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National Nuclear Security Administration

Sandia Site Office
P.O. Box 5400
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MAR 26 2008

CERTIFIED MAIL – RETURN RECEIPT REQUESTED



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

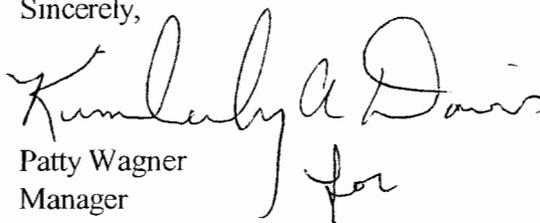
Dear Mr. Bearzi:

On behalf of the Department of Energy (DOE) and Sandia Corporation (Sandia), DOE is submitting the March 2008 Consolidated Quarterly Report for the Environmental Restoration Project that addresses all quarterly reporting (from November 2007 through January 2008) required under the Hazardous and Solid Waste Amendments (HSWA) Module of the Resource Conservation and Recovery Act (RCRA) Permit, the Compliance Order on Consent and the Chemical Waste Landfill (CWL) Closure Plan for Sandia National Laboratories/New Mexico (SNL/NM), EPA No. 5890110518.

The results of the perchlorate screening show detectable concentrations (above 4.0 micrograms/liter) continue to be found at monitoring well CYN-MW6 (located at the Burn Site groundwater area). We have concluded eight quarters of perchlorate monitoring at this well. Included in this quarterly report are an evaluation of the nature and extent of perchlorate in the Burn Site groundwater area, and a human health risk assessment based on the maximum perchlorate concentration detected in CYN-MW6. We request a meeting at your earliest convenience to discuss our assessment of perchlorate concentrations and a plan for continued monitoring at CYN-MW6.

If you have any questions regarding this report, please contact me at (505) 845-6036, or Dan Pellegrino of my staff, at (505) 854-5398.

Sincerely,


Patty Wagner
Manager

Enclosure

MAR 20 2010

James Bearzi

(2)

cc w/enclosure:

W. Moats, NMED-HWB (via Certified Mail)

L. King, EPA, Region 6 (via Certified Mail)

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B. Birch, NMED-OB

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Records Center, SNL/NM, Org. 6765, MS 1089

J. Estrada, SSO, MS 0184

CERTIFICATION STATEMENT FOR APPROVAL AND FINAL RELEASE OF DOCUMENTS

Document title: Consolidated EPA Quarterly Report, March 2008

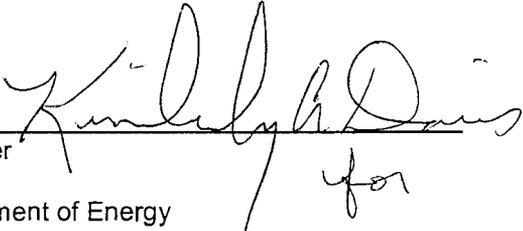
Document author: Paul Freshour, 06765

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.

Signature: 
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Deputy Director to the
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3/17/08
Date

and

Signature: 
Patty Wagner
Manager
U.S. Department of Energy
National Nuclear Security Administration
Sandia Site Office
Owner and Co-Operator

3/26/08
Date



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Sandia National Laboratories, New Mexico (SNL/NM)

Environmental Restoration Project

A Department of Energy Environmental Cleanup Program

**CONSOLIDATED
Quarterly Report**

November-December-January

March 2008



United States Department of Energy
Sandia Site Office

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

March 2008

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 November 2007 through January 2008. The following entities are addressed in these Sections:

SECTION I

Environmental Restoration Quarterly Report

SECTION II

Chemical Waste Landfill Quarterly Closure Progress Report

SECTION III

Perchlorate Screening Quarterly Report

SECTION I

ENVIRONMENTAL RESTORATION QUARTERLY REPORT

1.0 Introduction

This report discusses ongoing corrective actions for the Sandia National Laboratories (SNL) Environmental Restoration (ER) Project. The status of regulatory closure activities, specifically permit modifications for final corrective action complete approval, and status of documents pending regulatory approval are also included.

2.0 Work Completed in This Quarter (November 2007 through January 2008)

2.1 Mixed Waste Landfill (MWL)

- On November 7, 2007, routine neutron moisture logging of the MWL vadose zone was conducted to obtain baseline data regarding moisture content profiles with depth beneath the landfill.
- On November 20, 2007, DOE/Sandia met with the New Mexico Environmental Department (NMED) Hazardous Waste Bureau (HWB) to discuss location issues associated with groundwater monitoring wells.
- On December 5, 2007, DOE/Sandia submitted a response to the October 30, 2007 Notice of Approval for Monitoring Well Plug and Abandonment Plan and Replacement Well Construction Plan; Decommissioning of Groundwater Monitoring Wells MWL-MW1 and MWL-MW3; Installation of Replacement Groundwater Monitoring Wells MWL-MW7 and MWL-MW8. This response summarized items that were discussed in the November 20, 2007 meeting, listed above, as well as additional DOE/Sandia concerns regarding the well location issue.
- On January 14, 2008 drilling at the MWL began. This activity included the installation of the new background monitoring well MWL-BW2 and the plugging and abandoning of MWL-BW1.
- On January 23, 2008, DOE/Sandia met with the NMED again to discuss location issues associated with the proposed MWL groundwater monitoring wells.

MWL Documents submitted to NMED pending regulatory approval:

- Corrective Measure Implementation Plan (CMIP), submitted November 2005; CMIP Notice of Disapproval (NOD) Part 1 response, submitted December 15, 2006; CMIP NOD Part 2 response submitted January 19, 2007.
- Soil Gas Sampling and Analysis Plan (SAP) submitted December 2006, extended NMED public review and comment period ended May 15, 2007.

- Long-term Monitoring and Maintenance Plan (LTMMP) submitted September 2007, the extended NMED public review and comment period ended January 31, 2007.

2.2 Project Management Site Closure

Operable units with only regulatory and administrative closure activities remaining have been closed and those activities will be managed under project management. Two permit modification requests are currently in progress and a third was started in January 2008.

Permit Modification Request submitted in September 2005

Twenty-eight sites were submitted for final regulatory approval of corrective action complete (CAC) in September 2005 including nine Solid Waste Management Units (SWMUs) and nineteen Areas of Concern (AOCs). The NMED issued a Notice of Public Comment Period and Intent to Approve a Class 3 Permit Modification of the RCRA Permit for Sandia National Laboratories for these 28 sites on September 20, 2007. The NMED public review and comment period ended on November 19, 2007. The next step will be for the NMED to issue a final decision for the sites associated with this permit modification request. The SWMUs and AOCs included in this permit modification request are listed below.

SWMUs – 1, 3, 45, 78, 137, 146, 148, 152, and 153 AOCs – 276, 1004, 1031, 1034, 1035, 1036, 1052, 1078, 1079, 1080, 1081, 1084, 1087, 1092, 1098, 1102, 1104, 1113, and 1120.

Permit Modification Request submitted in March 2006

Twenty-six sites were submitted for final regulatory approval of corrective action complete (CAC) in March 2006 including nineteen SWMUs and seven AOCs. The NMED issued a Notice of Public Comment Period and Intent to Approve a Class 3 Permit Modification of the RCRA Permit for Sandia National Laboratories for these 26 sites on December 10, 2007. The NMED public review and comment period ends on February 8, 2008. The SWMUs and AOCs included in this permit modification request are listed below.

SWMUs – 4, 5, 46, 49, 52, 68, 91, 101, 116, 138, 140, 147, 149, 150, 154, 161, 196, 233, 234 AOCs – 1090, 1094, 1095, 1114, 1115, 1116, and 1117.

Permit Modification Request submitted in January 2008

A Class 3 Permit Modification request for five sites was submitted to the NMED on January 7, 2008. A poster session with a public review and comment period was conducted on January 29, 2008; the SNL/DOE public review and comment period ends on March 14, 2008. This permit modification included all remaining SNL ER sites with the exception of the Mixed Waste Landfill which is pending Corrective Measure Implementation and the Chemical Waste Landfill which is pending final regulatory approval of a post-closure permit (refer to MWL, this Section and The CWL Quarterly Report, Section II of this report). The four SWMUs and one AOC included in the January 2008 permit modification request are listed below.

SWMUs – 8, 28-2, 58, and 105
AOC – 1101

2.3 Site-Wide Hydrogeologic Characterization

TA-3/5 Groundwater

- Quarterly sampling was performed. Results will be reported in the SNL Groundwater Protection Program (GWPP) Annual Groundwater Monitoring Report.
- Installed groundwater monitoring well TAV-MW10, and plugged and abandoned groundwater monitoring well TAV-MW1. The well completion report is to be completed by June 30, 2008.

Burn Site Groundwater

- Quarterly sampling was performed. Results will be reported in the SNL GWPP Annual Groundwater Monitoring Report. Perchlorate results are reported in the quarterly Perchlorate Screening Quarterly Monitoring Report in Section III of this report.

Tijeras Arroyo Groundwater

- Groundwater sampling was performed. Results will be reported in the SNL GWPP Annual Groundwater Monitoring Report.

Mixed Waste Landfill Groundwater

- No groundwater sampling was performed this period. Results from MWL sampling events are reported in the Mixed Waste Landfill Annual Groundwater Monitoring Report.
- Installed groundwater monitoring well MWL-BW2, and plugged and abandoned groundwater monitoring well MWL-BW1. The well completion report is to be completed by April 30, 2008.

Chemical Waste Landfill Groundwater

- No groundwater sampling was performed this period.

Groundwater Documents submitted to the NMED pending regulatory review and approval:

- Technical Area V (TA-V) Groundwater (GW) Corrective Measure Evaluation (CME) Work Plan, submitted April 2004.
- Tijeras Arroyo GW (TAG) CME Work plan, submitted July 2004.
- Burn Site GW (BSGW) Interim Measures Work Plan (IMWP), submitted May 2005.
- Well Plug and Abandonment Plan, Decommissioning of Environmental Restoration Project Soil-Vapor Monitoring Wells, submitted December 2007.

2.4 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 (December 2007), including containment cell cover, storm water diversion structures, security fences, gates, and signs. Approximately 25 four-wing saltbush plants were identified growing on the cover. These plants can develop extensive root systems that could damage the high-density polyethylene cover. They were removed on January 4, 2008.
- Quarterly monitoring of the VZMS was conducted in December 2007. Results will be posted in the annual CAMU report.
- Waste management associated with the leachate collection was conducted (see below).
- Composite leachate sampling for waste characterization was conducted on January 2, 2008.

CAMU Waste Management Activities

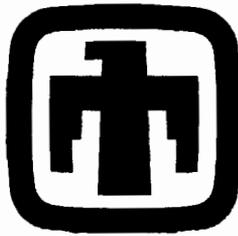
A calculation error was made in the August – October 2007 ER Quarterly Report for total gallons of waste generated. Two-hundred gallons were reported when the actual total waste was 206 gallons. This changed the end reported value (waste remaining on the site at the end of October 2007) from 181 to 187 gallons.

For this quarter (November 2007 – January 2008),

- Waste stored on site at the beginning of this period:
 - 183 gallons of leachate.
 - 4 gallons of rinsate.
 - 5 lbs PPE.
- Waste generated on-site during the period:
 - 233 gallons of leachate.
 - 5 lbs PPE, paper wipes, and plastic drum pump.
- Waste removed from site by the Hazardous Waste Management Facility:
 - 153 gallons of leachate on November 5, 2007.
 - 4 gallons of rinsate on November 5, 2007.
 - 5 lbs PPE on November 5, 2007.
- Waste removed from site by the Hazardous Waste Management Facility:
 - 200 gallons of leachate on January 9, 2008.
 - 5 lbs PPE, paper wipes and plastic drum pump on January 9, 2008.
- Waste remaining on site at the end of this period:
 - 63 gallons of leachate.
 - 1 lb PPE.

Regulatory Activities

- NMED conducted an audit of the CAMU on December 3, 2007. There were no findings reported by NMED.



Sandia National Laboratories/New Mexico

**CHEMICAL WASTE LANDFILL
QUARTERLY CLOSURE PROGRESS REPORT
MARCH 2008**



United States Department of Energy
Sandia Site Office

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.

SECTION II. CHEMICAL WASTE LANDFILL QUARTERLY PROGRESS REPORT

This Sandia National Laboratories/New Mexico (SNL/NM) Chemical Waste Landfill (CWL) Quarterly Closure Progress Report has been prepared pursuant to the CWL Final Closure Plan and Post-closure Permit Application (Closure Plan) (SNL/NM December 1992). This section documents activities at the CWL for the time period of October through December 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.

2.0 Status of Closure

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

Upcoming CWL Closure Plan reporting activities include revising and submitting the Final Resource Conservation and Recovery Act (RCRA) Closure Report, to be submitted 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 notices 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 October (and November) 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, and CWL-MW6U). These samples were analyzed for the agreed upon 40 CFR 264, Appendix IX constituents: volatile organic compounds, semi-volatile organic compounds, chlorinated herbicides, polychlorinated biphenyls, total metals, total iron, dissolved chromium, cyanide, and sulfide. No analytes were detected at concentrations above the Environmental Protection Agency Maximum Contamination Levels (MCL), except for chromium. Chromium was detected above the MCL of 0.1 milligrams per liter (mg/L) in CWL-MW2BU at a concentration of 0.218 mg/L. All sample results for these CWL monitoring wells are presented in the Appendix to this Section.

During October and November 2007, a groundwater sample was not collected from CWL-MW6L due to equipment problems with the dedicated sampling system.

No soil-gas sampling was performed at the CWL during this 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

DOE and Sandia have requested a hearing on the CWL post-closure care permit, and it is anticipated that a resolution conference with the NMED will be arranged with the intent of resolving comments.

In addition, analytical data from samples collected this reporting period will be summarized and presented in the next quarterly report.

5.0 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
October - December 2007**

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

March 2008

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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
FY08	Fiscal Year 2008
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 2008 (FY08) semiannual groundwater sampling at the CWL, Sandia National Laboratories/New Mexico (SNL/NM) (Figure A-1) between October 15 and November 7, 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 agreed upon Appendix IX constituents
- Semiannual frequency (twice a year) for Appendix IX volatile organic compounds (VOC) and Appendix IX metals

This report describes groundwater sampling activities and presents analytical results from the first FY08 semiannual groundwater assessment monitoring period; this sampling event is also a biannual sampling period. In October and November 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, and CWL-MW6U) (Figure A-2). These samples were analyzed for the agreed upon 40 CFR 264 (Appendix IX) constituents: VOCs, semi-volatile organic compounds (SVOC), chlorinated herbicides, polychlorinated biphenyls, total cyanide, sulfides, dissolved chromium, and total metals plus iron. All analytical results from the October and November 2007 sampling of all CWL monitoring wells are included in this report.

During October and November 2007, a groundwater sample was not collected from CWL-MW6L due to equipment problems with the dedicated sampling system. Several leaks were discovered in the air line, and the airline will need to be replaced prior to sampling collection from this well. 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, and cannot be restored for the purpose of compliance groundwater monitoring. In addition, the BaroBall™ control valves installed on top of well casings could not be removed.

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® water level indicator prior to purging activities. Measurements were taken in accordance with FOP 95-02, *A Technical Procedure for the Measurement of Static Water Levels* (SNL/NM November 1995)

until three replicate measurements agreed to within 0.05 foot of each other. The portion of the well sounder in contact with the groundwater was decontaminated between measurements at different wells (SNL/NM February 1997). During October and November 2007 the BaroBall™ control valves installed on CWL-MW1A and CWL-MW3A could not be removed and SNL/NM was unable to verify that both wells are dry. 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 and CWL-MW5L. 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 was purged a minimum of two tubing water volumes prior to sampling. CWL-MW2BU was purged to dryness twice then sampled. A total of 0.87 gallons of water was purged from CWL-MW2BU. Based upon historical sampling events, CWL-MW2BU will purge dry between 0.13 and 0.66 gallons 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, and CWL-MW5L 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 and CWL-MW5L. 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 and analyzed prior to sampling CWL-MW4 and CWL-MW5U, and results are discussed in section 3.0 of this report.

3.0 Analytical Results

Groundwater samples collected for analysis of VOCs, SVOCs, chlorinated herbicides, polychlorinated biphenyls, total cyanide, sulfides, dissolved chromium, and metals were submitted to General Engineering Laboratories, Inc. in Charleston, South Carolina. Tables A-6 to A-10 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-11 to A-13 summarizes all analytes detected in samples collected from CWL groundwater monitoring wells during the first FY08 semiannual sampling event. All chemical analytical results are compared to EPA MCLs for drinking water supplies. Table A-14 summarizes detected parameters in equipment blank samples. 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, SVOCs, chlorinated herbicides, or polychlorinated biphenyls were detected at concentrations exceeding the associated MCL. No VOCs were detected in any sample except for acetone, TCE, and total xylenes. Acetone was detected in CWL-BW4A at a concentration of 1.37 micrograms per liter ($\mu\text{g/L}$). TCE was detected below the MCL of 5.0 $\mu\text{g/L}$ in the groundwater samples from CWL-MW2BU, CWL-MW4 duplicate sample, CWL-MW5L, CWL-MW5U, and CWL-MW6U at concentrations ranging from 0.258 to 1.77 $\mu\text{g/L}$. No SVOCs were detected in groundwater samples, except bis (2-Ethylhexyl) phthalate. This compound was detected below the MCL of 6.0 $\mu\text{g/L}$ in CWL-BW3 and CWL-MW5L at concentrations of 4.97 $\mu\text{g/L}$ and 2.75 $\mu\text{g/L}$, respectively. No chlorinated herbicides or polychlorinated biphenyls were detected above associated laboratory MDLs. Table A-11 summarizes the detected VOCs, SVOCs, chlorinated herbicides, and polychlorinated biphenyls.

No total metal parameters were detected above established regulatory limits in any groundwater sample, except chromium. Chromium was detected above the MCL of 0.1 milligrams per liter (mg/L) in CWL-MW2BU at a concentration of 0.218 mg/L . Chromium concentrations for other groundwater samples ranged from not detected at the MDL to 0.0605 mg/L . In general, chromium, nickel, and iron results from CWL-BW3, CWL-MW2BU, and CWL-MW4 groundwater samples correlate to increased field turbidity measurements. Table A-12 summarizes the total metal concentrations for all groundwater samples collected during the first FY08 semiannual sampling event at the CWL.

Table A-13 presents dissolved chromium, total cyanide, and sulfide results from groundwater samples collected during the first FY08 semiannual sampling event at the CWL. No parameters were detected above established regulatory limits from any groundwater sample.

Table A-14 summarizes detected parameters in two EB samples. No SVOCs, chlorinated herbicides, polychlorinated biphenyls, total cyanide, sulfides, or dissolved chromium were detected above laboratory MDLs in any EB sample. Thallium was detected in the EB sample associated with CWL-MW4. Acetone, total xylenes, and vanadium were detected in the EB

sample associated with CWL-MW5U. No correction action was identified during data validation for associated environmental samples.

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-MW4 and CWL-MW5U 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-14 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 sulfides from CWL-MW4 and selenium from CWL-MW5U. The RPD for sulfides was calculated at 24 and selenium at 27. RPD calculations for these parameters were estimated, since associated results were reported at concentration below effective practical quantitation limits.

4.1.2 Field Blank Samples

One FB sample was collected for VOCs to assess whether contamination of the samples resulted from ambient field conditions. The FB sample was prepared by pouring deionized water into

sample containers at the CWL-MW5L sample collection point to simulate the transfer of environmental samples from the sampling system to the sample container. No VOCs were detected above laboratory MDLs in the FB sample.

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 samples discussed in this report. No VOCs were detected above laboratory MDLs in any TB sample, except for carbon disulfide. No corrective action was required, since carbon disulfide was not detected in the associated environmental samples.

4.2 Laboratory QC

Internal laboratory QC analyses performed included method blank, laboratory control sample, matrix spike, matrix spike duplicate, and surrogate spike analyses. All laboratory data were reviewed and qualified in accordance with AOP [Administrative Operating Procedure] 00-03, Revision 2, *Data Validation Procedure for Chemical and Radiochemical Data* (SNL/NM July 2007). Although some analytical results were qualified as unusable during the data validation process, no significant data quality problems were noted for CWL contaminants of concern; TCE and chromium. VOCs and SVOCs including acetone, allyl chloride, bromomethane, isobutyl alcohol, naphthalene, dibenzo[a,h]anthracene, and indeno(1,2,3-cd)pyrene were qualified as unusable in various samples due the initial calibration not meeting acceptance criteria. SNL/NM is currently reviewing QC procedures for both data validation and laboratory requirements. Data validation reports associated with the first FY08 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 these wells do not contain water. The wells partially filled with sediment during the VE VCM and have not recovered. The BaroBall™ control valve installed on these wells could not be removed and SNL/NM could not verify that wells are dry.
- CWL-MW6L could not be sampled due to several leaks in the air line on the dedicated sampling system.
- 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.
- Samples for Appendix IX constituents: SVOC, chlorinated herbicides, polychlorinated biphenyls, total cyanide, sulfides, and dissolved chromium, were not collected from well CWL-MW2BU due to lack of water.
- CWL-MW2BU and CWL-MW5L were sampled using dedicated sampling systems manufactured by QED Environmental Systems, Inc.

