the result of VOC vapors entering the well casing and being pushed downward to the groundwater via barometric pumping during high atmospheric pressure periods. On December 16, 2003, after six months of operation, the BaroBall™ was to be removed from CWL-MW2A so that groundwater sampling could be performed. During the manual removal of the BaroBall™, the top piece of casing (approximately 9 feet long) was accidentally broken. When the top casing piece separated, annular material from 2 to 3 feet above the separated joint fell into the well. With NMED approval, CWL-MW2A was plugged and abandoned in June 2004 (SNL/NM July 2004).

Three of the monitoring wells (CWL-MW2B, CWL-MW5, and CWL-MW6) are multi-completion wells with two separate polyvinyl chloride 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.

## **2.0 Field Methods and Measurements**

The field measurements collected as part of groundwater sampling activities are in conformance with the "Sampling and Analysis Plan for Groundwater Assessment Monitoring at the Chemical Waste Landfill," Appendix G of the CWL Closure Plan (SNL/NM December 1992). Groundwater monitoring is being performed according to Appendix G, Revision 4 of the Closure Plan (SNL/NM December 1992) 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<sup>®</sup> 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). CWL-MW1A and CWL-MW3A were checked in October 2006 and did not contain water. During April 2007, CWL-MW1A did not contain water, but CWL-MW3A could not be verified because the BaroBall<sup>™</sup> installed on the well could not be removed. The BaroBall<sup>™</sup> is a device that allows passive soil-gas venting, and is sealed on top of the well casing. In April 2007, the seal between the CWL-MW3A well casing and device could not be broken. Table A-1 summarizes the depth-to-water measurements for all CWL wells, and Attachment A presents complete field measurement information.

### **2.2 Well Evacuation**

A Bennett Company groundwater sampling system was used to collect groundwater samples from all wells, except CWL-MW2BU, CWL-MW5L, and CWL-MW6L. Because these are small-diameter wells (less than 2 inches), dedicated sampling systems manufactured by QED Environmental Systems, Inc. were 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-BW3, CWL-BW4A, CWL-MW2BU, 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 each purged a minimum of two tubing water volumes prior to sampling. CWL-MW2BU was purged to dryness twice then sampled. A total of 4,600 milliliters (mL) of water was purged from CWL-MW2BU. Based upon historical sampling events, CWL-MW2BU will purge dry between 500 and 2,500 mL per each purging event.

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), as required by the CWL Sampling and Analysis 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 pump 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-MW2BU, 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-BW4A and CWL-MW6U. No VOCs, except acetone, bromodichloromethane, and dibromochloromethane, were detected in either EB sample. Chromium was detected in the equipment blank sample associated with CWL-BW4A, and copper and zinc were detected in the sample associated with CWL-MW6U. These metal parameters were detected at low concentrations. All associated environmental samples with detectable VOCs or metals at concentrations less than five times the EB contamination were flagged with a "B2" notation in the associated data validation reports provided in Attachment C.

### **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 FY07 semiannual 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 1,2,4-trichlorobenzene, acetone, and TCE. 1,2,4-Trichlorobenzene was detected in CWL-BW4A at a concentration of 0.434 micrograms per liter ( $\mu\text{g/L}$ ) below the MCL of 70  $\mu\text{g/L}$ . Acetone was detected in the sample from CWL-MW6L at a concentration of 5.68  $\mu\text{g/L}$ ; there is no established MCL for acetone. TCE was detected below the MCL of 5.0  $\mu\text{g/L}$  in the groundwater samples from CWL-BW3, CWL-MW2BU, CWL-MW5L, CWL-MW5U, CWL-MW6L, and CWL-MW6U at concentrations ranging from 0.345 to 3.59  $\mu\text{g/L}$ . Table A-8 summarizes the detected VOCs.

No total metal parameters were detected above established regulatory limits in any groundwater sample. Table A-9 summarizes the total metal parameters for all groundwater samples collected during the second FY07 semiannual sampling event at the CWL.

### **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 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 the CWL Sampling and Analysis Plan (SNL/NM December 1992).

### **4.1.1 Duplicate Environmental Samples**

A total of two duplicate environmental samples were collected and analyzed for all parameters in order to determine the overall reproducibility of the sampling and analysis process. Duplicate samples were collected at CWL-BW4A 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-10 summarizes the results of the duplicate sample analyses and calculated RPD values. The results show that sampling and analysis precision was in conformance with the CWL Sampling and Analysis Plan requirements for all measured parameters, except iron from CWL-MW6U. The RPD for iron was calculated at 24.

### **4.1.2 Field Blank Samples**

Two FB samples were collected for VOCs to assess whether contamination of the samples resulted from ambient field conditions. The FB samples were prepared by pouring deionized water into sample containers at the CWL-MW4 and CWL-MW5L wellheads to simulate the transfer of environmental samples from the sampling system to the sample container. Both FB samples detected acetone, bromodichloromethane, bromoform, chloroform, and dibromochloromethane. Only acetone was qualified as not detected in CWL-MW4 during data validation, since the compound was detected at a concentration less than ten times the blank contamination.

### **4.1.3 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-mL 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 sample shipment. A total of nine TBs were submitted with the FY07 semiannual samples. No VOCs were detected above laboratory MDLs in any TB sample, except for methylene chloride. No corrective action was required, since methylene chloride was not detected in the associated environmental 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 0, *Data Validation Procedure for Chemical and Radiochemical Data* (SNL/NM January 2000). Although some analytical results were qualified during the data validation process, no significant data quality problems were noted. Data validation reports associated with the second FY07 semiannual groundwater sampling event are provided in Attachment C.

## 4.3 Variances and Nonconformances

Variances and nonconformances from requirements in the CWL Sampling and Analysis Plan (SNL/NM December 1992) are identified as follows:

- CWL-MW1A and CWL-MW3A are no longer sampled (since 1998) because these wells do not contain water. The wells partially filled with sediment during the VE VCM and have not recovered.
- The BaroBall™ installed on well CWL-MW3A could not be removed and SNL/NM could not verify that well is dry.
- CWL-MW2A was plugged and abandoned in June 2004 with NMED approval (SNL/NM July 2004).
- CWL-BW3, CWL-BW4A, CWL-MW2BU, 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-MW2BU, CWL-MW5L, and CWL-MW6L were sampled using dedicated sampling systems manufactured by QED Environmental Systems, Inc.

## 5.0 Summary

In April and May 2007, samples were collected from background wells (CWL-BW3 and CWL-BW4A) and monitoring wells (CWL-MW2BL, CWL-MW2BU, CWL-MW4, CWL-MW5L, CWL-MW5U, CWL-MW6L, and CWL-MW6U). The samples were analyzed for 40 CFR 264 (Appendix IX) VOCs and total metals plus iron. No analytes were detected at concentrations exceeding the associated EPA MCLs.

## 6.0 References

Bearzi, J.P. (New Mexico Environment Department), May 2000, Letter to M.J. Zamorski (U.S. Department of Energy) and R.J. Eagan (Sandia Corporation), *Class 1 Permit Modification Approval and Notice of Administrative Completeness: Request for*

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Dinwiddie, R.S. (New Mexico Environment Department), March 1998, Letter to M. Zamorski (U.S. Department of Energy), *Request for Supplemental Information: Appendix G, Sampling and Analysis Plan for Ground Water Assessment at the Chemical Waste Landfill, Revision 5.0, April 1997*. March 31, 1998.

Sandia National Laboratories/New Mexico (SNL/NM), July 2004. *Class 2 Amendment to the Chemical Waste Landfill Closure Plan – Rationale for Decommissioning Monitoring Well CWL-MW2A and Plug and Abandonment Plan*, Revision 1, Sandia National Laboratories, Albuquerque, New Mexico.

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Sandia National Laboratories/New Mexico (SNL/NM), February 1997, *General Equipment Decontamination*, FOP 94-26, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), September 1996, *Sampling Groundwater Monitoring Wells*, FOP 94-48, Sandia National Laboratories, Albuquerque, New Mexico.

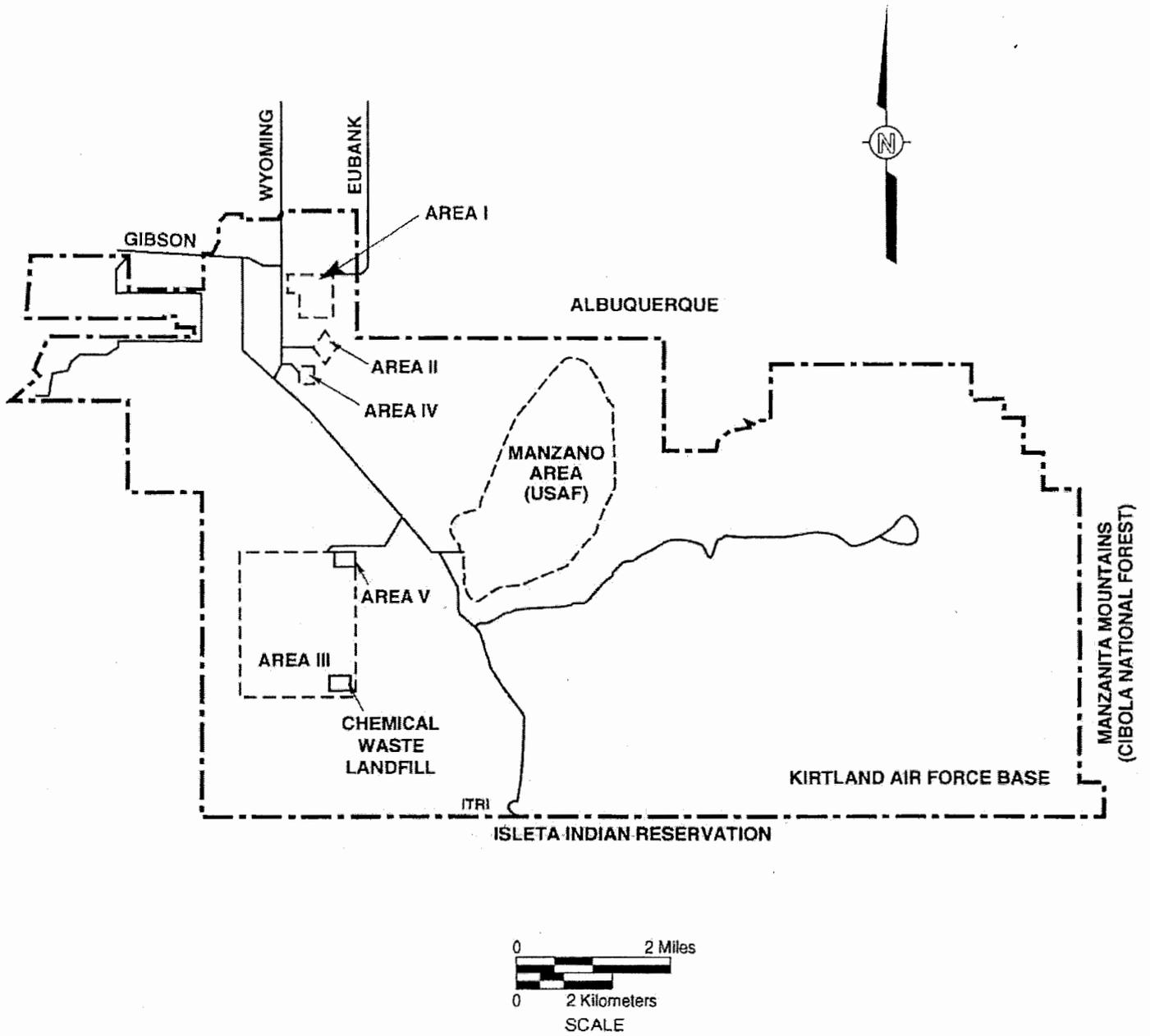
Sandia National Laboratories/New Mexico (SNL/NM), November 1995, *A Technical Procedure for the Measurement of Static Water Levels*, FOP 95-02, Sandia National Laboratories, Albuquerque, New Mexico.

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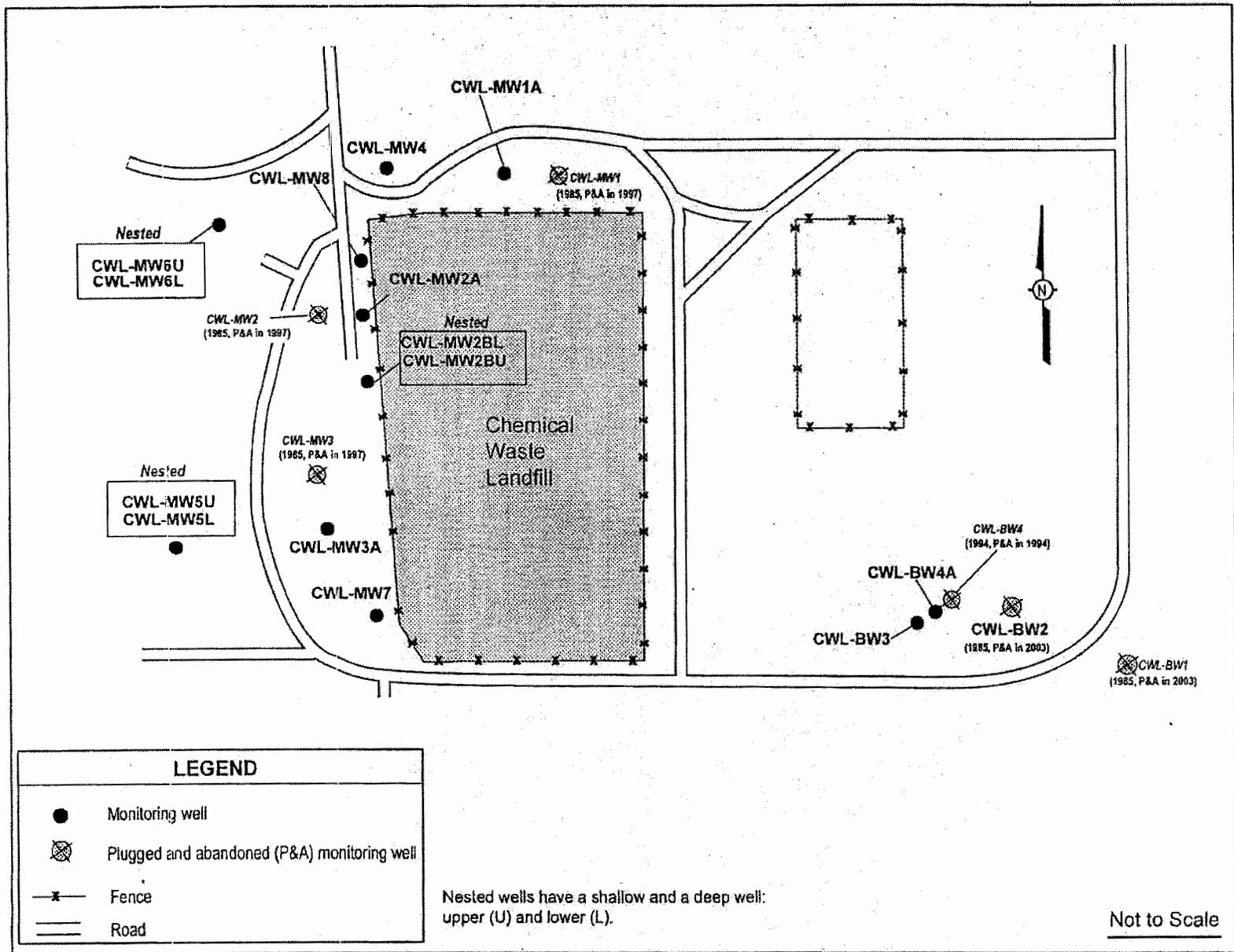
Sandia National Laboratories/New Mexico (SNL/NM), December 1992, *Chemical Waste Landfill Final Closure Plan and Postclosure Permit Application*, Sandia National Laboratories, Albuquerque, New Mexico.

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**  
**Semiannual Assessment, April - June 2007**

Well Number	Measuring Point Elevation (famsl)	Depth to Water <sup>a</sup> (feet)	Groundwater Elevation (famsl)	Total Well Depth <sup>b</sup> (feet)	Bottom of Well Elevation (famsl)	Static Water Height <sup>c</sup> (feet)
CWL-BW3	5430.23	502.04	4928.19	507.48	4921.05	7.14
CWL-BW4A	5431.36	502.30	4929.06	510.00	4919.24	9.82
CWL-MW1A	5421.49	NA	NA	495.00	4925.41	NC
CWL-MW2BL	5419.39	497.04	4922.35	557.50	4859.87	62.48
CWL-MW2BU	5419.42	491.13	4928.29	501.00	4916.37	11.92
CWL-MW3A	5417.78	NA	NA	492.00	4924.39	NC
CWL-MW4	5420.33	495.70	4924.63	503.00	4915.38	9.25
CWL-MW5L	5415.80	493.68	4922.12	558.00	4856.02	66.10
CWL-MW5U	5416.01	488.65	4927.36	502.00	4912.02	15.34
CWL-MW6L	5417.13	495.36	4921.77	564.00	4850.65	71.12
CWL-MW6U	5416.78	489.28	4927.50	502.00	4912.65	14.85

<sup>a</sup>Measurements transcribed from Groundwater Sample Collection Logs.

<sup>b</sup>Derived from well completion logs.

<sup>c</sup>Calculated as difference between depth to water and bottom of well.

BW = Background well.

CWL = Chemical Waste Landfill.

famsl = Feet above mean sea level. Measured from top of casing.

L = Lower well completion zone.

NA = Not applicable since CWL-MW1A and CWL-MW3A are dry wells.

NC = Not calculated.

MW = Monitoring well.

U = Upper well completion zone.

**Table A-2**  
**Volumes Purged from Monitoring Wells**  
**Sandia National Laboratories/New Mexico**  
**Chemical Waste Landfill**  
**Semiannual Assessment, April - June 2007**

Well Number	Volume Purged <sup>a</sup> (gal)	Time Pumped (minutes)	Average Pump Rate (gal/minute)	Well Pumped to Dryness
CWL-BW3	13	46	0.28	Yes
CWL-BW4A	16	66	0.24	Yes
CWL-MW2BL	484	395	1.23	No
CWL-MW2BU	4,600 mL	128	36 mL/minute	Yes
CWL-MW4	42	140	0.30	No
CWL-MW5L	14,000 mL	61	229 mL/minute	No
CWL-MW5U	21.5	89	0.24	Yes
CWL-MW6L	14,000 mL	123	114 mL/minute	No
CWL-MW6U	24	118	0.20	Yes

<sup>a</sup>Volume of groundwater purged before sampling.

BW = Background well.

CWL = Chemical Waste Landfill.

gal = Gallon(s).

L = Lower well completion zone.

mL = Milliliter(s).

MW = Monitoring well.

U = Upper well completion zone.

**Table A-3**  
**Summary of Field Measurements**  
**Sandia National Laboratories/New Mexico**  
**Chemical Waste Landfill**  
**Semiannual Assessment, April - June 2007**

Well Number	Measurement Period	pH	Temperature °C	SC (µmhos/cm)	Turbidity (NTU)
CWL-BW3	Purge measurements <sup>a</sup> :	NM	NM	NM	NM
		7.78	15.74	733	3.47
		7.85	14.13	902	0.50
CWL-BW4A	Purge measurements <sup>a</sup> :	7.10	17.82	1,019	0.37
		7.24	14.80	1,029	0.47
		7.18	15.66	1,024	0.34
CWL-MW2BL	Purge measurements <sup>a</sup> :	6.88	21.55	1,092	0.26
		6.88	21.28	1,092	0.26
		6.88	21.30	1,092	0.24
CWL-MW2BU	Purge measurements <sup>a</sup> :	8.24	14.74	889	31.2
		8.25	14.32	888	32.6
		8.28	13.88	906	12.2
CWL-MW4	Purge measurements <sup>a</sup> :	7.02	19.20	955	1.20
		7.02	19.40	955	1.22
		7.02	19.41	955	1.19
CWL-MW5L	Purge measurements <sup>a</sup> :	6.97	19.44	1,002	4.55
		6.97	19.48	1,002	4.59
		6.97	19.60	1,002	4.52
CWL-MW5U	Purge measurements <sup>a</sup> :	7.19	16.35	925	0.22
		7.13	17.23	924	0.26
		7.13	17.84	922	0.29
CWL-MW6L	Purge measurements <sup>a</sup> :	6.99	18.40	1,040	0.21
		6.99	18.43	1,040	0.19
		6.99	18.45	1,040	0.22
CWL-MW6U	Purge measurements <sup>a</sup> :	7.19	20.30	919	0.27
		7.17	20.66	920	0.24
		7.16	20.94	921	0.27

<sup>a</sup>Last three water quality measurements prior to sampling. For complete record reference Attachment A.

- BW = Background well.
- °C = Degrees Celsius.
- CWL = Chemical Waste Landfill.
- L = Lower well completion zone.
- µmhos/cm = Specific conductance measured in micromhos per centimeter.
- MW = Monitoring well.
- NM = Not measured.
- NTU = Turbidity measured in nephelometric turbidity units.
- SC = Specific conductance.
- U = Upper well completion zone.

**Table A-4**  
**Sample Number Identification**  
**Sandia National Laboratories/New Mexico**  
**Chemical Waste Landfill**  
**Semiannual Assessment, April - June 2007**

Sample Identification	AR/COC	Sample Number	Date Sampled	Laboratory	Sample Type
CWL-BW3	611284	084572	04-30-07	GEL	Environmental Sample
CWL-BW4A	611282	084565	05-07-07	GEL	Environmental Sample
CWL-BW4A	611282	084566	05-07-07	GEL	Duplicate Sample
CWL-MW2BL	611281	084563	05-08-07	GEL	Environmental Sample
CWL-MW2BU	611279	084559	05-08-07	GEL	Environmental Sample
CWL-MW4	611287	084579	05-09-07	GEL	Environmental Sample
CWL-MW5L	611283	084568 / 084569	05-01-07	GEL	Environmental Sample
CWL-MW5U	611285	084574	05-03-07	GEL	Environmental Sample
CWL-MW6L	611280	084561	04-26-07	GEL	Environmental Sample
CWL-MW6U	611286	084576	05-11-07	GEL	Environmental Sample
CWL-MW6U	611286	084577	05-11-07	GEL	Duplicate Sample
CWL-EB1	611288	084582	05-03-07	GEL	Equipment Blank
CWL-EB2	611289	084584	05-09-07	GEL	Equipment Blank
CWL-FB1	611283	084570	05-01-07	GEL	Field Blank
CWL-FB2	611287	084580	05-09-07	GEL	Field Blank

AR/COC = Analysis Request/Chain-of-Custody Record.  
 BW = Background well.  
 CWL = Chemical Waste Landfill.  
 GEL = General Engineering Laboratories.  
 EB = Equipment blank sample.  
 FB = Field blank sample.  
 L = Lower well completion zone.  
 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**  
**Semiannual Assessment, April - June 2007**

Analysis	Method <sup>a</sup>	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 + iron	6020/7470A	Polyethylene; 500 mL; HNO <sub>3</sub> , 4°C	28 days/ 180 days <sup>b</sup>

<sup>a</sup>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.

<sup>b</sup>Holding time for mercury is 28 days; all other metals are 180 days.

HCl = Hydrochloric acid.

HNO<sub>3</sub> = Nitric acid.