5.0 Summary

In October and November 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, and CWL-MW6U). The samples were analyzed for 40 CFR 264 (Appendix IX) VOCs, SVOCs, chlorinated herbicides, polychlorinated biphenyls, total cyanide, sulfides, dissolved chromium and total metals plus iron. No analytes were detected at concentrations exceeding the associated EPA MCLs, except for chromium. Chromium was detected above the MCL of 0.1 mg/L in CWL-MW2BU at a concentration of 0.218 mg/L.

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*

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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.

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Sandia National Laboratories/New Mexico (SNL/NM), October 1995, *Chemical Waste Landfill Groundwater Assessment Report*, Sandia National Laboratories, Albuquerque, New Mexico.

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

FIGURES

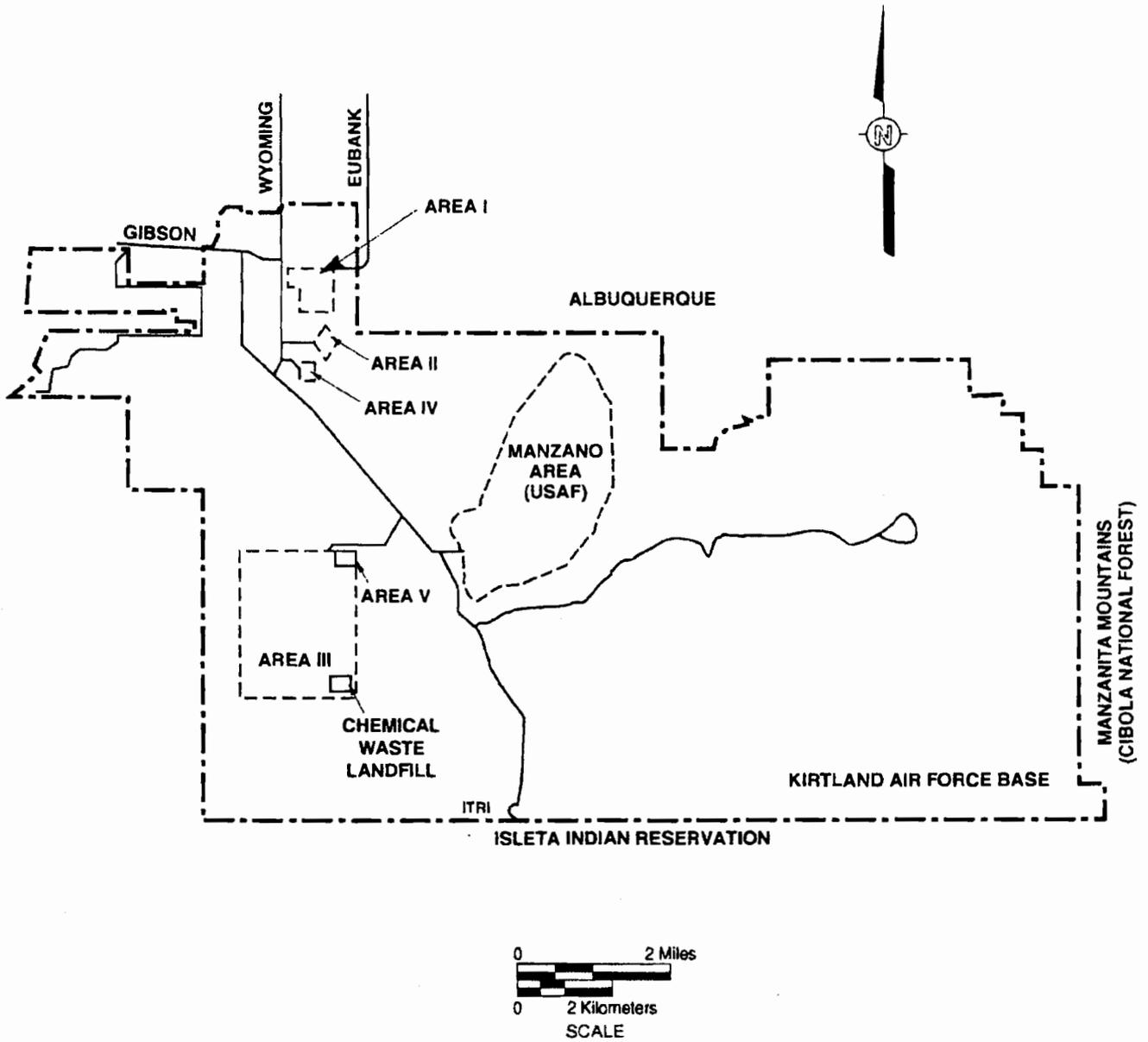


Figure A -1
Location of the Chemical Waste Landfill
Sandia National Laboratories/New Mexico

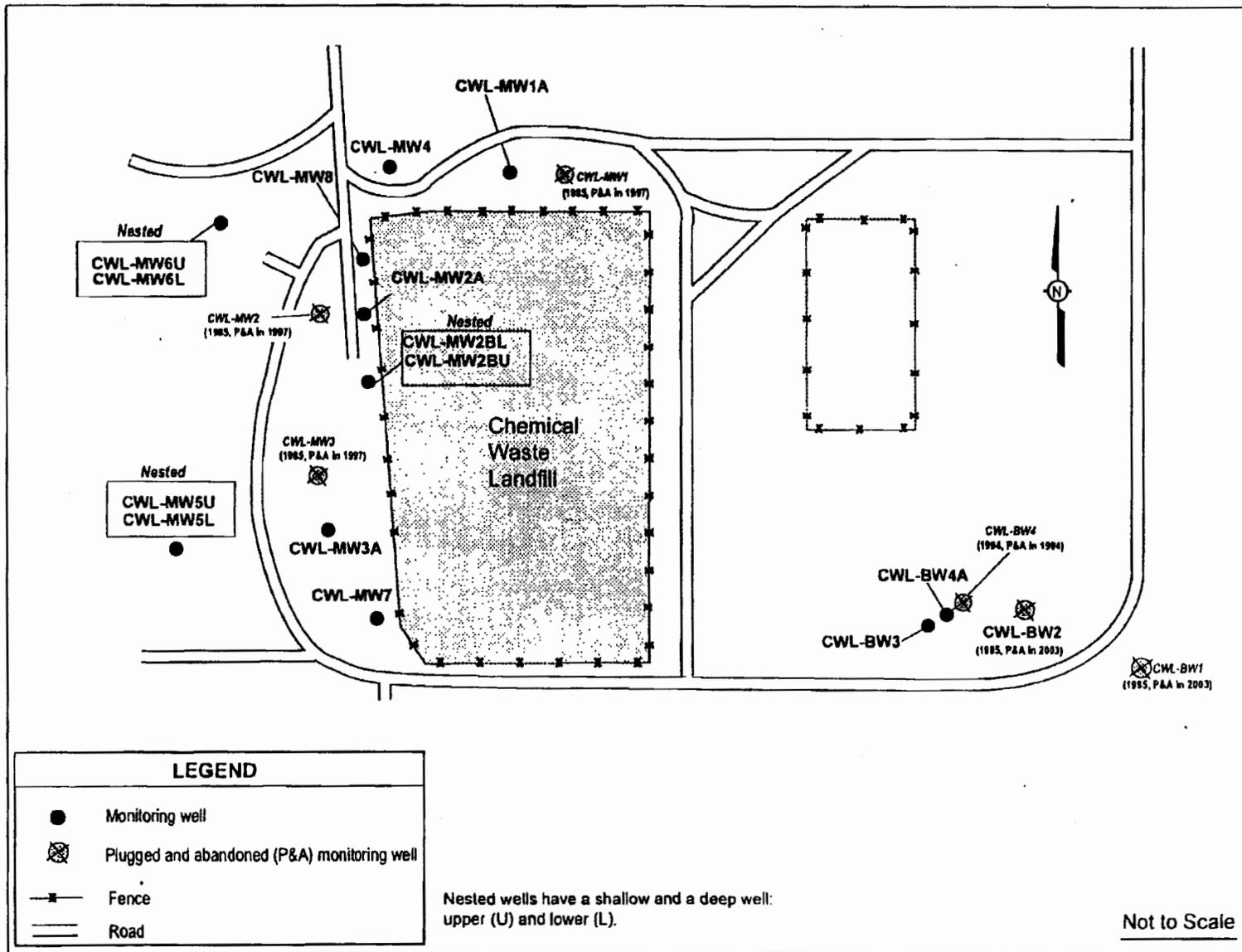


Figure A-2
Monitoring Well Locations at the Chemical Waste Landfill,
Sandia National Laboratories/ New Mexico

TABLES

Table A-1
Monitoring Well Groundwater Elevations
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semiannual Assessment, October - December 2007

Well Number	Measuring Point Elevation (famsl)	Depth to Water ^a (feet)	Groundwater Elevation (famsl)	Total Well Depth ^b (feet)	Bottom of Well Elevation (famsl)	Static Water Height ^c (feet)
CWL-BW3	5430.23	502.80	4927.43	507.48	4921.05	6.38
CWL-BW4A	5431.36	502.74	4928.62	510.00	4919.24	9.38
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	492.47	4926.95	501.00	4916.37	10.58
CWL-MW3A	5417.78	NA	NA	492.00	4924.39	NC
CWL-MW4	5420.33	496.05	4924.28	503.00	4915.38	8.90
CWL-MW5L	5415.80	494.20	4921.60	558.00	4856.02	65.58
CWL-MW5U	5416.01	489.30	4926.71	502.00	4912.02	14.69
CWL-MW6L	5417.13	496.02	4921.11	564.00	4850.65	70.46
CWL-MW6U	5416.78	489.55	4927.23	502.00	4912.65	14.58

^aMeasurements transcribed from Groundwater Sample Collection Logs.

^bDerived from well completion logs.

^cCalculated 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, unable to remove well cover assembly from CWL-MW1A and CWL-MW3A.

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, October - December 2007

Well Number	Volume Purged ^a (gal)	Time Pumped (minutes)	Average Pump Rate (gal/minute)	Well Pumped to Dryness
CWL-BW3	11	53	0.21	Yes
CWL-BW4A	8	41	0.20	Yes
CWL-MW2BL	480	386	1.24	No
CWL-MW2BU	0.87	77	0.01	Yes
CWL-MW4	38	130	0.29	No
CWL-MW5L	3.70	60	0.06	No
CWL-MW5U	14	59	0.24	Yes
CWL-MW6U	13	44	0.29	Yes

^aVolume of groundwater purged before sampling.

BW = Background well.

CWL = Chemical waste landfill.

gal = Gallon(s).

L = Lower well completion zone.

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, October - December 2007

Well Number	Measurement Period	pH	Temperature °C	SC (µmhos/cm)	Turbidity (NTU)
CWL-BW3	Purge measurements ^a :	7.79	18.38	835	3.01
		7.82	18.71	837	2.69
		7.82	18.80	838	2.98
CWL-BW4A	Purge measurements ^a :	6.80	17.21	392	0.52
		7.01	16.94	933	3.71
		7.05	18.31	987	2.01
CWL-MW2BL	Purge measurements ^a :	6.88	21.24	1,084	0.22
		6.88	21.27	1,084	0.28
		6.88	21.31	1,084	0.24
CWL-MW2BU	Purge measurements ^a :	7.80	13.89	604	800
		8.47	16.27	829	18.4
		8.52	16.04	769	85.9
CWL-MW4	Purge measurements ^a :	7.09	18.80	944	2.37
		7.09	18.95	944	2.24
		7.09	19.00	944	2.20
CWL-MW5L	Purge measurements ^a :	6.98	18.35	1,053	0.89
		6.98	18.38	1,053	0.93
		6.98	18.37	1,052	0.91
CWL-MW5U	Purge measurements ^a :	7.29	20.40	838	2.24
		7.07	18.62	914	0.67
		7.10	18.80	914	0.46
CWL-MW6U	Purge measurements ^a :	7.04	15.21	885	0.65
		7.10	15.35	893	0.62
		7.17	15.65	895	0.64

^aLast three water quality measurements prior to sampling. For complete record reference Attachment A.

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

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

Sample Identification	ARCOC	Sample Number	Date Sampled	Laboratory	Sample Type
CWL-BW3	611608	085324	10-24-07	GEL	Environmental Sample
CWL-BW4A	611609	085326	10-18-07	GEL	Environmental Sample
CWL-MW2BL	611610	085328	10-16-07	GEL	Environmental Sample
CWL-MW2BU	611611	085330	11-07-07	GEL	Environmental Sample
CWL-MW4	611613	085334	11-05-07	GEL	Environmental Sample
CWL-MW4	611613	085335	11-05-07	GEL	Duplicate Sample
CWL-MW5L	611614	085337	10-25-07	GEL	Environmental Sample
CWL-MW5U	611616	085342	10-30-07	GEL	Environmental Sample
CWL-MW5U	611616	085343	10-30-07	GEL	Duplicate Sample
CWL-MW6U	611618	085348	11-01-07	GEL	Environmental Sample
CWL-EB1(prior to CWL-MW5U)	611612	085332	10-29-07	GEL	Equipment Blank
CWL-EB2(prior to CWL-MW4)	611615	085340	11-01-07	GEL	Equipment Blank
CWL-FB1	611614	085338	10-25-07	GEL	Field Blank
CWL-TB1	611608	085235	10-24-07	GEL	Trip Blank
CWL-TB2	611609	085327	10-18-07	GEL	Trip Blank
CWL-TB3	611610	085329	10-16-07	GEL	Trip Blank
CWL-TB4	611611	085331	11-07-07	GEL	Trip Blank
CWL-TB5	611612	085333	10-29-07	GEL	Trip Blank
CWL-TB6	611613	085336	11-05-07	GEL	Trip Blank
CWL-TB7	611614	085339	10-25-07	GEL	Trip Blank
CWL-TB9	611616	085344	10-30-07	GEL	Trip Blank
CWL-TB11	611618	085349	11-01-07	GEL	Trip Blank

ARCOC = Analysis Request and 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.
 TB = Trip blank.
 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, October - December 2007

Analysis	Method ^a	Container Type/ Volume/Preservative	Holding Time
Appendix IX Volatile Organic Compounds	8260B	Glass; 3 x 40 mL; HCl, 4°C	14 days
Appendix IX Semi-Volatile Organic Compounds	8270C	Amber Glass; 3 x 1L; 4°C	7 days
Appendix IX Chlorinated Herbicides	8151A	Amber Glass; 3 x 1L; 4°C	7 days
Appendix IX Polychlorinated Biphenyls	8082	Amber Glass; 3 x 1L; 4°C	7 days
Total Cyanide	9012A	Polyethylene; 500 mL; NaOH, 4°C	28 days
Sulfides	9034	Nalgene; 1L; NaOH, 4°C	28 days
Appendix IX Total metals + iron	6020/7470A	Polyethylene; 500 mL; HNO ₃ , 4°C	28 days/180 days ^b
Dissolved Chromium	6020	Nalgene; 250 mL; HNO ₃ , 4°C	180 days

^aU.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.

^bHolding time for mercury is 28 days; all other metals are 180 days.

NaOH = Sodium Hydroxide.

HCl = Hydrochloric acid.

HNO₃ = Nitric acid.

L = Liter(s).

mL = Milliliter(s).

°C = Degrees Celsius.

Table A-6
Chemical Parameters, MDL/MCL for Volatile Organic Compounds Analyzed
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semiannual Assessment, October - December 2007

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

Refer to footnotes at end of table.

Table A-6 (Concluded)
Chemical Parameters, MDL/MCL for Volatile Organic Compounds Analyzed
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semiannual Assessment, October - December 2007

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

^aU.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.

^bTitle 40 Code of Federal Regulations (CFR), Part 264, Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Appendix IX, Groundwater Monitoring List.

EPA = Environmental Protection Agency.

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

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

µg/L = Microgram(s) per liter.

NE = Not established.

Table A-7
Chemical Parameter, MDL/MCL for Semi-Volatile Organic Compounds Analyzed
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semiannual Assessment, October - December 2007

Test Method 8270C* (Appendix IX List) ^b	MDL (µg/L)	MCL (µg/L)	Test Method 8270C* (Appendix IX List) ^b	MDL (µg/L)	MCL (µg/L)
alpha-alpha Dimethylphenethylamine	4.00 - 4.57	NE	2-Nitroaniline	2.00 - 2.29	NE
1,2,4,5-Tetrachlorobenzene	2.00 - 2.29	NE	2-Nitrophenol	2.00 - 2.29	NE
1,2,4-Trichlorobenzene	2.00 - 2.29	70	3,3'-Dichlorobenzidine	1.00 - 1.14	NE
1,2-Dichlorobenzene	2.00 - 2.29	600	3,3'-Dimethylbenzidine	2.00 - 2.29	NE
1,2-Diphenylhydrazine	2.00 - 2.29	NE	3-Methylcholanthrene	2.00 - 2.29	NE
1,3,5-Trinitrobenzene	2.00 - 2.29	NE	3-Nitroaniline	2.00 - 2.29	NE
1,3-Dichlorobenzene	2.00 - 2.29	NE	3-benzodioxole, 5-(2-Propenyl)-1	2.00 - 2.29	NE
1,3-Dinitrobenzene	2.00 - 2.29	NE	4-Aminobiphenyl	3.00 - 3.43	NE
1,4-Dichlorobenzene	2.00 - 2.29	75	4-Bromophenyl phenyl ether	2.00 - 2.29	NE
1,4-Dioxane	1.00 - 1.14	NE	4-Chloro-3-methylphenol	2.00 - 2.29	NE
1,4-Naphthoquinone	2.00 - 2.29	NE	4-Chlorobenzenamine	2.00 - 2.29	NE
1-Methylnaphthalene	0.300 - 0.343	NE	4-Chlorophenyl phenyl ether	2.00 - 2.29	NE
1-Naphthylamine	2.00 - 2.29	NE	4-Dimethylaminoazobenzene	2.00 - 2.29	NE
2,3,4,6-Tetrachlorophenol	2.00 - 2.29	NE	4-Nitroaniline	3.00 - 3.43	NE
2,4,5-Trichlorophenol	1.00 - 1.14	NE	4-Nitrophenol	2.00 - 2.29	NE
2,4,6-Trichlorophenol	2.00 - 2.29	NE	4-Nitroquinoline-1-oxide	3.00 - 3.43	NE
2,4-Dichlorophenol	2.00 - 2.29	NE	5-Nitro-o-toluidine	2.00 - 2.29	NE
2,4-Dimethylphenol	2.00 - 2.29	NE	7,12-Dimethylbenz(a)anthracene	2.00 - 2.29	NE
2,4-Dinitrophenol	10.0 - 11.4	NE	Acenaphthene	0.310 - 0.354	NE
2,4-Dinitrotoluene	2.00 - 2.29	NE	Acenaphthylene	0.200 - 0.229	NE
2,6-Dichlorophenol	2.00 - 2.29	NE	Acetophenone	2.00 - 2.29	NE
2,6-Dinitrotoluene	2.00 - 2.29	NE	Aniline	2.50 - 2.86	NE
2-Acetylamino fluorene	2.00 - 2.29	NE	Anthracene	0.200 - 0.229	NE
2-Chloronaphthalene	0.350 - 0.400	NE	Aramite	3.00 - 3.43	NE
2-Chlorophenol	2.00 - 2.29	NE	Benzidine	2.00 - 2.29	NE
2-Methylnaphthalene	0.300 - 0.343	NE	Benzo(a)anthracene	0.200 - 0.229	NE
2-Methylpyridine	2.00 - 2.29	NE	Benzo(a)pyrene	0.200 - 0.229	0.2
2-Naphthalenamine	2.00 - 2.29	NE	Benzo(b)fluoranthene	0.200 - 0.229	NE

Refer to footnotes at end of table.

Table A-7 (Continued)
Chemical Parameter, MDL/MCL for Semi-Volatile Organic Compounds Analyzed
Sandia National Laboratories/New Mexico
Chemical Waste Landfill, October - December 2007

Test Method 8270C ^a (Appendix IX List) ^b	MDL (µg/L)	MCL (µg/L)	Test Method 8270C ^a (Appendix IX List) ^b	MDL (µg/L)	MCL (µg/L)
Benzo(ghi)perylene	0.200 - 0.229	NE	Hexachloroethane	2.00 - 2.29	NE
Benzo(k)fluoranthene	0.200 - 0.229	NE	Hexachlorophene	200 - 229	NE
Benzoic acid	6.00 - 6.86	NE	Hexachloropropene	2.00 - 2.29	NE
Benzyl alcohol	2.00 - 2.29	NE	Indeno(1,2,3-c,d)pyrene	0.200 - 0.229	NE
Butylbenzyl phthalate	2.00 - 2.29	NE	Isodrin	2.00 - 2.29	NE
Carbazole	0.200 - 0.229	NE	Isophorone	2.00 - 2.29	NE
Chlorobenzilate	2.00 - 2.29	NE	Isosafrole	2.00 - 2.29	NE
Chrysene	0.200 - 0.229	NE	Kepone	2.00 - 2.29	NE
Di-n-butyl phthalate	2.00 - 2.29	NE	Methapyrilene	2.00 - 2.29	NE
Di-n-octyl phthalate	3.00 - 3.43	NE	Methoxychlor	2.00 - 2.29	40
Diallate	2.00 - 2.29	NE	Methyl methacrylate	2.00 - 2.29	NE
Dibenz[a,h]anthracene	0.200 - 0.229	NE	Methyl methanesulfonate	2.00 - 2.29	NE
Dibenzofuran	2.00 - 2.29	NE	Methyl parathion	2.00 - 2.29	NE
Diethylphthalate	2.00 - 2.29	NE	Naphthalene	0.300 - 0.343	NE
Dimethoate	2.00 - 2.29	NE	Nitro-benzene	3.00 - 3.43	NE
Dimethylphthalate	2.00 - 2.29	NE	O,O,O-Triethylphosphorothioate	2.00 - 2.29	NE
Dinitro-o-cresol	3.00 - 3.43	NE	Parathion	3.00 - 3.43	NE
Dinoseb	2.00 - 2.29	7.0	Pentachlorobenzene	2.00 - 2.29	NE
Diphenyl amine	3.00 - 3.43	NE	Pentachloroethane	2.00 - 2.29	NE
Disulfoton	2.00 - 2.29	NE	Pentachloronitrobenzene	2.00 - 2.29	NE
Ethyl methacrylate	2.00 - 2.29	NE	Pentachlorophenol	2.00 - 2.29	1.0
Ethyl methanesulfonate	2.00 - 2.29	NE	Phenacetin	2.00 - 2.29	NE
Famphur	2.00 - 2.29	NE	Phenanthrene	0.200 - 0.229	NE
Fluoranthene	0.200 - 0.229	NE	Phenol	1.00 - 1.14	NE
Fluorene	0.200 - 0.229	NE	Phorate	2.00 - 2.29	NE
Hexachlorobenzene	2.00 - 2.29	1.0	Pronamide	2.00 - 2.29	NE
Hexachlorobutadiene	2.00 - 2.29	NE	Pyrene	0.300 - 0.343	NE
Hexachlorocyclopentadiene	2.00 - 2.29	50	Pyridine	1.00 - 1.14	NE

Refer to footnotes at end of table.

Table A-7 (Concluded)
Chemical Parameter, MDL/MCL for Semi-Volatile Organic Compounds Analyzed
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semiannual Assessment, October - December 2007

Test Method 8270C* (Appendix IX List) ^b	MDL (µg/L)	MCL (µg/L)	Test Method 8270C* (Appendix IX List) ^b	MDL (µg/L)	MCL (µg/L)
Sulfotepp	2.00 - 2.29	NE	n-Nitrosodimethylamine	2.00 - 2.29	NE
Thionazin	2.00 - 2.29	NE	n-Nitrosodipropylamine	2.00 - 2.29	NE
Tributylphosphate	2.00 - 2.29	NE	n-Nitrosomethylethylamine	2.00 - 2.29	NE
bis(2-Chloroethoxy)methane	3.00 - 3.43	NE	n-Nitrosomorpholine	2.00 - 2.29	NE
bis(2-Chloroethyl)ether	2.00 - 2.29	NE	n-Nitrosopiperidine	2.00 - 2.29	NE
bis(2-Ethylhexyl)phthalate	2.00 - 2.29	6.0	n-Nitrosopyrrolidine	2.00 - 2.29	NE
bis-Chloroisopropyl ether	2.00 - 2.29	NE	o-Cresol	2.00 - 2.29	NE
m,p-Cresol	3.00 - 3.43	NE	o-Toluidine	2.00 - 2.29	NE
n-Nitroso-di-n-butylamine	2.00 - 2.29	NE	para-Phenylenediamine	2.00 - 2.29	NE
n-Nitrosodiethylamine	2.00 - 2.29	NE			

*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.

^bTitle 40 Code of Federal Regulations (CFR), Part 264, Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Appendix IX, Groundwater Monitoring List.

EPA = Environmental Protection Agency.

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

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

µg/L = Microgram(s) per liter.

NE = Not established.

Table A-8
Chemical Parameters, MDL/MCL for Chlorinated Herbicides and Polychlorinated
Biphenyls Analyzed
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semiannual Assessment, October - December 2007

Appendix IX List ^a	Test Method ^b	MDL (µg/L)	MCL (µg/L)
2,4,5-T	8151A	0.0838 - 0.104	NE
2,4,5-TP	8151A	0.0838 - 0.104	50
2,4-D	8151A	0.0838 - 0.104	70
Aroclor 1016	8082	0.0340 - 0.0416	0.5
Aroclor 1221	8082	0.0340 - 0.0416	0.5
Aroclor 1232	8082	0.0340 - 0.0416	0.5
Aroclor 1242	8082	0.0340 - 0.0416	0.5
Aroclor 1248	8082	0.0340 - 0.0416	0.5
Aroclor 1254	8082	0.0340 - 0.0416	0.5
Aroclor 1260	8082	0.0340 - 0.0416	0.5

^aTitle 40 Code of Federal Regulations (CFR), Part 264, Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Appendix IX, Groundwater Monitoring List.

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

EPA = Environmental Protection Agency.

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

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

µg/L = Microgram(s) per liter.

NE = Not established.

Table A-9
Chemical Parameters, MDL/MCL for Metal Parameters Analyzed
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semiannual Assessment, October - December 2007

Appendix IX List ^a	Test Method ^b	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	0.00011	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	0.00003	0.002
Nickel	6020	0.0005 – 0.0025	NE
Selenium	6020	0.001	0.05
Silver	6020	0.0002	NE
Thallium	6020	0.0003	0.002
Tin	6020	0.001	NE
Vanadium	6020	0.003	NE
Zinc	6020	0.0026	NE

^aTitle 40 Code of Federal Regulations (CFR), Part 264, Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Appendix IX, Groundwater Monitoring List. Addition metal parameter includes iron.

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

EPA = Environmental Protection Agency.

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

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

mg/L = Milligram(s) per liter.

NE = Not established.

Table A-10
Chemical Parameter, MDL/MCL for Total Cyanide and Sulfides Analyzed
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semiannual Assessment, October - December 2007

Parameter List	Test Method ^a	MDL (mg/L)	MCL (mg/L)
Total Cyanide	9010	0.0015 – 0.005	0.2
Sulfides	9034	0.670	NE

^aU.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

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 measured with 99% confidence that the analyte is greater than zero.

mg/L = Milligram(s) per liter.

Table A-11

Summary of Detected Volatile and Semi-Volatile Organic Compounds, Chlorinated Herbicides, and Polychlorinated Biphenyls
 Sandia National Laboratories/New Mexico
 Chemical Waste Landfill
 Semiannual Assessment, October - December 2007

			ARCOC No.: Sample No.: Well No.: Sample Type: Sample Method: Laboratory: Date Sampled:	611608 085324 CWL-BW3 Environmental Bennett Pump GEL 10-24-07	611608 085324 CWL-BW3 Reanalysis Bennett Pump GEL 10-24-07	611609 085326 CWL-BW4A Environmental Bennett Pump GEL 10-18-07	611610 085328 CWL-MW2BL Environmental Bennett Pump GEL 10-16-07	611611 085330 CWL-MW2BU Environmental QED Pump GEL 11-07-07	611613 085334 CWL-MW4 Environmental Bennett Pump GEL 11-05-07
Parameter	Method	MCL	All results in µg/L						
Acetone	8260	NE	ND (1.25) UJ	NA	1.37 (5.00) J, J-	ND (1.25) UJ	ND (1.25) UJ	ND (1.25) UJ	
Trichloroethene	8260	5	ND (0.250)	NA	ND (0.250)	ND (0.250)	0.648 (1.00) J	ND (0.250)	
Xylenes (total)	8260	NE	ND (0.250)	NA	0.767 (1.00) J	0.604 (1.00) J	0.477 (1.00) J	0.666 (1.00) J	
Bis(2-Ethylhexyl)phthalate	8270	6	4.97 (10.0) J	ND (2.15)	ND (2.17)	ND (2.00)	NS	ND (10.0)	

Table A-11 (Concluded)

Summary of Detected Volatile and Semi-Volatile Organic Compounds, Chlorinated Herbicides, and Polychlorinated Biphenyls
 Sandia National Laboratories/New Mexico
 Chemical Waste Landfill
 Semiannual Assessment, October - December 2007

			ARCOC No.: Sample No.: Well No.: Sample Type: Sample Method: Laboratory: Date Sampled:	611613 085335 CWL-MW4 Duplicate Bennett Pump GEL 11-05-07	611614 085337 CWL-MW5L Environmental QED Pump GEL 10-25-07	611616 085342 CWL-MW5U Environmental Bennett Pump GEL 10-30-07	611616 085343 CWL-MW5U Duplicate QED Pump GEL 10-30-07	611618 085348 CWL-MW6U Environmental Bennett Pump GEL 11-01-07
Parameter	Method	MCL	All results in µg/L					
Acetone	8260	NE	ND (1.25) UJ	ND (1.25) UJ	ND (1.25) UJ	ND (1.25) UJ	ND (1.25) R	
Trichloroethene	8260	5	0.262 (1.00) J	0.712 (1.00) J	1.77	1.70	0.258 (1.00) J	
Xylenes (total)	8260	NE	0.582 (1.00) J	ND (0.250)	0.633 (1.00) J	0.610 (1.00) J	0.541 (1.00) J	
Bis(2-Ethylhexyl)phthalate	8270	6	ND (10.8)	2.75 (10.1) J	ND (2.11)	ND (2.20)	ND (2.29)	

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

ARCOC= Analysis Request and Chain of Custody.

BW = Background well.

GEL = General Engineering Laboratories.

J = The associated value is an estimated quantity and/or detected below the practical quantitation limit.

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

L = Lower well completion zone.

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

MW = Monitoring well.

ND = The analyte was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

NS = Not Sampled.

U = Upper well completion zone.

UJ = The analyte was analyzed for but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

µg/L = Milligram(s) per liter.

R = The data are unusable. Resampling and reanalysis are necessary for verification.

Table A-12
Summary of Total Metal Parameters
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semiannual Assessment, October - December 2007

			ARCO No.: Sample No.: Well No.: Sample Type: Sample Method: Laboratory: Date Sampled:	611608 085324 CWL-BW3 Environmental Bennett Pump GEL 10-24-07	611609 085326 CWL-BW4A Environmental Bennett Pump GEL 10-18-07	611610 085328 CWL-MW2BL Environmental Bennett Pump GEL 10-16-07	611611 085330 CWL-MW2BU Environmental QED Pump GEL 11-07-07	611613 085334 CWL-MW4 Environmental Bennett Pump GEL 11-05-07
Parameter	Method	MCL	All results in mg/L					
Antimony	6020	0.006	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.0050)	ND (0.0005)	
Arsenic	6020	0.01	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.013)	ND (0.0015)	
Barium	6020	2.0	0.0487	0.0538	0.0627	0.433	0.0593	
Beryllium	6020	0.004	ND (0.0001)	ND (0.0001)	ND (0.0001)	0.00275	ND (0.0001)	
Cadmium	6020	0.005	ND (0.00011)	ND (0.00011)	ND (0.00011)	ND (0.00062)	0.000315 (0.001) J	
Chromium	6020	0.1	0.0605	ND (0.0051)	ND (0.001)	0.218	0.00783	
Cobalt	6020	NE	0.00063 (0.001) J	0.000344 (0.001) J	0.000354 (0.001) J	0.0067	0.00282	
Copper	6020	NE	0.00336	0.00175	0.000985 (0.001) J	0.0474	0.0018	
Iron	6020	NE	0.825	0.643	0.480	20.8	0.559	
Lead	6020	NE	ND (0.0005)	ND (0.0005)	ND (0.0005)	0.0525	ND (0.0005)	
Mercury	7470A	0.002	ND (0.00003)	ND (0.00003) UJ	0.000035 (0.0002) J, NJ	ND (0.00003) UJ	ND (0.00003) UJ	
Nickel	6020	NE	0.061	0.00402	0.00323	0.170	0.210	
Selenium	6020	0.05	0.00157 (0.005) J	0.00113 (0.005) J	0.00165 (0.005) J	ND (0.001)	0.0014 (0.005) J	
Silver	6020	NE	ND (0.0002)	ND (0.0002)	ND (0.0002)	0.0125	ND (0.0002)	
Thallium	6020	0.002	0.000378 (0.001) J	0.000317 (0.001) J	0.00054 (0.001) J	ND (0.0030)	ND (0.0027)	
Tin	6020	NE	ND (0.033)	ND (0.001)	ND (0.001)	0.0224	ND (0.001)	
Vanadium	6020	NE	0.0128	ND (0.003)	0.00511 (0.010) J	0.0199	ND (0.003)	
Zinc	6020	NE	0.0103	0.00975 (0.010) J	ND (0.0026)	0.454	0.00356 (0.010) J	

Refer to footnotes at end of table.

Table A-12 (Continued)
Summary of Total Metal Parameters
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semiannual Assessment, October - December 2007

			611613 085335 CWL-MW4 Duplicate Bennett Pump GEL 11-05-07	611614 085337 CWL-MW5L Environmental QED Pump GEL 10-25-07	611616 085342 CWL-MW5U Environmental Bennett Pump GEL 10-30-07	611616 085343 CWL-MW5U Duplicate QED Pump GEL 10-30-07	611618 085348 CWL-MW6U Environmental Bennett Pump GEL 11-01-07
Parameter	Method	MCL	All results in mg/L				
Antimony	6020	0.006	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.0005)
Arsenic	6020	0.01	ND (0.0015)	ND (0.0015)	ND (0.0015)	0.00202 (0.005) J	ND (0.0015)
Barium	6020	2.0	0.0599	0.060	0.068	0.070	0.0692
Beryllium	6020	0.004	ND (0.0001)	ND (0.0001)	ND (0.0001)	ND (0.0001)	ND (0.0001)
Cadmium	6020	0.005	ND (0.00011)	ND (0.00011)	ND (0.00011)	ND (0.00011)	ND (0.00011)
Chromium	6020	0.1	0.00764	ND (0.001)	ND (0.012)	ND (0.012)	0.00367
Cobalt	6020	NE	0.00285	0.000289 (0.001) J	0.00025 (0.001) J	0.00025 (0.001) J	0.000254 (0.001) J
Copper	6020	NE	0.00194	0.000995 (0.001) J	0.00178	0.00171	0.00197
Iron	6020	NE	0.632	0.510	0.296	0.348	0.372
Lead	6020	NE	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.0005)
Mercury	7470A	0.002	ND (0.00003) UJ	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003) UJ
Nickel	6020	NE	0.212	0.00221	0.00295	0.00279	0.00312
Selenium	6020	0.05	0.00126 (0.005) J	0.00204 (0.005) J	0.00133 (0.005) J	0.00101 (0.005) J	0.00164 (0.005) J
Silver	6020	NE	ND (0.0002)	ND (0.0002)	ND (0.0002)	ND (0.0002)	ND (0.0002)
Thallium	6020	0.002	ND (0.0003)	0.000363 (0.001) J	ND (0.0003)	ND (0.0003)	0.000491 (0.001) J
Tin	6020	NE	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
Vanadium	6020	NE	ND (0.003)	0.00379 (0.010) J	ND (0.018)	ND (0.018)	0.00439 (0.010) J
Zinc	6020	NE	0.00383 (0.010) J	0.00346 (0.010) J	0.0551	0.0534	0.0185

Refer to footnotes at end of table.

Table A-12 (Concluded)
Summary of Total Metal Parameters
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semiannual Assessment, October - December 2007

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

ARCOG = Background well.

BW = Background well.

GEL = General Engineering Laboratories.

J = The associated value is an estimated quantity and/or detected below the practical quantitation limit.

L = Lower well completion zone.

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

mg/L = Milligram(s) per liter.

MW = Monitoring well.

ND = The analyte was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

NE = Not established.

NJ- = Presumptive evidence of the presence of the material at an estimated quantity with a suspected negative bias,

U = Upper well completion zone.

UJ = The analyte was analyzed for but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

Table A-13
Summary of Dissolved Chromium, Total Cyanide, and Sulfides
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semiannual Assessment, October - December 2007

			611608 085324 CWL-BW3 Environmental Bennett Pump GEL 10-24-07	611609 085326 CWL-BW4A Environmental Bennett Pump GEL 10-18-07	611610 085328 CWL-MW2BL Environmental Bennett Pump GEL 10-16-07	611613 085334 CWL-MW4 Environmental Bennett Pump GEL 11-05-07	611613 085335 CWL-MW4 Duplicate Bennett Pump GEL 11-05-07
Parameter	Method	MCL	All results in mg/L				
Dissolved Chromium	6020	0.1	0.00227 (0.003) J	ND (0.0051)	ND (0.001)	ND (0.001)	ND (0.001)
Total Cyanide	9010	0.2	ND (0.0015) UJ	ND (0.0015)	ND (0.0015) UJ	ND (0.005)	ND (0.005)
Sulfides	9034	NE	ND (0.670)	1.01 (2.50) J	0.810 (2.50) J, J-	1.87 (2.50) J	1.47 (2.50) J

Refer to footnotes at end of table.

Table A-13 (Concluded)
Summary of Dissolved Chromium, Total Cyanide, and Sulfides
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semiannual Assessment, October - December 2007

			ARCOC No.: Sample No.: Well No.: Sample Type: Sample Method: Laboratory: Date Sampled:	611614 085337 CWL-MW5L Environmental QED Pump GEL 10-25-07	611616 085342 CWL-MW5U Environmental Bennett Pump GEL 10-30-07	611616 085343 CWL-MW5U Duplicate QED Pump GEL 10-30-07	611618 085348 CWL-MW6U Environmental Bennett Pump GEL 11-01-07
Parameter	Method	MCL	All results in mg/L				
Dissolved Chromium	7470 A	0.1	ND (0.001)	ND (0.012)	ND (0.012)	0.0019 (0.003) J	
Total Cyanide	9010	0.2	ND (0.0015) UJ	ND (0.0015) UJ	ND (0.0015) UJ	ND (0.005)	
Sulfides	9034	NE	ND (0.670)	ND (0.670)	ND (0.670)	ND (0.670)	

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

ARCOC= Analysis Request and Chain of Custody.

BW = Background well.

GEL = General Engineering Laboratories.

J = The associated value is an estimated quantity and/or detected below the practical quantitation limit.

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

L = Lower well completion zone.

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

mg/L = Milligrams per liter.

MW = Monitoring well.

ND = The analyte was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

U = Upper well completion zone.

UJ = The analyte was analyzed for but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

Table A-14
Summary of Detected Parameters in Equipment Blank Samples
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semiannual Assessment, October - December 2007

			ARCO No.: Sample No.: Well No.: Sample Type: Sample Method: Laboratory: Date Sampled:	611612 085332 Prior to CWL-MW5U Equipment Blank Bennett Pump GEL 10-29-07	611615 085340 Prior to CWL-MW4 Equipment Blank Bennett Pump GEL 11-01-07
Parameter	Method	MCL	All results in mg/L (unless otherwise specified)		
Acetone (in µg/L)	8260	NE	1.25 (5.00) J-	ND (1.25) R	
Total Xylenes (in µg/L)	8260	NE	0.722 (1.00) J	ND (0.250)	
Thallium	6020	0.1	0.000426 (0.001) J	ND (0.0003)	
Vanadium	6020	NE	ND (0.018)	0.00469 (0.010) J	

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

ARCO= Analysis Request and Chain of Custody.

GEL = General Engineering Laboratories.

J = The associated value is an estimated quantity and/or detected below the practical quantitation limit.

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

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

mg/L = Milligrams per liter.

ND = The analyte was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

U = Upper well completion zone.

µg/L = Milligram(s) per liter.

R = The data are unusable. Resampling and reanalysis are necessary for verification.