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**  
**Semiannual Assessment, April - June 2007**

Test Method 8260B <sup>a</sup> (Appendix IX List) <sup>b</sup>	MDL (µg/L)	MCL (µg/L)	Test Method 8260B <sup>a</sup> (Appendix IX List) <sup>b</sup>	MDL (µg/L)	MCL (µg/L)
1,1,1,2-Tetrachloroethane	0.250	NE	Chloroform	0.250	NE
1,1,1-Trichloroethane	0.300	200	Chloromethane	0.500	NE
1,1,2,2-Tetrachloroethane	0.250	NE	Chloroprene	0.300	NE
1,1,2-Trichloroethane	0.250	5.0	Dibromochloromethane	0.250	NE
1,1-Dichloroethane	0.300	NE	Dibromomethane	0.300	NE
1,1-Dichloroethene	0.300	7.0	Dichlorodifluoromethane	0.500	NE
1,2,3-Trichloropropane	0.300	NE	Ethyl benzene	0.250	700
1,2,4-Trichlorobenzene	0.300	70	Ethyl cyanide	1.50	NE
1,2-Dibromo-3-chloropropane	0.500	0.2	Ethyl methacrylate	1.00	NE
1,2-Dibromoethane	0.250	0.05	Iodomethane	1.25	NE
1,2-Dichloroethane	0.250	5.0	Isobutanol	12.5	NE
1,2-Dichloropropane	0.250	5.0	Methacrylonitrile	1.00	NE
2-Butanone	1.25	NE	Methyl methacrylate	1.00	NE
2-Hexanone	1.25	NE	Methylene chloride	2.00	5.0
4-methyl-, 2-Pentanone	1.25	NE	Pentachloroethane	1.00	NE
Acetone	1.25	NE	Styrene	0.250	100
Acetonitrile	6.25	NE	Tetrachloroethene	0.250	5.0
Acrolein	3.00	NE	Toluene	0.250	1,000
Acrylonitrile	1.00	NE	Trichloroethene	0.250	5.0
Allyl chloride	3.70	NE	Trichlorofluoromethane	0.310	NE
Benzene	0.300	5.0	Vinyl acetate	1.50	NE
Bromodichloromethane	0.250	NE	Vinyl chloride	0.500	2.0
Bromoform	0.250	NE	Xylenes (Total)	0.250	10,000
Bromomethane	0.500	NE	Bis(2-Chloroisopropyl)ether	1.50	NE
Carbon disulfide	1.25	NE	cis-1,3-Dichloropropene	0.250	NE
Carbon tetrachloride	0.250	5.0	trans-1,2-Dichloroethene	0.300	100
Chlorobenzene	0.250	100	trans-1,3-Dichloropropene	0.250	NE
Chloroethane	0.500	NE	trans-1,4-Dichloro-2-butene	1.00	NE

<sup>a</sup>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.

<sup>b</sup>Title 40 CFR, Part 264, Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Appendix IX, Groundwater Monitoring List.

CFR = Code of Federal Regulations.

EPA = U.S. 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**  
**Semiannual Assessment, April - June 2007**

Appendix IX List <sup>a</sup>	Test Method <sup>b</sup>	MDL (mg/L)	MCL (mg/L)
Antimony	6020	0.0005	0.006
Arsenic	6020	0.0015	0.01
Barium	6020	0.0005	2.0
Beryllium	6020	0.0001	0.004
Cadmium	6020	0.0001	0.005
Chromium	6020	0.001	0.1
Cobalt	6020	0.0001	NE
Copper	6020	0.0002	NE
Iron	6020	0.010	NE
Lead	6020	0.0005	NE
Mercury	7470A	0.00006	0.002
Nickel	6020	0.0005	NE
Selenium	6020	0.0025	0.05
Silver	6020	0.0002	NE
Thallium	6020	0.0004	0.002
Tin	6020	0.001	NE
Vanadium	6020	0.010	NE
Zinc	6020	0.002	NE

<sup>a</sup>Title 40 CFR, Part 264, Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Appendix IX, Groundwater Monitoring List. Addition metal parameter includes iron.

<sup>b</sup>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.

CFR = Code of Federal Regulations.

EPA = U.S. 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**  
**Semiannual Assessment, April - June 2007**

			084572	084565	084566	084563	084559	084579
			Well No.: CWL-BW3	Well No.: CWL-BW4A	Well No.: CWL-BW4A	Well No.: CWL-MW2BL	Well No.: CWL-MW2BU	Well No.: CWL-MW4
			Sample Type: Environmental	Sample Type: Environmental	Sample Type: Duplicate	Sample Type: Environmental	Sample Type: Environmental	Sample Type: Environmental
			Sample Method: Bennett Pump	Sample Method: Bennett Pump	Sample Method: Bennett Pump	Sample Method: Bennett Pump	Sample Method: QED Pump	Sample Method: Bennett Pump
			Laboratory: GEL	Laboratory: GEL	Laboratory: GEL	Laboratory: GEL	Laboratory: GEL	Laboratory: GEL
			Date Sampled: 04-30-07	Date Sampled: 05-07-07	Date Sampled: 05-07-07	Date Sampled: 05-08-07	Date Sampled: 05-08-07	Date Sampled: 05-09-07
Parameter	Method	MCL	All results in µg/L					
1,2,4-Trichlorobenzene	8260	70	ND (0.300)	ND (0.300)	0.434 (1.0) J	ND (0.300)	ND (0.300)	ND (0.300)
Acetone	8260	NE	ND (1.25)	ND (1.25)	ND (1.25)	ND (1.25)	ND (1.25)	5.0 U
Trichloroethene	8260	5	0.345 (1.00) J	ND (0.250)	ND (0.250)	ND (0.250)	3.59	ND (0.250)

**Table A-8 (Continued)**  
**Summary of Detected Volatile Organic Compounds**  
**Sandia National Laboratories/New Mexico**  
**Chemical Waste Landfill**  
**Semiannual Assessment, April - June 2007**

			Sample No.: Well No.: Sample Type: Sample Method: Laboratory: Date Sampled:	084568 CWL-MW5L Environmental QED Pump GEL 05-01-07	084574 CWL-MW5U Environmental Bennett Pump GEL 05-03-07	084561 CWL-MW6L Environmental QED Pump GEL 04-26-07	084576 CWL-MW6U Environmental Bennett Pump GEL 05-11-07	084577 CWL-MW6U Duplicate Bennett Pump GEL 05-11-07
Parameter	Method	MCL	All results in µg/L					
1,2,4-Trichlorobenzene	8260	70	ND (0.300)	ND (0.300)	ND (0.300)	ND (0.300)	ND (0.300)	
Acetone	8260	NE	ND (1.25)	ND (1.25) R	5.68	ND (1.25) A2, UJ	5.0 UJ, A2, B2	
Trichloroethene	8260	5	0.738 (1.00) J	2.31	0.374 (1.00) J	0.410 (1.00) J	0.387 (1.00) J	

Note: If result detected below laboratory practical quantitation limit, then practical quantitation limit is indicated in parentheses.

A2 = Laboratory accuracy and/or bias measurements for the matrix spike and/or duplicate do not meet acceptance criteria.

B2 = Analyte present in associated equipment blank sample.

BW = Background well.

CFR = Code of Federal Regulations.

CWL = Chemical Waste Landfill.

EPA = U.S. Environmental Protection Agency.

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 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).

µg/L = Microgram(s) per liter.

MW = Monitoring well.

ND = Analyte not detected at listed value.

NE = Not established.

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.

R = The data was qualified as unusable during data validation.

XU = The analyte was qualified as not detected at the listed detection limit during data validation.

XUJ = The analyte was qualified as not detected during data validation. The listed detection limit is an estimate and may be inaccurate or imprecise.

**Table A-9**  
**Summary of Total Metal Parameters**  
**Sandia National Laboratories/New Mexico**  
**Chemical Waste Landfill**  
**Semiannual Assessment, April - June 2007**

		Sample No.: Well No.: Sample Type: Sample Method: Laboratory: Date Sampled:	084572 CWL-BW3 Environmental Bennett Pump GEL 04-30-07	084565 CWL-BW4A Environmental Bennett Pump GEL 05-07-07	084566 CWL-BW4A Duplicate Bennett Pump GEL 05-07-07	084563 CWL-MW2BL Environmental Bennett Pump GEL 05-08-07	084559 CWL-MW2BU Environmental QED Pump GEL 05-08-07
Parameter	Method	MCL	All results in mg/L				
Antimony	6020	0.006	0.000503 (0.002) B, B3, J	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.0005)
Arsenic	6020	0.01	0.00192 (0.005) B, J	0.00168 (0.005) B, J	0.00174 (0.005) B, J	0.00334 (0.005) B, J	0.00627 B, J
Barium	6020	2.0	0.0634	0.0595	0.0595	0.0618	0.0584
Beryllium	6020	0.004	ND (0.0001)	0.000111 (0.0005) B, B3, J	ND (0.0001)	ND (0.0001)	ND (0.0001)
Cadmium	6020	0.005	ND (0.0001)	0.000334 (0.001) J	0.000328 (0.001) J	ND (0.0001)	ND (0.0001)
Chromium	6020	0.1	0.00914	ND (0.001)	ND (0.001)	ND (0.001)	0.00759
Cobalt	6020	NE	0.000191 (0.001) J	0.000303 (0.001) J	0.000284 (0.001) J	0.000337 (0.001) J	0.000553 (0.001) J
Copper	6020	NE	0.00121	0.00117	0.00118	0.000887 (0.001) J	0.0026
Iron	6020	NE	0.316	0.805	0.811	0.686 J	1.27 J
Lead	6020	NE	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.0005)	0.00173 (0.002) J
Mercury	7470A	0.002	ND (0.00006) B3, UJ	ND (0.00006) B3, UJ	ND (0.00006) B3, UJ	ND (0.00006) B3, UJ	ND (0.00006) B3, UJ
Nickel	6020	NE	0.0692	0.00376	0.00392	0.00349	0.017
Selenium	6020	0.05	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)
Silver	6020	NE	ND (0.0002)	ND (0.0002)	ND (0.0002)	ND (0.0002)	0.000773 (0.001) J
Thallium	6020	0.002	0.000564 (0.001) J	0.00041 (0.001) J	ND (0.0004)	ND (0.0004)	0.000572 (0.001) J
Tin	6020	NE	0.00104 (0.005) J	ND (0.001)	ND (0.001)	ND (0.001)	0.00113 (0.005) J
Vanadium	6020	NE	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
Zinc	6020	NE	0.00557 (0.010) J	0.00816 (0.010) J	0.0102	ND (0.002)	0.0175

Refer to footnotes at end of table.

**Table A-9 (Continued)**  
**Summary of Total Metal Parameters**  
**Sandia National Laboratories/New Mexico**  
**Chemical Waste Landfill**  
**Semiannual Assessment, April - June 2007**

		Sample No.: Well No.: Sample Type: Sample Method: Laboratory: Date Sampled:	084579 CWL-MW4 Environmental Bennett Pump GEL 05-09-07	084569 CWL-MW5L Environmental QED Pump GEL 05-01-07	084574 CWL-MW5U Environmental Bennett Pump GEL 05-03-07	084561 CWL-MW6L Environmental QED Pump GEL 04-26-07	084576 CWL-MW6U Environmental Bennett Pump GEL 05-11-07	084577 CWL-MW6U Duplicate Bennett Pump GEL 05-11-07
Parameter	Method	MCL	All results in mg/L					
Antimony	6020	0.006	ND (0.0005)	ND (0.0005) B3, UJ	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.0005)
Arsenic	6020	0.01	0.00426 (0.005) B, J	ND (0.0015)	ND (0.0015)	0.00171 (0.005) J	ND (0.0015)	ND (0.0015)
Barium	6020	2.0	0.0635	0.0680	0.0728	0.0574	0.0702	0.0746
Beryllium	6020	0.004	ND (0.0001)	ND (0.0001)	ND (0.0001)	ND (0.0001)	ND (0.0001)	ND (0.0001)
Cadmium	6020	0.005	0.000257 (0.001) J	ND (0.0001)	0.000421 (0.001) J	ND (0.0001)	0.000166 (0.001) J	0.000157 (0.001) J
Chromium	6020	0.1	0.0053	0.0064	0.00159 (0.003) J	ND (0.001)	0.00538	0.00614
Cobalt	6020	NE	0.00332	0.000344 (0.001) J	0.000339 (0.001) J	0.000204 (0.001) J	0.000215 (0.001) J	0.00026 (0.001) J
Copper	6020	NE	0.00144	0.00285	0.00181	0.000665 (0.001) J	0.00135 B2, J	0.00155 B2, J
Iron	6020	NE	0.840 J	0.548	0.241	0.281	0.279	0.356
Lead	6020	NE	ND (0.0005)	0.00057 (0.002) J	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.0005)
Mercury	7470A	0.002	ND (0.00006) B3, UJ	ND (0.00006) B3, UJ	ND (0.00006) B3, UJ	ND (0.00006)	ND (0.00006) B3, UJ	ND (0.00006) B3, UJ
Nickel	6020	NE	0.242	0.00436	0.00337	0.00136 (0.002) J	0.00405	0.0049
Selenium	6020	0.05	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)
Silver	6020	NE	ND (0.0002)	ND (0.0002)	ND (0.0002)	ND (0.0002)	ND (0.0002)	ND (0.0002)
Thallium	6020	0.002	ND (0.0004)	ND (0.0004)	0.000599 (0.001) J	0.00041 (0.001) B3, J	0.000461 (0.001) J	ND (0.0004)
Tin	6020	NE	ND (0.001)	0.00214 (0.005) J	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
Vanadium	6020	NE	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
Zinc	6020	NE	0.00367 (0.010) B, J	0.0261	0.0369	ND (0.002)	0.00679 (0.010) B2, J	0.00703 (0.010) B2, 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**  
**Semiannual Assessment, April - June 2007**

Note: If result detected below laboratory practical quantitation limit, then practical quantitation limit is indicated in parentheses.

- B = Analyte present in associated laboratory method blank sample.
- B2 = Analyte present in associated equipment blank sample.
- B3 = Analyte present in laboratory initial calibration blank or continuing calibration blank.
- BW = Background well.
- CFR = Code of Federal Regulations.
- CWL = Chemical Waste Landfill.
- EPA = U.S. Environmental Protection Agency.
- 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 EPA Primary Drinking Water Regulations in 40 CFR 141.11(b), subsequent amendments or the New Mexico Environmental Improvement Board I in the New Mexico Register, Title 20, Chapter 7, Part 1).
- mg/L = Milligram(s) per liter.
- MW = Monitoring well.
- ND = Analyte not detected at listed value.
- NE = Not established.
- U = Upper well completion zone.
- UJ = The analyte was analyzed for but not detected. The associated value/detection limit is an estimate and may be inaccurate or imprecise.

**Table A-10**  
**Summary of Environmental and Duplicate Analyses**  
**Sandia National Laboratories/New Mexico**  
**Chemical Waste Landfill**  
**Semiannual Assessment, April - June 2007**

Parameter	Environmental Sample Results (R <sub>1</sub> ) (mg/L)	Duplicate Sample Results (R <sub>2</sub> ) (mg/L)	RPD
<b>CWL-BW4A</b>			
1,2,4-Trichlorobenzene	ND (0.300) µg/L	0.434 (1.00) J µg/L	NC
Arsenic	0.00168 (0.005) B, J	0.00174 (0.005) B, J	NC
Barium	0.0595	0.0595	<1
Beryllium	0.000111 (0.0005) B, B3, J	ND (0.0001)	NC
Cadmium	0.000334 (0.001) J	0.000328 (0.001) J	NC
Cobalt	0.000303 (0.001) J	0.000284 (0.001) J	NC
Copper	0.00117	0.00118	1
Iron	0.805	0.811	1
Nickel	0.00376	0.00392	4
Thallium	0.00041 (0.001) J	ND (0.0004)	NC
Zinc	0.00816 (0.010) J	0.0102	NC
<b>CWL-MW6U</b>			
Trichloroethene	0.410 (1.00) J µg/L	0.387 (1.00) J µg/L	NC
Barium	0.0702	0.0746	6
Cadmium	0.000166 (0.001) J	0.000157 (0.001) J	NC
Chromium	0.00538	0.00614	13
Cobalt	0.000215 (0.001) J	0.0026 (0.001) J	NC
Copper	0.00135 B2, J	0.00155 B2, J	NC
Iron	0.279	0.356	24
Nickel	0.00405	0.0049	19
Thallium	0.000461 (0.001) J	ND (0.0004)	NC
Zinc	0.00679 (0.010) B2, J	0.00703 (0.010) B2, J	NC

- B = Analyte present in associated laboratory method blank sample.  
 B2 = Analyte present in associated equipment blank sample.  
 B3 = Analyte present in laboratory initial calibration blank or continuing calibration blank.  
 BW = Background well.  
 J = The associated value is qualified as an estimated quantity and/or detected below the practical quantitation limit.  
 L = Lower well completion zone.  
 µg/L = Microgram(s) per liter.  
 mg/L = Milligram(s) per liter.  
 MW = Monitoring well.  
 NC = Not calculated for non-detected and/or estimated values.  
 ND = Analyte not detected at listed value.  
 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<sub>1</sub> = analysis result.  
 R<sub>2</sub> = duplicate analysis result.

**ATTACHMENT A**  
**FIELD MEASUREMENT LOGS AND**  
**DOCUMENTATION**

ATTACHMENT A

503.37 80%  
secs

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: <u>CWL - GWM</u>	Project No.: <u>98036.10.11.01</u>
Well I.D.: <u>CWL - BW3</u>	Date: <u>4-27-07</u>
Weather <u>Clear &amp; Cool</u>	
Method: <u>X</u> Portable pump _____ Dedicated pump _____ Pump depth: <u>506</u>	

PURGE MEASUREMENTS

DO mg/L

Depth to Water (FT)	Time 24 hr	Vol. L(gls)	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	Color and appearance
502.04	0826		start	Purge						
505.73	0841	48 1	15.74	733	284.1	7.78		3.47	93.2	9.32
505.73	0842	48 2	WELL DRY							
		48 3								
		48								
4/30/07										
502.11	0810	START								
505.40	0840	1	14.13	902	297.4	7.85		0.50	57.2	5.84
505.68	0841		SAMPLING							
COC number(s): <u>611289</u>										
Sample number(s): <u>084572</u>										

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: 21.6 ml/ft X \_\_\_\_\_ (length of tubing) = \_\_\_\_\_ millileters

4-27-07  
~ 4.75 gal of tubing vol. purged before G.W.  
0837  
4-30-07 0835  
~ 4.25 gals. of tubing vol. purged before sampling



# ATTACHMENT A

## FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: <u>CWL-GWM</u>	Project No.:
Well I.D.: <u>CWL-MW2BL</u>	Date: <u>5-8-07</u>
Weather	
Method: <input checked="" type="checkbox"/> Portable pump <input type="checkbox"/> Dedicated pump	
Pump depth: <del>507</del> <u>550'</u>	

### PURGE MEASUREMENTS

Depth to Water (FT)	Time 24 hr	Vol. L (G)	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	Color and appearance
<del>497.04</del>	<del>0822</del>	<del>START</del>						0.27		
497.28	0940	100	19.78	1091	297.8	6.90		42.2	81.0	7.38
497.30	1051	200	20.11	1091	301.4	6.89		0.22	81.4	7.36
497.30	1202	300	20.78	1091	305.2	6.88		0.23	81.7	7.29
497.31	1240	350	21.20	1092	306.4	6.89		0.28	82.5	7.30
497.31	1316	400	21.20	1091	307.6	6.88		0.32	82.7	7.32
497.28	1337	420	21.12	1091	309.9	6.89		0.31	82.3	7.29
497.28	1359	440	21.43	1091	310.8	6.88		0.29	82.5	7.27
497.28	1418	460	21.50	1092	310.7	6.89		0.36	82.6	7.27
497.28	1429	470	21.55	1092	310.9	6.88		0.26	82.2	7.23
497.28	1444	480	21.28	1092	310.8	6.88		0.26	82.1	7.26
497.28	1457	484	21.30	1092	310.9	6.88		0.24	82.2	7.26
	1458		<u>SAMPLING</u>							
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) = \_\_\_\_\_ milliliters

3/8" OD: 9.7 ml/ft X \_\_\_\_\_ (length of tubing) = \_\_\_\_\_ milliliters

1/2" OD: 21.6 ml/ft X \_\_\_\_\_ (length of tubing) = \_\_\_\_\_ milliliters

*~ 4.75 gals purged before vol. calculations*

# ATTACHMENT A

## FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: <u>CWL-MWL</u>	Project No.: <u>98036.10.11.01</u>
Well I.D.: <u>CWL-MW2BU</u>	Date: <u>4-25-07/5-2-07</u>
Weather: <u>Cool light breeze clear sky</u>	
Method: <input type="checkbox"/> Portable pump <input checked="" type="checkbox"/> Dedicated pump Pump depth: <u>491'</u>	

### PURGE MEASUREMENTS

Depth to Water (FT)	Time 24 hr	Vol. (Gls)	Temp °C	Ec µmho	ORP MV	pH	Flow Lgls	Turb NTU	DO %	Color and appearance
491.13	0825		start Purge							
491.98	0848	.500	13.32	850	289.4	7.74		6.77	93.4	9.68
493.42	0856	.800	13.37	765	281.7	7.75		10.3	87.2	9.11
495.10	0905	1.100	13.16	785	255.3	7.84		11.6	85.8	8.97
49	0915	1.400	13.17	794	245.7	7.88		27.1	88.1	9.20
	0925	1.700	13.39	851	232.7	7.75		73.4	88.1	9.17
	0946	2.0	13.33	883	220.3	7.78		88.3	89.2	9.28
	0956	2.3	13.3	887	217.6	7.83		95.4	89.1	9.27
	Well Dry									
12/07 492.33	0808	START								
	0817	.5	14.55	901	245.9	8.04		30.0	86.4	8.77
493.67	0821	1.0	14.78	894	260.0	8.26		35.4	84.0	8.48
	0828	1.5	14.74	889	274.9	8.24		31.2	83.5	8.43
	0835	1.8	14.32	888	282.9	8.25		32.6	84.5	8.61
COC number(s):										
Sample number(s):										

0835 - well DRY

#### 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) = \_\_\_\_\_ milliliters

3/8" OD: 9.7 ml/ft X \_\_\_\_\_ (length of tubing) = \_\_\_\_\_ milliliters

1/2" OD: 21.6 ml/ft X \_\_\_\_\_ (length of tubing) = \_\_\_\_\_ milliliters



# ATTACHMENT A

## FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: <u>CWL - Gwm</u>	Project No.: <u>98036-10.11.01</u>
Well I.D.: <u>CWL - MW4</u>	Date: <u>5-9-07</u>
Weather: <u>Hazed sky moist &amp; cool</u>	
Method: <u>X</u> Portable pump _____ Dedicated pump _____ Pump depth: <u>5001</u>	

### 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 %	Color and appearance
495.70	0830	/	Start Purge							
497.27	0907	10	18.29	950	1.7	6.87		87.1	30.2	2.83
497.31	0938	20	18.48	952	25.7	6.99		11.3	54.4	5.08
497.32	0954	25	18.57	952	36.0	7.01		4.58	58.9	5.50
497.34	1009	30	18.62	954	46.1	7.01		2.34	60.7	5.66
497.36	1025	35	18.90	955	58.0	7.01		1.11	62.5	5.80
497.35	1032	37	19.14	955	50.1	7.02		1.14	62.8	5.79
497.35	1039	39	19.20	955	50.2	7.02		1.20	63.2	5.81
497.35	1046	41	19.40	955	49.9	7.02		1.22	63.9	5.86
497.35	1050	42	19.41	955	50.0	7.02		1.19	63.9	5.87
	1051	/	Sampling							
COC number(s): <u>611287</u>										
Sample number(s): <u>084579</u>										

### 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: 21.6 ml/ft X \_\_\_\_\_ (length of tubing) = \_\_\_\_\_ millileters

*~4.75 gals. of tubing  
 Vol. purged prior  
 Vol. calculations*

5-9-07 0843

# ATTACHMENT A

## FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: <u>GWL-GWM</u>	Project No.:
Well I.D.: <u>CWL-MW5L</u>	Date: <u>5-1-07</u>
Weather	
Method: <input type="checkbox"/> Portable pump <input checked="" type="checkbox"/> Dedicated pump	
Pump depth: <u>543'</u>	

### 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 %	Color and appearance
493.68	0817	<del>   </del>	<u>START</u>							
493.70	0829	2	18.28	773	320.3	7.90		1.69	84.1	7.91
493.68	0837	4	18.34	781	318.6	7.94		0.97	82.1	7.70
493.68	0844	6	18.69	875	327.0	7.62		0.98	78.5	7.31
493.68	0852	8	18.97	923	337.5	7.14		39.8	62.3	5.75
493.68	0859	10	19.20	972	337.3	7.00		80.3	59.4	5.48
493.68	0902	11	19.22	1001	338.3	6.97		5.03	62.3	5.77
493.68	0907	12	19.44	1002	340.0	6.97		4.55	66.0	5.83
493.68	0912	13	19.48	1002	340.1	6.97		4.59	64.3	5.79
493.68	0918	14	19.60	1002	340.0	6.97		4.52	64.2	5.80
	0919	<del>   </del>	<u>sample</u>							
COC number(s): <u>601283</u>										
Sample number(s): <u>084568</u>										

### 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" OD: 21.6 ml/ft X \_\_\_\_\_ (length of tubing) = \_\_\_\_\_ millileters

# ATTACHMENT A

## FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: <u>CWL - GWM</u>	Project No.:
Well ID.: <u>CWL - MWSU</u>	Date: <u>5-2-07 / 5-3-07</u>
Weather: <u>Cloudy Wet</u>	
Method: <input checked="" type="checkbox"/> Portable pump <input type="checkbox"/> Dedicated pump Pump depth: <u>499'</u>	