Table A-15
Summary of Environmental and Duplicate Analyses
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semiannual Assessment, October - December 2007

Parameter	Environmental Sample Results (R ₁) (mg/L, unless indicated)	Duplicate Sample Results (R ₂) (mg/L, unless indicated)	RPD
CWL-MW4			
Trichloroethene (µg/L)	ND (0.250)	0.262 (1.00) J	NC
Total Xylenes (µg/L)	0.666 (1.00) J	0.582 (1.00) J	13
Barium	0.0593	0.0599	1
Cadmium	0.000315 (0.001) J	ND (0.00011)	NC
Chromium	0.00783	0.00764	2
Cobalt	0.00282	0.00285	1
Copper	0.0018	0.00194	7
Iron	0.559	0.632	12
Nickel	0.210	0.212	1
Selenium	0.0014 (0.005) J	0.00126 (0.005) J	11
Zinc	0.00356 (0.010) J	0.00383 (0.010) J	7
Sulfides	1.87 (2.50) J	1.47 (2.50) J	24
CWL-MW5U			
Trichloroethene (µg/L)	1.77	1.70	4
Total Xylenes (µg/L)	0.633 (1.00) J	0.610 (1.00) J	4
Arsenic	ND (0.0015)	0.00202 (0.005) J	NC
Barium	0.068	0.070	3
Cobalt	0.00025 (0.001) J	0.00025 (0.001) J	< 1
Copper	0.00178	0.00171	4
Iron	0.296	0.348	16
Nickel	0.00295	0.00279	6
Selenium	0.00133 (0.005) J	0.00101 (0.005) J	27
Zinc	0.0551	0.0534	3

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

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

where: R₁ = analysis result.
R₂ = duplicate analysis result.

ATTACHMENT A
FIELD MEASUREMENT LOGS AND
DOCUMENTATION

ATTACHMENT A FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: <u>CWL-GWM</u>	Project No.:
Well I.D.: <u>CWL-BW3</u>	Date: <u>10-23-07</u> <u>10-24-07</u>
Weather	
Method: <u>X</u> Portable pump _____ Dedicated pump Pump depth: <u>506</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
<u>502.80</u>	<u>0849</u>	<u>/</u>	<u>START</u>							
<u>506.11</u>	<u>0904</u>	<u>.5</u>	<u>16.20</u>							
<u>506.21</u>	<u>0904</u>	<u>WELL</u>	<u>DRY</u>	<u>666</u>	<u>195.7</u>	<u>7.36</u>		<u>2.55</u>	<u>95.7</u>	<u>9.39</u>
	<u>0939</u>	<u>1.5</u>	<u>16.56</u>	<u>826</u>	<u>225.4</u>	<u>7.86</u>		<u>2.60</u>	<u>35.5</u>	<u>3.28</u>
	<u>0941</u>	<u>2.5</u>	<u>17.49</u>	<u>829</u>	<u>224.1</u>	<u>7.88</u>		<u>1.83</u>	<u>41.9</u>	<u>3.99</u>
	<u>0943</u>	<u>3.5</u>	<u>17.87</u>	<u>840</u>	<u>224.1</u>	<u>7.87</u>		<u>10.8</u>	<u>50.4</u>	<u>4.48</u>
	<u>0945</u>	<u>4.5</u>	<u>17.83</u>	<u>844</u>	<u>223.1</u>	<u>7.88</u>		<u>9.87</u>	<u>35.6</u>	<u>3.30</u>
<u>503.07</u>	<u>0903</u>	<u>/</u>	<u>Start</u>							
<u>N/A</u>	<u>0941</u>	<u>.25</u>	<u>17.16</u>	<u>799</u>	<u>321.9</u>	<u>7.33</u>		<u>2.06</u>	<u>82.1</u>	<u>7.62</u>
	<u>0944</u>	<u>1.25</u>	<u>18.38</u>	<u>835</u>	<u>309.4</u>	<u>7.79</u>		<u>3.01</u>	<u>60.7</u>	<u>5.57</u>
	<u>0946</u>	<u>1.50</u>	<u>18.71</u>	<u>837</u>	<u>304.5</u>	<u>7.82</u>		<u>2.69</u>	<u>53.5</u>	<u>4.89</u>
	<u>0953</u>	<u>2.0</u>	<u>18.80</u>	<u>838</u>	<u>295.7</u>	<u>7.82</u>		<u>2.98</u>	<u>42.4</u>	<u>3.86</u>
COC number(s):										
Sample number(s):										

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) = _____ 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
from tubing
0903*

10/24 → 0926

ATTACHMENT A FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: <u>CWL</u>	Project No.:
Well I.D.: <u>CWL-BW4A</u>	Date: <u>10-17-07</u> <u>10-18-07</u>
Weather: <u>Cold & Cloudy</u>	
Method: <input checked="" type="checkbox"/> Portable pump <input type="checkbox"/> Dedicated pump Pump depth: <u>507'</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
502.74	0828	---	Start Purge							
506.35	0851	5.2 X	13.49	0930	281.7	7.01		0.57	95.3	9.90
506.90	08.54	1.4 X	14.75	0986	276.7	7.06		0.54	66.9	6.73
507.07	08.56	1.5 X	15.19	0983	275.1	7.07		0.71	66.6	6.67
	0857	WELL DRY								
502.93	0858	---	START							
506.31	0919		17.21	0992	239.1	6.80		0.52	98.1	9.39
NA	0930		16.94	0933	257.9	7.01		3.71	80.9	7.69
	0932		18.31	0987	275.1	7.05		2.01	65.0	6.08
COC number(s): <u>611609</u>										
Sample number(s): <u>085326</u>										

DO mg/L

18

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

approx. 4.75 gal.
purge prior to
Volume Calculation
0844
0919

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: GWL-GWM	Project No.:
Well I.D.: CWL-MW 2BL	Date: 10-16-07
Weather	
Method: <input checked="" type="checkbox"/> Portable pump <input type="checkbox"/> Dedicated pump Pump depth: 550'	

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
497.04	0758	/	START							
497.26	0850	50	19.75	1081	201.8	6.91		0.39	76.1	6.94
497.25	0935	100	19.59	1083	210.8	6.91		0.51	77.1	7.04
497.27	1013	150	19.87	1083	206.4	6.90		0.21	77.4	7.04
497.25	1056	200	20.18	1082	210.2	6.90		0.25	77.1	6.96
497.25	1139	250	20.49	1080	208.6	6.89		0.25	77.5	6.96
497.25	1223	300	20.51	1083	216.6	6.89		0.29	78.8	7.06
497.22	1259	350	20.93	1083	212.3	6.89		0.32	78.4	7.98
497.23	1341	400	21.08	1083	208.6	6.89		0.31	79.5	7.05
497.22	1354	420	21.21	1084	207.4	6.88		0.30	79.1	7.01
497.23	1406	440	21.24	1084	208.8	6.88		0.22	79.1	7.00
497.22	1419	460	21.27	1084	208.7	6.88		0.28	79.6	7.04
497.	1423	480	21.31	1084	208.6	6.88		0.24	79.1	6.98
	1424	/	SAMPLING							
COC number(s):		611610								
Sample number(s):		085328								

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) = _____ 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 from tubing 0808

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: <u>CWL</u>	Project No.:
Well I.D.: <u>CWL- AW2BU</u>	Date: <u>10-15-07</u> <u>10-22-07</u>
Weather: <u>Cool & Clear</u>	
Method: <u> </u> Portable pump <u>X</u> Dedicated pump Pump depth: <u>491'</u>	

PURGE MEASUREMENTS

Depth to Water (FT)	Time 24 hr	Vol ① gls	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	Color and appearance
<u>492.47</u>	<u>0816</u>	<u>/</u>	<u>Start Purge</u>							
<u>493.85</u>	<u>0833</u>	<u>.5</u>	<u>16.09</u>	<u>0123</u>	<u>192.5</u>	<u>8.96</u>		<u>6.60</u>	<u>84.1</u>	<u>8.25</u>
<u>494.32</u>	<u>0838</u>	<u>.8</u>	<u>16.25</u>	<u>0041</u>	<u>145.7</u>	<u>9.13</u>		<u>5.27</u>	<u>82.6</u>	<u>8.11</u>
	<u>0845</u>	<u>1.1</u>	<u>16.03</u>	<u>0051</u>	<u>155.3</u>	<u>8.88</u>		<u>4.34</u>	<u>82.0</u>	<u>8.06</u>
	<u>0852</u>	<u>1.3</u>	<u>15.06</u>	<u>0059</u>	<u>160.8</u>	<u>8.61</u>		<u>3.96</u>	<u>82.5</u>	<u>8.12</u>
<u>← Well Dry →</u>										
<u>492.82</u>	<u>0833</u>	<u>/</u>	<u>START Purge</u>							
<u>493.10</u>	<u>0842</u>	<u>.5</u>	<u>14.63</u>	<u>137</u>	<u>100.6</u>	<u>8.71</u>		<u>1.69</u>	<u>81.4</u>	<u>8.26</u>
<u>493.42</u>	<u>0846</u>	<u>.8</u>	<u>14.56</u>	<u>137</u>	<u>136.4</u>	<u>8.34</u>		<u>1.64</u>	<u>81.8</u>	<u>8.28</u>
<u>494.20</u>	<u>0855</u>	<u>1.1</u>	<u>13.96</u>	<u>247</u>	<u>165.5</u>	<u>8.03</u>		<u>7.59</u>	<u>87.3</u>	<u>8.92</u>
	<u>0901</u>	<u>1.4</u>	<u>13.89</u>	<u>604</u>	<u>187.8</u>	<u>7.80</u>		<u>7.800</u>	<u>88.0</u>	<u>9.04</u>
		<u>WELL</u>	<u>DRY</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) = _____ 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 I.D.: <u>CWL-mw4</u>	Date: <u>11-05-07</u>
Weather	
Method: <u>X</u> Portable pump _____ Dedicated pump _____ Pump depth: <u>500'</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
<u>496.05</u>	<u>0814</u>	<u>/</u>	<u>START</u>							
<u>497.98</u>	<u>0848</u>	<u>10</u>	<u>18.66</u>	<u>944</u>	<u>22.7</u>	<u>6.94</u>		<u>36.9</u>	<u>28.9</u>	<u>2.69</u>
<u>497.75</u>	<u>0902</u>	<u>15</u>	<u>18.77</u>	<u>943</u>	<u>35.0</u>	<u>7.04</u>		<u>30.7</u>	<u>47.3</u>	<u>4.40</u>
<u>497.76</u>	<u>0918</u>	<u>20</u>	<u>19.15</u>	<u>944</u>	<u>48.4</u>	<u>7.07</u>		<u>26.7</u>	<u>55.6</u>	<u>5.13</u>
<u>497.77</u>	<u>0933</u>	<u>25</u>	<u>19.01</u>	<u>944</u>	<u>60.6</u>	<u>7.08</u>		<u>13.7</u>	<u>58.7</u>	<u>5.43</u>
<u>497.75</u>	<u>0950</u>	<u>30</u>	<u>18.77</u>	<u>944</u>	<u>62.8</u>	<u>7.08</u>		<u>8.53</u>	<u>61.9</u>	<u>5.53</u>
<u>497.75</u>	<u>0956</u>	<u>32</u>	<u>18.91</u>	<u>944</u>	<u>69.9</u>	<u>7.09</u>		<u>2.35</u>	<u>61.1</u>	<u>5.66</u>
<u>497.38</u>	<u>1006</u>	<u>34</u>	<u>18.80</u>	<u>944</u>	<u>69.0</u>	<u>7.09</u>		<u>2.37</u>	<u>60.9</u>	<u>5.66</u>
<u>497.21</u>	<u>1015</u>	<u>36</u>	<u>18.95</u>	<u>944</u>	<u>69.5</u>	<u>7.09</u>		<u>2.24</u>	<u>61.2</u>	<u>5.67</u>
<u>497.13</u>	<u>1024</u>	<u>38</u>	<u>19.00</u>	<u>944</u>	<u>69.3</u>	<u>7.09</u>		<u>2.20</u>	<u>61.7</u>	<u>5.69</u>
	<u>1025</u>	<u>/</u>	<u>sample</u>							

DO mg/L

COC number(s): 611613
 Sample number(s): 085334, 085335

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

24.75 gals purged
from tubing
0823

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: CWL-GWM	Project No.:
Well ID.: CWL-MW5L	Date: 10-25-07
Weather	
Method: <input type="checkbox"/> Portable pump <input checked="" type="checkbox"/> Dedicated pump	
Pump depth: 543	

PURGE MEASUREMENTS

Depth to Water (FT)	Time 24 hr	Vol. D gls	Temp $^{\circ}\text{C}$	Ec μmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	Color and appearance
494.20	0804	 	SYNRT							
494.22	0817	2	16.39	770	262.0	7.97		0.54	82.8	8.08
494.22	0826	4	16.97	789	260.1	7.89		0.28	80.3	7.75
494.22	0834	6	17.53	942	275.3	7.23		0.50	73.9	7.03
494.22	0843	8	17.87	1050	282.9	6.99		0.73	77.5	7.33
494.22	0851	10	18.16	1052	285.7	6.98		0.89	79.4	7.46
494.22	0856	11	18.35	1052	287.1	6.98		0.98	80.0	7.49
494.22	0900	12	18.35	1053	288.1	6.98		0.89	79.2	7.45
494.22	0902	13	18.38	1053	288.8	6.98		0.93	79.2	7.42
494.22	0904	14	18.37	1052	289.1	6.98		0.91	80.0	7.45
	0905	 	SAMPLING							
COC number(s): 611614										
Sample number(s): 085337										

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

80% = 492.24

Project Name: <u>CWL - GWM</u>	Project No.:
Well I.D.: <u>CWL - mW5U</u>	Date: <u>10-29-07</u> <u>10-30-07</u>
Weather	
Method: <u>X</u> Portable pump _____ 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>489.30</u>	<u>0905</u>	<u>START</u>								
<u>494.60</u>	<u>0926</u>	<u>2</u>	<u>18.53</u>	<u>849</u>	<u>290.3</u>	<u>7.20</u>		<u>0.28</u>	<u>72.2</u>	<u>6.74</u>
<u>496.30</u>	<u>0932</u>	<u>4</u>	<u>19.53</u>	<u>835</u>	<u>281.5</u>	<u>7.26</u>		<u>0.86</u>	<u>74.3</u>	<u>6.80</u>
<u>497.22</u>	<u>0936</u>	<u>5</u>	<u>19.89</u>	<u>832</u>	<u>277.7</u>	<u>7.27</u>		<u>1.87</u>	<u>74.5</u>	<u>6.77</u>
<u>498.30</u>	<u>0939</u>	<u>6</u>	<u>20.11</u>	<u>832</u>	<u>274.9</u>	<u>7.28</u>		<u>1.80</u>	<u>74.7</u>	<u>6.77</u>
<u>498.55</u>	<u>0945</u>	<u>7</u>	<u>20.10</u>	<u>834</u>	<u>273.3</u>	<u>7.28</u>		<u>1.84</u>	<u>74.6</u>	<u>6.75</u>
<u>499.25</u>	<u>0948</u>	<u>8</u>	<u>20.40</u>	<u>838</u>	<u>271.6</u>	<u>7.29</u>		<u>2.24</u>	<u>74.3</u>	<u>6.68</u>
<u>499.25</u>	<u>0948</u>	<u>well dry</u>								
<u>491.10</u>	<u>0907</u>	<u>START Purge</u>								
<u>495.77</u>	<u>0924</u>	<u>.5</u>	<u>18.62</u>	<u>914</u>	<u>295.6</u>	<u>7.07</u>		<u>0.67</u>	<u>73.4</u>	<u>6.73</u>
<u>496.09</u>	<u>0926</u>	<u>1</u>	<u>18.80</u>	<u>914</u>	<u>289.6</u>	<u>7.10</u>		<u>0.46</u>	<u>67.1</u>	<u>6.22</u>
	<u>0927</u>	<u>Sample</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

24.75 gals purged from tubing
0919

10/30/07
0923

ATTACHMENT A FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: CWL	Project No.:
Well I.D.: CWL-MW6U	Date: 10-31-07 11-01-07
Weather: Cold & clear	
Method: <input checked="" type="checkbox"/> Portable pump <input type="checkbox"/> Dedicated pump	Pump depth: 499'

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
489.55	0829	 	Start Purge							
495.27	0846	2	17.89	905	248.4	7.15		0.33	62.3	5.89
496.48	0852	4	18.20	905	239.8	7.17		0.81	61.7	5.80
497.18	0856	5	18.20	902	240.5	7.17		1.23	61.8	5.82
497.75	0900	6	18.22	900	241.7	7.17		2.02	61.7	5.80
498.50	0904	7	18.24	896	243.1	7.17		3.60	61.7	5.80
498.75	0907	WELL	DRY							
499.80	0818	 	START Purge							
493.75	0830	.5	15.21	885	284.3	7.04		0.65	83.7	8.38
494.08	0834	1	15.35	893	283.1	7.10		0.62	67.9	6.73
494.79	0836	1.5	15.65	895	278.8	7.17		0.64	63.8	6.34
	0837	 	sampling							
COC number(s): 611618										
Sample number(s): 085348										

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) = _____ 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 gal.
purge prior to
Vol. Calculation
0841

11/01/07 0831

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:	0645	4.01	18.0	7.00	17.9	10.00	17.9
2. Time:	0950	4.02	19.2	6.99	19.2	10.01	19.2
3. Time:	0652	4.00	16.5	7.01	16.5	9.99	16.5
4. Time:	1015	4.02	19.7	7.00	19.7	10.00	19.7
Standard Lot No.: 031187							
Expiration Date: 8-2008							
Ec Probe Model No.: YSI6560			Serial No.: 03J1141				
Reference Value: 1278 @ 20C			Standard Lot #: 2307212				
	Value	Temp	Expiration Date: May 2008				
1. Time:	0647	1277	17.9				
2. Time:	0946	1277	19.2				
3. Time:	0649	1275	16.5				
4. Time:	1012	1276	19.7				
Comments:							
Calibration Done by:			Date:				
RL RL			10-15-07 10-27-07				

10/22

10/22

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: 10/2008	
1. Time:	0644 219.8	17.9		
2. Time:	0947 219.9	19.2		
19/22 3. Time:	0648 218.8	16.5		
4. Time	1010 219.7	19.7		
TURBIDIMETER				
Make & Model No.: HACH 2100P			Serial No.: 030900032367	
Reference Value	.1	20	100	800
Standard Lot No.				
1. Time	0747 .09	20.1	101	803
2. Time	0908 .10	20.0	99.8	800
3. Time	0810 .08	19.8	100	798
4. Time	0950 .11	20.2	102	801
Comments:				
Calibration Done By: <i>RL</i>			Date: 10-15-07 10-22-07	

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: 0640	81.6%	7.74	24.32
2. Time: 0944	81.8	7.69	24.33
3. Time: 0645	81.6	8.03	24.69
4. Time: 1008	81.8	7.91	24.66
Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.			
DO Charge= 39.0			
Calibration done by: RL RL		Date: 10-15-07 10-27-07	

10/22

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:	0650	4.01	17.2	7.01	17.2	9.99	17.2
2. Time:	1528	4.02	19.9	7.00	19.8	10.00	19.8
3. Time:							
4. Time:							
Standard Lot No.: 031187							
Expiration Date: 8-2008							
Ec Probe Model No.: YSI6560			Serial No.: 03J1141				
Reference Value: 1278 @ 20C			Standard Lot #: 2307212				
	Value	Temp	Expiration Date: May 2008				
1. Time:	0647	1277	17.2				
2. Time:	1520	1279	19.8				
3. Time:							
4. Time:							
Comments:							
Calibration Done by:			Date:				
RL			10-16-07				

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: 10/2008	
1. Time:	0649 219.9	17.2		
2. Time:	1522 221.1	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	0744 .09	20.1	101	802
2. Time	1441 .10	20.2	102	804
3. Time				
4. Time				
Comments:				
Calibration Done By: RL		Date: 10-16-07		

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: 06:45	81.6	7.86	24.22
2. Time: 15:18	81.5	7.91	24.25
3. Time:			
4. Time:			
Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.			
DO Charge= 39.0			
Calibration done by: RL		Date: 10-16-07	

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:	0650	4.02	17.4	7.00	17.4	9.99	17.4
2. Time:	1313	4.01	19.7	6.99	19.7	9.99	19.7
3. Time:	0655	4.01	19.6	6.99	19.6	10.00	19.6
4. Time:	1247	4.02	20.0	7.00	20.0	9.99	20.0
Standard Lot No.: 031187							
Expiration Date: 8-2008							
Ec Probe Model No.: YSI6560			Serial No.: 03J1141				
Reference Value: 1278 @ 20C			Standard Lot #: 2307212				
	Value	Temp	Expiration Date: May 2008				
1. Time:	0647	1275	17.4				
2. Time:	1311	1276	19.7				
3. Time:	0653	1277	19.6				
4. Time:	1242	1278	20.0				
Comments:							
Calibration Done by:			Date:				
RL RL			10-17-07 10-18-07				