### 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 %	Color and appearance	
488.65	0858	<del>2</del>	start	Purge							
493.93	0925	2	16.73	870	362.0	7.09		0.32	73.7	7.15	
495.50	0932	4	17.72	868	352.1	7.13		0.25	72.9	6.93	
496.27	0935	<del>5</del>	18.03	866	348.2	7.13		0.30	73.0	6.89	
497.02	0939	<del>6</del>	18.21	863	345.8	7.14		0.39	73.0	6.86	
497.83	0942	7	18.31	858	344.3	7.16		0.37	74.0	6.94	
498.85	0946	8	18.41	861	342.9	7.16		0.47	73.9	6.92	
499.05	0948	8.5	well	DRY							
5-3-07											
490.50	0823	<del>1</del>	START								
494.96	0850	1	16.35	925	348.2	7.19		0.22	78.6	7.61	
495.35	0856	2	17.23	924	349.0	7.13		0.26	62.8	6.02	
496.22	0902	3	17.84	922	350.1	7.13		0.29	62.7	6.00	
496.51	0903	<del>4</del>	SAMPLE								
COC number(s): <u>611285</u>											
Sample number(s): <u>084574</u>											

DO mg/L

#### 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" OD: 21.6 ml/ft X \_\_\_\_\_ (length of tubing) = \_\_\_\_\_ millileters

Approx. 4.75 gal tubing  
 Volumes purged  
 5-2-07 0917  
 ~ 4.75 gal tubing Vol.  
 purged before reading  
 5-3-07 0842

# ATTACHMENT A

## FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: <u>CWL - GWM</u>	Project No.: <u>98036. 10.11.01</u>
Well I.D.: <u>CWL - MW6L</u>	Date: <u>4-26-07</u>
Weather: <u>Cool Breeze, Clear sky</u>	
Method: <u>          </u> Portable pump <u>  X  </u> Dedicated pump                      Pump depth: <u>549'</u>	

### PURGE MEASUREMENTS

DO mg/L

Depth to Water (FT)	Time 24 hr	Vol (L)gls	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	<del>Color and appearance</del>
<u>495.36</u>	<u>0808</u>		<u>Start Purge</u>							
<u>495.41</u>	<u>0827</u>	<u>2</u>	<u>16.53</u>	<u>678</u>	<u>103.5</u>	<u>7.98</u>		<u>0.18</u>	<u>84.7</u>	<u>8.27</u>
<u>495.37</u>	<u>0843</u>	<u>4</u>	<u>16.81</u>	<u>974</u>	<u>217.0</u>	<u>7.20</u>		<u>0.97</u>	<u>84.0</u>	<u>8.12</u>
<u>495.37</u>	<u>0859</u>	<u>6</u>	<u>17.45</u>	<u>1037</u>	<u>267.8</u>	<u>7.03</u>		<u>0.28</u>	<u>87.0</u>	<u>8.30</u>
<u>495.40</u>	<u>0917</u>	<u>8</u>	<u>17.83</u>	<u>1038</u>	<u>288.4</u>	<u>7.00</u>		<u>0.20</u>	<u>80.9</u>	<u>7.64</u>
<u>495.37</u>	<u>0935</u>	<u>10</u>	<u>18.18</u>	<u>1039</u>	<u>295.6</u>	<u>6.98</u>		<u>0.18</u>	<u>79.4</u>	<u>7.47</u>
<u>495.37</u>	<u>0944</u>	<u>11</u>	<u>18.36</u>	<u>1039</u>	<u>299.5</u>	<u>6.98</u>		<u>0.20</u>	<u>79.9</u>	<u>7.48</u>
<u>495.37</u>	<u>0953</u>	<u>12</u>	<u>18.40</u>	<u>1040</u>	<u>300.4</u>	<u>6.99</u>		<u>0.21</u>	<u>78.9</u>	<u>7.38</u>
<u>495.37</u>	<u>1002</u>	<u>13</u>	<u>18.43</u>	<u>1040</u>	<u>300.2</u>	<u>6.99</u>		<u>0.19</u>	<u>78.1</u>	<u>7.29</u>
<u>495.37</u>	<u>1011</u>	<u>14</u>	<u>18.45</u>	<u>1040</u>	<u>300.4</u>	<u>6.99</u>		<u>0.22</u>	<u>77.8</u>	<u>7.26</u>
	<u>1012</u>	<u>SAMPLING</u>								
COC number(s): <u>611280</u>										
Sample number(s): <u>084561</u>										

### 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: 21.6 ml/ft X \_\_\_\_\_ (length of tubing) = \_\_\_\_\_ millileters

# ATTACHMENT A

## FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: <u>CWL - GWM</u>	Project No.: <u>98036.10.11.01</u>
Well I.D.: <u>CWL - MW6U</u>	Date: <u>5-10-07</u>
Weather: <u>clear &amp; warm</u>	
Method: <input checked="" type="checkbox"/> Portable pump <input type="checkbox"/> Dedicated pump Pump depth: <u>499'</u>	

### PURGE MEASUREMENTS

DO mg/L

Depth to Water (FT)	Time 24 hr	Vol. L/gls	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	Color and appearance
<u>489.28</u>	<u>0833</u>		<u>Start</u>	<u>Purge</u>						
<u>496.31</u>	<u>0905</u>	<u>5</u>	<u>19.54</u>	<u>918</u>	<u>227.7</u>	<u>7.12</u>		<u>0.35</u>	<u>66.6</u>	<u>6.08</u>
<u>497.36</u>	<u>0915</u>	<u>7</u>	<u>20.02</u>	<u>919</u>	<u>232.2</u>	<u>7.14</u>		<u>0.38</u>	<u>65.9</u>	<u>5.98</u>
<u>497.79</u>	<u>0919</u>	<u>8</u>	<u>20.22</u>	<u>919</u>	<u>239.0</u>	<u>7.13</u>		<u>0.29</u>	<u>64.6</u>	<u>6.00</u>
<u>498.17</u>	<u>0939</u>	<u>9</u>	<u>20.68</u>	<u>921</u>	<u>245.7</u>	<u>7.16</u>		<u>0.31</u>	<u>64.2</u>	<u>5.90</u>
<u>498.19</u>	<u>0951</u>	<u>10</u>	<u>21.00</u>	<u>921</u>	<u>257.5</u>	<u>7.10</u>		<u>0.26</u>	<u>65.1</u>	<u>5.78</u>
<u>498.81</u>	<u>1001</u>	<u>11</u>	<u>22.03</u>	<u>922</u>	<u>257.1</u>	<u>7.12</u>		<u>0.29</u>	<u>63.1</u>	<u>5.50</u>
	<u>10.03</u>	<u>12</u>	<u>WELL DRY</u>							

COC number(s): 611286  
Sample number(s): 084576, 084577

#### 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) = \_\_\_\_\_ milliliters
- 3/8" OD: 9.7 ml/ft X \_\_\_\_\_ (length of tubing) = \_\_\_\_\_ milliliters
- 1/2" ODI: 21.6 ml/ft X \_\_\_\_\_ (length of tubing) = \_\_\_\_\_ milliliters

*~ 4.75 gals of tubing volume purged prior to volume calculation*



ATTACHMENT A-1

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			SNL/NM Project No.: 98036.10.11.01				
Contractor Project Name:			Contractor Project No.:				
pH, TEMPERATURE Meter							
Make & Model: YSI 6820			Serial No.: 99J0064				
PH Probe Model No.: YSI 6565			Serial No.: YSI 6565 03J				
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	4.02	19.7	7.00	19.8	10.01	19.8
2. Time:	1128	4.01	20.1	6.99	20.1	10.00	20.1
3. Time:							
4. Time:							
Standard Lot No.: 031187							
Expiration Date: 8-2005							
Ec Probe Model No.: YSI6560			Serial No.: 03J1141				
Reference Value: 1278 @ 20C			Standard Lot #: 2307212				
	Value	Temp	Expiration Date: Sept. 2007				
1. Time:	0641	1279	19.8				
2. Time:	1126	1277	20.1				
3. Time:							
4. Time:							
Comments:							
Calibration Done by:			Date:				
RL			4-26-07				

ATTACHMENT A-2

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			Project No.: 98036.10.11.01	
ORP Probe Model No.: YSI 6565			Serial No.: YSI 6565 03J	
Reference value: 220.0			Standard Lot No. 03K0868	
	Value	Temp	Expiration Date: 10/2007	
1. Time:	0640 219.8	19.8		
2. Time:	1125 219.9	20.1		
3. Time:				
4. Time				
TURBIDIMETER				
Make & Model No.: HACH 2100P			Serial No.: 030900032367	
Reference Value	.1	20	100	800
Standard Lot No.				
1. Time	0710 .10	19.9	100	798
2. Time	1020 .09	20.1	102	299
3. Time				
4. Time				
Comments:				
Calibration Done By:			Date:	
RL			4-26-07	

ATTACHMENT A-3

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 98036.10.11.01
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 6820		Serial No.: YSI 6562	
DO Probe Serial No.: 03J0967			
Calibration value:	81% Air Saturation @ 5200 ft/ DO mg/L		Atmospheric Pressure in/Hg
1. Time: 0633	81.6	7.32	24.29
2. Time: 1120	81.5	7.35	24.30
3. Time:			
4. Time:			
Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.			
DO Charge= 30.8			
Calibration done by: RL		Date: 4-26-07	

ATTACHMENT A-1

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			SNL/NM Project No.: 98026.01.04.01				
Contractor Project Name:			Contractor Project No.:				
pH, TEMPERATURE Meter							
Make & Model: YSI 6820			Serial No.: 99J0064				
PH Probe Model No.: YSI 6565			Serial No.: YSI 6565 03J				
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	4.02	20.7	7.00	20.8	10.01	20.7
2. Time:	0917	4.01	20.9	7.01	20.9	10.00	20.9
3. Time:	0640	4.01	19.3	7.00	19.3	10.01	19.3
4. Time:	1042	4.03	20.4	7.00	20.4	9.99	20.4
Standard Lot No.: 031187							
Expiration Date: 8-2007							
Ec Probe Model No.: YSI6560			Serial No.: 03J1141				
Reference Value: 1278 @ 20C			Standard Lot #: 2307212				
	Value	Temp	Expiration Date: JUL 2007				
1. Time:	0648	1277	20.7				
2. Time:	0915	1278	20.9				
3. Time:	0642	1277	19.4				
4. Time:	1044	1279	20.4				
Comments:							
Calibration Done by:			Date:				
RL RL			4-27-07      4-30-07				

ATTACHMENT A-2

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			Project No.: 98026.01.04.01	
ORP Probe Model No.: YSI 6565			Serial No.: YSI 6565 03J	
Reference value: 220.0			Standard Lot No. 03K0868	
	Value	Temp	Expiration Date: 10/2007	
1. Time:	0650 219.8	20.7		
2. Time:	0918 220.2	20.9		
3. Time:	0641 219.9	19.3		
4. Time	1045 219.9	20.4		
TURBIDIMETER				
Make & Model No.: HACH 2100P			Serial No.: 030900032367	
Reference Value	.1	20	100	800
Standard Lot No.				
1. Time	0715 .09	19.9	100	799
2. Time	0855 .10	20.1	101	797
3. Time	0800 .11	20.1	100	796
4. Time	0910 .10	19.9	99.9	795
Comments:				
Calibration Done By:			Date:	
RL RL			4-27-07 4-30-07	

ATTACHMENT A-3

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 98026.01.04.01
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 6820		Serial No.: YSI 6562	
DO Probe Serial No.: 03J0967			
Calibration value:	81% Air Saturation @ 5200 ft/ DO mg/L		Atmospheric Pressure in/Hg
1. Time: 0644	81.6	8.02	24.38
2. Time: 0915	81.5	7.90	24.38
3. Time: 0633	81.6	7.52	24.34
4. Time: 1038	81.6	7.50	24.34
Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.			
DO Charge= 29.8 30.8			
Calibration done by: PL		Date: 4-27-07	

ATTACHMENT A-1

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			SNL/NM Project No.: 98026.01.04.01			
Contractor Project Name:			Contractor Project No.:			
pH, TEMPERATURE Meter						
Make & Model: YSI 6820			Serial No.: 99J0064			
PH Probe Model No.: YSI 6565			Serial No.: YSI 6565 03J			
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	4.02	<del>4.02</del> 7.00	20.3	10.01	20.3
2. Time:	1101	4.02	7.01	20.7	10.00	20.7
3. Time:						
4. Time:						
Standard Lot No.: 031187						
Expiration Date: 8-2007						
Ec Probe Model No.: YSI6560			Serial No.: 03J1141			
Reference Value: 1278 @ 20C			Standard Lot #: 2307212			
	Value	Temp	Expiration Date: JUL 2007			
1. Time:	0641	1277				
2. Time:	1059	1279				
3. Time:						
4. Time:						
Comments:						
Calibration Done by:			Date:			
RL			5-1-07			

ATTACHMENT A-2

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			Project No.: 98026.01.04.01	
ORP Probe Model No.: YSI 6565			Serial No.: YSI 6565 03J	
Reference value: 220.0			Standard Lot No. 03K0868	
	Value	Temp	Expiration Date: 10/2007	
1. Time:	0640 220.1	20.3		
2. Time:	1058 220.2	20.7		
3. Time:				
4. Time				
TURBIDIMETER				
Make & Model No.: HACH 2100P			Serial No.: 030900032367	
Reference Value	.1	20	100	800
Standard Lot No.				
1. Time	0711 .09	19.9	101	802
2. Time	0940 .10	20.1	102	800
3. Time				
4. Time				
Comments:				
Calibration Done By: RL			Date: 5-1-07	

ATTACHMENT A-3

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 98026.01.04.01
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 6820		Serial No.: YSI 6562	
DO Probe Serial No.: 03J0967			
Calibration value:	81% Air Saturation @ 5200 ft/ DO mg/L		Atmospheric Pressure in/Hg
1. Time: 0637	81.6	7.37	24.32
2. Time: 1055	81.5	7.40	24.33
3. Time:			
4. Time:			
Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.			
DO Charge= 30.9			
Calibration done by: RL		Date: 5-1-07	

ATTACHMENT A-1

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			SNL/NM Project No.: 98036.10.11.01				
Contractor Project Name:			Contractor Project No.:				
pH, TEMPERATURE Meter							
Make & Model: YSI 6820			Serial No.: 99J0064				
PH Probe Model No.: YSI 6565			Serial No.: YSI 6565 03J				
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:	0636	4.02	19.3	7.00	19.3	10.01	19.3
2. Time:	1050	4.01	18.2	7.01	18.2	10.00	18.2
3. Time:	0639	4.02	18.9	7.02	18.9	10.00	18.9
4. Time:	0957	4.01	19.1	7.01	19.1	9.99	19.1
Standard Lot No.: 031187							
Expiration Date: 8-2007							
Ec Probe Model No.: YSI6560			Serial No.: 03J1141				
Reference Value: 1278 @ 20C			Standard Lot #: 2307212				
	Value	Temp	Expiration Date: JUL 2007				
1. Time:	0635	1279	19.3				
2. Time:	1052	1280	18.2				
3. Time:	0638	1277	18.9				
4. Time:	0954	1279	19.1				
Comments:							
Calibration Done by:			Date:				
DL			5-2-07				

ATTACHMENT A-2

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			Project No.: 98036.10.11.01	
ORP Probe Model No.: YSI 6565			Serial No.: YSI 6565 03J	
Reference value: 220.0			Standard Lot No. 03K0868	
	Value	Temp	Expiration Date: 10/2007	
1. Time:	0633 219.9	19.3		
2. Time:	1051 220.4	18.2		
3. Time:	0637 220.1	18.9		
4. Time	0955 219.8	19.1		
TURBIDIMETER				
Make & Model No.: HACH 2100P			Serial No.: 030900032367	
Reference Value	.1	20	100	800
Standard Lot No.				
1. Time	0719 .10	20.1	99.9	798
2. Time	1000 .09	19.9	100	799
3. Time	0950 .11	20.0	101	797
4. Time	0915 .10	20.1	99.9	801
Comments:				
Calibration Done By: <i>RL</i>			Date: <i>5-2-07</i>	

ATTACHMENT A-3

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 98036.10.11.01
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 6820		Serial No.: YSI 6562	
DO Probe Serial No.: 03J0967			
Calibration value:	81% Air Saturation @ 5200 ft./ DO mg/L		Atmospheric Pressure in/Hg
1. Time: 0630	81.6	7.51	24.27
2. Time: 1100	81.5	7.47	24.27
3. Time: 0648	81.6	7.85	24.25
4. Time: 0949	81.4	7.88	24.25
Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.			
DO Charge= 29.8			
Calibration done by: RL		Date: 5-2-07	

5/3

ATTACHMENT A-1

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			SNL/NM Project No.: 98036.10.11.01			
Contractor Project Name:			Contractor Project No.:			
pH, TEMPERATURE Meter						
Make & Model: YSI 6820			Serial No.: 99J0064			
PH Probe Model No.: YSI 6565			Serial No.: YSI 6565 03J			
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	4.01	18.0	7.00	18.0	10.01	18.0
2. Time: 1104	4.02	20.1	6.99	20.1	10.00	20.1
3. Time: 0647	4.00	16.5	7.01	16.5	9.98	16.5
4. Time: 0941 -	3.99	19.7	7.00	19.7	10.00	19.8
Standard Lot No.: 031187						
Expiration Date: 8-2007						
Ec Probe Model No.: YSI6560			Serial No.: 03J1141			
Reference Value: 1278 @ 20C			Standard Lot #: 2307212			
	Value	Temp	Expiration Date: JUL 2007			
1. Time: 0645	1278	18.0				
2. Time: 1103	1279	20.1				
3. Time: 0645	1274	16.5				
4. Time: 0938	1279	19.8				
Comments:						
Calibration Done by:			Date:			
RL RL			5-4-07 5-7-07			

ATTACHMENT A-2

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			Project No.: 98036.10.11.01	
ORP Probe Model No.: YSI 6565			Serial No.: YSI 6565 03J	
Reference value: 220.0			Standard Lot No. 03K0868	
	Value	Temp	Expiration Date: 10/2007	
1. Time:	0642 219.8	18.0		
2. Time:	1100 220.1	20.1		
3. Time:	0640 221.0	16.3		
4. Time	0938 220.4	19.8		
TURBIDIMETER				
Make & Model No.: HACH 2100P			Serial No.: 030900032367	
Reference Value	.1	20	100	800
Standard Lot No.				
1. Time	0715 .11	20.1	101	799
2. Time	0912 .09	20.0	99.9	797
3. Time	0750 .11	19.9	100	798
4. Time	1001 .10	19.8	99.9	801
Comments:				
Calibration Done By: RL RL			Date: 5-4-07 5-7-07	

ATTACHMENT A-3

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 98036.10.11.01
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 6820		Serial No.: YSI 6562	
DO Probe Serial No.: 03J0967			
Calibration value:	81% Air Saturation @ 5200 ft/ DO mg/L		Atmospheric Pressure in/Hg
1. Time: 0638	81.6	7.71	24.18
2. Time: 1050	81.4	7.68	24.20
3. Time: 0641	81.6	8.16	24.45
4. Time: 0930	81.5	8.09	24.46
Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.			
DO Charge= 30.8			
Calibration done by: RL RL		Date: 5-4-07 5-7-07	

5/7/07

ATTACHMENT A-1

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			SNL/NM Project No.: 98036.10.11.01			
Contractor Project Name:			Contractor Project No.:			
pH, TEMPERATURE Meter						
Make & Model: YSI 6820			Serial No.: 99J0064			
PH Probe Model No.: YSI 6565			Serial No.: YSI 6565 03J			
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:	0619	4.01	17.0	7.00	17.0	10.00
2. Time:	1608	4.00	20.8	6.99	20.8	10.02
3. Time:						
4. Time:						
Standard Lot No.: 031187						
Expiration Date: 8-2007						
Ec Probe Model No.: YSI6560			Serial No.: 03J1141			
Reference Value: 1278 @ 20C			Standard Lot #: 2307212			
	Value	Temp	Expiration Date: JUL 2007			
1. Time:	0621	1279	17.0			
2. Time:	1610	1280	20.8			
3. Time:						
4. Time:						
Comments:						
Calibration Done by:			Date:			
RL			5-8-07			

ATTACHMENT A-2

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			Project No.: 98036.10.11.01	
ORP Probe Model No.: YSI 6565			Serial No.: YSI 6565 03J	
Reference value: 220.0			Standard Lot No. 03K0868	
	Value	Temp	Expiration Date: 10/2007	
1. Time: 0615	220.1	19.6		
2. Time: 1607 <del>1508</del>	220.4	20.8		
3. Time:				
4. Time				
TURBIDIMETER				
Make & Model No.: HACH 2100P			Serial No.: 030900032367	
Reference Value	.1	20	100	800
Standard Lot No.				
1. Time 0731	.10	19.9	100	800
2. Time 1529	.11	20.2	101	802
3. Time				
4. Time				
Comments:				
Calibration Done By: RL			Date: 5-8-07	

ATTACHMENT A-3

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 98036.10.11.01
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 6820		Serial No.: YSI 6562	
DO Probe Serial No.: 03J0967			
Calibration value:	81% Air Saturation @ 5200 ft./ DO mg/L	Atmospheric Pressure in/Hg	
1. Time: 0613	81.6	7.87	24.45
2. Time: 1555	81.5	7.90	24.47
3. Time:			
4. Time:			
Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.			
DO Charge= 30.8			
Calibration done by: RL		Date: 5-8-07	

ATTACHMENT A-1

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			SNL/NM Project No.: 98036.10.11.01				
Contractor Project Name:			Contractor Project No.:				
pH, TEMPERATURE Meter							
Make & Model: YSI 6820			Serial No.: 99J0064				
PH Probe Model No.: YSI 6565			Serial No.: YSI 6565 03J				
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:	0735	4.00	20.39	7.01	20.39	10.00	20.39
2. Time:	1201	4.01	20.81	7.00	20.81	10.01	20.81
3. Time:							
4. Time:							
Standard Lot No.: 031187							
Expiration Date: 8-2005							
Ec Probe Model No.: YSI6560			Serial No.: 03J1141				
Reference Value: 1278 @ 20C			Standard Lot #: 2307212				
	Value	Temp	Expiration Date: Sept. 2007				
1. Time:	0737	1277	20.39				
2. Time:	1205	1276	20.81				
3. Time:							
4. Time:							
Comments:							
Calibration Done by: <i>William J. [Signature]</i>			Date: 4-25-07				

ATTACHMENT A-2

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			Project No.: 98036.10.11.01	
ORP Probe Model No.: YSI 6565			Serial No.: YSI 6565 03J	
Reference value: 220.0			Standard Lot No. 03K0868	
	Value	Temp	Expiration Date: 10/2007	
1. Time:	6733 219.7	20.39		
2. Time:	1207 218.6	20.81		
3. Time:				
4. Time				
TURBIDIMETER				
Make & Model No.: HACH 2100P			Serial No.: 030900032367	
Reference Value	.1	20	100	800
Standard Lot No.				
1. Time	0756 .11	20	101	799
2. Time	1215 .10	20	101	800
3. Time				
4. Time				
Comments:				
Calibration Done By: <i>William J. Gilg</i>			Date: 4-25-07	

ATTACHMENT A-3

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 98036.10.11.01
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 6820		Serial No.: YSI 6562	
DO Probe Serial No.: 03J0967			
Calibration value:	81% Air Saturation @ 5200 ft/ DO mg/L	Atmospheric Pressure in/Hg	
1. Time: 0731	81.6	7.36	24.57
2. Time: 1158	81.6	7.57	24.35
3. Time:			
4. Time:			
Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration. DO Charge= 30.8			
Calibration done by: <i>William J. Kelly</i>		Date: 4-25-07	

ATTACHMENT A-1

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			SNL/NM Project No.: 98036.10.11.01			
Contractor Project Name:			Contractor Project No.:			
pH, TEMPERATURE Meter						
Make & Model: YSI 6820			Serial No.: 99J0064			
PH Probe Model No.: YSI 6565			Serial No.: YSI 6565 03J			
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:	0630 4.02	16.3	7.01	16.3	9.99	16.3
2. Time:	1131 4.01	19.7	7.00	19.7	10.01	19.7
3. Time:						
4. Time:						
Standard Lot No.: 031187						
Expiration Date: 8-2007						
Ec Probe Model No.: YSI6560			Serial No.: 03J1141			
Reference Value: 1278 @ 20C			Standard Lot #: 2307212			
	Value	Temp	Expiration Date: JUL 2007			
1. Time:	0627 1269	16.3				
2. Time:	1132 1276	19.7				
3. Time:						
4. Time:						
Comments:						
Calibration Done by: RL			Date: 5-9-07			

ATTACHMENT A-2

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			Project No.: 98036.10.11.01	
ORP Probe Model No.: YSI 6565			Serial No.: YSI 6565 03J	
Reference value: 220.0			Standard Lot No. 03K0868	
	Value	Temp	Expiration Date: 10/2007	
1. Time:	0625 218.9	16.3		
2. Time:	1130 219.1	19.8		
3. Time:				
4. Time				
TURBIDIMETER				
Make & Model No.: HACH 2100P			Serial No.: 030900032367	
Reference Value	.1	20	100	800
Standard Lot No.				
1. Time	0710 .11	20.1	101	799
2. Time	1058 .10	20.0	100	796
3. Time				
4. Time				
Comments:				
Calibration Done By: <i>RL</i>			Date: 5-9-07	

ATTACHMENT A-3

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 98036.10.11.01
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 6820		Serial No.: YSI 6562	
DO Probe Serial No.: 03J0967			
Calibration value:	81% Air Saturation @ 5200 ft/ DO mg/L	Atmospheric Pressure in/Hg	
1. Time: 0618	81.6	8.00	24.42
2. Time: 1124	81.6	7.97	24.42
3. Time:			
4. Time:			
Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.			
DO Charge= 33-9			
Calibration done by: RL		Date: 5-9-07	

ATTACHMENT A-1

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			SNL/NM Project No.: 98036.10.11.01				
Contractor Project Name:			Contractor Project No.:				
pH, TEMPERATURE Meter							
Make & Model: YSI 6820			Serial No.: 99J0064				
PH Probe Model No.: YSI 6565			Serial No.: YSI 6565 03J				
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:	0640	4.01	17.1	7.01	17.1	10.00	17.1
2. Time:	1110	4.02	19.4	7.00	19.4	10.01	19.4
3. Time:	0644	4.02	20.6	7.00	20.6	9.99	20.6
4. Time:	0945	4.01	21.1	7.01	21.1	10.00	21.1
Standard Lot No.: 031187							
Expiration Date: 8-2007							
Ec Probe Model No.: YSI6560			Serial No.: 03J1141				
Reference Value: 1278 @ 20C			Standard Lot #: 2307212				
	Value	Temp	Expiration Date: JUL 2007				
1. Time:	0642	1277	17.2				
2. Time:	1111	1279	19.4				
3. Time:	0647	1278	20.6				
4. Time:	0950	1279	21.1				
Comments:							
Calibration Done by:			Date:				
RL RL			5-10-07 5-11-07				

ATTACHMENT A-2

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			Project No.: 98036.10.11.01	
ORP Probe Model No.: YSI 6565			Serial No.: YSI 6565 03J	
Reference value: 220.0			Standard Lot No. 03K0868	
	Value	Temp	Expiration Date: 10/2007	
1. Time:	0640 219.8	17.2		
2. Time:	1115 220.1	19.4		
3. Time:	0643 219.9	20.6		
4. Time	0943 220.2	21.1		
TURBIDIMETER				
Make & Model No.: HACH 2100P			Serial No.: 030900032367	
Reference Value	.1	20	100	800
Standard Lot No.				
1. Time	0711 .09	20.0	99.9	797
2. Time	1027 .10	19.9	101	796
3. Time	0750 .11	20.1	100	799
4. Time	1011 .10	20.2	101	801
Comments:				
Calibration Done By: RL RL			Date: 5-10-07 5-11-07	

ATTACHMENT A-3

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 98036.10.11.01
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 6820		Serial No.: YSI 6562	
DO Probe Serial No.: 03J0967			
Calibration value:	81% Air Saturation @ 5200 ft./ DO mg/L	Atmospheric Pressure in/Hg	
1. Time: 0639	81.6	7.89	24.43
2. Time: 1100	81.5	7.79	24.44
3. Time: 0640	81.6	7.33	24.51
4. Time: 0938	81.5	7.38	24.51
Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.			
DO Charge= 33.9			
Calibration done by:		Date:	
RL RL		5-10-07 5-11-07	

5-11-07



SANDIA NATIONAL LABORATORIES  
GROUND-WATER MONITORING PROGRAM  
PORTABLE PUMP AND TUBING DECONTAMINATION FIELD LOG

Project Name <u>CWL-GWM</u>	Project No.: <u>98036.10-11.01</u>
Decon. Location: <u>9425</u>	Date: <u>4-30-07</u>
<p>The portable pump and tubing bundle (S/N <u>pump 1</u>) were decontaminated prior to installation in well _____, according to the following procedure:</p> <ol style="list-style-type: none"> <li>1. 5 gallons tap water<sup>(a)</sup> + Liquinox wash.</li> <li>2. 5 gallons tap-water<sup>(a)</sup> rinse.</li> <li>3. 5 gallons tap water<sup>(a)</sup> + 50 mL HNO<sub>3</sub><sup>(b)</sup> (0.04M).</li> <li>4. 10 gallons deionized-water<sup>(c)</sup> rinse.</li> <li>5. 5 gallons deionized water<sup>(c)</sup> for sampling.</li> <li>6. Equipment blank sample # _____ was collected at _____ (time).</li> </ol>	
Weather:	
Personnel Performing Decontamination: <u>R. Lynch</u>	
Name of Sampler: <u>R. Lynch</u>	
Signature of Sampler: <u>[Signature]</u>	Date: _____
<sup>a</sup> Tap-Water Source: <u>DI Water, Crystal Springs</u>	
<sup>b</sup> HNO <sub>3</sub> Grade: Reagent	UN #: <u>2031</u>
Lot No.: <u>002735</u>	Manufacturer: <u>Fisher</u>
<sup>c</sup> DI Water Source: <u>Crystal Springs</u>	Lot No.: <u>04-12-07</u>
Condition of Tubing Bundle: <u>good</u>	
Condition of Pump: <u>good</u>	
Comments: <u>After CWL-BW3</u>	



SANDIA NATIONAL LABORATORIES  
GROUND-WATER MONITORING PROGRAM  
PORTABLE PUMP AND TUBING DECONTAMINATION FIELD LOG

Project Name <b>CWL-GWM</b>	Project No.: <b>98036.10.11.01.</b>
Decon. Location: <b>9925</b>	Date: <b>5-3-07</b>
<p>The portable pump and tubing bundle (S/N <b>pump 1</b>) were decontaminated prior to installation in well _____, according to the following procedure:</p> <ol style="list-style-type: none"> <li>1. 5 gallons tap water<sup>(a)</sup> + Liquinox wash.</li> <li>2. 5 gallons tap-water<sup>(a)</sup> rinse.</li> <li>3. 5 gallons tap water<sup>(a)</sup> + 50 mL HNO<sub>3</sub><sup>(b)</sup> (0.04M).</li> <li>4. 10 gallons deionized-water<sup>(c)</sup> rinse.</li> <li>5. 5 gallons deionized water<sup>(c)</sup> for sampling.</li> <li>6. Equipment blank sample # _____ was collected at _____ (time).</li> </ol>	
Weather:	
Personnel Performing Decontamination: <b>R. Lynch</b>	
Name of Sampler: <b>R. Lynch</b>	
Signature of Sampler: <b>R. Lynch</b>	Date:
<sup>a</sup> Tap-Water Source: <b>DI Water, Crystal Springs.</b>	
<sup>b</sup> HNO <sub>3</sub> Grade: Reagent	UN #: <b>2031</b>
Lot No.: <b>002735</b>	Manufacturer: <b>Fisher</b>
<sup>c</sup> DI Water Source: <b>Crystal Springs</b>	Lot No.: <b>04-12-07</b>
Condition of Tubing Bundle: <b>good</b>	
Condition of Pump: <b>good</b>	
Comments:  <b>After CWL-MWSU</b>	



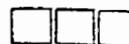
SANDIA NATIONAL LABORATORIES  
GROUND-WATER MONITORING PROGRAM  
PORTABLE PUMP AND TUBING DECONTAMINATION FIELD LOG

Project Name <u>CWL-GWM</u>	Project No.: <u>98036.10-11.01</u>
Decon. Location: <u>9925</u>	Date: <u>5-7-07</u>
<p>The portable pump and tubing bundle (S/N <u>pump</u>) were decontaminated prior to installation in well <u>mw2BL</u>, according to the following procedure:</p> <ol style="list-style-type: none"> <li>1. 5 gallons tap water<sup>(a)</sup> + Liquinox wash.</li> <li>2. 5 gallons tap-water<sup>(a)</sup> rinse.</li> <li>3. 5 gallons tap water<sup>(a)</sup> + 50 mL HNO<sub>3</sub><sup>(b)</sup> (0.04M).</li> <li>4. 10 gallons deionized-water<sup>(c)</sup> rinse.</li> <li>5. 5 gallons deionized water<sup>(c)</sup> for sampling.</li> <li>6. Equipment blank sample # <u>      </u> was collected at <u>      </u> (time).</li> </ol>	
Weather:	
Personnel Performing Decontamination: <u>R. Lynch</u>	
Name of Sampler: <u>R. Lynch</u>	
Signature of Sampler: <u>[Signature]</u>	Date: <u>      </u>
<sup>a</sup> Tap-Water Source: <u>DI Water, Crystal Springs</u>	
<sup>b</sup> HNO <sub>3</sub> Grade: Reagent	UN #: <u>2031</u>
Lot No.: <u>002735</u>	Manufacturer: <u>Fisher</u>
<sup>c</sup> DI Water Source: <u>Crystal Springs</u>	Lot No.: <u>04-12-07</u>
Condition of Tubing Bundle: <u>good</u>	
Condition of Pump: <u>good</u>	
Comments: <u>After CWL-BW4A</u>	



SANDIA NATIONAL LABORATORIES  
GROUND-WATER MONITORING PROGRAM  
PORTABLE PUMP AND TUBING DECONTAMINATION FIELD LOG

Project Name <u>CWL-GWM</u>	Project No.: <u>98036.10.11.01</u>
Decon. Location: <u>9925</u>	Date: <u>5-8-07</u>
<p>The portable pump and tubing bundle (S/N <u>pump 1</u>) were decontaminated prior to installation in well <u>mw 4</u>, according to the following procedure:</p> <ol style="list-style-type: none"> <li>1. 5 gallons tap water<sup>(a)</sup> + Liquinox wash.</li> <li>2. 5 gallons tap-water<sup>(a)</sup> rinse.</li> <li>3. 5 gallons tap water<sup>(a)</sup> + 50 mL HNO<sub>3</sub><sup>(b)</sup> (0.04M).</li> <li>4. 10 gallons deionized-water<sup>(c)</sup> rinse.</li> <li>5. 5 gallons deionized water<sup>(c)</sup> for sampling.</li> <li>6. Equipment blank sample # <u>      </u> was collected at <u>      </u> (time).</li> </ol>	
Weather:	
Personnel Performing Decontamination: <u>R. Lynch</u>	
Name of Sampler: <u>R. Lynch</u>	
Signature of Sampler: <u>[Signature]</u>	Date: <u>      </u>
<sup>a</sup> Tap-Water Source: <u>DI Water, Crystal Springs</u>	
<sup>b</sup> HNO <sub>3</sub> Grade: Reagent	UN #: <u>2037</u>
Lot No.: <u>002735</u>	Manufacturer: <u>Fisher</u>
<sup>c</sup> DI Water Source: <u>Crystal Springs</u>	Lot No.: <u>04-12-07</u>
Condition of Tubing Bundle: <u>good</u>	
Condition of Pump: <u>good</u>	
Comments:  <u>After CWL-ma2BL</u>	



SANDIA NATIONAL LABORATORIES  
GROUND-WATER MONITORING PROGRAM  
PORTABLE PUMP AND TUBING DECONTAMINATION FIELD LOG

Project Name <u>CWL-GWM</u>	Project No.: <u>98036.10-11.01.</u>
Decon. Location: <u>9925</u>	Date: <u>5-9-07</u>
<p>The portable pump and tubing bundle (S/N <u>PUMPU</u>) were decontaminated prior to installation in well <u>MW6U</u>, according to the following procedure:</p> <ol style="list-style-type: none"> <li>1. 5 gallons tap water<sup>(a)</sup> + Liquinox wash.</li> <li>2. 5 gallons tap-water<sup>(a)</sup> rinse.</li> <li>3. 5 gallons tap water<sup>(a)</sup> + 50 mL HNO<sub>3</sub><sup>(b)</sup> (0.04M).</li> <li>4. 10 gallons deionized-water<sup>(c)</sup> rinse.</li> <li>5. 5 gallons deionized water<sup>(c)</sup> for sampling.</li> <li>6. Equipment blank sample # _____ was collected at _____ (time).</li> </ol>	
Weather:	
Personnel Performing Decontamination: <u>R. Lynch</u>	
Name of Sampler: <u>R. Lynch</u>	
Signature of Sampler: <u>[Signature]</u>	Date: <u>5-9-07</u>
<sup>a</sup> Tap-Water Source: <u>DI Water, Crystal Springs.</u>	
<sup>b</sup> HNO <sub>3</sub> Grade: Reagent	UN #: <u>2031</u>
Lot No.: <u>002735</u>	Manufacturer: <u>Fisher</u>
<sup>c</sup> DI Water Source: <u>Crystal Springs</u>	Lot No.: <u>04-12-07</u>
Condition of Tubing Bundle: <u>good</u>	
Condition of Pump: <u>good</u>	
Comments:  <u>After CWL - MW4</u>	



SANDIA NATIONAL LABORATORIES  
GROUND-WATER MONITORING PROGRAM  
PORTABLE PUMP AND TUBING DECONTAMINATION FIELD LOG

Project Name <b>CWL-GWM</b>	Project No.: <b>98036.10-11.01</b>
Decon. Location: <b>9925</b>	Date: <b>5-11-07</b>
<p>The portable pump and tubing bundle (S/N <b>pump 1</b>) were decontaminated prior to installation in well _____, according to the following procedure:</p> <ol style="list-style-type: none"> <li>1. 5 gallons tap water<sup>(a)</sup> + Liquinox wash.</li> <li>2. 5 gallons tap-water<sup>(a)</sup> rinse.</li> <li>3. 5 gallons tap water<sup>(a)</sup> + 50 mL HNO<sub>3</sub><sup>(b)</sup> (0.04M).</li> <li>4. 10 gallons deionized-water<sup>(c)</sup> rinse.</li> <li>5. 5 gallons deionized water<sup>(c)</sup> for sampling.</li> <li>6. Equipment blank sample # _____ was collected at _____ (time).</li> </ol>	
Weather:	
Personnel Performing Decontamination: <b>R. Lynch</b>	
Name of Sampler: <b>R. Lynch</b>	
Signature of Sampler: <b>[Signature]</b>	Date: <b>/</b>
<sup>a</sup> Tap-Water Source: <b>DI Water, Crystal Springs</b>	
<sup>b</sup> HNO <sub>3</sub> Grade: Reagent	UN #: <b>2031</b>
Lot No.: <b>002735</b>	Manufacturer: <b>Fisher</b>
<sup>c</sup> DI Water Source: <b>Crystal Springs</b>	Lot No.: <b>04-12-07</b>
Condition of Tubing Bundle: <b>good</b>	
Condition of Pump: <b>good</b>	
Comments:  <b>After CWL-mw6</b>	



### ENVIRONMENTAL RESTORATION TAILGATE SAFETY MEETING FORM

Date: 4/27/07 4-30-07

Sheet \_\_\_ of \_\_\_

ER Site #(s): CWL -GWM Well=CWL-BW3

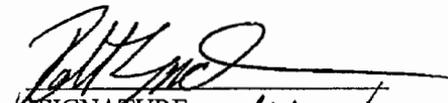
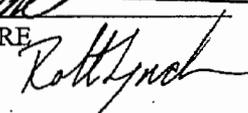
Operable Units(s) \_\_\_\_\_

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

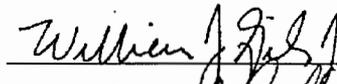
Hospital/Clinic: Sandia Medical Phone: ( ) 844-0911/ 911 Paramedic Phone: ( ) 911

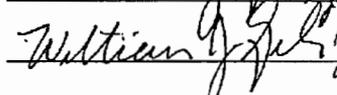
Hospital Address: 7<sup>th</sup> & F street

Special Equipment: Sampling pumps

Other: \_\_\_\_\_

#### ATTENDEES

NAME PRINTED: William J Gibson SIGNATURE: 

4-30-07 NAME PRINTED: William J 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: 5/02/07 / 5-3-07

Sheet \_\_\_ of \_\_\_

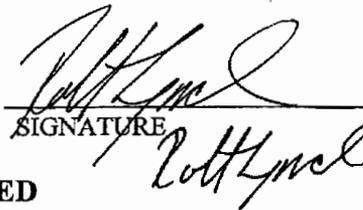
ER Site #(s): CWL -GWM Well=CWL-MW5U Operable Units(s) \_\_\_\_\_

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

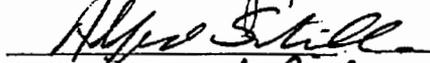
Hospital Address: 7<sup>th</sup> & F street

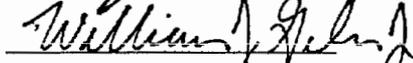
Special Equipment: Sampling pumps

Other: \_\_\_\_\_

#### ATTENDEES

NAME PRINTED: William J Gibson SIGNATURE: 

X NAME PRINTED: ALFRED SANTILLANES SIGNATURE: 

5-3-07- NAME PRINTED: William J Gibson SIGNATURE: 

X NAME PRINTED: \_\_\_\_\_ SIGNATURE: \_\_\_\_\_

NAME PRINTED: \_\_\_\_\_ SIGNATURE: \_\_\_\_\_

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

### ENVIRONMENTAL RESTORATION TAILGATE SAFETY MEETING FORM

Date: 5/04/07 5-7-07

Sheet \_\_\_ of \_\_\_

ER Site #(s): CWL -GWM Well=CWL-BW4A 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  
Robert Lynch 5-7-07

#### 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: 7<sup>th</sup> & F street

Special Equipment: Sampling pumps

Other: \_\_\_\_\_

#### ATTENDEES

NAME PRINTED: William Gibson SIGNATURE: William J Gibson

X NAME PRINTED: ALFRED SANTILLANO SIGNATURE: Alfred Santillano

5-7-07 NAME PRINTED: William J Gibson SIGNATURE: William J Gibson

NAME PRINTED: \_\_\_\_\_ SIGNATURE: \_\_\_\_\_

NAME PRINTED: \_\_\_\_\_ SIGNATURE: \_\_\_\_\_

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









## ER WASTE GENERATION LOG

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

**Form Generator:** William Gibson **Phone:** 284-5232 **Task Leader:** Paul Freshour

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

<b>Container I.D. #</b> <small>(site-date-sequence)</small>	CWL-QED-042507	CWL-BW3-042707	CWL-043007
<b>Container Certification #</b> <small>(i.e.SNL/NM#####)</small>	NA	NA	NA
<b>Project Name</b>	CWL-GWM	CWL-GWM	CWL-GWM
<b>Site Number</b>	NA	NA	NA
<b>Waste Mgt. Case #</b>	98036.10.11.01	98036.10.11.01	98036.10.11.01
<b>Initial Label Type</b>	Haz-Waste	Haz-Waste	Haz-Waste
<b>Waste Matrix</b> <small>(i.e. Water, Cuttings, Soil, Samples, Metal, etc.)</small>	Purge water	Purge water	Decon water
<b>Container Type / Vol</b> <small>(always use Certified containers)</small>	55gal.      CHPD	55gal.      CHPD	55gal.      CHPD
<b>Volume of Waste</b>	11 gals	15gals	35 gals
<b>Total Container Weight</b>	110lbs.	150lbs.	350lbs.
<b>Waste Char. Samples</b> <small>(COC#: Sample#-Fraction)</small>	COC# 611283, 611280, 611279 SMO# 084568, 084561, 084559	COC# 611284 SMO# 084572	COC# 611284 SMO# 084572
<b>SMO Hazardous [ ]</b>	NA	NA	NA
<b>SMO Radioactive [ ]</b>	NA	NA	NA
<b>ERCL Haz [ ] Rad [ ]</b>	NA	NA	NA
<b>RPSD Rad [ ]</b> <small>(Amir's on-site Rad Lab)</small>	NA	NA	NA
<b>Container Exterior RAD SURVEY #</b>	Survey: NA Swipes:	Survey: NA Swipes:	Survey: NA Swipes:
<b>Container Contents RAD SURVEY #</b>	Survey: NA Swipes:	Survey: NA Swipes:	Survey: NA Swipes:
<b>Accumulation Date</b>	Start 04/27/07 Full 05/08/07	Start 04/27/07 Full 04/30/07	Start 04/30/07 Full 04/30/07
<b>Date Moved to Waste Accumulation Area</b>	05/08/07	04/30/07	04/30/07
<b>Accumulation Area Name</b>	9925	9925	9925
<b>ERwm Memo #</b>			
<b>Comments</b>			Decon water after CWL-BW3 purge, CoC 611284

(OHSB) = 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 to Craig Wood MS-1087 Fax 284-2616

**Form Generator:** William Gibson **Phone:** 284-5232 **Task Leader:** Paul Freshour

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

<b>Container I.D. #</b> <small>(site-date-sequence)</small>	CWL-MW5U-050207	CWL-050307	
<b>Container Certification #</b> <small>(i.e. SNL/NM#####)</small>	NA	NA	
<b>Project Name</b>	CWL-GWM	CWL-GWM	
<b>Site Number</b>	NA	NA	
<b>Waste Mgt. Case #</b>	98036.10.11.01	98036.10.11.01	
<b>Initial Label Type</b>	Haz-Waste	Haz-Waste	
<b>Waste Matrix</b> <small>(i.e. Water, Cuttings, Soil, Samples, Metal, etc.)</small>	Purge water	Decon water	
<b>Container Type / Vol</b> <small>(always use Certified containers)</small>	CHPD 55gal.	CHPD 55gal.	
<b>Volume of Waste</b>	22 gals	35 gals	
<b>Total Container Weight</b>	220lbs.	350lbs.	
<b>Waste Char. Samples</b> <small>(COC#: Sample#-Fraction)</small>	COC# 611285 SMO# 084574	COC# 611285 SMO# 084574	
<b>SMO Hazardous [ ]</b>			
<b>SMO Radioactive [ ]</b>	NA	NA	
<b>ERCL Haz [ ] Rad [ ]</b>	NA	NA	
<b>RPSD Rad [ ]</b> <small>(Amir's on-site Rad Lab)</small>	NA	NA	
<b>Container Exterior RAD SURVEY #</b>	Survey: NA Swipes:	Survey: NA Swipes:	
<b>Container Contents RAD SURVEY #</b>	Survey: NA Swipes:	Survey: NA Swipes:	
<b>Accumulation Date</b>	Start 05/02/07 Full 05/03/07	Start 05/03/07 Full 05/03/07	
<b>Date Moved to Waste Accumulation Area</b>	05/03/07	05/03/07	
<b>Accumulation Area Name</b>	9925	9925	
<b>ERwm Memo #</b>			
<b>Comments</b>		Decon water after CWL-MW5U purge, CoC 611285	

(OHSD) = open head steel drum; (CHSD) = closed head steel drum; (CHPD) = closed head poly drum; (OHPP) = open head poly drum; (OHPB) = open head poly bucket; (B-Off) = roll off; (WGLS) = waffle bag; (44) = 44"x44" steel box; (BF) = Barricade 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 to Craig Wood MS-1087 Fax 284-2616