10/18

10/18

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: 10/2008	
1. Time:	0644 220.2	17.4		
2. Time:	1311 219.9	19.9		
3. Time:	0647 219.8	14.6		
4. Time	1244 219.7	20.0		
TURBIDIMETER				
Make & Model No.: HACH 2100P			Serial No.: 030900032367	
Reference Value	.1	20	100	800
Standard Lot No.				
1. Time	0810 .08	19.9	100	801
2. Time	0904 .09	20.0	101	802
3. Time	0833 .09	20.1	102	801
4. Time	1000 .09	20.0	102	802
Comments:				
Calibration Done By:			Date:	
RL RL			10-17-07 10-18-07	

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: 0643	81.6	7.46	24.11
2. Time: 1300	81.4	7.44	24.07
3. Time: 0645	81.6	7.46	24.24
4. Time: 1240	81.7	7.46	24.22
Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.			
DO Charge= 40.0			
Calibration done by: RL RL		Date: 10-17-07 10-18-07	

10/18

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:	0653	4.01	19.0	7.00	19.0	9.99	19.0
2. Time:	0949	4.02	19.7	6.99	19.7	9.99	19.7
3. Time:	0706	4.01	20.3	6.99	20.3	10.00	20.3
4. Time:	1059	4.00	20.7	7.00	20.7	9.99	20.7
Standard Lot No.: 031187							
Expiration Date: 8-2008							
Ec Probe Model No.: YSI6560			Serial No.: 03J1141				
Reference Value: 1278 @ 20C			Standard Lot #: 2307212				
	Value	Temp	Expiration Date: May 2008				
1. Time:	0650	1276	19.0				
2. Time:	0950	1277	19.7				
3. Time:	0711	1279	20.3				
4. Time:	1054	1280	20.7				
Comments:							
Calibration Done by: RL RL			Date: 10-23-07 10-24-07				

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: 10/2008	
1. Time:	0649 218.9	19.0		
2. Time:	0944 219.2	19.7		
3. Time:	0705 220.1	20.3		
4. Time	1056 219.9	20.7		
TURBIDIMETER				
Make & Model No.: HACH 2100P			Serial No.: 030900032367	
Reference Value	.1	20	100	800
Standard Lot No.				
1. Time	0755 .11	20.1	102	800
2. Time	0900 .10	20.0	102	801
3. Time	0803 .09	19.5	100	797
4. Time	1010 .09	19.9	101	799
Comments:				
Calibration Done By:			Date:	
RL RL			10-23-07 10-24-07	

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: 0647	81.6	7.56	24.71
2. Time: 0940	81.8	7.52	24.70
3. Time: 0700	81.6	7.22	24.73
4. Time: 1050	81.4	7.30	24.70
Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.			
DO Charge= 39.0			
Calibration done by:		Date:	
RL RL		10-23-07 10-24-07	

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:	0655 4.00	20.6	6.99 6.99	20.6 20.8	10.01 10.00	20.6 20.8
2. Time:	1037 4.01	20.8				
3. Time:						
4. Time:						
Standard Lot No.: 031187						
Expiration Date: 8-2008						
Ec Probe Model No.: YSI6560			Serial No.: 03J1141			
Reference Value: 1278 @ 20C			Standard Lot #: 2307212			
	Value	Temp	Expiration Date: May 2008			
1. Time:	0658 1280	20.6				
2. Time:	1034 1279	20.8				
3. Time:						
4. Time:						
Comments:						
Calibration Done by: <i>RL</i>			Date: <i>10-25-07</i>			

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: 10/2008	
1. Time:	0651 220.2	20.6		
2. Time:	1036 220.1	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	0758 .09	19.9	100	801
2. Time	0930 .09	19.8	99.9	802
3. Time				
4. Time				
Comments:				
Calibration Done By:		Date:		
RL		10-25-07		

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: 2647	81.6	7.33	24.53
2. Time: 1030	81.8	7.30	24.53
3. Time:			
4. Time:			
Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration. DO Charge= 39.0			
Calibration done by: RL		Date: 10-25-07	

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: 0647	81.6	7.27	24.67
2. Time: 1050	81.8	7.30	24.65
3. Time: 0650	81.6	7.24	24.50
4. Time: 1235	81.8	7.27	24.46
Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.			
DO Charge= 39.0			
Calibration done by:		Date:	
RL RL		10-29-07 10-30-07	

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:	0651	4.02	21.0	7.01	21.0	9.99
2. Time:	1053	4.01	20.8	7.02	20.8	9.98
3. Time:	0646	4.03	20.3	7.01	20.3	10.00
4. Time:	0936	4.02	20.5	7.00	20.5	10.00
Standard Lot No.: 031187						
Expiration Date: 8-2008						
Ec Probe Model No.: YSI6560			Serial No.: 03J1141			
Reference Value: 1278 @ 20C			Standard Lot #: 2307212			
	Value	Temp	Expiration Date: May 2008			
1. Time:	0643	1280	21.0			
2. Time:	1049	1281	20.8			
3. Time:	0649	1279	20.3			
4. Time:	0940	1279	20.5			
Comments:						
Calibration Done by:			Date:			
RL PL			10-31-07 11-01-07			

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: 10/2008	
1. Time:	0647 221.0	21.0		
2. Time:	1100 220.9	20.7		
3. Time:	0645 220.8	20.3		
4. Time	0927 220.7	20.5		
TURBIDIMETER				
Make & Model No.: HACH 2100P			Serial No.: 030900032367	
Reference Value	.1	20	100	800
Standard Lot No.				
1. Time	0755 .10	20.1	100	802
2. Time	1000 .09	20.0	101	803
3. Time	0727 .09	19.9	102	802
4. Time	0850 .08	19.8	100	801
Comments:				
Calibration Done By: RL PL			Date: 10-31-07 11-01-07	

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: 0642	81.6	7.54	24.45
2. Time: 1047	81.5	7.50	24.47
3. Time: 0642	81.6	7.36	24.52
4. Time: 0925	81.6	7.34	24.51
Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.			
DO Charge= 38.0			
Calibration done by: RL RL		Date: 10-31-07 11-01-07	

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:	0650	4.02	20.0	7.00	20.0	10.01	20.0
2. Time:	1356	4.03	21.1	7.01	21.1	10.00	21.1
3. Time:							
4. Time:							
Standard Lot No.: 031187							
Expiration Date: 8-2008							
Ec Probe Model No.: YSI6560			Serial No.: 03J1141				
Reference Value: 1278 @ 20C			Standard Lot #: 2307212				
	Value	Temp	Expiration Date: May 2008				
1. Time:	0645	1277	20.0				
2. Time:	1352	1279	21.1				
3. Time:							
4. Time:							
Comments:							
Calibration Done by:			Date:				
ZL			11-5-07				

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: 10/2008	
1. Time:	0647 220.1	20.0		
2. Time:	1354 219.9	21.2		
3. Time:				
4. Time				
TURBIDIMETER				
Make & Model No.: HACH 2100P			Serial No.: 030900032367	
Reference Value	.1	20	100	800
Standard Lot No.				
1. Time	0751 .08	19.8	99.9	802
2. Time	1100 .09	19.9	100	803
3. Time				
4. Time				
Comments:				
Calibration Done By:			Date:	
RL			11-5-07	

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: 0644	81.6	7.41	24.52
2. Time: 1350	81.5	7.44	24.53
3. Time:			
4. Time:			
Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.			
DO Charge= 38.0			
Calibration done by: RL		Date: 11-5-07	

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:	0651	4.01	19.7	7.00	19.7	9.99
2. Time:	0911	4.02	20.1	7.01	20.1	10.00
3. Time:						
4. Time:						
Standard Lot No.: 031187						
Expiration Date: 8-2008						
Ec Probe Model No.: YSI6560			Serial No.: 03J1141			
Reference Value: 1278 @ 20C			Standard Lot #: 2307212			
	Value	Temp	Expiration Date: May 2008			
1. Time:	0650	1277	19.7			
2. Time:	0908	1276	20.1			
3. Time:						
4. Time:						
Comments:						
Calibration Done by:			Date:			
RL			11-7-07			

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: 10/2008	
1. Time:	0647 220.1	19.7		
2. Time:	0910 220.0	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	0800 .09	20.1	101	799
2. Time	0855 .10	19.9	102	801
3. Time				
4. Time				
Comments:				
Calibration Done By: RL			Date: 11-7-07	

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: 0649	81.6	7.38	24.47
2. Time: 0901	81.5	7.35	24.47
3. Time:			
4. Time:			
Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.			
DO Charge=			
Calibration done by: RL		Date: 11-7-07	



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>10-16-07</u>
<p>The portable pump and tubing bundle (S/N <u>pump 2</u>) were decontaminated prior to installation in well <u>BW-4A</u>, according to the following procedure:</p> <ol style="list-style-type: none"> 1. 5 gallons tap water^(a) + Liquinox wash. 2. 5 gallons tap-water^(a) rinse. 3. 5 gallons tap water^(a) + 50 mL HNO₃^(b) (0.04M). 4. 10 gallons deionized-water^(c) rinse. 5. 5 gallons deionized water^(c) for sampling. 6. Equipment blank sample # <u> </u> was collected at <u> </u> (time). 	
Weather:	
Personnel Performing Decontamination: <u>R. Lynch, W. Gibson</u>	
Name of Sampler: <u>R. Lynch</u>	
Signature of Sampler: <u>[Signature]</u>	Date: <u> </u>
^a Tap-Water Source: <u>DI Water, Crystal Springs</u>	
^b HNO ₃ Grade: Reagent	UN #: <u>2031</u>
Lot No.: <u>002735</u>	Manufacturer: <u>Fisher</u>
^c DI Water Source: <u>Crystal Springs</u>	Lot No <u>9-20-07</u>
Condition of Tubing Bundle: <u>good</u>	
Condition of Pump: <u>good</u>	
Comments: <u>After CWI - MW236</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>10-18-07</u>
<p>The portable pump and tubing bundle (S/N <u>Pump 2</u>) were decontaminated prior to installation in well <u>BW-3</u>, according to the following procedure:</p> <ol style="list-style-type: none"> 1. 5 gallons tap water^(a) + Liquinox wash. 2. 5 gallons tap-water^(a) rinse. 3. 5 gallons tap water^(a) + 50 mL HNO₃^(b) (0.04M). 4. 10 gallons deionized-water^(c) rinse. 5. 5 gallons deionized water^(c) for sampling. 6. Equipment blank sample # <u>1</u> was collected at <u>1</u> (time). 	
Weather:	
Personnel Performing Decontamination:	
Name of Sampler: <u>R. Lynch</u>	
Signature of Sampler: <u>[Signature]</u>	Date:
^a Tap-Water Source: <u>DI Water, Crystal Springs</u>	
^p HNO ₃ Grade: Reagent	UN #: <u>2031</u>
Lot No.: <u>002735</u>	Manufacturer: <u>Fisher</u>
^c DI Water Source: <u>Crystal Springs</u>	Lot No: <u>9-20-07</u>
Condition of Tubing Bundle: <u>good</u>	
Condition of Pump: <u>good</u>	
<p>Comments:</p> <p style="text-align: center;"><u>After CWL-BW4A</u></p>	

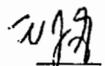
**Portable Pump and Tubing / Water Level Indicator
Decontamination Log Form**

Project Name: <u>CWL</u>	Monitoring Well ID #: <u>CWL-BW3</u>	Date: <u>10/24/07</u>
The following equipment was decontaminated at completion of sampling activities in accordance with FOP-05-03		
Pump and Tubing Bundle ID #: <u>Pump 2</u>	Water Level Indicator ID#: <u>43908</u>	
Personnel Performing Decontamination:		Personnel Performing Decontamination:
Print Name: <u>Robert Lynch</u>	 Initial:	Print Name: <u>Robert Lynch</u>
Print Name: <u>William Gibson</u>	 Initial:	Print Name: <u>William Gibson</u>
Condition of Equipment		
Pump: <u>Good</u>	Tubing Bundle: <u>Good</u>	Water Level Indicator: <u>Good</u>
List of Decontamination Materials		
Distilled or Deionized (circle one)	HNO₃	
Source: <u>Crystal Springs</u>	Grade: <u>Reagent</u>	
Lot Number: <u>10-08-07</u>	UN #: <u>2031</u>	
	Manufacture: <u>Fisher</u>	
	Lot Number: <u>002735</u>	

**Portable Pump and Tubing / Water Level Indicator
Decontamination Log Form**

Project Name: <u>CWL</u>	Monitoring Well ID #: <u>CWL-MW5U</u>	Date: <u>10/30/07</u>
The following equipment was decontaminated at completion of sampling activities in accordance with FOP-05-03		
Pump and Tubing Bundle ID #: <u>Pump 2</u>	Water Level Indicator ID#: <u>43908</u>	
Personnel Performing Decontamination:		Personnel Performing Decontamination:
Print Name: <u>Robert Lynch</u>	<u>RL</u> Initial:	Print Name: <u>Robert Lynch</u>
Print Name: <u>William Gibson</u>	<u>WJG</u> Initial:	Print Name: <u>William Gibson</u>
Condition of Equipment		
Pump: <u>Good</u>	Tubing Bundle: <u>Good</u>	Water Level Indicator: <u>Good</u>
List of Decontamination Materials		
Distilled or Deionized (circle one)	HNO₃	
Source: <u>Crystal Springs</u>	Grade: <u>Reagent</u>	
Lot Number: <u>10-08-07</u>	UN #: <u>2031</u>	
	Manufacture: <u>Fisher</u>	
	Lot Number: <u>002735</u>	

**Portable Pump and Tubing / Water Level Indicator
Decontamination Log Form**

Project Name: <u>CWL</u>	Monitoring Well ID #: <u>CWL-MW4</u>	Date: <u>11/05/07</u>
The following equipment was decontaminated at completion of sampling activities in accordance with FOP-05-03		
Pump and Tubing Bundle ID #: <u>Pump 2</u>	Water Level Indicator ID#: <u>43908</u>	
Personnel Performing Decontamination:		Personnel Performing Decontamination:
Print Name: <u>Robert Lynch</u>	 Initial:	Print Name: <u>Robert Lynch</u>
Print Name: <u>William Gibson</u>	 Initial:	Print Name: <u>William Gibson</u>
Condition of Equipment		
Pump: <u>Good</u>	Tubing Bundle: <u>Good</u>	Water Level Indicator: <u>Good</u>
List of Decontamination Materials		
Distilled or Deionized (circle one)	HNO₃	
Source: <u>Crystal Springs</u>	Grade: <u>Reagent</u>	
Lot Number: <u>10-08-07</u>	UN #: <u>2031</u>	
	Manufacture: <u>Fisher</u>	
	Lot Number: <u>002735</u>	

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: Don Schofield

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

Container I.D. # <small>(site-date-sequence)</small>	CWL-QED-101507	CWL-101507	
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	PPE, poly tubing, filter, and wipes	
Container Type / Vol <small>(always use Certified containers)</small>	CHPD	55gal.	Poly Tote 30gal.
Volume of Waste	15 gals		
Total Container Weight	150 lbs.	7 lbs.	
Waste Char. Samples <small>(COC#: Sample#-Fraction)</small>	COC# 611611, 611614 SMO# 085330, 085337, 085338	COC# 611611, 611614 SMO# 085330, 085337, 085338	
SMO Hazardous []			
SMO Radioactive []	NA	NA	NA
ERCL Haz [] Rad []	NA	NA	NA
RPSD Rad [] <small>(Amir's on-site Rad Lab)</small>	NA	NA	NA
Container Exterior RAD SURVEY #	Survey: NA Swipes:	Survey: NA Swipes:	Survey: NA Swipes:
Container Contents RAD SURVEY #	Survey: NA Swipes:	Survey: NA Swipes:	Survey: NA Swipes:
Accumulation Date	Start 10/15/07 Full 11/07/07	Start 11/07/07 Full 11/07/07	Start Full
Date Moved to Waste			
Accumulation Area	11/07/07	11/07/07	
Accumulation Area Name	9925	9925	
ERwm Memo #			
Comments	Contains CWL-MW2BU and CWL-MW5L purge water CoC 611611, 611614	Contains PPE, pump tubing, filters, and wipes from CWL sampling.	

(OHSD) = open head steel drum; (CHSD) = closed head steel drum; (CHPD) = closed head poly drum; (OHPD) = open head poly drum;
(OHPS) = 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:** Don Schofield

Signature: *William Gibson*

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

Container I.D. # <small>(site-date-sequence)</small>	CWL-MW2BL-101607-01	CWL-MW2BL-101607-02	CWL-MW2BL-101607-03
Container Certification # <small>(i.e. SNL/NM#####)</small>	NA	NA	NA
Project Name	CWL-GWM	CWL-GWM	CWL-GWM
Site Number	NA	NA	NA
Waste Mgt. Case #	98036.10.11.01	98036.10.11.01	98036.10.11.01
Initial Label Type	Haz-Waste	Haz-Waste	Haz-Waste
Waste Matrix <small>(i.e. Water, Cuttings, Soil, Samples, Metal, etc.)</small>	Purge water	Purge water	Purge water
Container Type / Vol <small>(always use Certified containers)</small>	CHPD 55gal.	CHPD 55gal.	CHPD 55gal.
Volume of Waste	50 gals	50 gals	50 gals
Total Container Weight	500lbs.	500lbs.	500lbs.
Waste Char. Samples <small>(COC#: Sample#-Fraction)</small>	COC# 611610 SMO# 085328	COC# 611610 SMO# 085328	COC# 611610 SMO# 085328
SMO Hazardous []			
SMO Radioactive []	NA	NA	NA
ERCL Haz [] Rad []	NA	NA	NA
RPSD Rad [] <small>(Amir's on-site Rad Lab)</small>	NA	NA	NA
Container Exterior RAD SURVEY #	Survey: NA Swipes:	Survey: NA Swipes:	Survey: NA Swipes:
Container Contents RAD SURVEY #	Survey: NA Swipes:	Survey: NA Swipes:	Survey: NA Swipes:
Accumulation Date	Start 10/16/07 Full 10/16/07	Start 10/16/07 Full 10/16/07	Start 10/16/07 Full 10/16/07
Date Moved to Waste Accumulation Area	10/16/07	10/16/07	10/16/07
Accumulation Area Name	9925	9925	9925
ERwm Memo #			
Comments			

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

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

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

ER WASTE GENERATION LOG

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

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

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

Container I.D. # <small>(site-date-sequence)</small>	CWL-MW2BL-101607-04	CWL-MW2BL-101607-05	CWL-MW2BL-101607-06
Container Certification # <small>(i.e. SNL/NM#####)</small>	NA	NA	NA
Project Name	CWL-GWM	CWL-GWM	CWL-GWM
Site Number	NA	NA	NA
Waste Mgt. Case #	98036.10.11.01	98036.10.11.01	98036.10.11.01
Initial Label Type	Haz-Waste	Haz-Waste	Haz-Waste
Waste Matrix <small>(i.e. Water, Cuttings, Soil, Samples, Metal, etc.)</small>	Purge water	Purge water	Purge water
Container Type / Vol <small>(always use Certified containers)</small>	CHPD 55gal.	CHPD 55gal.	CHPD 55gal.
Volume of Waste	50 gals	50 gals	50 gals
Total Container Weight	500lbs.	500lbs.	500lbs.
Waste Char. Samples <small>(COC#: Sample#-Fraction)</small>	COC# 611610 SMO# 085329/8	COC# 611610 SMO# 085329/8	COC# 611610 SMO# 085329/8
SMO Hazardous []			
SMO Radioactive []	NA	NA	NA
ERCL Haz [] Rad []	NA	NA	NA
RPSD Rad [] <small>(Amir's on-site Rad Lab)</small>	NA	NA	NA
Container Exterior RAD SURVEY #	Survey: NA Swipes:	Survey: NA Swipes:	Survey: NA Swipes:
Container Contents RAD SURVEY #	Survey: NA Swipes:	Survey: NA Swipes:	Survey: NA Swipes:
Accumulation Date	Start 10/16/07 Full 10/16/07	Start 10/16/07 Full 10/16/07	Start 10/16/07 Full 10/16/07
Date Moved to Waste Accumulation Area	10/16/07	10/16/07	10/16/07
Accumulation Area Name	9925	9925	9925
ERwm Memo #			
Comments			