**Form Generator:** William Gibson **Phone:** 284-5232 **Task Leader:** Paul Freshour

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

<b>Container I.D. #</b> <small>(site-date-sequence)</small>	CWL-BW4A-050407	CWL-050707	
<b>Container Certification #</b> <small>(i.e.SNL/NM#####)</small>	NA	NA	
<b>Project Name</b>	CWL-GWM	CWL-GWM	
<b>Site Number</b>	NA	NA	
<b>Waste Mgt. Case #</b>	98036.10.11.01	98036.10.11.01	
<b>Initial Label Type</b>	Haz-Waste	Haz-Waste	
<b>Waste Matrix</b> <small>(i.e. Water, Cuttings, Soil, Samples, Metal, etc.)</small>	Purge water	Decon water	
<b>Container Type / Vol</b> <small>(always use Certified containers)</small>	CHPD	55gal.	CHPD 55gal.
<b>Volume of Waste</b>	17 gals	35 gals	
<b>Total Container Weight</b>	200lbs.	350lbs.	
<b>Waste Char. Samples</b> <small>(COC#: Sample#-Fraction)</small>	COC# 611282 SMO#084565, 084566	COC# 611282 SMO#084565, 084566	
<b>SMO Hazardous [ ]</b>			
<b>SMO Radioactive [ ]</b>	NA	NA	
<b>ERCL Haz [ ] Rad [ ]</b>	NA	NA	
<b>RPSD Rad [ ]</b> <small>(Amir's on-site Rad Lab)</small>	NA	NA	
<b>Container Exterior RAD SURVEY #</b>	Survey: NA Swipes:	Survey: NA Swipes:	
<b>Container Contents RAD SURVEY #</b>	Survey: NA Swipes:	Survey: NA Swipes:	
<b>Accumulation Date</b>	Start 05/04/07 Full 05/07/07	Start 05/07/07 Full 05/07/07	
<b>Date Moved to Waste Accumulation Area</b>	05/07/07	05/07/07	
<b>Accumulation Area Name</b>	9925	9925	
<b>ERwm Memo #</b>			
<b>Comments</b>	EB-1 prior to BW4A CoC 611288	Decon water after CWL-BW4A purge, CoC 611282	

(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 to Craig Wood MS-1087 Fax 284-2616

**Form Generator:** William Gibson **Phone:** 284-5232 **Task Leader:** Paul Freshour

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

<b>Container I.D. #</b> (site-date-sequence)	CWL-MW2BL-050807-01	CWL-MW2BL-050807-02	CWL-MW2BL-050807-03
<b>Container Certification #</b> (i.e.SNL/NM#####)	NA	NA	NA
<b>Project Name</b>	CWL-GWM	CWL-GWM	CWL-GWM
<b>Site Number</b>	NA	NA	NA
<b>Waste Mgt. Case #</b>	98036.10.11.01	98036.10.11.01	98036.10.11.01
<b>Initial Label Type</b>	Haz-Waste	Haz-Waste	Haz-Waste
<b>Waste Matrix</b> (i.e. Water, Cuttings, Soil, Samples, Metal, etc.)	Purge water	Purge water	Purge water
<b>Container Type / Vol</b> (always use Certified containers)	CHPD      55gal.	CHPD      55gal.	CHPD      55gal.
<b>Volume of Waste</b>	50 gals	50 gals	50 gals
<b>Total Container Weight</b>	500lbs.	500lbs.	500lbs.
<b>Waste Char. Samples</b> (COC#: Sample#-Fraction)	COC# 611281 SMO# 084563	COC# 611281 SMO# 084563	COC# 611281 SMO# 084563
<b>SMO Hazardous [ ]</b>			
<b>SMO Radioactive [ ]</b>	NA	NA	NA
<b>ERCL Haz [ ] Rad [ ]</b>	NA	NA	NA
<b>RPSD Rad [ ]</b> (Amir's on-site Rad Lab)	NA	NA	NA
<b>Container Exterior RAD SURVEY #</b>	Survey: NA Swipes:	Survey: NA Swipes:	Survey: NA Swipes:
<b>Container Contents RAD SURVEY #</b>	Survey: NA Swipes:	Survey: NA Swipes:	Survey: NA Swipes:
<b>Accumulation Date</b>	Start 05/08/07 Full 05/08/07	Start 05/08/07 Full 05/08/07	Start 05/08/07 Full 05/08/07
<b>Date Moved to Waste Accumulation Area</b>	05/08/07	05/08/07	05/08/07
<b>Accumulation Area Name</b>	9925	9925	9925
<b>ERwm Memo #</b>			
<b>Comments</b>			

(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 to Craig Wood MS-1087 Fax 284-2616

**Form Generator:** William Gibson **Phone:** 284-5232 **Task Leader:** Paul Freshour

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

<b>Container I.D. #</b> <small>(site-date-sequence)</small>	CWL-MW2BL-050807-04	CWL-MW2BL-050807-05	CWL-MW2BL-050807-06
<b>Container Certification #</b> <small>(i.e.SNL/NM#####)</small>	NA	NA	NA
<b>Project Name</b>	CWL-GWM	CWL-GWM	CWL-GWM
<b>Site Number</b>	NA	NA	NA
<b>Waste Mgt. Case #</b>	98036.10.11.01	98036.10.11.01	98036.10.11.01
<b>Initial Label Type</b>	Haz-Waste	Haz-Waste	Haz-Waste
<b>Waste Matrix</b> <small>(i.e. Water, Cuttings, Soil, Samples, Metal, etc.)</small>	Purge water	Purge water	Purge water
<b>Container Type / Vol</b> <small>(always use Certified containers)</small>	CHPD      55gal.	CHPD      55gal.	CHPD      55gal.
<b>Volume of Waste</b>	50 gals	50 gals	50 gals
<b>Total Container Weight</b>	500lbs.	500lbs.	500lbs.
<b>Waste Char. Samples</b> <small>(COC#: Sample#-Fraction)</small>	COC# 611281 SMO# 084563	COC# 611281 SMO# 084563	COC# 611281 SMO# 084563
<b>SMO Hazardous [ ]</b>			
<b>SMO Radioactive [ ]</b>	NA	NA	NA
<b>ERCL Haz [ ] Rad [ ]</b>	NA	NA	NA
<b>RPSD Rad [ ]</b> <small>(Amir's on-site Rad Lab)</small>	NA	NA	NA
<b>Container Exterior RAD SURVEY #</b>	Survey: NA Swipes:	Survey: NA Swipes:	Survey: NA Swipes:
<b>Container Contents RAD SURVEY #</b>	Survey: NA Swipes:	Survey: NA Swipes:	Survey: NA Swipes:
<b>Accumulation Date</b>	Start 05/08/07 Full 05/08/07	Start 05/08/07 Full 05/08/07	Start 05/08/07 Full 05/08/07
<b>Date Moved to Waste Accumulation Area</b>	05/08/07	05/08/07	05/08/07
<b>Accumulation Area Name</b>	9925	9925	9925
<b>ERwm Memo #</b>			
<b>Comments</b>			

(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 to Craig Wood MS-1087 Fax 284-2616

**Form Generator:** William Gibson **Phone:** 284-5232 **Task Leader:** Paul Freshour

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

<b>Container I.D. #</b> <small>(site-date-sequence)</small>	CWL-MW2BL-050807-07	CWL-MW2BL-050807-08	CWL-MW2BL-050807-09
<b>Container Certification #</b> <small>(i.e. SNL/NM#####)</small>	NA	NA	NA
<b>Project Name</b>	CWL-GWM	CWL-GWM	CWL-GWM
<b>Site Number</b>	NA	NA	NA
<b>Waste Mgt. Case #</b>	98036.10.11.01	98036.10.11.01	98036.10.11.01
<b>Initial Label Type</b>	Haz-Waste	Haz-Waste	Haz-Waste
<b>Waste Matrix</b> <small>(i.e. Water, Cuttings, Soil, Samples, Metal, etc.)</small>	Purge water	Purge water	Purge water
<b>Container Type / Vol</b> <small>(always use Certified containers)</small>	CHPD      55gal.	CHPD      55gal.	CHPD      55gal.
<b>Volume of Waste</b>	50 gals	50 gals	50 gals
<b>Total Container Weight</b>	500lbs.	500lbs.	500lbs.
<b>Waste Char. Samples</b> <small>(COC#: Sample#-Fraction)</small>	COC# 611281 SMO# 084563	COC# 611281 SMO# 084563	COC# 611281 SMO# 084563
<b>SMO Hazardous [ ]</b>			
<b>SMO Radioactive [ ]</b>	NA	NA	NA
<b>ERCL Haz [ ] Rad [ ]</b>	NA	NA	NA
<b>RPSD Rad [ ]</b> <small>(Amir's on-site Rad Lab)</small>	NA	NA	NA
<b>Container Exterior RAD SURVEY #</b>	Survey: NA Swipes:	Survey: NA Swipes:	Survey: NA Swipes:
<b>Container Contents RAD SURVEY #</b>	Survey: NA Swipes:	Survey: NA Swipes:	Survey: NA Swipes:
<b>Accumulation Date</b>	Start 05/08/07 Full 05/08/07	Start 05/08/07 Full 05/08/07	Start 05/08/07 Full 05/08/07
<b>Date Moved to Waste Accumulation Area</b>	05/08/07	05/08/07	05/08/07
<b>Accumulation Area Name</b>	9925	9925	9925
<b>ERwm Memo #</b>			
<b>Comments</b>			

(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 to Craig Wood MS-1087 Fax 284-2616

<b>Form Generator: <u>William Gibson</u> Phone: <u>284-5232</u> Task Leader: <u>Paul Freshour</u></b>				
<b>Signature: <u>William Gibson</u> To the best of my knowledge this information is correct &amp; accurate.</b>				
Container I.D. # <small>(site-date-sequence)</small>	CWL-MW2BL-050807-10		CWL-050807	
Container Certification # <small>(i.e.SNL/NM#####)</small>	NA		NA	
Project Name	CWL-GWM		CWL-GWM	
Site Number	NA		NA	
Waste Mgt. Case #	98036.10.11.01		98036.10.11.01	
Initial Label Type	Haz-Waste		Haz-Waste	
Waste Matrix <small>(i.e. Water, Cuttings, Soil, Samples, Metal, etc.)</small>	Purge water		Decon water	
Container Type / Vol <small>(always use Certified containers)</small>	CHPD	55gal.	CHPD	55gal.
Volume of Waste	34 gals		35 gals	
Total Container Weight	340lbs.		350lbs.	
Waste Char. Samples <small>(COC#: Sample#-Fraction)</small>	COC# 611281 SMO# 084563		COC# 611281 SMO# 084563	
SMO Hazardous [ ]				
SMO Radioactive [ ]	NA		NA	
ERCL Haz [ ] Rad [ ]	NA		NA	
RPSD Rad [ ] <small>(Amir's on-site Rad Lab)</small>	NA		NA	
Container Exterior RAD SURVEY #	Survey: NA Swipes:		Survey: NA Swipes:	
Container Contents RAD SURVEY #	Survey: NA Swipes:		Survey: NA Swipes:	
Accumulation Date	Start 05/08/07 Full 05/08/07		Start 05/08/07 Full 05/08/07	
Date Moved to Waste Accumulation Area	05/08/07		05/08/07	
Accumulation Area Name	9925		9925	
ERwm Memo #				
Comments			Decon water after CWL-MW2BL purge, CoC 611281	

(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 to Craig Wood MS-1087 Fax 284-2616

**Form Generator:** William Gibson **Phone:** 284-5232 **Task Leader:** Paul Freshour

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

<b>Container I.D. #</b> <small>(site-date-sequence)</small>	CWL-MW4-050907-01	CWL-MW4-050907-02	CWL-050907
<b>Container Certification #</b> <small>(i.e.SNL/NM#####)</small>	NA	NA	NA
<b>Project Name</b>	CWL-GWM	CWL-GWM	CWL-GWM
<b>Site Number</b>	NA	NA	NA
<b>Waste Mgt. Case #</b>	98036.10.11.01	98036.10.11.01	98036.10.11.01
<b>Initial Label Type</b>	Haz-Waste	Haz-Waste	Haz-Waste
<b>Waste Matrix</b> <small>(i.e. Water, Cuttings, Soil, Samples, Metal, etc.)</small>	Purge water	Purge water	Decon water
<b>Container Type / Vol</b> <small>(always use Certified containers)</small>	CHPD	55gal.	CHPD
			55gal.
<b>Volume of Waste</b>	25 gals	20 gals	35 gals
<b>Total Container Weight</b>	250lbs.	200lbs.	350lbs.
<b>Waste Char. Samples</b> <small>(COC#: Sample#-Fraction)</small>	COC# 611287 SMO# 084579	COC# 611287 SMO# 084579	COC# 611287 SMO# 084579
<b>SMO Hazardous [ ]</b>			
<b>SMO Radioactive [ ]</b>	NA	NA	NA
<b>ERCL Haz [ ] Rad [ ]</b>	NA	NA	NA
<b>RPSD Rad [ ]</b> <small>(Amir's on-site Rad Lab)</small>	NA	NA	NA
<b>Container Exterior RAD SURVEY #</b>	Survey: NA Swipes:	Survey: NA Swipes:	Survey: NA Swipes:
<b>Container Contents RAD SURVEY #</b>	Survey: NA Swipes:	Survey: NA Swipes:	Survey: NA Swipes:
<b>Accumulation Date</b>	Start 05/09/07 Full 05/09/07	Start 05/09/07 Full 05/09/07	Start 05/09/07 Full 05/09/07
<b>Date Moved to Waste Accumulation Area</b>	05/09/07	05/09/07	05/09/07
<b>Accumulation Area Name</b>	9925	9925	9925
<b>ERwm Memo #</b>			
<b>Comments</b>			Decon water after CWL-BW3 purge, CoC 611287

(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 to Craig Wood MS-1087 Fax 284-2616

**Form Generator:** William Gibson **Phone:** 284-5232 **Task Leader:** Paul Freshour

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

<b>Container I.D. #</b> <small>(site-date-sequence)</small>	CWL-MW6U-051007	CWL-051107	
<b>Container Certification #</b> <small>(i.e. SNL/NM#####)</small>	NA	NA	
<b>Project Name</b>	CWL-GWM	CWL-GWM	
<b>Site Number</b>	NA	NA	
<b>Waste Mgt. Case #</b>	98036.10.11.01	98036.10.11.01	
<b>Initial Label Type</b>	Haz-Waste	Haz-Waste	
<b>Waste Matrix</b> <small>(i.e. Water, Cuttings, Soil, Samples, Metal, etc.)</small>	Purge water	Decon water	
<b>Container Type / Vol</b> <small>(always use Certified containers)</small>	CHPD	55gal.	CHPD 55gal.
<b>Volume of Waste</b>	22 gals	35 gals	
<b>Total Container Weight</b>	220lbs.	350lbs.	
<b>Waste Char. Samples</b> <small>(COC#: Sample#-Fraction)</small>	COC# 611286 SMO# 084576, 084577	COC# 611286 SMO# 084576, 084577	
<b>SMO Hazardous [ ]</b>			
<b>SMO Radioactive [ ]</b>	NA	NA	
<b>ERCL Haz [ ] Rad [ ]</b>	NA	NA	
<b>RPSD Rad [ ]</b> <small>(Amir's on-site Rad Lab)</small>	NA	NA	
<b>Container Exterior RAD SURVEY #</b>	Survey: NA Swipes:	Survey: NA Swipes:	
<b>Container Contents RAD SURVEY #</b>	Survey: NA Swipes:	Survey: NA Swipes:	
<b>Accumulation Date</b>	Start 05/10/07 Full 05/11/07	Start 05/11/07 Full 05/11/07	
<b>Date Moved to Waste Accumulation Area</b>	10/11/07	05/11/07	
<b>Accumulation Area Name</b>	9925	9925	
<b>ERwm Memo #</b>			
<b>Comments</b>	EB-2 prior to CWL-MW6U CoC 611289	Decon water after CWL-MW6U purge, CoC 611286	

(OHSB)= 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.

**ATTACHMENT B**  
**ANALYSIS REQUEST/CHAIN-OF-CUSTODY FORMS**

# CONTRACT LABORATORY ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC

611284

Dept. No /Mail Stop: 6765/MS 1089	Date Samples Shipped: <u>4/30/07</u>	Project/Task NO. 98036 10 11 01
Project/Task Manager: Paul Freshour	Carrier/Waybill No.	SMO Authorization: <u>[Signature]</u>
Project Name: CWL GWM	Lab Contact: Edie Kent/803-556-8171	Contract # 21671
Record Center Code: ER/076/DAT	Lab Destination: GEL	S O U
Logbook Ref. No.: ER 032	SMC Contact/Phone: Pam Puissant/505-844-3185	
Service Order No. CF 025-07	Send Report to SMO: Lorraine Herrera/505-844-3199	

<input type="checkbox"/> Waste Characterization -Send preliminary/copy report to:
<input type="checkbox"/> Released by COC No.: _____
<input checked="" type="checkbox"/> Validation Required
Bill To: Sandia National Labs (Accounts Payable) P.O. Box 5800 MS 0154 Albuquerque, NM 87185-0154

Location		Reference LOV (available at SMO)											
Building	Room	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container		Preserv- ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
							Type	Volume					
		084572-001 CWL-BW3	506	74	<u>4/30/07 0841</u>	GW	G	3x40ml	HCL	G	SA	VOC (8260) Appendix IX	
		084572-009 CWL-BW3	506	74	<u>0842</u>	GW	AG	500 ml	HNO3	G	SA	Total Metals + Fe (6020/7470) Appendix IX	
		084573-001 CWL-TB 6	506	74	<u>0841</u>	DIW	G	3x40ml	HCL	G	TB	VOC (8260) Appendix IX	

<b>RMMA</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <b>Sample Disposal</b> <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by lab <b>Turnaround Time</b> <input type="checkbox"/> 7 Day <input type="checkbox"/> 15 Day <input checked="" type="checkbox"/> 30 Day <b>Return Samples By:</b> _____	<b>Sample Tracking</b> Date Entered (mm/dd/yy) _____ Entered by: _____ Negotiated TAT _____ QC In: _____	<b>Special Instructions/QC Requirements</b> EDD <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Level D Package <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No *Send report to: Tim Jackson/Org 6765/MS 1087/505-284-2547	<b>Abnormal Conditions on Receipt</b>																				
<b>Sample Team Members</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Name</th> <th>Signature</th> <th>Inil</th> <th>Company/Organization/Phone/Cellular</th> </tr> </thead> <tbody> <tr> <td>Robert Lynch</td> <td><u>[Signature]</u></td> <td>RL</td> <td>Weston/6765/844-4013/250-7090</td> </tr> <tr> <td>William Gibson</td> <td><u>[Signature]</u></td> <td>WG</td> <td>Weston/6765/284-5232/239-7367</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>			Name	Signature	Inil	Company/Organization/Phone/Cellular	Robert Lynch	<u>[Signature]</u>	RL	Weston/6765/844-4013/250-7090	William Gibson	<u>[Signature]</u>	WG	Weston/6765/284-5232/239-7367									<b>Lab Use</b>
Name	Signature	Inil	Company/Organization/Phone/Cellular																				
Robert Lynch	<u>[Signature]</u>	RL	Weston/6765/844-4013/250-7090																				
William Gibson	<u>[Signature]</u>	WG	Weston/6765/284-5232/239-7367																				
*Please list as separate report.																							

1. Relinquished by <u>[Signature]</u> Org. 6765 Date <u>4/30/07</u> Time <u>0900</u>	4. Relinquished by _____ Org. _____ Date _____ Time _____
1. Received by <u>[Signature]</u> Org. 6765 Date <u>4/30/07</u> Time <u>0900</u>	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**

*Prior to CWL-MUN60*

Internal Lab

Batch No.

SMO Use

AR/COC

**611289**

Dept. No./Mail Stop: 6765/MS 1089	Date Samples Shipped:	Project/Task NO. 98036 .10.11.01	<input type="checkbox"/> Waste Characterization -Send preliminary/copy report to:  <input type="checkbox"/> Released by COC No.: _____ <input checked="" type="checkbox"/> Validation Required Bill To: Sandia National Labs (Accounts Payable) P.O. Box 5800 MS 0154 Albuquerque, NM 87185-0154
Project/Task Manager: Paul Freshour	Carrier/Waybill No.:	SMO Authorization:	
Project Name: CWL GWM	Lab Contact: Edie Kent/803-556-8171	Contract # 21671	
Record Center Code: ER/076/DAT	Lab Destination: GEL		
Logbook Ref. No.: ER 032	SMO Contact/Phone: Pam Puissant/505-844-3185		
Service Order No. CF 025-07	Send Report to SMO: Lorraine Herrera/505-844-3199		

Location		Reference LOV(available at SMO)										Parameter & Method Requested		Lab Sample ID
Building	Room	Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container		Preservative	Collection Method	Sample Type	Lab Sample ID	
								Type	Volume					
		084584-001	CWL-EB 2	N/A	74	050907/1140	GW	G	3x40ml	HCL	G	SA	VOC (8260) Appendix IX	
		084584-009	CWL-EB 2	N/A	74	050907/1141	GW	AG	500 ml	HNO3	G	SA	Total Metals + Fe (6020/7470) Appendix IX	
		084585-001	CWL-TB 11	N/A	74	050907/1140	DIW	G	3x40ml	HCL	G	TB	VOC (8260) Appendix IX	

RMMA <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sample Tracking	SmO Use	Special Instructions/QC Requirements	Abnormal Conditions on Receipt
Sample Disposal <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by lab	Date Entered(mm/dd/yy)		EDD <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Turnaround Time <input type="checkbox"/> 7 Day <input type="checkbox"/> 15 Day <input checked="" type="checkbox"/> 30 Day	Entered by:		Level D Package <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Return Samples By: <input type="checkbox"/> Negotiated TAT <input type="checkbox"/> QC inits.			*Send report to: Tim Jackson/Crg 6765/MS 1087/505-284-2547	
Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	Alfred Santillanes	<i>[Signature]</i>		Weston/6765/844-5130/228-0710
	William Gibson	<i>[Signature]</i>		Weston/6765/284-5232/239-7367
*Please list as separate report.				

1. Relinquished by <i>[Signature]</i> Org. 6765 Date 5/10/07 Time 1030	4. Relinquished by _____ Org. _____ Date _____ Time _____
1. Received by <i>[Signature]</i> Org. 10335 Date 5/10/07 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 _____

**ATTACHMENT C**  
**DATA VALIDATION REPORTS FOR**  
**GROUNDWATER ANALYTICAL RESULTS**  
**April – June 2007**

# Analytical Quality Associates, Inc.

616 Maxine NE  
Albuquerque, NM 87123  
Phone: 505-299-5201  
Fax: 505-299-6744  
Email: minteer@aol.com

## Memorandum

Date: June 28, 2007  
To: File  
From: Kevin Lambert  
Subject: Organic Data Review and Validation – SNL  
Site: CWL Assessment GWM  
AR/COC: 611279, 611281, and 611287  
SDG: 185762  
Laboratory: GEL  
Project/Task: 98036.10.11.01

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 1.

### Summary

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

#### 1. VOC:

The calibration response factor (RF) for acetonitrile, isobutyl alcohol, and propionitrile were  $<0.05$  but  $\geq 0.01$ . The associated sample results were non-detects and should be qualified "UJ."

The calibration RF for acrolein was  $<0.05$  but  $\geq 0.01$  and the calibration verification percent difference for acrolein was  $>20\%$  but  $\leq 40\%$ . The associated sample results were non-detects and should be qualified "UJ."

Acetone was detected ( $\geq$  DL) in the field blank. The associated sample result that was non-detect should not be qualified. The associated sample result that was a detect  $<$  the RL and  $<10X$  the blank concentration should be qualified "U" at the RL (5.0 ug/L).

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.

### Calibration

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

VOC:

The calibration verification percent difference for carbon disulfide, trans-1,4-dichloro-2-butene, and trichlorofluoromethane (see VOC Worksheets) were >20% but ≤40%. The associated sample results were non-detects and should not be qualified based on professional judgment.

**Blanks**

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

VOC:

Bromodichloromethane, bromoform, chloroform, and dibromochloromethane (see VOC Worksheets) were detected (≥ DL) in the field blank. The associated sample results were non-detects; no data should be qualified as a result.

**Internal Standards (ISs)**

Internal standards data met QC acceptance criteria.

**Surrogates**

The surrogate recoveries met QC acceptance criteria.

**Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)**

The LCS/LCSD met QC acceptance criteria except as follows.

VOC:

The LCS recovery for carbon disulfide (see VOC Worksheets) was slightly < the lower QC acceptance limit. The associated sample results were non-detects and should not be qualified based on professional judgment. Also, it should be noted that no LCSD was provided with the SDG. Laboratory precision was assessed using the MS/MSD. No data should be qualified as a result.

**Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

The MS/MSD met QC acceptance criteria except as follows.

VOC:

The MSD recovery for chloromethane and vinyl chloride (see VOC Worksheets) were > the upper QC acceptance limits. The associated sample results were non-detects; no data should be qualified as a result.

**Target Compound Identification/Confirmation**

No target compound identification/confirmation analyses were required.

**Detection Limits/Dilutions**

All detection limits were properly reported. No dilutions were required.

**Other QC**

No trip blank (TB), equipment blank (EB), field blank (FB), or field duplicate pair was submitted on the AR/COC(s) except as follows.

VOC:

TBs and an FB were submitted on the AR/COC(s).

No other specific issues which affect data quality were identified.