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

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

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

ER WASTE GENERATION LOG

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

Form Generator: <u>William Gibson</u> Phone: <u>284-5232</u> Task Leader: <u>Don Schofield</u>			
Signature: <u>William Gibson</u> To the best of my knowledge this information is correct & accurate.			
Container I.D. # <small>(site-date-sequence)</small>	CWL-MW2BL-101607-07	CWL-MW2BL-101607-08	CWL-MW2BL-101607-09
Container Certification # <small>(i.e. SNL/NM#####)</small>	NA	NA	NA
Project Name	CWL-GWM	CWL-GWM	CWL-GWM
Site Number	NA	NA	NA
Waste Mgt. Case #	98036.10.11.01	98036.10.11.01	98036.10.11.01
Initial Label Type	Haz-Waste	Haz-Waste	Haz-Waste
Waste Matrix <small>(i.e. Water, Cuttings, Soil, Samples, Metal, etc.)</small>	Purge water	Purge water	Purge water
Container Type / Vol <small>(always use Certified containers)</small>	CHPD 55gal.	CHPD 55gal.	CHPD 55gal.
Volume of Waste	50 gals	50 gals	50 gals
Total Container Weight	500lbs.	500lbs.	500lbs.
Waste Char. Samples <small>(COC#: Sample#-Fraction)</small>	COC# 611610 SMO# 085328	COC# 611610 SMO# 085328	COC# 611610 SMO# 085328
SMO Hazardous []			
SMO Radioactive []	NA	NA	NA
ERCL Haz [] Rad []	NA	NA	NA
RPSD Rad [] <small>(Amir's on-site Rad Lab)</small>	NA	NA	NA
Container Exterior RAD SURVEY #	Survey: NA Swipes:	Survey: NA Swipes:	Survey: NA Swipes:
Container Contents RAD SURVEY #	Survey: NA Swipes:	Survey: NA Swipes:	Survey: NA Swipes:
Accumulation Date	Start 10/16/07 Full 10/16/07	Start 10/16/07 Full 10/16/07	Start 10/16/07 Full 10/16/07
Date Moved to Waste Accumulation Area	10/16/07	10/16/07	10/16/07
Accumulation Area Name	9925	9925	9925
ERwm Memo #			
Comments			

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

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

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

ER WASTE GENERATION LOG

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

Form Generator: <u>William Gibson</u> Phone: <u>284-5232</u> Task Leader: <u>Don Schofield</u>				
Signature: <u>William J Gibson</u> To the best of my knowledge this information is correct & accurate.				
Container I.D. # <small>(site-date-sequence)</small>	CWL-MW2BL-101607-10		CWL-101607	
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	33 gals		35 gals	
Total Container Weight	330lbs.		350lbs.	
Waste Char. Samples <small>(COC#: Sample#-Fraction)</small>	COC# 611610 SMO# 085328		COC# 611610 SMO# 085328	
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 10/16/07 Full 10/16/07		Start 10/16/07 Full 10/16/07	
Date Moved to Waste Accumulation Area	10/16/07		10/16/07	
Accumulation Area Name	9925		9925	
ERwm Memo #				
Comments			Decon water after CWL-MW2BL purge, CoC 611610	

(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: <u>William Gibson</u> Phone: <u>284-5232</u> Task Leader: <u>Don Schofield</u>			
Signature: <u>William Gibson</u> To the best of my knowledge this information is correct & accurate.			
Container I.D. # <small>(site-date-sequence)</small>	CWL-BW4A-101707	CWL-101807	
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	16 gals	35 gals	
Total Container Weight	160lbs.	350lbs.	
Waste Char. Samples <small>(COC#: Sample#-Fraction)</small>	COC# 611609 SMO# 085326	COC# 611609 SMO# 085326	
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 10/17/07 Full 10/18/07	Start 10/18/07 Full 10/18/07	
Date Moved to Waste Accumulation Area	10/18/07	10/18/07	
Accumulation Area Name	9925	9925	
ERwm Memo #			
Comments		Decon water after CWL-BW4A purge, CoC 611609	

(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: <u>William Gibson</u> Phone: <u>284-5232</u> Task Leader: <u>Don Schofield</u>				
Signature: <u><i>William Gibson</i></u> To the best of my knowledge this information is correct & accurate.				
Container I.D. # <small>(site-date-sequence)</small>	CWL-BW3-102307		CWL-102407	
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	17 gals		35 gals	
Total Container Weight	170lbs.		350lbs.	
Waste Char. Samples <small>(COC#: Sample#-Fraction)</small>	COC# 611608 SMO# 085324		COC# 611608 SMO# 085324	
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 10/23/07 Full 10/24/07		Start 10/24/07 Full 10/24/07	
Date Moved to Waste Accumulation Area	10/24/07		10/24/07	
Accumulation Area Name	9925		9925	
ERwm Memo #				
Comments			Decon water after CWL-BW3 purge, CoC 611608	

(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: <u>William Gibson</u> Phone: <u>284-5232</u> Task Leader: <u>Don Schofield</u>			
Signature: <u>William Gibson</u> To the best of my knowledge this information is correct & accurate.			
Container I.D. # <small>(site-date-sequence)</small>	CWL-MW5U-102907		CWL-103007
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	22 gals		35 gals
Total Container Weight	220lbs.		350lbs.
Waste Char. Samples <small>(COC#: Sample#-Fraction)</small>	COC# 611616 SMO# 085342, 085343		COC# 611616 SMO# 085342, 085343
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 10/29/07 Full 10/30/07		Start 10/30/07 Full 10/30/07
Date Moved to Waste Accumulation Area	10/30/07		10/30/07
Accumulation Area Name	9925		9925
ERwm Memo #			
Comments	EB-1; CoC 611612 taken prior to CWL-MW5U purge		Decon water after CWL-MW5U purge, CoC 611616

(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:** Don Schofield

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

Container I.D. # <small>(site-date-sequence)</small>	CWL-MW6U-103107	CWL-110107	
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	22 gals	35 gals	
Total Container Weight	220lbs.	350lbs.	
Waste Char. Samples <small>(CO#: Sample#-Fraction)</small>	CO# 611618 SMO# 085348	CO# 611618, 611615 SMO# 085348, 085340	
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 10/31/07 Full 11/01/07	Start 11/01/07 Full 11/01/07	
Date Moved to Waste Accumulation Area	11/01/07	11/01/07	
Accumulation Area Name	9925	9925	
ERwm Memo #			
Comments		Decon water after CWL-MW6U purge, CoC 611618 & EB-2 CoC 611615 taken prior to CWL-MW4	

(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:** Don Schofield

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

Container I.D. # <small>(site-date-sequence)</small>	CWL-MW4-110507	CWL-110507	
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	42 gals	35 gals	
Total Container Weight	420lbs.	350lbs.	
Waste Char. Samples <small>(COC#: Sample#-Fraction)</small>	COC# 611613 SMO# 085334, 085335	COC# 611613 SMO# 085334, 085335	
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 11/05/07 Full 11/05/07	Start 11/05/07 Full 11/05/07	
Date Moved to Waste Accumulation Area	11/05/07	11/05/07	
Accumulation Area Name	9925	9925	
ERwm Memo #			
Comments	EB-2, CoC 611615 taken prior to CWL-MW4 purge	Decon water after CWL-BW3 purge, CoC 611613	

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

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

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

ENVIRONMENTAL RESTORATION
TAILGATE SAFETY MEETING FORM

Date: 10/15/07 10/22/07

Sheet ___ of ___

ER Site #(s): CWL -GWM Well=CWL-MW2BU 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]
SIGNATURE
[Signature]
[Signature]

SAFETY TOPICS PRESENTED

Protective Cloting/Equipment: Level-D, when sampling

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

Radiological Hazards: None

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

Emergency Procedures: Aide, Call, Transport

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

Hospital Address: 7th & F street

Special Equipment: Sampling pumps

Other: _____

ATTENDEES

NAME PRINTED: William Gibson SIGNATURE: [Signature]

NAME PRINTED: William Gibson SIGNATURE: [Signature]

NAME PRINTED: William Gibson SIGNATURE: [Signature]

NAME PRINTED: _____ SIGNATURE: _____

NAME PRINTED: _____ SIGNATURE: _____

11/22
11/7

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

ENVIRONMENTAL RESTORATION TAILGATE SAFETY MEETING FORM

Date: 10/16/07

Sheet ___ of ___

ER Site #(s): CWL -GWM Well=CWL-MW2BL Operable Units(s) _____

Applicable documentation:

Site Work Plan: PHS :9631246780-010, HASP 222696

FOP's : 94-01,94-25,94-26,94-28,94-30,94-34,94-46,94-47,94-48,95-02

MEETING CONDUCTED BY: Robert Lynch
NAME PRINTED


SIGNATURE

SAFETY TOPICS PRESENTED

Protective Cloting/Equipment: Level-D, when sampling

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

Radiological Hazards: None

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

Emergency Procedures: Aide, Call, Transport

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

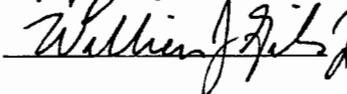
Hospital Address: 7th & F street

Special Equipment: Sampling pumps

Other: _____

ATTENDEES

NAME PRINTED: ALFRED SANTILLANA SIGNATURE: 

NAME PRINTED: William Loibson 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: 10/17/07 10-18-07

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


SAFETY TOPICS PRESENTED

Protective Cloting/Equipment: Level-D, when sampling

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

Radiological Hazards: None

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

Emergency Procedures: Aide, Call, Transport

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

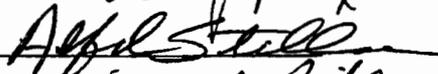
Hospital Address: 7th & F street

Special Equipment: Sampling pumps

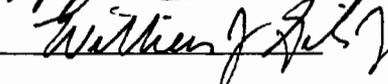
Other: _____

ATTENDEES

NAME PRINTED: William Gibson SIGNATURE: 

NAME PRINTED: ALFRED SANTILLANES SIGNATURE: 

0/18

NAME PRINTED: William Gibson SIGNATURE: 

NAME PRINTED: _____ SIGNATURE: _____

NAME PRINTED: _____ SIGNATURE: _____

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

ENVIRONMENTAL RESTORATION TAILGATE SAFETY MEETING FORM

Date: 10/23/07 10-24-07

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

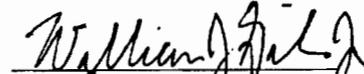
Hospital/Clinic: Sandia Medical Phone: () 844-0911/ 911 Paramedic Phone: () 911

Hospital Address: 7th & F street

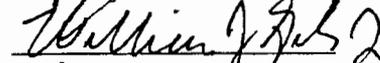
Special Equipment: Sampling pumps

Other: _____

ATTENDEES

NAME PRINTED: William Gibson SIGNATURE: 

NAME PRINTED: ALFRED SANTILLANA SIGNATURE: 

10/24 NAME PRINTED: William Gibson SIGNATURE: 

NAME PRINTED: X Alfred Santillana SIGNATURE: ALFRED SANTILLANA

NAME PRINTED: _____ SIGNATURE: _____

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

**ENVIRONMENTAL RESTORATION
TAILGATE SAFETY MEETING FORM**

Date: 10/29/07 10-30-07

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

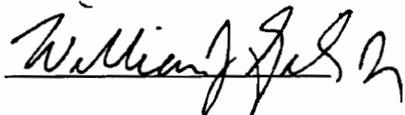
Hospital/Clinic: Sandia Medical Phone: () 844-0911/911 Paramedic Phone: () 911

Hospital Address: 7th & F street

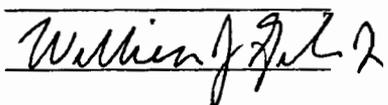
Special Equipment: Sampling pumps

Other: _____

ATTENDEES

NAME PRINTED: William Gibson SIGNATURE: 

NAME PRINTED: _____ SIGNATURE: _____

NAME PRINTED: William Gibson SIGNATURE: 

NAME PRINTED: _____ SIGNATURE: _____

NAME PRINTED: _____ SIGNATURE: _____

10/30

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

ENVIRONMENTAL RESTORATION TAILGATE SAFETY MEETING FORM

Date: 10/31/07 11/01/07

Sheet ___ of ___

ER Site #(s): CWL -GWM Well=CWL-MW6U Operable Units(s) _____

Applicable documentation:

Site Work Plan: PHS :9631246780-010, HASP 222696

FOP's : 94-01,94-25,94-26,94-28,94-30,94-34,94-46,94-47,94-48,95-02

MEETING CONDUCTED BY: Robert Lynch
NAME PRINTED

[Signature]
SIGNATURE
[Signature]

SAFETY TOPICS PRESENTED

Protective Cloting/Equipment: Level-D, when sampling

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

Radiological Hazards: None

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

Emergency Procedures: Aide, Call, Transport

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

Hospital Address: 7th & F street

Special Equipment: Sampling pumps

Other: _____

ATTENDEES

NAME PRINTED: William J Gibson SIGNATURE: [Signature]

NAME PRINTED: ALFRED SANTILLANUS SIGNATURE: [Signature]

11/01 NAME PRINTED: William J Gibson SIGNATURE: [Signature]

NAME PRINTED: ALFRED SANTILLANUS SIGNATURE: [Signature]

NAME PRINTED: _____ SIGNATURE: _____

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

ATTACHMENT B
ANALYSIS REQUEST/CHAIN-OF-CUSTODY FORMS

CONTRACT LABORATORY ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Page 1 of 1

Batch No. <i>N/A</i>	SMO Use	AR/COC	611608
Dept. No./Mail Stop: 6765/1089	Date Samples Shipped: <i>10-24-07</i>	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
Project/Task Manager: Paul Freshour	Carrier/Waybill No.	SMO Authorization: <i>OK from SMO</i>	
Project Name: CWL GWM	Lab Contact: Edie Kent/803-556-8171	Contract #: PO 21671	
Record Center Code: ER/1267 074/DAT	Lab Destination: GEL	<i>SEE BOTTLE ORDER</i>	
Logbook Ref. No.: ER 049	SMO Contact/Phone: Pam Puissant/505-844-3185		
Service Order No. CF 025-08	Send Report to SMO: Lorraine Herrera/505-844-3199	Bill To: Sandia National Labs (Accounts Payable) P.O. Box 5800 MS 0154 Albuquerque, NM 87185-0154	

Location		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
		085324-001	CWL-BW3	506	<i>N/A</i>	102407/0942	GW	G	3x40ml	HCL	G	SA	VOC (SW846-8260) APP IX	
		085324-002	CWL-BW3	506		102407/0944	GW	AG	3x1L	4C	G	SA	SVOC (SW846-8270) APP IX	
		085324-010	CWL-BW3	506		102407/0946	GW	P	500ml	HNO3	G	SA	Metals+Fe (SW846-6020/7470) APPXI	
		085324-013	CWL-BW3	506		102407/0945	FGW	NAL	250ml	HNO3	G	SA	Dissolved Cr (SW846-6020)	
		085324-025	CWL-BW3	506		102407/0948	GW	AG	3x1L	4C	G	SA	PCBs (SW846-8082) APP IX	
		085324-027	CWL-BW3	506		102407/0947	GW	P	500ml	NaOH	G	SA	Total Cyanide (SW846-9012)	
		085324-029	CWL-BW3	506		102407/0951	GW	NAL	1L	NaOH	G	SA	Sulfide (SW846-9034)	
		085324-032	CWL-BW3	506		102407/0950	GW	AG	3x1L	4C	G	SA	Chlo Herbicides (SW846-8151) APP IX	
		085325-001	CWL-TB1	NA		102407/0942	DIW	G	3x40ml	HCL	G	TB	VOC (SW846-8260)	

RMMA <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Ref. No. _____ Sample Disposal <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by lab Turnaround Time <input type="checkbox"/> 7 Day <input type="checkbox"/> 15 Day <input checked="" type="checkbox"/> 30 Day Return Samples By: <input type="checkbox"/> Negotiated TAT <input type="checkbox"/> QC Inits.	Sample Tracking SMO Use Date Entered (mm/dd/yy) _____ Entered by: _____	Special Instructions/QC Requirements 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 1089/505-284-2547 *Please list as separate report.	Abnormal Conditions on Receipt Lab Use																				
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">Sample Team Members</th> <th style="width: 15%;">Name</th> <th style="width: 15%;">Signature</th> <th style="width: 15%;">Init</th> <th style="width: 40%;">Company/Organization/Phone/Cellular</th> </tr> </thead> <tbody> <tr> <td></td> <td>Alfred Santillanas</td> <td><i>[Signature]</i></td> <td></td> <td>Weston/6765/844-5130/228-0710</td> </tr> <tr> <td></td> <td>Robert Lynch</td> <td><i>[Signature]</i></td> <td></td> <td>Weston/6765/844-4013/250-7090</td> </tr> <tr> <td></td> <td>William J Gibson</td> <td><i>[Signature]</i></td> <td></td> <td>Weston/6765/284-5232/239-7367</td> </tr> </tbody> </table>				Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular		Alfred Santillanas	<i>[Signature]</i>		Weston/6765/844-5130/228-0710		Robert Lynch	<i>[Signature]</i>		Weston/6765/844-4013/250-7090		William J Gibson	<i>[Signature]</i>		Weston/6765/284-5232/239-7367
Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular																			
	Alfred Santillanas	<i>[Signature]</i>		Weston/6765/844-5130/228-0710																			
	Robert Lynch	<i>[Signature]</i>		Weston/6765/844-4013/250-7090																			
	William J Gibson	<i>[Signature]</i>		Weston/6765/284-5232/239-7367																			

1. Relinquished by <i>Alfred Santillanas</i> Org. 6765 Date <i>10/24/07</i> Time <i>10:20</i>	4. Relinquished by _____ Org. _____ Date _____ Time _____
1. Received by <i>Chloe G. from CWR</i> Org. 6765 Date <i>10/24/07</i> Time <i>10:20</i>	4. Received by _____ Org. _____ Date _____ Time _____
2. Relinquished by _____ Org. _____ Date _____ Time _____	5. Relinquished by _____ Org. _____ Date _____ Time _____
2. Received by _____ Org. _____ Date _____ Time _____	5. Received by _____ Org. _____ Date _____ Time _____
3. Relinquished by _____ Org. _____ Date _____ Time _____	6. Relinquished by _____ Org. _____ Date _____ Time _____
3. Received by _____ Org. _____ Date _____ Time _____	6. Received by _____ Org. _____ Date _____ Time _____

CONTRACT LABORATORY ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Page 1 of 1

Batch No. N/A SMO Use 10/18/07 AR/COC 611609

Dept. No./Mail Stop: 6765/1089	Date Samples Shipped: <u>10/18/07</u>	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: <u>[Signature]</u>	
Project Name: CWL GWM	Lab Contact: Edie Kent/803-556-8171	Contract #: PO 21671	
Record Center Code: ER/1267 074/DAT	Lab Destination: GEL	<u>SEE BOTTLE CROWN</u>	
Logbook Ref. No.: ER 049	SMO Contact/Phone: Pam Puissant/505-844-3185		
Service Order No. CF 025-08	Send Report to SMO: Lorraine Herrera/505-844-3199		

Location:	Tech Area	Reference LOV (available at SMO)
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					
085326-001	CWL-BW4A	507	<u>N/A</u>	101807/0920	GW	G	3x40ml	HCL	G	SA	VOC (SW846-8260) APP IX	
085326-002	CWL-BW4A	507		101807/0921	GW	AG	3x1L	4C	G	SA	SVOC (SW846-8270) APP IX	
085326-010	CWL-BW4A	507		101807/0923	GW	P	500ml	HNO3	G	SA	Metals+Fe (SW846-6020/7470) APPXI	
085326-013	CWL-BW4A	507		101807/0924	GW	NAL	250ml	HNO3	G	SA	Dissolved Cr (SW846-6020)	
085326-025	CWL-BW4A	507		101807/0925	GW	AG	3x1L	4C	G	SA	PCBs (SW846-8082) APP IX	
085326-027	CWL-BW4A	507		101807/0927	GW	P	500ml	NaOH	G	SA	Total Cyanide (SW846-9012)	
085326-029	CWL-BW4A	507		101807/0928	GW	NAL	1L	NaOH	G	SA	Sulfide (SW846-9034)	
085326-032	CWL-BW4A	507		101807/0929	GW	AG	3x1L	4C	G	SA	Chlo Herbicides (SW846-8151) APP IX	
085327-001	CWL-TB2	NA	<u>7</u>	101807/0920	DIW	G	3x40ml	HCL	G	TB	VOC (SW846-8260)	

RMMA <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Ref. No. _____ Sample Disposal <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by lab Turnaround Time <input type="checkbox"/> 7 Day <input type="checkbox"/> 15 Day <input checked="" type="checkbox"/> 30 Day Return Samples By: <input type="checkbox"/> Negotiated TAT <input type="checkbox"/> QC inits.	Sample Tracking SMO Use Date Entered (mm/dd/yy) _____ Entered by: _____	Special Instructions/QC Requirements 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 1089/505-284-2547 *Please list as separate report.	Abnormal Conditions on Receipt Lab Use
---	--	--	---

1. Relinquished by _____ Org. _____ Date: _____ Time: _____	4. Relinquished by _____ Org. _____ Date _____ Time _____
1. Received by _____ Org. _____ Date: _____ Time: _____	4. Received by _____ Org. _____ Date _____ Time _____
2. Relinquished by _____ Org. _____ Date _____ Time _____	5. Relinquished by _____ Org. _____ Date _____ Time _____
2. Received by _____ Org. _____ Date _____ Time _____	5. Received by _____ Org. _____ Date _____ Time _____
3. Relinquished by _____ Org. _____ Date _____ Time _____	6. Relinquished by _____ Org. _____ Date _____ Time _____
3. Received by _____ Org. _____ Date _____ Time _____	6. Received by _____ Org. _____ Date _____ Time _____