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**Memorandum**

Date: June 28, 2007  
To: File  
From: Kevin Lambert  
Subject: Inorganic Data Review and Validation – SNL  
Site: CWL Assessment GWM  
AR/COC: 611279, 611281, and 611287  
SDG: 185762  
Laboratory: GEL  
Project/Task: 98036.10.11.01

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 1.

**Summary**

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

1. ICP-MS metals:

The following target analytes were detected ( $\geq$  DL) in one or more of the blanks (ICB, CCB, MB). The associated sample results are qualified as noted below.

Sample 185762-002            As was a detect  $<5X$  the MB and should be qualified "J, B."  
and -005

Sample 185762-007            As and Zn were detects  $<5X$  the MB and should be qualified "J, B."

The serial dilution relative percent difference for Fe (12%) was  $>10\%$  and the parent sample result was  $>50X$  the RL. The associated sample results were detects and should be qualified "J."

2. CVAA mercury:

The target analyte was detected ( $\geq$  DL) in one or more of the blanks (ICB, CCB) at a negative concentration with an absolute value  $>$  the DL but  $<$  the RL. The associated sample results are qualified as noted below.

Sample 185762-002,            Hg was non-detect and should be qualified "UJ, B3."  
-005, and -007

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

### **Holding Times/Preservation**

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

### **Calibration**

The initial and continuing calibration data met QC acceptance criteria.

### **Blanks**

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

#### **ICP-MS metals:**

It should be noted that the associated Zn sample results that were non-detect or >5X the blank concentration should not be qualified.

### **Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD)**

The LCS/LCSD met QC acceptance criteria.

#### **All Analyses:**

It should be noted that no LCSD was provided with the SDG. Laboratory precision was assessed using the replicate. No data should be qualified as a result.

### **Matrix Spike (MS)**

The MS met QC acceptance criteria.

### **Replicate**

The replicate met QC acceptance criteria.

### **ICP Serial Dilution**

The serial dilution met QC acceptance criteria except as noted above in the summary section.

### **ICP Interference Check Sample (ICS)**

The ICS data met QC acceptance criteria.

### **Detection Limits/Dilutions**

All detection limits were properly reported. No dilutions were required.

### **Other QC**

No trip blank (TB), equipment blank (EB), field blank (FB), or field duplicate pair was submitted on the AR/COC(s).

No other specific issues which affect data quality were identified.

Sample Findings Summary

Site: CWL Assessment GWM

AR/COC: 611279,611281,611287

Data Type: Organic & Inorgani

	VOC												
	75-05-8 (acetonitrile)	107-02-8 (acrolein)	78-83-1 (isobutyl alcohol)	107-12-0 (propionitrile)	67-64-1 (acetone)	ICP-MS metals	7440-38-2 (arsenic)	7440-66-6 (zinc)	7439-89-6 (iron)	CVAA Hg	7439-97-6 (mercury)		
084559-001 CWL-MW2BU	UJ	UJ	UJ	UJ									
084560-001 CWL-TB 1	UJ	UJ	UJ	UJ									
084563-001 CWL-MW2BL	UJ	UJ	UJ	UJ									
084579-001 CWL-MW4	UJ	UJ	UJ	UJ	5.0 U								
084580-001 CWL-FB 2	UJ	UJ	UJ	UJ									
084581-001 CWL-TB 9	UJ	UJ	UJ	UJ									
084559-009 CWL-MW2BU							J,B		J		UJ,B3		
084563-009 CWL-MW2BL							J,B		J		UJ,B3		
084579-009 CWL-MW4							J,B	J,B	J		UJ,B3		

Validated By: *Kevin A. Lambert*

Kevin A. Lambert

Date: 06/28/07

# Analytical Quality Associates, Inc.

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## Memorandum

Date: June 8, 2007  
To: File  
From: Kevin Lambert  
Subject: Organic Data Review and Validation – SNL  
Site: CWL Assessment GWM  
AR/COC: 611280  
SDG: 185040  
Laboratory: GEL  
Project/Task: 98036.10.11.01

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 1.

### Summary

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

#### 1. VOC:

The initial calibration intercept for bromoform and pentachloroethane were >3X the DL. The associated sample results were non-detects and should be qualified "UJ."

The calibration response factor (RF) for isobutyl alcohol (0.01), propionitrile (0.04), and acetonitrile (0.03) were <0.05 but  $\geq 0.01$ . The associated sample results were non-detects and should be qualified "UJ."

The LCS recovery and MSD recovery for methylene chloride (73% and 63%, respectively) were below the lower acceptance limits (76% and 71%, respectively) but  $\geq 10\%$ . The associated sample results were non-detects and should be qualified "UJ, A, A2."

The MSD recoveries for chloromethane (59%) and vinyl chloride (61%) were below the lower acceptance limits (60% and 63%, respectively) but  $\geq 10\%$ . The associated sample results were non-detects and should be qualified "UJ, A2."

The MS/MSD relative percent difference for dichlorodifluoromethane (22%) was outside of the QC acceptance criteria (20%). The associated sample results were non-detects and should be qualified "UJ, P1."

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.

### **Calibration**

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

#### **VOC:**

The calibration RF for trichloroethene (0.17) was < the specified minimum RF (0.30). No data should be qualified based on professional judgment. The calibration verification percent difference for nine target analytes (see VOC Worksheets) were >20% but ≤40%. The associated sample results were non-detects and should not be qualified based on professional judgment.

### **Blanks**

No target analytes were detected in the blanks.

### **Internal Standards (ISs)**

Internal standards data met QC acceptance criteria.

### **Surrogates**

The surrogate recoveries met QC acceptance criteria.

### **Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)**

The LCS/LCSD met QC acceptance criteria except as noted above in the summary section.

#### **VOC:**

It should be noted that no LCSD was provided with the SDG. Laboratory precision was assessed using the MS/MSD. No data should be qualified as a result.

### **Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

The MS/MSD met QC acceptance criteria except as noted above in the summary section.

### **Target Compound Identification/Confirmation**

No target compound identification/confirmation analyses were required.

### **Detection Limits/Dilutions**

All detection limits were properly reported. No dilutions were required.

### **Other QC**

No trip blank (TB), equipment blank (EB), field blank (FB), or field duplicate pair was submitted on the AR/COC(s) except as follows.

#### **VOC:**

A TB was submitted on the AR/COC(s).

No other specific issues which affect data quality were identified.

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## Memorandum

Date: June 8, 2007  
To: File  
From: Kevin Lambert  
Subject: Inorganic Data Review and Validation – SNL  
Site: CWL Assessment GWM  
AR/COC: 611280  
SDG: 185040  
Laboratory: GEL  
Project/Task: 98036.10.11.01

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 1.

### Summary

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

#### 1. ICP-MS metals:

The following target analytes were detected ( $\geq$  DL) in one or more of the blanks (ICB, CCB, MB, equipment blank). The associated sample result is qualified as noted below.

Sample 185040-002      Tl was a detect  $<5X$  the CCB and should be qualified "J, B3."

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

### Holding Times/Preservation

The sample was analyzed within the prescribed holding times and properly preserved.

### Calibration

The initial and continuing calibration data met QC acceptance criteria.

### Blanks

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

ICP-MS metals:

Sb was detected ( $\geq$  DL) in one or more of the blanks (ICB, CCB, MB). The associated sample result was non-detect; no data should be qualified as a result.

**Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD)**

The LCS/LCSD met QC acceptance criteria.

All Analyses:

It should be noted that no LCSD was provided with the SDG. Laboratory precision was assessed using the replicate. No data should be qualified as a result.

**Matrix Spike (MS)**

The MS met QC acceptance criteria.

**Replicate**

The replicate met QC acceptance criteria.

**ICP Serial Dilution**

The serial dilution met QC acceptance criteria.

**ICP Interference Check Sample (ICS)**

The ICS data met QC acceptance criteria.

**Detection Limits/Dilutions**

All detection limits were properly reported. No dilutions were required.

**Other QC**

No trip blank (TB), equipment blank (EB), field blank (FB), or field duplicate pair was submitted on the AR/COC(s).

No other specific issues which affect data quality were identified.



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## Memorandum

Date: June 23, 2007  
To: File  
From: David Schwent  
Subject: Organic Data Review and Validation - SNL  
Site: CWL GWM  
AR/COC: 611282  
SDG: 185592  
Laboratory: GEL  
Project/Task No: 98036.10.11.01

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 1.

### Summary

All samples were prepared and analyzed with approved procedures using method EPA8260B (VOCs). Problems were identified with the data package that result in the qualification of data.

#### VOC Analysis:

Calibration: The initial calibration intercept values of toluene and xylenes(total) were negative with absolute values >3X the detection limit (DL). All associated results of Samples 185592-001, -002, and -005 were non-detects (NDs) and will be qualified "R."

Calibration: The initial calibration intercept value of ethylbenzene was positive with an absolute value >3X the DL. All associated results of Samples 185592-001, -002, and -005 were NDs and will be qualified "UJ."

Calibration: The initial calibration response factors (RFs) of acrolein, propionitrile, and isobutyl alcohol were <0.05 but  $\geq 0.01$ . All associated results of Samples 185592-001, -002, and -005 were NDs and will be qualified "UJ."

Data are acceptable, except as noted above. QC measures appear to be adequate. The following sections discuss the data review and validation.

#### Holding Times/Preservation

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

### Calibration

VOC Analysis: All initial and continuing calibration QC acceptance criteria were met, except as noted above in the summary section and the following. The CCV %Ds of 7 target analytes (see Data Validation Worksheets) were >20% but <40%. However, all associated results of Samples 185592-001, -002, and -005 were NDs and will not be qualified.

### Blanks

VOC Analysis: No target analytes were detected in the blanks, except the following. Methylene chloride was detected in the trip blank (TB) (Sample 185592-005) at a concentration < the RL. However, all associated results of Samples -001 and -002 were NDs and will not be qualified. Dibromochloromethane was detected in the equipment blank (EB) (Sample 185458-004) at a concentration < the RL. However, all associated results of Samples -001 and -002 were NDs and will not be qualified.

### Internal Standards (ISs)

VOC Analysis: All IS area and RT QC acceptance criteria were met.

### Surrogates

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

### Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)

VOC Analysis: All LCS QC acceptance criteria were met. No LCSD analysis was performed. The MSD analysis was used as a measure of laboratory precision. No sample data will be qualified as a result.

### Matrix Spike/Matrix Spike Duplicate (MS/MSD)

VOC Analysis: All MS/MSD (PS/PSD) QC acceptance criteria were met, except the following. The PSD percent recovery (%R) of acetone was > QC acceptance criteria. However, all associated results of Samples 185592-001, -002, and -005 were NDs and will not be qualified.

### Target Compound Identification/Confirmation

VOC Analysis: No confirmation analysis was required for this method.

### Detection Limits/Dilutions

VOC Analysis: All detection limits were reported correctly. No samples required dilution.

### Other QC

VOC Analysis: No field blanks (FBs) were submitted on the ARCOCs. It should be noted that the EB (Sample 185458-004) submitted on COC 611288 of another package, SDG 185458, applies to the field samples of COC 611282. It should be noted that all field duplicate (FD) relative percent differences (RPDs) were <20%. No QC criteria for the evaluation of FDs are currently in place.

No other specific issues were identified which affect data quality.

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## Memorandum - Revised

DATE: July 10, 2007  
TO: File  
FROM: David Schwent  
SUBJECT: Inorganic Data Review and Validation - SNL  
Site: CWL GWM  
AR/COC: 611282  
SDG: 185592  
Laboratory: GEL  
Project/Task No: 98036.10.11.01

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 1.

### Summary

The samples were prepared and analyzed with accepted procedures using methods EPA6020 (ICP-MS) and EPA7470A (CVAA). Problems were identified with the data package that result in the qualification of data.

#### ICP-MS Analysis:

Blanks: As was detected in the method blank (MB) at a concentration < the reporting limit (RL). The associated results of Samples 185592-003 and -004 were detects <5X the MB concentration and will be qualified "J,B."

Blanks: Be was detected in the MB at a concentration < the RL and was detected in the continuing calibration blank (CCB) at a concentration < the RL. The associated result of Sample 185592-003 was a detect <5X the MB concentration and <5X the CCB concentration and will be qualified "J,B,B3."

#### CVAA Analysis:

Blanks: Hg was detected in the initial calibration blank (ICB) and the CCB at negative concentrations with absolute values > the detection limit (DL) but < the RL. The associated results of Samples 185592-003 and -004 were NDs and will be qualified "UJ,B3."

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**

**ICP-MS Analysis:** No target analytes were detected in the blanks, except as noted above in the summary section and the following. Cr, Sb and Be were detected in several of the blanks at concentrations < the RL. However, the associated Sb results of Sample 185592-003 and -004 and the Be result of Sample -004 were NDs and will not be qualified. Fe was detected in the CCB at a negative concentration with an absolute value > the DL but < the RL. However, the associated results of Samples -003 and -004 were detects >5X the DL and will not be qualified. Cr was detected in the equipment blank (EB) (Sample 185458-005) at a concentration < the RL. However, all associated results of Samples -003 and -004 were NDs and will not be qualified.

**CVAA Analysis:** No target analytes were detected in the blanks, except as noted above in the summary section.

### **Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)**

**All Analyses:** All LCS QC acceptance criteria were met. No LCSD analyses were performed. No sample data will be qualified as a result.

### **Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

**ICP-MS Analysis:** All MS QC acceptance criteria were met.

**CVAA Analysis:** All MS QC acceptance criteria were met. It should be noted that the MS analysis was performed on an SNL sample of similar matrix from another SDG. No sample data will be qualified as a result.

### **Replicates**

**All Analyses:** All replicate QC acceptance criteria were met.

### **ICP Serial Dilution**

**ICP-MS Analysis:** All serial dilution QC acceptance criteria were met.

**CVAA Analysis:** No serial dilution analysis was required for this method.

### **ICP Interference Check Sample (ICS)**

**ICP-MS Analysis:** All ICS AB QC acceptance criteria were met.

**CVAA Analysis:** No ICS analysis was required for this method.

### **Detection Limits/Dilutions**

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

**Other QC**

All Analyses: No field blanks (FBs) were submitted on the ARCOCs. It should be noted that the EB (Sample 185458-005) submitted on COC 611288 of another package, SDG 185458, applies to the field samples of COC 611282. It should be noted that all field duplicate (FD) relative percent differences (RPDs) were <20%. No QC criteria for the evaluation of FDs are currently in place.

No other specific issues were identified which affect data quality.



# AQA Nonconformance Report

NCR No. 07-10-07DJSPg 1 of 1**SECTION 1**

Document Title: DV report SNL COC 611282 Inorganic Memo and Sample Findings Summary (SFS)

Project or Program: Data Validation

Originator / Date: David Schwent 07/10/07

Contract No.: 3719 - Line 5 DV

**DESCRIPTION OF NONCONFORMANCE**

Requirement: The Fe result of Sample 185592-004 should not be qualified "UJ,B3" due to an associated negative blank value detected in the continuing calibration blank (CCB) because the result is a detect >5X the value of the detection limit (DL).

Condition Found: The Fe result of Sample 185592-004 was incorrectly qualified "UJ,B3" due to an associated negative blank value detected in the CCB because the result was incorrectly identified as a non-detect (ND).

Assigned to: David SchwentResponse Due 07/10/07**DISPOSITION:** Accept-As-Is  Reject  Administrative Action **Justification:** Validation oversight.**Instructions:** (Identify what Administrative Actions and/or Corrective Actions will occur.)  
Correct error and re-issue DV report and SFS.Responsible Employee David SchwentCorrective Action Due Date 07/10/07**SECTION 3****VERIFICATION AND CLOSURE:** Disposition Completed As Directed  Other (Specify) 

Originator or QA Coordinator (Signature/Date)

David Schwent07/10/07

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## Memorandum

Date: June 22, 2007  
To: File  
From: Kevin Lambert  
Subject: Organic Data Review and Validation – SNL  
Site: CWL Assessment GWM  
AR/COC: 611283  
SDG: 185277  
Laboratory: GEL  
Project/Task: 98036.10.11.01

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 1.

### Summary

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

#### 1. VOC:

The initial calibration intercept for 2-chloro-1,3-butadiene was >3X the DL. The associated sample results were non-detects and should be qualified "UJ."

The calibration response factor (RF) for isobutyl alcohol (0.013) was <0.05 but  $\geq 0.01$ . The associated sample results were non-detects and should be qualified "UJ."

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.

### Calibration

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

VOC:

The calibration RF for 1,1-dichloroethene (0.17) and trichloroethene (0.23) were < the specified minimum RF (0.20 and 0.30, respectively). No data should be qualified based on professional judgment. The calibration verification percent difference for 1,1,1-trichloroethane (23%), carbon tetrachloride (27%), and trans-1,4-dichloro-2-butene(24%) were >20% but ≤40%. The associated sample results were non-detects and should not be qualified based on professional judgment.

**Blanks**

No target analytes were detected in the blanks except as follows.

VOC:

Acetone, bromodichloromethane, bromoform, chloroform, dibromochloromethane were detected (≥ DL) in the field blank. The associated sample results were non-detects; no data should be qualified as a result.

**Internal Standards (ISs)**

Internal standards data met QC acceptance criteria.

**Surrogates**

The surrogate recoveries met QC acceptance criteria.

**Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)**

The LCS/LCSD met QC acceptance criteria except as follows.

VOC:

It should be noted that no LCSD was provided with the SDG. Laboratory precision was assessed using the MS/MSD. No data should be qualified as a result.

**Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

The MS/MSD met QC acceptance criteria.

**Target Compound Identification/Confirmation**

No target compound identification/confirmation analyses were required.

**Detection Limits/Dilutions**

All detection limits were properly reported. No dilutions were required.

**Other QC**

No trip blank (TB), equipment blank (EB), field blank (FB), or field duplicate pair was submitted on the AR/COC(s) except as follows.

VOC:

A TB and FB were submitted on the AR/COC(s).

No other specific issues which affect data quality were identified.

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## Memorandum

Date: June 22, 2007  
To: File  
From: Kevin Lambert  
Subject: Inorganic Data Review and Validation – SNL  
Site: CWL Assessment GWM  
AR/COC: 611283  
SDG: 185277  
Laboratory: GEL  
Project/Task: 98036.10.11.01

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 1.

### Summary

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

1. ICP-MS metals:

The following target analytes were detected ( $\geq$  DL) in one or more of the blanks (ICB, CCB) at a negative concentration with an absolute value  $>$  the DL but  $<$  the RL. The associated sample results are qualified as noted below.

Sample 185277-002            Sb was non-detect and should be qualified "UJ, B3."

2. CVAA mercury:

The target analyte was detected ( $\geq$  DL) in one or more of the blanks (ICB, CCB) at a negative concentration with an absolute value  $>$  the DL but  $<$  the RL. The associated sample results are qualified as noted below.

Sample 185277-002            Hg was non-detect and should be qualified "UJ, B3."

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

### Holding Times/Preservation

The sample was analyzed within the prescribed holding times and properly preserved.

### **Calibration**

The initial and continuing calibration data met QC acceptance criteria.

### **Blanks**

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

#### **ICP-MS metals:**

As and Sb were detected ( $\geq$  DL) in one or more of the blanks (ICB, CCB, MB). The associated sample results were non-detects; no data should be qualified as a result.

### **Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD)**

The LCS/LCSD met QC acceptance criteria.

#### **All Analyses:**

It should be noted that no LCSD was provided with the SDG. Laboratory precision was assessed using the replicate. No data should be qualified as a result.

### **Matrix Spike (MS)**

The MS met QC acceptance criteria.

### **Replicate**

The replicate met QC acceptance criteria.

#### **ICP-MS metals:**

Since a replicate and MSD were performed for the analysis, two measures of precision were available. The replicate was used to evaluate target analyte precision.

### **ICP Serial Dilution**

The serial dilution met QC acceptance criteria.

### **ICP Interference Check Sample (ICS)**

The ICS data met QC acceptance criteria.

### **Detection Limits/Dilutions**

All detection limits were properly reported. No dilutions were required.

### **Other QC**

No trip blank (TB), equipment blank (EB), field blank (FB), or field duplicate pair was submitted on the AR/COC(s).

No other specific issues which affect data quality were identified.



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## Memorandum

Date: June 8, 2007  
To: File  
From: Kevin Lambert  
Subject: Organic Data Review and Validation – SNL  
Site: CWL Assessment GWM  
AR/COC: 611284  
SDG: 185163  
Laboratory: GEL  
Project/Task: 98036.10.11.01

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 1.

### Summary

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

#### 1. VOC:

The initial calibration intercept for 2-chloro-1,3-butadiene was >3X the DL. The associated sample results were non-detects and should be qualified "UJ."

The calibration response factor (RF) for isobutyl alcohol (0.01) was <0.05 but  $\geq 0.01$ . The associated sample results were non-detects and should be qualified "UJ."

The LCS recovery for carbon disulfide (71%) was below the lower acceptance limit (72%) but  $\geq 10\%$ . The associated sample results were non-detects and should be qualified "UJ, A."

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.

### Calibration

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

VOC:

The calibration RF for trichloroethene (0.23) was < the specified minimum RF (0.30). No data should be qualified based on professional judgment. The calibration verification percent difference for four target analytes (see VOC Worksheets) were >20% but ≤40%. The associated sample results were non-detects and should not be qualified based on professional judgment.

**Blanks**

No target analytes were detected in the blanks.

**Internal Standards (ISs)**

Internal standards data met QC acceptance criteria.

**Surrogates**

The surrogate recoveries met QC acceptance criteria.

**Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)**

The LCS/LCSD met QC acceptance criteria except as noted above in the summary section.

VOC:

It should be noted that no LCSD was provided with the SDG. Laboratory precision was assessed using the MS/MSD. No data should be qualified as a result.

**Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

The MS/MSD met QC acceptance criteria.

VOC:

It should be noted the MS/MSD was run on a SNL sample of similar matrix from another SDG. No data should be qualified as a result.

**Target Compound Identification/Confirmation**

No target compound identification/confirmation analyses were required.

**Detection Limits/Dilutions**

All detection limits were properly reported. No dilutions were required.

**Other QC**

No trip blank (TB), equipment blank (EB), field blank (FB), or field duplicate pair was submitted on the AR/COC(s) except as follows.

VOC:

A TB was submitted on the AR/COC(s).

No other specific issues which affect data quality were identified.

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## Memorandum

Date: June 8, 2007  
To: File  
From: Kevin Lambert  
Subject: Inorganic Data Review and Validation – SNL  
Site: CWL Assessment GWM  
AR/COC: 611284  
SDG: 185163  
Laboratory: GEL  
Project/Task: 98036.10.11.01

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 1.

### Summary

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

1. ICP-MS metals:

The following target analytes were detected ( $\geq$  DL) in one or more of the blanks (ICB, CCB, MB, equipment blank). The associated sample result is qualified as noted below.

Sample 185163-002	As was a detect $<5X$ the MB and should be qualified "J, B." Sb was a detect $<5X$ the ICB/CCB/MB and should be qualified "J, B, B3."
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2. CVAA mercury:

The target analyte was detected ( $\geq$  DL) in one or more of the blanks (ICB, CCB) at a negative concentration with an absolute value  $>$  the DL but  $<$  the RL. The associated sample results are qualified as noted below.

Sample 185163-002	Hg was non-detect and should be qualified "UJ, B3."
-------------------	---

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

### Holding Times/Preservation

The sample was analyzed within the prescribed holding times and properly preserved.

### **Calibration**

The initial and continuing calibration data met QC acceptance criteria.

### **Blanks**

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

### **Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD)**

The LCS/LCSD met QC acceptance criteria.

#### **All Analyses:**

It should be noted that no LCSD was provided with the SDG. Laboratory precision was assessed using the replicate. No data should be qualified as a result.

### **Matrix Spike (MS)**

The MS met QC acceptance criteria.

#### **ICP-MS metals:**

It should be noted the MS was run on a SNL sample of similar matrix from another SDG. No data should be qualified as a result.

### **Replicate**

The replicate met QC acceptance criteria.

#### **ICP-MS metals:**

Since a replicate and MSD were performed for the ICP-MS analysis, two measures of precision were available. The replicate was used to evaluate ICP-MS precision. No sample data should be qualified as a result. Also, it should be noted the replicate was run on a SNL sample of similar matrix from another SDG. No data should be qualified as a result.

### **ICP Serial Dilution**

The serial dilution met QC acceptance criteria.

#### **ICP-MS metals:**

It should be noted the serial dilution was run on a SNL sample of similar matrix from another SDG. No data should be qualified as a result.

### **ICP Interference Check Sample (ICS)**

The ICS data met QC acceptance criteria.

### **Detection Limits/Dilutions**

All detection limits were properly reported. No dilutions were required.