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

internal LFL

Page 1 of 2

Batch No.		SMO Use		AR/COC		611613					
Dept. No./Mail Stop: 4133/1089		Date Samples Shipped:		Project/Task No. 98036.10.11.01		<input type="checkbox"/> Waste Characterization					
Project/Task Manager: Don Schofield		Carrier/Waybill No.:		SMO Authorization:		-Send preliminary/copy report to:					
Project Name: CWL GWM		Lab Contact: Edie Kent/803-556-8171		Contract #: PO 691436		<input type="checkbox"/> Released by COC No.:					
Record Center Code: ER/1267 074/DAT		Lab Destination: GEL				<input checked="" type="checkbox"/> Validation Required					
Logbook Ref. No.: ER 049		SMO Contact/Phone: Pam Puissant/505-844-3185				Bill To: Sandia National Labs (Accounts Payable)					
Service Order No.: CF 025-08		Send Report to SMO: Lorraine Herrera/505-844-3199				P.O. Box 5800 MS 0154 Albuquerque, NM 87185-0154					
Location: Tech Area		Reference LOV (available at SMO)									
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 Type Volume	Preservative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
g 085334-001	CWL-MW4	500		110507/1025	GW	G 3x40ml	HCL	G	SA	VOC (SW846-8260) APP IX	
h 085334-002	CWL-MW4	500		110507/1026	GW	AG 3x1L	4C	G	SA	SVOC (SW846-8270) APP IX	
i 085334-010	CWL-MW4	500		110507/1028	GW	P 500ml	HNO3	G	SA	Metals+Fe (SW846-6020/7470) APPXI	
j 085334-013	CWL-MW4	500		110507/1029	FGW	NAL 250ml	HNO3	G	SA	Dissolved Cr (SW846-6020)	
k 085334-025	CWL-MW4	500		110507/1030	GW	AG 3x1L	4C	G	SA	PCBs (SW846-8082) APP IX	
l 085334-027	CWL-MW4	500		110507/1033	GW	P 500ml	NaOH	G	SA	Total Cyanide (SW846-9012)	
m 085334-029	CWL-MW4	500		110507/1034	GW	NAL 1L	NaOH	G	SA	Sulfide (SW846-9034)	
n 085334-032	CWL-MW4	500		110507/1037	GW	AG 3x1L	4C	G	SA	Chlo Herbicides (SW846-8151) APP IX	
o 085335-001	CWL-MW4	500		110507/1025	GW	G 3x40ml	HCL	G	DU	VOC (SW846-8260) APP IX	
p 085335-002	CWL-MW4	500		110507/1026	GW	AG 3x1L	4C	G	DU	SVOC (SW846-8270) APP IX	
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/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/Org 4133/MS 1089/505-284-2547					
Sample Team Members		Name	Signature	Init	Company/Organization/Phone/Cellular						
		Alfred Santillanes	<i>Alfred Santillanes</i>	AS	Weston/4133/844-5130/228-0710						
		Robert Lynch	<i>Robert Lynch</i>	RL	Weston/4133/844-4013/250-7090						
		William J Gibson	<i>William J Gibson</i>	WJG	Weston/4133/284-5232/239-7367						
							*Please list as separate report.				
1. Relinquished by <i>WJG</i> Org. <i>4133</i> Date <i>11/5/07</i> Time <i>11:30</i>		4. Relinquished by		Org.		Date		Time			
1. Received by <i>Samuel</i> Org. <i>4133</i> Date <i>11/5/07</i> Time <i>11:30</i>		4. Received by		Org.		Date		Time			
2. Relinquished by		5. Relinquished by		Org.		Date		Time			
2. Received by		5. Received by		Org.		Date		Time			
3. Relinquished by		6. Relinquished by		Org.		Date		Time			
3. Received by		6. Received by		Org.		Date		Time			

Lab Use

**OFF-SITE LABORATORY
Analysis Request And Chain Of Custody (Continuation)**

AR/COC-

611613

Project Name: CWL GWM		Project/Task Manager: Don Schrifield		Project/Task No.: 96036.10 11.01								
Location		Tech Area		Reference LOV (available at SMO)				Lab use				
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 Type	Volume	Preservative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
085335-010	CWL-MW4	500		110507/1028	GW	P	500ml	HNO3	G	DU	Metals+Fe (SW846-6020/7470) APPXI	
085335-013	CWL-MW4	500		110507/1029	FGW	NAL	250ml	HNO3	G	DU	Dissolved Cr (SW846-6020)	
085335-025	CWL-MW4	500		110507/1030	GW	AG	3x1L	4C	G	DU	PCBs (SW846-8082) APP IX	
085335-027	CWL-MW4	500		110507/1033	GW	P	500ml	NaOH	G	DU	Total Cyanide (SW846-9012)	
085335-029	CWL-MW4	500		110507/1034	GW	NAL	1L	NaOH	G	DU	Sulfide (SW846-9034)	
085335-032	CWL-MW4	500		110507/1037	GW	AG	3x1L	4C	G	DU	Chlo Herbicides (SW846-8151) APP IX	
085336-001	CWL-TB6	NA		110507/1025	DIW	G	3x40ml	HCL	G	TB	VOC (SW846-8260)	
Abnormal Conditions on Receipt												
LAB USE												
Recipient Initials _____												

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

Prior to CWL-MUSU

Internal Lab

Batch No. *N/A*

SMO Use

AR/COC

611612

Dept. No./Mail Stop: 4133/1089	Date Samples Shipped: <i>10/29/07</i>	Project/Task No. 98036.10.11.01
Project/Task Manager: Don Schofield	Carrier/Waybill No.	SMO Authorization: <i>OK by SMO</i>
Project Name: CWL GWM	Lab Contact: Edie Kent/803-556-8171	Contract #: PO 21671
Record Center Code: ER/1267 074/DAT	Lab Destination: GEL	<i>SEE BOTTLE OR LABEL</i>
Logbook Ref. No.: ER 049	SMO Contact/Phone: Pam Puissant/505-844-3185	
Service Order No. CF 025-08	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

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					
085332-001	CWL-EB1	NA	<i>N/A</i>	10/29/07 0830	DIW	G	3x40ml	HCL	G	EB	VOC (SW846-8260) APP IX	
085332-002	CWL-EB1	NA		10/29/07 0831	DIW	AG	3x1L	4C	G	EB	SVOC (SW846-8270) APP IX	
085332-010	CWL-EB1	NA		10/29/07 0833	DIW	P	500ml	HNO3	G	EB	Metals+Fe (SW846-6020/7470) APPXI	
085332-013	CWL-EB1	NA		10/29/07 0834	FDIW	NAL	250ml	HNO3	G	EB	Dissolved Cr (SW846-6020)	
085332-025	CWL-EB1	NA		10/29/07 0835	DIW	AG	3x1L	4C	G	EB	PCBs (SW846-8082) APP IX	
085332-027	CWL-EB1	NA		10/29/07 0837	DIW	P	500ml	NaOH	G	EB	Total Cyanide (SW846-9012)	
085332-029	CWL-EB1	NA		10/29/07 0838	DIW	NAL	1L	NaOH	G	EB	Sulfide (SW846-9034)	
085332-032	CWL-EB1	NA		10/29/07 0839	DIW	AG	3x1L	4C	G	EB	Chlo Herbicides (SW846-8151) APP IX	
085333-001	CWL-TB5	NA		10/29/07 0830	DIW	G	3x40ml	HCL	G	TB	VOC (SW846-8260)	

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/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	QC Inits:		*Send report to:																
<table border="1"> <tr> <th>Name</th> <th>Signature</th> <th>Init</th> <th>Company/Organization/Phone/Cellular</th> </tr> <tr> <td>Alfred Santillanes</td> <td><i>[Signature]</i></td> <td><i>[Init]</i></td> <td>Weston/4133/844-5130/228-0710</td> </tr> <tr> <td>Robert Lynch</td> <td><i>[Signature]</i></td> <td><i>[Init]</i></td> <td>Weston/4133/844-4013/250-7090</td> </tr> <tr> <td>William J Gibson</td> <td><i>[Signature]</i></td> <td><i>[Init]</i></td> <td>Weston/4133/284-5232/239-7367</td> </tr> </table>	Name	Signature	Init		Company/Organization/Phone/Cellular	Alfred Santillanes	<i>[Signature]</i>	<i>[Init]</i>	Weston/4133/844-5130/228-0710	Robert Lynch	<i>[Signature]</i>	<i>[Init]</i>	Weston/4133/844-4013/250-7090	William J Gibson	<i>[Signature]</i>	<i>[Init]</i>	Weston/4133/284-5232/239-7367		
Name	Signature	Init	Company/Organization/Phone/Cellular																
Alfred Santillanes	<i>[Signature]</i>	<i>[Init]</i>	Weston/4133/844-5130/228-0710																
Robert Lynch	<i>[Signature]</i>	<i>[Init]</i>	Weston/4133/844-4013/250-7090																
William J Gibson	<i>[Signature]</i>	<i>[Init]</i>	Weston/4133/284-5232/239-7367																

1. Relinquished by <i>[Signature]</i> Org. 4133 Date <i>10/29/07</i> Time <i>1000</i>	4. Relinquished by	Org.	Date	Time
1. Received by <i>[Signature]</i> Org. 4133 Date <i>10/29/07</i> Time <i>1000</i>	4. Received by	Org.	Date	Time
2. Relinquished by	5. Relinquished by	Org.	Date	Time
2. Received by	5. Received by	Org.	Date	Time
3. Relinquished by	6. Relinquished by	Org.	Date	Time
3. Received by	6. Received by	Org.	Date	Time

**Please list as separate report.*

Lab Use

ATTACHMENT C
DATA VALIDATION REPORTS FOR
GROUNDWATER ANALYTICAL RESULTS
October - December 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: December 4, 2007
TO: File
FROM: David Schwent
SUBJECT: Organic GC/MS Data Review and Validation - SNL
Site: CWL GWM
AR/COC: 611608 and 611614
SDG: 196403
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 2.

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.

Calibration: The initial calibration response factor (RF) of isobutyl alcohol was <0.01 . All associated sample results were non-detects (NDs) and will be qualified "R,I4."

Calibration: The initial calibration RF of acetonitrile was <0.05 but >0.01 . All associated sample results were NDs and will be qualified "UJ,I4."

Calibration: The initial calibration RF of propionitrile was <0.05 but >0.01 . All associated sample results were NDs and will be qualified "UJ,I4."

Calibration: The initial calibration slope of acrolein was <0.05 but >0.01 . All associated sample results were NDs and will be qualified "UJ,I4."

MS/MSD: The MS (PS) and MSD (PSD) percent recoveries (%Rs) of acetone were $< QC$ acceptance criteria. All associated sample results were NDs and will be qualified "UJ,MS3."

MS/MSD: The MS (PS) and MSD (PSD) %Rs of chloromethane were $< QC$ acceptance criteria. All associated sample results were NDs and will be qualified "UJ,MS3."

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

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

Instrument Tune

All instrument tune requirements were met.

Calibration

All initial and continuing calibration QC acceptance criteria were met, except as noted above in the summary section and the following. The initial calibration intercept values of eight target analytes were >3X the associated method detection limit (MDL) (see Data Validation Worksheets). However, all associated sample results were NDs and will not be qualified. The initial calibration verification (ICV) or the continuing calibration verification (CCV) percent differences (%Ds) of three target analytes were >20% with positive bias (see Data Validation Worksheets). However, all associated sample results were NDs and will not be qualified. The ICV or CCV %Ds of three other target analytes were >20% but <40% with negative bias (see Data Validation Worksheets). However, all associated sample results were NDs and no other calibration QC acceptance criteria were exceeded. Therefore, no sample data will be qualified as a result.

Blanks

No target analytes were detected in the blanks.

Internal Standards (ISs)

All IS area and RT QC acceptance criteria were met.

Surrogates

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

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

All LCS QC acceptance criteria were met. No LCSD analysis was performed. The MSD (PSD) 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)

All MS/MSD (PS/PSD) QC acceptance criteria were met, except as noted above in the summary section.

Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not requested.

Detection Limits/Dilutions

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

Other QC

No equipment blanks (EBs) or field duplicates (FDs) were submitted on the AR/COCs.

No other specific issues were identified which affect data quality.

Analytical Quality Associates, Inc.

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Memorandum

DATE: December 11, 2007
TO: File
FROM: David Schwent
SUBJECT: Organic GC/MS Data Review and Validation - SNL
Site: CWL GWM
AR/COC: 611608 and 611614
SDG: 196403
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 2.

Summary

All samples were prepared and analyzed with approved procedures using method EPA8270C (SVOCs). Due to low surrogate recoveries, sample 196403-002 was re-extracted out of hold and reanalyzed in Batch 698385. The lab sample ID for the re-extracted sample will be referred to as 196403-002RE and the client ID for the re-extracted sample will be referred to as 085324-R02 CWL-BW3RE. Problems were identified with the data package that result in the qualification of data.

Holding Time/Preservation: Sample 196403-002RE of Batch 698385 was re-extracted beyond the method specified holding time but within 2X the holding time. All associated sample results were non-detects (NDs) and will be qualified "UJ,H2."

Calibration: The initial calibration intercept value for naphthalene of Batch 697703 was negative with an absolute value >3X the method detection limit (MDL). The associated results of samples 196403-002 and -011 were NDs and will be qualified "R,I5."

Calibration: The initial calibration intercept value for indeno(1,2,3-cd)pyrene of Batch 698385 was negative with an absolute value >3X the MDL. The associated result of sample 196403-002RE was a ND and will be qualified "R,I5."

Calibration: The initial calibration intercept value for dibenzo(a,h)anthracene of Batch 698385 was negative with an absolute value >3X the MDL. The associated result of sample 196403-002RE was a ND and will be qualified "R,I5."

Calibration: The initial calibration response factor (RF) for aramite of Batch 697703 was <0.05 but >0.01. The associated results of samples 196403-002 and -011 were NDs and will be qualified "UJ,I4."

Calibration: The initial calibration RF for aramite of Batch 698385 was <0.05 but >0.01. The associated result of sample 196403-002RE was a ND and will be qualified "UJ,I4."

Calibration: The initial calibration RF for 4-nitroquinoline-1-oxide of Batch 697703 was <0.05 but >0.01. The associated results of samples 196403-002 and -011 were NDs and will be qualified "UJ,I4."

Calibration: The initial calibration percent relative standard deviation (%RSD) for pronamide of Batch 698385 was >15% but <40%. The associated result of sample 196403-002RE was a ND and will be qualified "UJ,I3."

Calibration: For 4-nitroquinoline-1-oxide of Batch 698385, the initial calibration RF was <0.05 but >0.01, the initial calibration %RSD was >15% but <40%, and the continuing calibration verification (CCV) percent difference (%D) was >20% but <40% with negative bias. The associated result of sample 196403-002RE was a ND and will be qualified "UJ,I3,I4,C3."

Calibration: For hexachlorophene of Batch 698385, the initial calibration RF was <0.05 but >0.01 and the initial calibration verification (ICV) %D was >20% but <40% with negative bias. The associated result of sample 196403-002RE was a ND and will be qualified "UJ,I4,C3."

Calibration: The CCV %D for benzoic acid of Batch 698385 was >40% but <60% with negative bias. The associated result of sample 196403-002RE was a ND and will be qualified "UJ,C3."

Surrogates: For sample 196403-002 of Batch 697703, the percent recoveries (%Rs) of acid-fraction surrogates 2,4,6-tribromophenol and 2-fluorophenol were < QC acceptance criteria but >10%. All associated acid-fraction analyte results were NDs and will be qualified "UJ,S2."

MS/MSD: The MS/MSD relative percent difference (RPD) for benzidine of Batch 698385 was > QC acceptance criteria. The associated result of sample 196403-002RE was a ND and will be qualified "UJ,MS5."

MS/MSD: The MS/MSD RPD for hexachlorocyclopentadiene of Batch 698385 was > QC acceptance criteria. The associated result of sample 196403-002RE was a ND and will be qualified "UJ,MS5."

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

All samples were extracted and analyzed within the prescribed holding times and properly preserved, except as noted above in the summary section.

Instrument Tune

All instrument tune requirements were met.

Calibration

All initial and continuing calibration QC acceptance criteria were met, except as noted above in the summary section and the following. The initial calibration intercept values of 1,3,5-trinitrobenzene (Batch 698385) and dinoseb (both batches) were >3X the MDL. However, all associated sample results were NDs and will not be qualified. The ICV or CCV %Ds of five target analytes in Batch 697703 and fifteen target analytes in Batch 698385 were >20% with positive bias (see Data Validation Worksheets). However, all associated sample results were NDs and will not be qualified. The ICV or CCV %Ds of four target analytes

in Batch 697703 and seven target analytes in Batch 698385 were >20% but <40% with negative bias (see Data Validation Worksheets). However, all associated sample results, except the results qualified in the summary section, were NDs and no other calibration QC acceptance criteria were exceeded. Therefore, no sample data will be qualified as a result.

Blanks

No target analytes were detected in the method blanks.

Internal Standards (ISs)

All IS area and RT QC acceptance criteria were met.

Surrogates

All surrogate recovery and retention time QC acceptance criteria were met, except as noted above in the summary section.

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

All LCS QC acceptance criteria were met, except the following. The LCS percent recovery (%R) for hexachlorocyclopentadiene of Batch 697703 was > QC acceptance criteria. However, all associated sample results were NDs and will not be qualified. No LCSD analyses were performed. The MSD analyses were used as a measure of laboratory precision. No sample data will be qualified as a result.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

All MS/MSD QC acceptance criteria were met, except as noted above in the summary section and the following. The MSD %Rs for hexachlorocyclopentadiene of both batches were > QC acceptance criteria. However, all associated sample results were NDs and will not be qualified. It should be noted that the MS/MSD analyses for Batch 698385 were performed on SNL QC samples of similar matrix from another SDG. No sample data will be qualified as a result.

Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not requested.

Detection Limits/Dilutions

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

Other QC

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

No other specific issues were identified that affect data quality.

Analytical Quality Associates, Inc.

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Memorandum

DATE: December 4, 2007
TO: File
FROM: David Schwent
SUBJECT: Organic GC Data Review and Validation – SNL
Site: CWL GWM
AR/COC: 611608 and 611614
SDG: 196403
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 2.

Summary

All samples was prepared and analyzed with accepted procedures using method EPA8082 (PCBs). No problems were identified with the data package that result in the qualification of data.

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

Holding Times and Preservation

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

Calibration

All initial and continuing calibration QC acceptance criteria were met.

Blanks

No target analytes were detected in the blanks.

Surrogates

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

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

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)

All MS/MSD QC acceptance criteria were met.

Target Compound Identification/Confirmation

All confirmation QC acceptance criteria were met.

Detection Limits/Dilutions

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

Other QC

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

No other specific issues that affect data quality were identified.

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Memorandum

DATE: December 4, 2007
TO: File
FROM: David Schwent
SUBJECT: Organic GC Data Review and Validation – SNL
Site: CWL GWM
AR/COC: 611608 and 611614
SDG: 196403
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 2.

Summary

All samples was prepared and analyzed with accepted procedures using method EPA8151A (Herbicides). No problems were identified with the data package that result in the qualification of data.

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

Holding Times and Preservation

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

Calibration

All initial and continuing calibration QC acceptance criteria were met.

Blanks

No target analytes were detected in the blanks.

Surrogates

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

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

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)

All MS/MSD QC acceptance criteria were met. It should be noted that the MS/MSD analyses were performed on SNL samples of similar matrix from another SDG. No sample data will be qualified as a result.

Target Compound Identification/Confirmation

All confirmation QC acceptance criteria were met.

Detection Limits/Dilutions

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

Other QC

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

No other specific issues that affect data quality were identified.

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Memorandum

DATE: December 4, 2007
TO: File
FROM: David Schwent
SUBJECT: Inorganic Data Review and Validation - SNL
Site: CWL GWM
AR/COC: 611608 and 611614
SDG: 196403
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 2.

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: Sn was detected in the method blank (MB) of Batch 696303 at a concentration > the method detection limit (MDL) but < the practical quantitation limit (PQL). The associated result of sample 196403-003 was a detect <5X the MB concentration and will be qualified "0.033U,B" at 5X the value of the MB.

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

Holding Times/Preservation

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

ICP-MS Instrument Tune

ICP-MS Analysis: The instrument tune data were not reported and could not be evaluated. No sample data should be qualified as a result.

Calibration

All Analyses: All initial and continuing calibration QC acceptance criteria were met, except the following. Initial calibration y-intercept values and correlation coefficients (R^2) values for target analytes were not reported and could not be evaluated. No sample data should be qualified as a result.