### **Other QC**

No trip blank (TB), equipment blank (EB), field blank (FB), or field duplicate pair was submitted on the AR/COC(s).

No other specific issues which affect data quality were identified.



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## Memorandum

Date: June 22, 2007  
To: File  
From: David Schwent  
Subject: Organic Data Review and Validation - SNL  
Site: CWL GWM  
AR/COC: 611285 and 611288  
SDG: 185458  
Laboratory: GEL  
Project/Task No: 98036.10.11.01

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 1.

### Summary

All samples were prepared and analyzed with approved procedures using method EPA8260B (VOCs). Problems were identified with the data package that result in the qualification of data.

#### VOC Analysis:

Calibration: The initial calibration response factors (RFs) for acetonitrile, acrolein, propionitrile, and isobutyl alcohol were  $<0.05$  but  $>0.01$ . All associated results of Samples 185458-001, -003, and -004 were non-detects (NDs) and will be qualified "UJ."

Calibration: The continuing calibration verification (CCV) percent difference (%D) of acetone was  $>60\%$ . All associated results of Samples 185458-001, -003, and -004 were NDs and will be qualified "R."

Data are acceptable, except as noted above. QC measures appear to be adequate. The following sections discuss the data review and validation.

### Holding Times/Preservation

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

### Calibration

VOC Analysis: All initial and continuing calibration QC acceptance criteria were met, except as noted above in the summary section and the following. The CCV %Ds of 9 target analytes (see Data Validation Worksheets) were  $>20\%$  but  $<40\%$ . However, all associated results of Samples 185458-001, -003, and -004 were NDs and will not be qualified.

### **Blanks**

**VOC Analysis:** No target analytes were detected in the blanks, except the following. Dibromochloromethane was detected in the equipment blank (EB) (Sample 185458-004) at a concentration < the reporting limit (RL). The results of the EB apply to sample on COC 611282 of another package, SDG 185592.

### **Internal Standards (ISs)**

**VOC Analysis:** All IS area and RT QC acceptance criteria were met.

### **Surrogates**

**VOC Analysis:** All surrogate recovery and retention time QC acceptance criteria were met.

### **Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)**

**VOC Analysis:** All LCS QC acceptance criteria were met, except the following. The LCS percent recoveries (%Rs) of acetone and trichlorofluoromethane were > QC acceptance criteria. However, all associated results of Samples 185458-001, -003, and -004 were NDs and will not be qualified. No LCSD analysis was performed. The MSD analysis was used as a measure of laboratory precision. No sample data will be qualified as a result.

### **Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

**VOC Analysis:** All MS/MSD (PS/PSD) QC acceptance criteria were met, except the following. The PS %R of trichlorofluoromethane was > QC acceptance criteria. However, all associated results of Samples 185458-001, -003, and -004 were NDs and will not be qualified.

### **Target Compound Identification/Confirmation**

**VOC Analysis:** No confirmation analysis was required for this method.

### **Detection Limits/Dilutions**

**VOC Analysis:** All detection limits were reported correctly. No samples required dilution.

### **Other QC**

**VOC Analysis:** No field blanks (FBs) or field duplicates (FDs) were submitted on the ARCOCs. It should be noted that the EB (Sample 185458-004) submitted on COC 611288 applies to the field samples of COC 611282, contained in another package, SDG 185592.

No other specific issues were identified which affect data quality.

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## Memorandum

DATE: June 22, 2007  
TO: File  
FROM: David Schwent  
SUBJECT: Inorganic Data Review and Validation - SNL  
Site: CWL GWM  
AR/COC: 611285 and 611288  
SDG: 185458  
Laboratory: GEL  
Project/Task No. 98036.10.11.01

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 1.

### Summary

The samples were prepared and analyzed with accepted procedures using methods EPA6020 (ICP-MS) and EPA7470A (CVAA). Problems were identified with the data package that result in the qualification of data.

### CVAA Analysis:

Blanks: Hg was detected in the continuing calibration blank (CCB) at a negative concentration with an absolute value > the detection limit (DL) but < the reporting limit (RL). The associated results of Samples 185458-002 and -005 were non-detects (NDs) and will be qualified "UJ,B3."

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

ICP-MS Analysis: No target analytes were detected in the blanks, except the following. Cu was detected in the method blank (MB) at a concentration < the RL and Sb was detected in the CCB at a concentration < the RL. However, the associated results of Samples 185458-002 and -005 were NDs or were >5X the blank concentration and will not be qualified. Cr was detected in the equipment blank (EB)(Sample -005) at a

Sample Findings Summary

Site: CWL GWM

AR/COC: 611285 and 611288

Organic, Inorganic

Sample ID	Method/CAS Number (Analysis/Analyte)																			
	EPA8260 (VOCs):	75-05-8 (acetonitrile)	107-02-8 (acrolein)	107-12-0 (propionitrile)	78-83-1 (isobutyl alcohol)	67-64-1 (acetone)	EPA6020 (ICP-MS):	EPA7470A (CVAA):	7439-97-6 (Hg)											
084574-001 CWL-MW5U		UJ	UJ	UJ	UJ	R	All Acceptance criteria met. No sample data will be qualified.													
084574-009 CWL-MW5U									UJ,B3											
084575-001 CWL-TB 7		UJ	UJ	UJ	UJ	R														
084582-001 CWL-EB 1		UJ	UJ	UJ	UJ	R														
084582-009 CWL-EB 1									UJ,B3											

Validated By: David Schwent  
Mr. David Schwent

Date: 06/22/07

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## Memorandum

Date: June 26, 2007  
To: File  
From: Kevin Lambert  
Subject: Organic Data Review and Validation – SNL  
Site: CWL Assessment GWM  
AR/COC: 611286  
SDG: 186203  
Laboratory: GEL  
Project/Task: 98036.10.11.01

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 1.

### Summary

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

#### 1. VOC:

The initial calibration intercept for bromoform was >3X the DL. The associated sample results were non-detects and should be qualified "UJ."

The calibration response factor (RF) for isobutyl alcohol and acetonitrile were <0.05 but  $\geq$ 0.01. The associated sample results were non-detects and should be qualified "UJ."

The calibration verification percent difference for acetone was >40% but  $\leq$ 60%. The associated sample results that were non-detects should be qualified "UJ" and detects should be qualified "J."

Acetone was detected ( $\geq$  DL) in the equipment blank. The associated sample results that were non-detects should not be qualified. The associated sample result that was a detect < the RL and <10X the blank concentration should be qualified "U" at the RL (5.0 ug/L); however, it has already been qualified due to calibration problems and, thus will be qualified "UJ" at the RL (5.0 ug/L) with descriptive flag "B2."

The MS and MSD recoveries for acetone were < the lower QC acceptance limit but  $\geq$ 10%. The associated sample results that were non-detects should be qualified "UJ, A2" and detects should be qualified "J, A2." However, it should be noted that acetone has already been recommended for qualification due to calibration problems and blank contamination; no further qualification is necessary. The descriptive flag "A2" will be included to indicate the low MS/MSD recovery.

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.

### **Calibration**

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

#### **VOC:**

The calibration verification percent difference for 10 target analytes (see VOC Worksheets) were >20% but ≤40%. The associated sample results were non-detects and should not be qualified based on professional judgment.

### **Blanks**

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

#### **VOC:**

Bromodichloromethane and dibromochloromethane were detected ( $\geq$  DL) in the equipment blank. The associated sample results were non-detects; no data should be qualified as a result.

### **Internal Standards (ISs)**

Internal standards data met QC acceptance criteria.

### **Surrogates**

The surrogate recoveries met QC acceptance criteria.

### **Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)**

The LCS/LCSD met QC acceptance criteria except as follows.

#### **VOC:**

The LCS recovery for allyl chloride was > the upper QC acceptance limit. The associated sample results were non-detects; no data should be qualified as a result. Also, it should be noted that no LCSD was provided with the SDG. Laboratory precision was assessed using the MS/MSD. No data should be qualified as a result.

### **Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

The MS/MSD met QC acceptance criteria except as noted above in the summary section.

### **Target Compound Identification/Confirmation**

No target compound identification/confirmation analyses were required.

### **Detection Limits/Dilutions**

All detection limits were properly reported. No dilutions were required.

**Other QC**

No trip blank (TB), equipment blank (EB), field blank (FB), or field duplicate pair was submitted on the AR/COC(s) except as follows.

VOC:

A TB and field duplicate pair were submitted on the AR/COC(s). There are no "required" review criteria for field duplicate analyses comparability; no data should be qualified as a result. Also, it should be noted that the EB associated with the SNL samples in this SDG was submitted on AR/COC# 611289 in SDG# 185922.

No other specific issues which affect data quality were identified.

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## Memorandum

Date: June 26, 2007  
To: File  
From: Kevin Lambert  
Subject: Inorganic Data Review and Validation – SNL  
Site: CWL Assessment GWM  
AR/COC: 611286  
SDG: 186203  
Laboratory: GEL  
Project/Task: 98036.10.11.01

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 1.

### Summary

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

1. ICP-MS metals:

The following target analytes were detected ( $\geq$  DL) in one or more of the blanks (ICB, CCB, MB, EB). The associated sample results are qualified as noted below.

Sample 186203-003      Cu and Zn were detects  $<5X$  the EB and should be qualified "J, B2."  
and -004

2. CVAA mercury:

The target analyte was detected ( $\geq$  DL) in one or more of the blanks (ICB, CCB) at a negative concentration with an absolute value  $>$  the DL but  $<$  the RL. The associated sample results are qualified as noted below.

Sample 186203-003      Hg was non-detect and should be qualified "UJ, B3."  
and -004

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

### Holding Times/Preservation

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

## **Calibration**

The initial and continuing calibration data met QC acceptance criteria.

## **Blanks**

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

### ICP-MS metals:

Fe and Ni were detected ( $\geq$  DL) in one or more of the blanks (ICB, CCB, MB, EB). The associated sample results were non-detects or  $>5X$  the blank concentrations; no data should be qualified as a result.

## **Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD)**

The LCS/LCSD met QC acceptance criteria.

### All Analyses:

It should be noted that no LCSD was provided with the SDG. Laboratory precision was assessed using the replicate. No data should be qualified as a result.

## **Matrix Spike (MS)**

The MS met QC acceptance criteria.

## **Replicate**

The replicate met QC acceptance criteria.

## **ICP Serial Dilution**

The serial dilution met QC acceptance criteria.

## **ICP Interference Check Sample (ICS)**

The ICS data met QC acceptance criteria.

## **Detection Limits/Dilutions**

All detection limits were properly reported. No dilutions were required.

## **Other QC**

No trip blank (TB), equipment blank (EB), field blank (FB), or field duplicate pair was submitted on the AR/COC(s) except as follows.

### All Analyses:

A field duplicate pair was submitted on the AR/COC(s). There are no "required" review criteria for field duplicate analyses comparability; no data should be qualified as a result. Also, it should be noted that the EB associated with the SNL samples in this SDG was submitted on AR/COC# 611289 in SDG# 185922.

No other specific issues which affect data quality were identified.



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## Memorandum

Date: June 26, 2007  
To: File  
From: Kevin Lambert  
Subject: Organic Data Review and Validation – SNL  
Site: CWL Assessment GWM  
AR/COC: 611289  
SDG: 185922  
Laboratory: GEL  
Project/Task: 98036.10.11.01

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 1.

### Summary

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

#### 1. VOC:

The initial calibration intercept for bromoform, ethyl methacrylate, methyl methacrylate, pentachloroethane, and styrene were >3X the DL. The associated sample results were non-detects and should be qualified "UJ."

The calibration response factor (RF) for isobutyl alcohol and acetonitrile were <0.05 but  $\geq 0.01$ . The associated sample results were non-detects and should be qualified "UJ."

An MS/MSD was not run and no LCSD was run. Therefore, the associated sample results will be flagged "P2" to indicate insufficient QC data to determine laboratory precision.

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.

## **Calibration**

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

### **VOC:**

The calibration RF for 1,1-dichloroethene (0.12) and trichloroethene (0.18) were < the specified minimum RF (0.20 and 0.30, respectively). No data should be qualified based on professional judgment. The calibration verification percent difference for seven target analytes (see VOC Worksheets) were >20% but ≤40%. The associated sample results were non-detects and should not be qualified based on professional judgment.

## **Blanks**

No target analytes were detected in the blanks.

## **Internal Standards (ISs)**

Internal standards data met QC acceptance criteria.

## **Surrogates**

The surrogate recoveries met QC acceptance criteria.

## **Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)**

The LCS/LCSD met QC acceptance criteria except as follows.

### **VOC:**

It should be noted that no LCSD was provided with the SDG. Laboratory precision was assessed using the MS/MSD. No data should be qualified as a result.

## **Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

The MS/MSD met QC acceptance criteria except as noted above in the summary section.

## **Target Compound Identification/Confirmation**

No target compound identification/confirmation analyses were required.

## **Detection Limits/Dilutions**

All detection limits were properly reported. No dilutions were required.

## **Other QC**

No trip blank (TB), equipment blank (EB), field blank (FB), or field duplicate pair was submitted on the AR/COC(s) except as follows.

### **VOC:**

A TB and EB were submitted on the AR/COC(s). However, it should be noted that the EB on AR/COC# 611289 applies to SNL samples on AR/COC# 611286 in another SDG# 186203.

No other specific issues which affect data quality were identified.

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## Memorandum

Date: June 26, 2007  
To: File  
From: Kevin Lambert  
Subject: Inorganic Data Review and Validation – SNL  
Site: CWL Assessment GWM  
AR/COC: 611289  
SDG: 185922  
Laboratory: GEL  
Project/Task: 98036.10.11.01

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 1.

### Summary

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

#### 1. CVAA mercury:

The target analyte was detected ( $\geq$  DL) in one or more of the blanks (ICB, CCB) at a negative concentration with an absolute value  $>$  the DL but  $<$  the RL. The associated sample result is qualified as noted below.

Sample 185922-002            Hg was non-detect and should be qualified "UJ, B3."

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

### Holding Times/Preservation

The sample was analyzed within the prescribed holding times and properly preserved.

### Calibration

The initial and continuing calibration data met QC acceptance criteria.

### Blanks

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

**Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD)**

The LCS/LCSD met QC acceptance criteria.

**All Analyses:**

It should be noted that no LCSD was provided with the SDG. Laboratory precision was assessed using the replicate. No data should be qualified as a result.

**Matrix Spike (MS)**

The MS met QC acceptance criteria.

**Replicate**

The replicate met QC acceptance criteria.

**ICP Serial Dilution**

The serial dilution met QC acceptance criteria.

**ICP Interference Check Sample (ICS)**

The ICS data met QC acceptance criteria.

**Detection Limits/Dilutions**

All detection limits were properly reported. No dilutions were required.

**Other QC**

No trip blank (TB), equipment blank (EB), field blank (FB), or field duplicate pair was submitted on the AR/COC(s) except as follows.

**All Analyses:**

An EB was submitted on the AR/COC(s). However, it should be noted that the EB on AR/COC# 611289 applies to SNL samples on AR/COC# 611286 in another SDG# 186203.

No other specific issues which affect data quality were identified.

Sample Findings Summary

Site: CWL Assessment GWM

AR/COC: 611289

Data Type: Organic & Inorganic

	VOC																	
	All target analytes except those already qualified	75-25-2 (bromoform)	97-63-2 (ethyl methacrylate)	80-62-6 (methyl methacrylate)	76-01-7 (pentachloroethane)	100-42-5 (styrene)	78-83-1 (isobutyl alcohol)	75-05-8 (acetone/trile)	CVAA Hg	7439-97-6 (mercury)								
084698-001 CWL-EB 2	P2	UJ,P2	UJ,P2	UJ,P2	UJ,P2	UJ,P2	UJ,P2	UJ,P2										
084697-001 CWL-TB 11	P2	UJ,P2	UJ,P2	UJ,P2	UJ,P2	UJ,P2	UJ,P2	UJ,P2										
084698-009 CWL-EB 2									UJ,B3									
ICP-MS metals met QC acceptance criteria. No data should be qualified.																		

Validated By:

*Kevin A. Lambert*

Kevin A. Lambert

Date: 06/26/07

# **Perchlorate Screening Quarterly Monitoring Report**

**Second Quarter of Calendar Year 2007  
(April, May, and June 2007)**

**Sandia National Laboratories, New Mexico**

**Environmental Restoration Project, Department 6765**

**September 2007**

Sandia is a multiprogram 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.

# Perchlorate Screening Quarterly Monitoring Report Second Quarter of Calendar Year 2007 (April, May, and June 2007)

## 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 (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 2007 (CY2007) in response to the requirements of the Order.

During the second quarter of CY2007, a groundwater sample was collected from the only well currently in the perchlorate-screening monitoring-well network. CYN-MW6 was sampled on June 27, 2007, and the sample was submitted to General Engineering Laboratories (GEL) for perchlorate analysis using U.S. Environmental Protection Agency (EPA) Method 314.0 (EPA November 1999).

The environmental sample from CYN-MW6 revealed perchlorate at a concentration of 6.57 micrograms per liter ( $\mu\text{g/L}$ ). This concentration was verified by subsequent analysis of the sample with by EPA Method 6850M (EPA April 2005), which provided a result of 5.94  $\mu\text{g/L}$ . As discussed in the previous quarterly reports, the source for the perchlorate in the groundwater at CYN-MW6 is unknown. Because perchlorate concentrations in monitoring well CYN-MW6 have exceeded the screening level, DOE/Sandia have initiated a negotiation process with the NMED to determine the frequency of continued monitoring. DOE/Sandia recommended the continuation of monitoring perchlorate concentrations in CYN-MW6 through at least the fourth quarter of CY2007 (SNL/NM March 2007).

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# **Perchlorate Screening Quarterly Monitoring Report Second Quarter of Calendar Year 2007 (April, May, and June 2007)**

## **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 [New Mexico Environment Department (NMED) April 2004]. This report summarizes the perchlorate screening monitoring completed during the second quarter of Calendar Year 2007 (CY2007) 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).

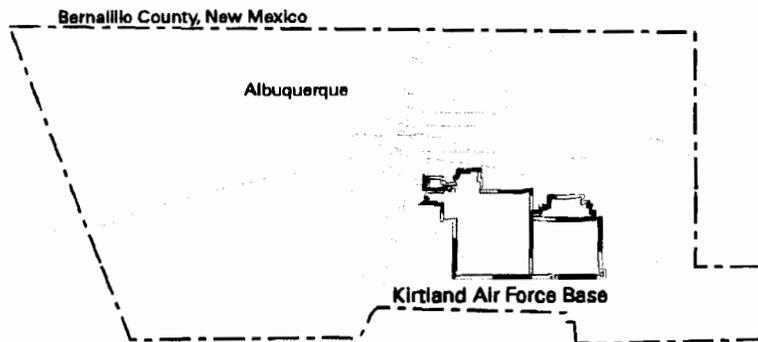
In November 2005 DOE/Sandia submitted a letter report on the status of perchlorate screening in groundwater at SNL/NM monitoring wells (SNL/NM November 2005). The purpose of that letter report was to summarize previous correspondence and sampling results, and to outline proposed future work to comply with NMED requirements for perchlorate screening in groundwater. Quarterly reports will be submitted for wells actively in the perchlorate-screening monitoring-well network. Based on NMED response (NMED January 2006), DOE/Sandia will submit each quarterly report within 90 days following the quarter that the data represent. This quarterly report is the seventh to be submitted since the November 2005 letter report; the previous quarterly reports were submitted in:

1. Fourth Quarter of Calendar Year 2005 (SNL/NM February 2006),
2. First Quarter of Calendar Year 2006 (SNL/NM June 2006),
3. Second Quarter of Calendar Year 2006 (SNL/NM September 2006),
4. Third Quarter of Calendar Year 2006 (SNL/NM December 2006),
5. Fourth Quarter of Calendar Year 2006 (SNL/NM March 2007), and
6. First Quarter of Calendar Year 2007 (SNL/NM June 2007).

Reporting will continue as long as a groundwater monitoring well remains in the perchlorate-screening monitoring well network.

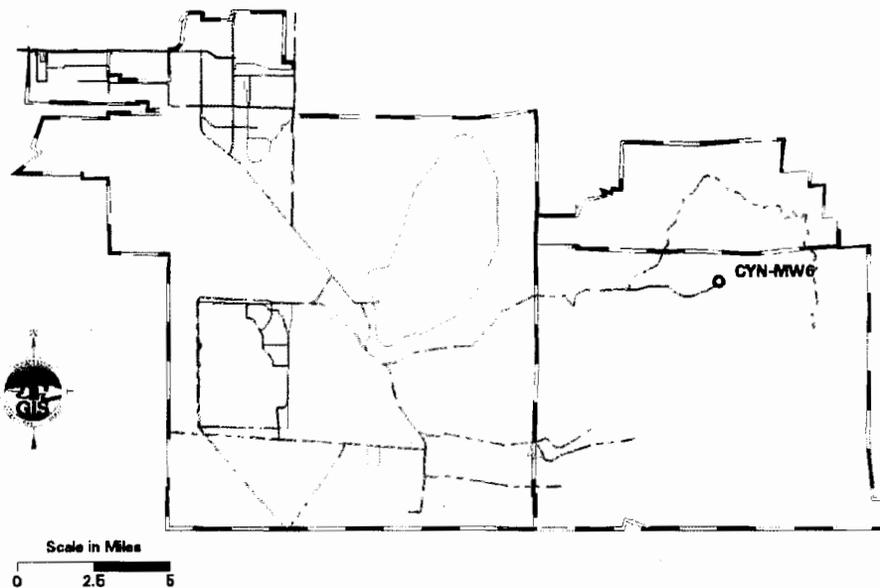
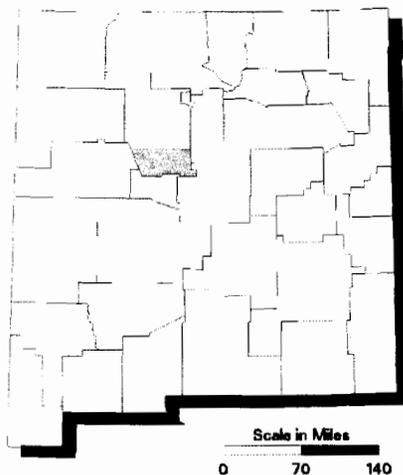
## **2.0 Scope of Activities**

This report provides perchlorate screening results from the second quarter of CY2007 (April, May, and June 2007) for the one well 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 ( $\mu\text{g/L}$ ) is removed from the requirement of continued monitoring for perchlorate. Data from several wells identified in the Order have satisfied this requirement and, therefore, the 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, MRN-2, MRN-3D, MWL-BW1, MWL-MW1, NWSA3-MW2, and SWTA3-MW4.



**Figure 1**  
**Sandia National Laboratories**  
**New Mexico**  
**Current Perchlorate-Screening**  
**Monitoring-Well Network**  
**(Apr/May/Jun 2007)**

**Bernalillo County, New Mexico**



**Table 1**  
**Current Perchlorate-Screening Monitoring-Well Network**  
**Second Quarter of CY2007 (April, May, and June)**

Well	Date Sampled	Number of Consecutive Sampling Events <sup>a</sup>	Remaining Number of Sampling Events <sup>b</sup>	Sampling Method
CYN-MW6	27-JUN-07	6	2 <sup>c</sup>	Bennett™ Pump

Notes:

<sup>a</sup> Includes this sampling event.

<sup>b</sup> 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.

<sup>c</sup> This well has been sampled for the required initial four quarters. Because perchlorate concentrations in this well have exceeded the screening level, DOE/Sandia have initiated the negotiation process with the NMED to determine the frequency of continued monitoring. DOE/Sandia recommended the continuation of quarterly monitoring and reporting for CYN-MW6 through the fourth quarter of CY2007.

DOE/Sandia performed groundwater sampling at CYN-MW6 on June 27, 2007. This well was installed after the Order was finalized and is required to be sampled for perchlorate as a “new” well. Groundwater sampling activities were conducted in conformance with procedures outlined in the investigation-specific sampling and analysis plan (SAP) entitled, “Burn Site Groundwater Monitoring, Mini-SAP for Third Quarter Fiscal Year 2007” (SNL/NM May 2007).

As described in the 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 sample. The sampling pump and tubing bundle were decontaminated prior to installation into monitoring wells according to procedures described in FOP 05-03, “LTES Groundwater Sampling Equipment Decontamination” (SNL/NM October 2005a). The well was 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 October 2005b).

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 using with an 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 was considered acceptable when measurements were within 10 percent or less than 5 nephelometric turbidity units for turbidity, 0.1 pH units, 1.0 degree Celsius, and SC 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 sample was submitted to General Engineering Laboratories (GEL) for chemical analysis for perchlorate analysis using U.S. Environmental Protection Agency (EPA) Method 314.0 (EPA November 1999). The sample identification, Analysis Request/Chain-of-Custody (AR/COC) form number, and the sample shipment date are provided in Table 2. The analytical report from GEL, including certificates of analyses, analytical methods, MDLs, practical quantitation limits (PQLs), dates of analyses, results of QC analyses, and data validation findings have been submitted to the Sandia Customer-Funded Records Center.

**Table 2**  
**Sample Details for Second Quarter of CY2007 Perchlorate Sampling**

<b>Well</b>	<b>Sample Identification</b>	<b>AR/COC Number</b>	<b>Date Shipped</b>
CYN-MW6	084833-020	611399	27-JUN-07

Notes:  
AR/COC = Analysis request/chain of custody.

### **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 above the screening level/MDL in a specific well, monitoring will continue at that well at a frequency negotiated with the NMED. The Order (NMED April 2004) also requires that the DOE/Sandia 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 March 2007, DOE/Sandia received a letter from the NMED stating the requirement that DOE/Sandia "determine the nature and extent of the contamination and complete a Corrective Measures Evaluation for the perchlorate-impacted groundwater in the vicinity of CYN-MW6" (NMED March 2007). As this was based solely on the four quarters of monitoring results, DOE/Sandia submitted a letter to the NMED in April 2007 (SNL/NM April 2007) which recommended further characterization through continued quarterly monitoring of CYN-MW6 for four additional quarters, including for perchlorate, ending in December 2007, to assure appropriate characterization of this new well. DOE/Sandia further indicated the plan to continue reporting perchlorate results on a quarterly basis, formatted as Periodic Monitoring Reports under Section X.D of the Consent Order. At

that time, DOE/Sandia would propose revisiting the need for continued monitoring or additional characterization work, and, potentially, a CME.

#### **4.0 Monitoring Results**

Table 3 summarizes current and historical perchlorate results for CYN-MW6. The analytical laboratory certificate of analysis for the second quarter CY2007 perchlorate data is included as Appendix A. Consistent with historical analytical results, perchlorate was detected above the screening level/MDL in the second quarter of CY2007 in CYN-MW6. The detected concentration of perchlorate was verified by subsequent analysis of the sample by EPA Method 6850M (EPA April 2005).

As shown in Figure 2, the concentrations of perchlorate found in CYN-MW6 in June 2007 (6.57 and 5.94  $\mu\text{g/L}$ ) is lower than concentrations reported for last quarter (SNL/NM June 2007), but overall consistent with concentrations from previous quarters (SNL/NM May 2006, SNL/NM June 2006, SNL/NM September 2006, SNL/NM December 2006, SNL/NM March 2007, and SNL/NM June 2007).

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 AOP 00-03 Revision 2, "Data Validation Procedure for Chemical and Radiochemical Data." (SNL/NM July 2007). 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 Burn Site Groundwater Monitoring mini-SAP (SNL/NM May 2007) were identified during the Second Quarter CY2007 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:

- Since June 2004 (the start of sampling required by the Order), perchlorate has only been detected above the screening level/MDL in one of the wells (CYN-MW6) in the perchlorate-screening monitoring-well network. Due to the detection of perchlorate in the samples from CYN-MW6 in March 2006, DOE/Sandia submitted the "Notification of Release, Perchlorate at Well CYN-MW6, May 2006" (SNL/NM May 2006) to the NMED. DOE and Sandia were required to notify the NMED of the discovery of a previously unknown release under Section V of the Order (NMED April 2004).
- The concentrations from this sampling event (6.57 and 5.94  $\mu\text{g/L}$ ) are lower than concentrations reported for last quarter, but overall consistent with the concentrations in previous quarters (Figure 2) (SNL/NM June 2006, SNL/NM September 2006, SNL/NM December 2006, SNL/NM March 2007, and SNL/NM June 2007). No explanation for the mildly fluctuating concentrations is readily available.

**Table 3  
Summary of Perchlorate Screening Analytical Results for the  
Current Monitoring-Well Network, as of Second Quarter CY2007.**

Well ID	Sample Date	ARCO No.	Sample No.	Perchlorate Result <sup>a</sup> (µg/L)	MDL <sup>b</sup> (µg/L)	PQL <sup>c</sup> (µg/L)	MCL <sup>d</sup> (µg/L)	Laboratory Qualifier <sup>e</sup>	Validation Qualifier <sup>f</sup>	Analytical Method <sup>g</sup>	Comments
CYN-MW6	23-Mar-06	609578	075985-020	6.92	4.0	12	NE	J		EPA 314.0	
			075986-020	7.44	4.0	12	NE	J		EPA 314.0	Duplicate sample
			075985-R20	6.39	0.50	2.0	NE	Hh	HT, J	EPA 6850M	Verification/Re-analysis
			075986-R20	6.48	0.50	2.0	NE	Hh	HT, J	EPA 6850M	Verification/Re-analysis
	22-Jun-06	609929	078687-020	6.63	4.0	12	NE	J		EPA 314.0	
			078688-020	6.45	4.0	12	NE	J		EPA 314.0	Duplicate sample
			078687-021	6.99	1.0	4.0	NE			EPA 6850M	Verification
			078688-021	6.92	1.0	4.0	NE			EPA 6850M	Verification/Duplicate Sample
	20-Sep-06	610652	081626-020	7.52	4.0	12	NE	J		EPA 314.0	
			081626-R20	6.96	1.0	4.0	NE		P2	EPA 6850M	Verification/Re-analysis
	15-Dec-06	611057	083858-020	8.46	4.0	12	NE	J		EPA 314.0	
			083859-020	8.93	4.0	12	NE	J		EPA 314.0	Duplicate sample
	14-Mar-07	611200	084237-020	8.12	4.0	12	NE	J		EPA 314.0	
27-Jun-07	611399	084833-020	6.57	4.0	12	NE	J	J-, X1	EPA 314.0		
27-Jun-07	611399	084833-020	5.94	0.5	2.0	NE			EPA 6850M	Verification/Re-analysis	

*Refer to notes on next page.*

**Table 3 (concluded)**  
**Summary of Perchlorate Screening Analytical Results for the**  
**Current Monitoring-Well Network, as of Second Quarter CY2007.**

**Notes—**

CYN-MW6 was installed in January 2006; this table presents all quarterly data collected at this well.

**<sup>a</sup>Result**

Values in **bold** exceed the screening level/MDL.

µg/L = micrograms per liter.

**<sup>b</sup>MDL**

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

**<sup>c</sup>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 that indicated method under routine laboratory operating conditions.

**<sup>d</sup>MCL**

Maximum contaminant level. Established by the U.S. Environmental Protection Agency Primary Water Regulations [40 CFR 141.11(b)], and subsequent amendments or 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.

**<sup>e</sup>Lab Qualifier**

H = Analytical holding time was exceeded.

h = Prep holding time was exceeded.

J = Amount detected is below the practical quantitation limit.

**<sup>f</sup>Validation Qualifier**

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

HT = The holding time was exceeded for the associated sample analysis.

J = The associated value is an estimated quantity.

J- = The associated value is an estimated quantity with a suspected negative bias.

P2 = Insufficient quality control data to determine laboratory precision.

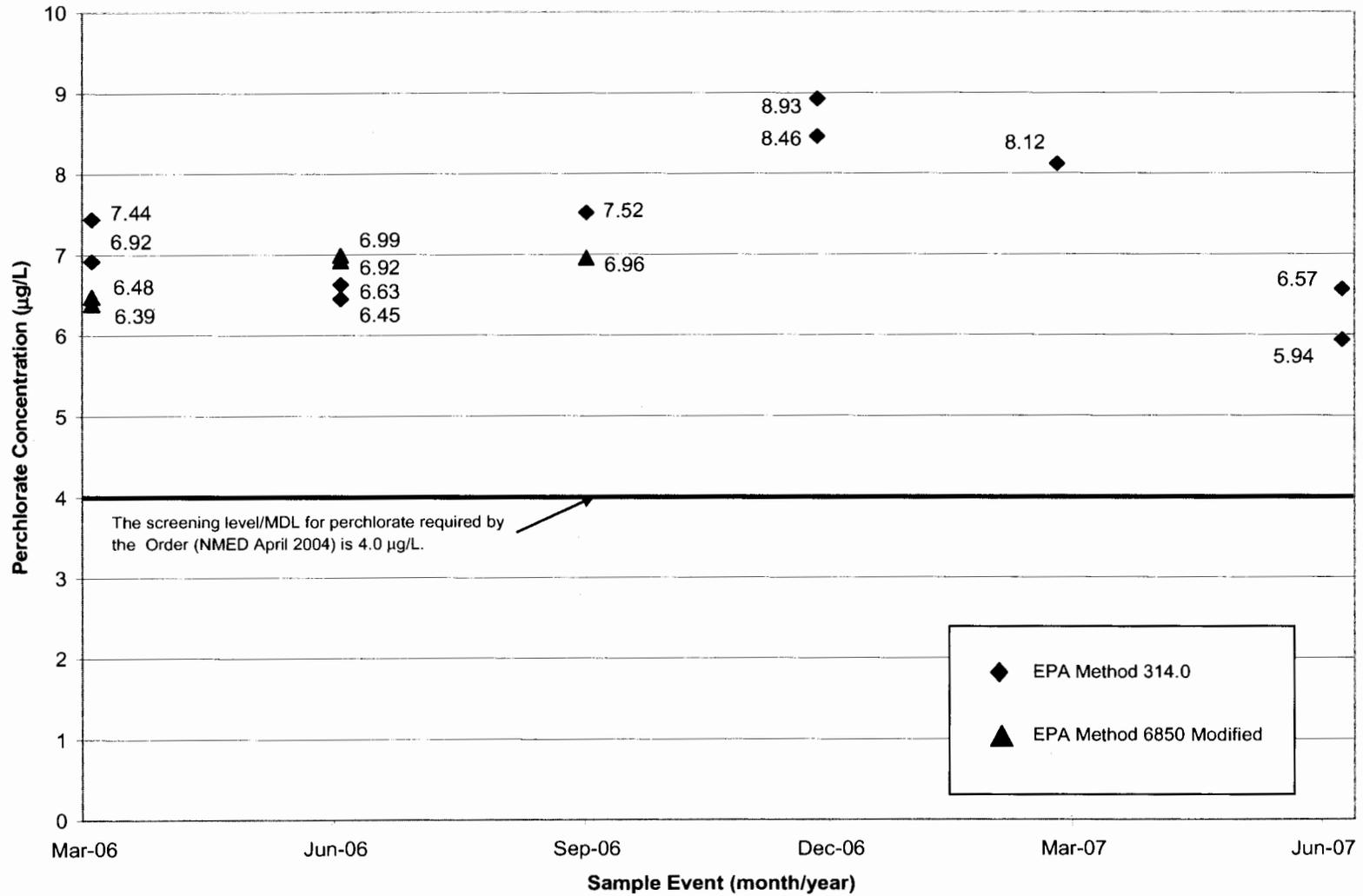
X1 = General data quality is suspect.

**<sup>g</sup>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 6850M: U.S. Environmental Protection Agency, April 2005, "Perchlorate in Water, Soils, and Solids Using High Performance Liquid Chromatography/Electrospray Ionization/Mass Spectrometry (HPLC/ESI/MS)," draft, Method 6850.

**Figure 2**  
**Perchlorate Results for CYN-MW6**



**Table 4**  
**Perchlorate Screening Groundwater Monitoring**  
**Field Water Quality Measurements<sup>a</sup>, Second Quarter of CY2007**

Well ID	Sample Date	Temperature (°C)	Specific Conductivity (µmho/cm)	Oxidation Reduction Potential (mV)	pH	Turbidity (NTU)	Dissolved Oxygen (% Sat)	Dissolved Oxygen (mg/L)
CYN-MW6	27-Jun-07	19.11	955	226.0	7.22	0.67	30.0	2.76

**Notes:**

<sup>a</sup>Field measurements made immediately before the groundwater sample was collected.

°C = degrees Celsius.

% Sat = percent saturation.

µmho/cm = micromhos per centimeter.

mg/L = milligrams per liter.

mV = millivolts.

NTU = nephelometric turbidity units.

pH = potential of hydrogen (negative logarithm of the hydrogen ion concentration).

- As discussed in the previous quarterly reports (SNL/NM June 2006, SNL/NM September 2006), the source for the perchlorate in the groundwater at CYN-MW6 is unknown. Soil sampling completed in 2001 at Solid Waste Management Unit (SWMU) 65—Lurance Canyon Explosives Test Site, or SWMU 94—Lurance Canyon Burn Site did not reveal detectable concentrations of perchlorate in site soils (NMED January 2001; Skelly and Griffith January 2003; and SNL/NM June 2006).

Because perchlorate concentrations in monitoring well CYN-MW6 have exceeded the screening level, DOE/Sandia have initiated the negotiation process with the NMED to determine the frequency of continued monitoring. DOE/Sandia have proposed to continue to monitor perchlorate concentrations in CYN-MW6 through at least the fourth quarter of CY2007 before changing the frequency.

## **6.0 References**

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## Appendix B

### Data Validation Sample Findings Summary Sheets for the Perchlorate Data

**CONTRACT LABORATORY  
ANALYSIS REQUEST AND CHAIN OF CUSTODY**

Internal Lab

Batch No. <i>N/A</i>		SMO Use		Project/Task No. <i>88069 10 21 01</i>		AR/COC		611399				
Dept. No./Mail Stop: 6765/1089		Date Sample Shipped: <i>6-27-07</i>		SMO Authorization: <i>[Signature]</i>		<input type="checkbox"/> Waste Characterization -Send preliminary/copy report to:						
Project/Task Manager: Paul Freshour		Carton/Vial No: <i>78645</i>		Contract #: PO 21871		<input type="checkbox"/> Released by COC No. _____						
Project Name: CYN GWM		Lab Contact: Edie Kent/803-556-8171		Send Report to SMO: Lorraine Herrera/505-844-3199		<input checked="" type="checkbox"/> Validation Required						
Record Center Code: ER/1333/DAT		Lab Destination: GEL		SMO Contact/Phone: Pam Puissant/505-844-3185		Bill To: Send to National Labs (Accounts Payable) P.O. Box 5800 MS 0154 Albuquerque, NM 87185-0154 <i>188740%</i>						
Logbook Ref. No.: ER 058		SMO Contact/Phone: Pam Puissant/505-844-3185		SMO Use: <i>905 bottles ordered</i>		Parameter & Method Requested						
Service Order No. CF#003-07		Send Report to SMO: Lorraine Herrera/505-844-3199		Reference LOV (available at SMO)		Lab Sample ID						
Location		Tech Area		Building		Room						
Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container		Preservative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
						Type	Volume					
084833-001	CYN-GWSA1	163	<i>N/A</i>	062707/1023	GW	G	3 x 40ml	HCL	G	SA	VOC (SW846-8260)	<i>1</i>
084833-002	CYN-GWSA1	163		062707/1024	GW	AG	4 x 1L	4C	G	SA	SVOC (SW846-8270)	<i>2</i>
084833-005	CYN-GWSA1	163		062707/1025	GW	AG	4 x 1L	4C	G	SA	TPH Diesel (8015)	<i>3</i>
084833-006	CYN-GWSA1	163		062707/1026	GW	G	3 x 40ml	HCL	G	SA	TPH Gasoline (8015)	<i>4</i>
084833-016	CYN-GWSA1	163		062707/1027	GW	P	250 ml	4C	G	SA	Major Anions (SW846/8056)	<i>5</i>
084833-017	CYN-GWSA1	163		062707/1028	FGW	P	500 ml	HNO3	G	SA	Major Cations (SW846-6020)	<i>6</i>
084833-018	CYN-GWSA1	163		062707/1029	GW	P	250 ml	H2SO4	G	SA	NPN (353.2)	<i>7</i>
084833-020	CYN-GWSA1	163		062707/1030	GW	P	250 ml	4C	G	SA	Perchlorate (314.0)	<i>8</i>
084834-001	CYN TB1	NA		062707/1023	DW	G	3 x 40ml	HCL	G	TB	VOC (SW846-8260)	<i>1</i>
RMMA <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Ref. No.		Sample Tracking		Smo Use		Special Instructions/QC Requirements		Abnormal Conditions on Receipt		
Sample Disposal <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by lab		Date Entered (mm/dd/yyyy)		Entered by:		Level D Package <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		*Send report to:		Tim Jackson/Org. 6765/MS 1089/505-284-2547		
Turnaround Time <input type="checkbox"/> 7 Day <input type="checkbox"/> 15 Day <input checked="" type="checkbox"/> 30 Day		Negotiated TAT		QC Files								
Return Samples By:												
Sample Team Members	Name	Signature	Init.	Company/Organization/Phone/Cellular								
	William J Gibson	<i>[Signature]</i>	<i>[Init.]</i>	Weston/8785/284-5232/239-7367								
	Robert Lynch	<i>[Signature]</i>	<i>[Init.]</i>	Weston/8785/844-4013/250-7090								
	Alfred Santillanes	<i>[Signature]</i>	<i>[Init.]</i>	Weston/6765/844-5130/228-0710								
										<i>Last CYN well</i>		
1. Relinquished by <i>[Signature]</i> Org. <i>6765</i> Date <i>6/27/07</i> Time <i>1115</i>		4. Relinquished by		Date		Time						
1. Received by <i>[Signature]</i> Org. <i>SMO 6765</i> Date <i>6/27/07</i> Time <i>1115</i>		4. Received by		Date		Time						
2. Relinquished by <i>[Signature]</i> Org. <i>SMO 6765</i> Date <i>6/28/07</i> Time <i>1300</i>		5. Relinquished by		Date		Time						
2. Received by <i>[Signature]</i> Org. <i>SMO 6765</i> Date <i>6/28/07</i> Time <i>0740</i>		5. Received by		Date		Time						
3. Relinquished by		Org.		Date		Time						
3. Received by		Org.		Date		Time						
6. Relinquished 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. 7578, Bldg. 823/Rm. 4276  
1515 Eubank SE  
Albuquerque, New Mexico 87123  
Contact: Ms. Pamela M. Puissant  
Project: Level C Data Package GW

Report Date: July 20, 2007

Client Sample ID: 084833-020  
Sample ID: 188740008  
Matrix: AQUEOUS  
Collect Date: 27-JUN-07 10:30  
Receive Date: 28-JUN-07  
Collector: Client

Project: SNLSGW  
Client ID: SNLS002

Client Desc.: CYN-GWSA1

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
<b>Ion Chromatography Federal</b>										
<i>EPA 314.0 Perchlorate by IC, contingent</i>										
Perchlorate	J	0.00657	0.004	0.012	mg/L	I	MAR107/16/07	1907	648713	1

### The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 314.0 DOE-AL	

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1515 Eubank SE  
Albuquerque, New Mexico 87123  
Contact: Ms. Pamela M. Puissant  
Project: Level C Data Package GW

Report Date: August 13, 2007

Page 1 of 2

Client Sample ID: 084833-R20  
Sample ID: 190149001  
Matrix: AQ  
Collect Date: 27-JUN-07 10:30  
Receive Date: 28-JUN-07  
Collector: Client  
Project: SNLSGW  
Client ID: SNLS002  
Client Desc.: CYN-GWSA1

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>LC-MS/MS Perchlorate Federal</b>											
<i>EPA 6850 Modified Perchlorate by LC-MS/MS</i>											
Perchlorate		5.94	0.500	2.00	ug/L	10	CWW	07/25/07	1737	654087	1

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 6850 Modified	EPA 6850 Perchlorate Extraction in Liquid	CXM1	07/25/07	1028	654086

### The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 6850 Modified	

### Notes:

The Qualifiers in this report are defined as follows :

- \* Recovery or %RPD not within acceptance limits and/or spike amount not compatible with the sample or the duplicate RPD's are not applicable where the concentration falls below the effective PQL.
- \*\* Indicates analyte is a surrogate compound.
- B The analyte was found in the blank above the effective MDL.
- H Analytical holding time was exceeded
- J Estimated value, the analyte concentration fell above the effective MDL and below the effective PQL
- P The response between the confirmation column and the primary column is >40%D
- U The analyte was analyzed for but not detected below this concentration. For Organic and Inorganic analytes the result is less than the effective MDL. For radiochemical analytes the result is less than the Decision Level
- X Presumptive evidence that the analyte is not present. Please see narrative for further information.
- Z The percent difference is greater than 70%.
- d The 2:1 depletion requirement was not met for this sample
- h Prep holding time exceeded

The above sample is reported on an "as received" basis.

## Appendix B

### Data Validation Sample Findings Summary Sheets for the Perchlorate Data

# Analytical Quality Associates, Inc.

616 Maxine NE  
Albuquerque, NM 87123  
Phone: 505-299-5201  
Fax: 505-299-6744  
Email: minteer@aol.com

## Memorandum - Revised

Date: August 28, 2007  
To: File  
From: Kevin Lambert  
Subject: Inorganic Data Review and Validation – SNL  
Site: Canyons Assessment GWM  
AR/COC: 611399  
SDG: 188740  
Laboratory: GEL  
Project/Task: 98026.01.06  
Analysis: General Chemistry

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

One sample was prepared and analyzed with accepted procedures using method EPA 9056 (Br, Cl, F, SO<sub>4</sub> by Ion Chromatography). One sample was prepared and analyzed with accepted procedures using method EPA 353.2 (nitrate/nitrite by Cd reduction). One sample was prepared and analyzed with accepted procedures using method EPA 314.0 (perchlorate). Data were reported for all required analytes. Problems were identified with the data package that result in the qualification of data.

#### 1. Perchlorate:

Perchlorate was originally requested and reported by method EPA 314.0. The client requested confirmation analysis using method EPA 6850 Mod (perchlorate by LCMSMS) and the confirmation analysis data was submitted in SDG# 190149. The reanalysis data was assessed for confirmation only in accordance with Section 4.5 of the AOP and applies only to the qualification of the original perchlorate result analyzed by method EPA 314.0 submitted in this SDG.

The method blank, continuing calibration, reporting limit verification, and internal standards were assessed from the LCMSMS confirmation analysis data. The LCMSMS analysis confirmed the original perchlorate result and that there were no confirmation QC infractions. The original perchlorate result is > the method detection limit (MDL) but < the practical quantitation limit (PQL) and the LCMSMS perchlorate result is ≥ the PQL. Therefore, the original perchlorate result should be qualified "J-, X1."

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

### Holding Times/Preservation

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

### **Calibration**

The initial and continuing calibration data met QC acceptance criteria.

### **Reporting Limit Verification**

All CRI recoveries met QC acceptance criteria.

### **Blanks**

No target analytes were detected in the blanks except as follows.

#### **Nitrate/Nitrite:**

The blank result for nitrate/nitrite was negative with absolute value > the MDL but < the PQL. The nitrate/nitrite result was detected at >5X the MDL and should not be qualified due to blank infractions.

### **Internal Standards**

All internal standards met QC acceptance criteria.

### **Laboratory Control Sample (LCS)**

All LCS recoveries met QC acceptance criteria.

### **Matrix Spike (MS)**

The MS met QC acceptance criteria.

### **Replicate**

The replicate met QC acceptance criteria.

### **Detection Limits/Dilutions**

All detection limits were properly reported. No dilutions were required except as follows.

#### **Ion Chromatography:**

Sample 188740-005 was diluted 10X for Cl and SO<sub>4</sub> due to high concentration for this analysis.

#### **Nitrate/Nitrite:**

Sample 188740-007 was diluted 25X due to high concentration for this analysis.

#### **Perchlorate by LCMSMS:**

Sample 190149-001 was diluted 10X due to high concentration for this analysis.

### **Other QC**

No other specific issues which affect data quality were identified.

Sample Findings Summary - Revised

Site: Canyons Assessment GWM

AR/COC: 611399

Data Type: Organic & Inorganic

	VOC	SVOC		General Chemistry														
	67-64-1 (acetone)	91-94-1 (3,3'-dichlorobenzidine)	99-09-2 (m-nitroaniline)	14797-73-0 (perchlorate)														
084833-001 CYN-MW6	UJ,MS3																	
084834-001 CYN-TB1	UJ,MS3																	
084833-002 CYN-MW6		UJ,MS5	UJ,MS5															
084833-020 CYN-MW6					J-,X1													
DRO, GRO, and ICP-MS metals analyses met QC acceptance criteria. No data should be qualified.																		

Validated By: Kevin A. Lambert

Kevin A. Lambert

Date: 08/28/07