Reporting Limit Verification

All Analyses: All CRA/CRI recoveries met QC acceptance criteria.

Blanks

ICP-MS Analysis: No target analytes were detected in the blanks, except as noted above in the summary section and the following. Sb and Fe were detected in the continuing calibration blanks (CCBs) at concentrations > the MDL but < the PQL. However, all associated sample results were either detects >5X the CCB concentration or non-detects (NDs) and will not be qualified.

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

ICP-MS Internal Standards

ICP-MS Analysis: Internal standards data were not reported and could not be evaluated. No sample data should be qualified as a result.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

All Analyses: All MS (PS) QC acceptance criteria were met. No MSD analyses were performed. No sample data will be qualified as a result.

Laboratory Replicate

All Analyses: All replicate QC acceptance criteria were met.

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

All Analyses: All LCS QC acceptance criteria were met. No LCSD analyses were performed. The laboratory replicate analyses were used as measures of laboratory precision. No sample data will be qualified as a result.

Detection Limits/Dilutions

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

ICP Interference Check Sample (ICS A and AB)

ICP-MS Analysis: The ICS A and ICS AB raw data were not reported and could not be evaluated. No sample data should be qualified as a result. It should be noted that all ICS AB recoveries still met QC acceptance criteria. No sample data should be qualified as a result.

ICP Serial Dilution

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

Other QC

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

No other specific issues were identified which affect data quality.

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Memorandum

DATE: December 4, 2007
TO: File
FROM: David Schwent
SUBJECT: General Chemistry Data Review and Validation - SNL
Site: CWL GWM
AR/COC: 611608 and 611614
SDG: 196403
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 2.

Summary

The samples were prepared and analyzed with accepted procedures using methods EPA9012A (total CN) and EPA9034 (acid soluble sulfide). Problems were identified with the data package that result in the qualification of data.

Total CN Analysis:

Blanks: Total CN was detected in the initial calibration blank (ICB) at a negative concentration with absolute value > the method detection limit (MDL) but < the practical quantitation limit (PQL). The associated results of samples 196403-006 and -015 were non-detects (NDs) and will be qualified "UJ,B4."

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

Total CN Analysis: No target analytes were detected in the blanks, except as noted above in the summary section and the following. Total CN was detected in the method blank (MB) at a concentration > the MDL but < the PQL. However, all associated sample results were NDs and will not be qualified.

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

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

All Analyses: All LCS QC acceptance criteria were met. No LCSD analyses were performed. The laboratory replicates were used as measures of laboratory precision. No sample data will be qualified as a result.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

All Analyses: All MS (PS) QC acceptance criteria were met. No MSD analyses were performed. No sample data will be qualified as a result.

Replicates

All Analyses: All replicate QC acceptance criteria were met.

Detection Limits/Dilutions

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

Other QC

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

No other specific issues were identified which affect data quality.

Sample Findings Summary

Site: CWL GWM

AR/COC: 611609 and 611610

Organic, Metals, Gen Chem

Sample ID	EPA8260B (VOCs):			EPA8270C (SVOCs):			EPA8082B (PCBs):			EPA8151A (Herbicides):			EPA6020 (ICP-MS):			EPA7470A (CVAA):			EPA9012A (Total CN):			EPA9034 (Sulfide):		
	107-12-0 (propionitrile)	78-83-1 (isobutyl alcohol)	67-64-1 (acetone)	193-39-5 (indeno[1,2,3-cd]pyrene)	53-70-3 (dibenzo[a,h]anthracene)	23950-58-5 (pronamide)	140-57-8 (aramite)	56-57-5 (4-nitroquinoline-1-oxide)	70-30-4 (hexachlorophene)	92-87-5 (benzidine)	7440-47-3 (Cr)	7439-97-6 (Hg)	57-12-5 (total CN)	EPA9034 (Sulfide):	SULFIDE_ASOL (acid soluble sulfide)									
085328-001 CWL-MW2BL	UJ,I4	UJ,I4	UJ,MS3																					
085328-002 CWL-MW2BL				R,I5	R,I5	UJ,I3	UJ,I4	UJ,I3, I4,C3	UJ,I4, C3	UJ,C3	All Acceptance criteria met. No sample data will be qualified.													
085328-010 CWL-MW2BL																								
085328-027 CWL-MW2BL																								
085328-029 CWL-MW2BL																								J-,MS3
085329-001 CWL-TB3	UJ,I4	UJ,I4	UJ,MS3																					
085326-001 CWL-BW4A	UJ,I4	UJ,I4	J-,C3,MS3																					
085326-002 CWL-BW4A				R,I5	R,I5	UJ,I3	UJ,I4	UJ,I3, I4,C3	UJ,I4, C3	UJ,C3														
085326-010 CWL-BW4A															0.0051U,B		UJ,B4							
085326-013 CWL-BW4A															0.0051U,B									
085326-027 CWL-BW4A																							UJ,B4	
085327-001- CWL-TB2	UJ,I4	UJ,I4	UJ,MS3																					

Validated By:

David Schwart

Date: 11/26/07

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Memorandum

DATE: November 21, 2007
TO: File
FROM: David Schwent
SUBJECT: Organic GC/MS Data Review and Validation - SNL
Site: CWL GWM
AR/COC: 611609 and 611610
SDG: 196012
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 2.

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.

Calibration: The initial calibration response factor (RF) of propionitrile was <0.05 but >0.01 . All associated sample results were non-detects (NDs) and will be qualified "UJ,I4."

Calibration: The initial calibration RF of isobutyl alcohol was <0.05 but >0.01 . All associated sample results were NDs and will be qualified "UJ,I4."

Calibration: The continuing calibration verification (CCV) percent difference (%D) of acetone was $>20\%$ but $<40\%$ with negative bias. The associated result of sample 196012-010 was a detect and will be qualified "J-,C3."

MS/MSD: The MSD (PSD) percent recovery (%R) of acetone was $<$ QC acceptance criteria. The associated result of sample 196012-010 was a detect and will be qualified "J-,MS3"; the associated results of samples -001, -009, and -018 were NDs and will be qualified "UJ,MS3."

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

Holding Times/Preservation

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

Instrument Tune

All instrument tune requirements were met.

Calibration

All initial and continuing calibration QC acceptance criteria were met, except as noted above in the summary section and the following. The initial calibration verification (ICV) or CCV %Ds of three target analytes were >20% with positive bias (see Data Validation Worksheets). However, all associated sample results were non-detects (NDs) and will not be qualified. The ICV or CCV %Ds of three other target analytes were >20% but <40% with negative bias (see Data Validation Worksheets). However, all associated sample results, except the result of acetone for sample 196012-010 (qualified in the summary section), were NDs and no other calibration QC acceptance criteria were exceeded. Therefore, no sample data will be qualified as a result.

Blanks

No target analytes were detected in the blanks, except the following. 1,2,4-trichlorobenzene was detected in the method blank (MB) at a concentration > the method detection limit (MDL) but < the practical quantitation limit (PQL). However, all associated sample results were NDs and will not be qualified.

Internal Standards (ISs)

All IS area and RT QC acceptance criteria were met.

Surrogates

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

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

All LCS QC acceptance criteria were met, except the following. The LCS %R of vinyl acetate was > QC acceptance criteria. However, all associated sample results were NDs and will not be qualified. No LCSD analysis was performed. The MSD (PSD) 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)

All MS/MSD (PS/PSD) QC acceptance criteria were met, except as noted above in the summary section and the following. The PS and PSD %Rs of vinyl acetate were > QC acceptance criteria. However, all associated sample results were NDs and will not be qualified.

Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not requested.

Detection Limits/Dilutions

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

Other QC

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

No other specific issues were identified which affect data quality.

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Memorandum

DATE: November 26, 2007
TO: File
FROM: David Schwent
SUBJECT: Organic GC/MS Data Review and Validation - SNL
Site: CWL GWM
AR/COC: 611609 and 611610
SDG: 196012
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 2.

Summary

All samples were prepared and analyzed with approved procedures using method EPA8270C (SVOCs). Problems were identified with the data package that result in the qualification of data.

Calibration: The initial calibration intercept value of indeno(1,2,3-cd)pyrene was negative with an absolute value >3X the method detection limit (MDL). The associated results of samples 196012-002 and -011 were non-detects (NDs) and will be qualified "R,I5."

Calibration: The initial calibration intercept value of dibenzo(a,h)anthracene was negative with an absolute value >3X the MDL. The associated results of samples 196012-002 and -011 were NDs and will be qualified "R,I5."

Calibration: The initial calibration percent relative standard deviation (%RSD) of pronamide was >15%. The associated results of samples 196012-002 and -011 were NDs and will be qualified "UJ,I3."

Calibration: The initial calibration response factor (RF) of aramite was <0.05 but >0.01. The associated results of samples 196012-002 and -011 were NDs and will be qualified "UJ,I4."

Calibration: For 4-nitroquinoline-1-oxide, the initial calibration RF was <0.05 but >0.01, the initial calibration %RSD was >15%, and the continuing calibration verification (CCV) percent difference (%D) was >20% but <40% with negative bias. The associated results of samples 196012-002 and -011 were NDs and will be qualified "UJ,I3,I4,C3."

Calibration: For hexachlorophene, the initial calibration RF was <0.05 but >0.01 and the initial calibration verification (ICV) %D was >20% but <40% with negative bias. The associated results of samples 196012-002 and -011 were NDs and will be qualified "UJ,I4,C3."

Calibration: The CCV %D of benzidine was >40% but <60% with negative bias. . The associated results of samples 196012-002 and -011 were NDs and will be qualified "UJ,C3."

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

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

Instrument Tune

All instrument tune requirements were met.

Calibration

All initial and continuing calibration QC acceptance criteria were met, except as noted above in the summary section and the following. The initial calibration intercept values of 1,3,5-trinitrobenzene and dinoseb were >3X the MDL. However, all associated sample results were NDs and will not be qualified. The ICV or CCV %Ds of seven target analytes were >20% with positive bias (see Data Validation Worksheets). However, all associated sample results were NDs and will not be qualified. The ICV or CCV %Ds of seven other target analytes were >20% but <40% with negative bias (see Data Validation Worksheets). However, all associated sample results, except the results qualified in the summary section, were NDs and no other calibration QC acceptance criteria were exceeded. Therefore, no sample data will be qualified as a result. The CCV %D of p-nitroaniline was >40% but <60% with negative bias. However, the %D was above the QC limit by <1% and no other calibration QC acceptance criteria were exceeded. Therefore, based on professional judgment, no sample data will be qualified as a result.

Blanks

No target analytes were detected in the method blank.

Internal Standards (ISs)

All IS area and RT QC acceptance criteria were met.

Surrogates

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

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

All LCS QC acceptance criteria were met, except the following. The LCS percent recovery (%R) of hexachlorocyclopentadiene was > QC acceptance criteria. However, all associated sample results 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)

All MS/MSD QC acceptance criteria were met, except the following. The MS and MSD %Rs of hexachlorocyclopentadiene and the MS %R of benzidine were > QC acceptance criteria. However, all associated sample results were NDs and will not be qualified.

Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not requested.

Detection Limits/Dilutions

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

Other QC

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

No other specific issues were identified that affect data quality.

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Memorandum

DATE: November 23, 2007
TO: File
FROM: David Schwent
SUBJECT: Organic GC Data Review and Validation – SNL
Site: CWL GWM
AR/COC: 611609 and 611610
SDG: 196012
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 2.

Summary

All samples was prepared and analyzed with accepted procedures using method EPA8082 (PCBs). No problems were identified with the data package that result in the qualification of data.

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

Holding Times and Preservation

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

Calibration

All initial and continuing calibration QC acceptance criteria were met.

Blanks

No target analytes were detected in the blanks.

Surrogates

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

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

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)

All MS/MSD QC acceptance criteria were met.

Target Compound Identification/Confirmation

All confirmation QC acceptance criteria were met.

Detection Limits/Dilutions

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

Other QC

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

No other specific issues that affect data quality were identified.

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Memorandum

DATE: November 23, 2007
TO: File
FROM: David Schwent
SUBJECT: Organic GC Data Review and Validation – SNL
Site: CWL GWM
AR/COC: 611609 and 611610
SDG: 196012
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 2.

Summary

All samples was prepared and analyzed with accepted procedures using method EPA8151A (Herbicides). No problems were identified with the data package that result in the qualification of data.

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

Holding Times and Preservation

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

Calibration

All initial and continuing calibration QC acceptance criteria were met.

Blanks

No target analytes were detected in the blanks.

Surrogates

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

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

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)

All MS/MSD QC acceptance criteria were met.

Target Compound Identification/Confirmation

All confirmation QC acceptance criteria were met.

Detection Limits/Dilutions

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

Other QC

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

No other specific issues that affect data quality were identified.

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Memorandum

DATE: November 26, 2007
TO: File
FROM: David Schwent
SUBJECT: Inorganic Data Review and Validation - SNL
Site: CWL GWM
AR/COC: 611609 and 611610
SDG: 196012
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 2.

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: Cr was detected in the method blank (MB) of Batch 695171 at a concentration > the method detection limit (MDL) but < the practical quantitation limit (PQL). The associated results of samples 196012-012 and -013 were detects <5X the MB concentration and will be qualified "0.0051U,B" at 5X the value of the MB.

CVAA Analysis:

Blanks: Hg was detected in the continuing calibration blank (CCB) at a negative concentration with an absolute value > the MDL but < the PQL. The associated result of sample 196012-003 was a detect and will be qualified "NJ,B4"; the associated result of sample -012 was a non-detect (ND) and will be qualified "UJ,B4."

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

Holding Times/Preservation

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

ICP-MS Instrument Tune

ICP-MS Analysis: The instrument tune data were not reported and could not be evaluated. No sample data should be qualified as a result.

Calibration

All Analyses: All initial and continuing calibration QC acceptance criteria were met, except for the following. Initial calibration y-intercept values and correlation coefficients (R^2) values for target analytes were not reported and could not be evaluated. No sample data should be qualified as a result.

Reporting Limit Verification

All Analyses: All CRA/CRI recoveries met QC acceptance criteria.

Blanks

ICP-MS Analysis: No target analytes were detected in the blanks, except as noted above in the summary section and the following. Sb was detected in the initial calibration blank (ICB), CCB, and the MB of Batch 694338 at concentrations > the MDL but < the PQL. However, all associated sample results were NDs and will not be qualified. Fe was detected in the CCB and MB of Batch 695171 at concentrations > the MDL but < the PQL. However, the associated sample result was a detect >5X the CCB concentration and >5X the MB concentration and will not be qualified.

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

ICP-MS Internal Standards

ICP-MS Analysis: Internal standards data were not reported and could not be evaluated. No sample data should be qualified as a result.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

All Analyses: All MS (PS) QC acceptance criteria were met. No MSD analyses were performed. No sample data will be qualified as a result.

Laboratory Replicate

All Analyses: All replicate QC acceptance criteria were met.

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

All Analyses: All LCS QC acceptance criteria were met. No LCSD analyses were performed. The laboratory replicate analyses were used as measures of laboratory precision. No sample data will be qualified as a result.

Detection Limits/Dilutions

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

ICP Interference Check Sample (ICS A and AB)

ICP-MS Analysis: The ICS A and ICS AB raw data were not reported and could not be evaluated. No sample data should be qualified as a result. It should be noted that all ICS AB recoveries still met QC acceptance criteria. No sample data should be qualified as a result.

ICP Serial Dilution

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

Other QC

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

No other specific issues were identified which affect data quality.

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Memorandum

DATE: November 26, 2007
TO: File
FROM: David Schwent
SUBJECT: General Chemistry Data Review and Validation - SNL
Site: CWL GWM
AR/COC: 611609 and 611610
SDG: 196012
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 2.

Summary

The samples were prepared and analyzed with accepted procedures using methods EPA9012A (total CN) and EPA9034 (acid soluble sulfide). Problems were identified with the data package that result in the qualification of data.

Total CN Analysis:

Blanks: Total CN was detected in the initial calibration blank (ICB) and continuing calibration blank (CCB) of Batch 695328 and the CCB of Batch 695334 at negative concentrations with absolute values > the method detection limit (MDL) but < the practical quantitation limit (PQL). The associated results of samples 196012-006 and -015 were non-detects (NDs) and will be qualified "UJ,B4."

Sulfide Analysis:

MS/MSD: The MS and MSD percent recoveries (%Rs) for total sulfide of Batch 694029 were < QC acceptance criteria. The associated result of sample 196012-007 was a detect and will be qualified "J-,MS3."

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

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

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

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

All Analyses: All LCS QC acceptance criteria were met. No LCSD analyses were performed. The laboratory replicate or MSD analyses were used as measures of laboratory precision. No sample data will be qualified as a result.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Total CN Analysis: All MS (PS) QC acceptance criteria were met. No MSD analyses were performed. No sample data will be qualified as a result. It should be noted that the MS analysis of Batch 695328 was performed on a QC sample of similar matrix from another SNL SDG. No sample data will be qualified as a result.

Sulfide Analysis: All MS/MSD QC acceptance criteria were met, except as noted above in the summary section.

Replicates

All Analyses: All replicate QC acceptance criteria were met. It should be noted that the laboratory replicate analysis for total CN of Batch 695328 was performed on a QC sample of similar matrix from another SNL SDG. No sample data will be qualified as a result.

Detection Limits/Dilutions

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

Other QC

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

No other specific issues were identified which affect data quality.

Sample Findings Summary

Revised

Site: CWL GWM

AR/COC: 611611 and 611613

Organic, Metals, Gen Chem

Sample ID	EPA8260B (VOCs):						EPA8270C (SVOCs):	EPA8082B (PCBs):	EPA8151A (Herbicides):
	75-05-8 (acetonitrile)	107-12-0 (propionitrile)	78-83-1 (isobutyl alcohol)	67-64-1 (acetone)	130-15-4 (1,4-naphthoquinone)	117-81-7 (bis[2-ethylhexyl]phthalate)			
085334-001 CWL-MW4	UJ,I4	UJ,I4	UJ,I4	UJ,MS3			All Acceptance criteria met. No sample data will be qualified.	All Acceptance criteria met. No sample data will be qualified.	
085334-002 CWL-MW4					UJ,I3	10.0U,B			
085335-001 CWL-MW4	UJ,I4	UJ,I4	UJ,I4	UJ,MS3					
085335-002 CWL-MW4					UJ,I3	10.8U,B			
085336-001 CWL-TB6	UJ,I4	UJ,I4	UJ,I4	UJ,MS3					
085330-001 CWL-MW2BU	UJ,I4	UJ,I4	UJ,I4	UJ,MS3					
085331-001 CWL-TB4	UJ,I4	UJ,I4	UJ,I4	UJ,MS3					
Sample ID	EPA6020 (ICP-MS):						EPA7470A (CVAA):	EPA9034 (Sulfide):	EPA9012A (Total CN):
	7440-38-2 (As)	7440-43-9 (Cd)	7440-36-0 (Sb)	7440-28-0 (Tl)	7439-97-6 (Hg)				
085334-010 CWL-MW4				0.0027U,B3	UJ,B4	All Acceptance criteria met. No sample data will be qualified.	All Acceptance criteria met. No sample data will be qualified.		
085335-010 CWL-MW4					UJ,B4				
085330-010 CWL-MW2BU	0.013U,B	0.00062U,B	0.0050UJ,B3,MS3	0.0030U,B3	UJ,B4				

Validated By:

David Schwartz

Date: 2/25/08 (Revised, DJS)

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Memorandum

DATE: December 27, 2007
TO: File
FROM: David Schwent
SUBJECT: Organic GC/MS Data Review and Validation - SNL
Site: CWL GWM
AR/COC: 611611 and 611613
SDG: 197069
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 2.

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.

Calibration: The initial calibration response factor (RF) of acetonitrile was <0.05 but >0.01 . All associated sample results were non-detects (NDs) and will be qualified "UJ,I4."

Calibration: The initial calibration RF of propionitrile was <0.05 but >0.01 . All associated sample results were NDs and will be qualified "UJ,I4."

Calibration: The initial calibration RF of isobutyl alcohol was <0.05 but >0.01 . All associated sample results were NDs and will be qualified "UJ,I4."

MS/MSD: The MS (PS) and MSD (PSD) percent recoveries (%Rs) of acetone were $< QC$ acceptance criteria but $>10\%$. All associated sample results were NDs and will be qualified "UJ,MS3."

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

Holding Times/Preservation

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

Instrument Tune

All instrument tune requirements were met.

Calibration

All initial and continuing calibration QC acceptance criteria were met, except as noted above in the summary section and the following. The initial calibration verification (ICV) percent differences (%Ds) of vinyl acetate and acrolein were >20% with positive bias. However, all associated sample results were NDs and will not be qualified. The ICV or continuing calibration verification (CCV) %Ds of four other target analytes were >20% but <40% with negative bias (see Data Validation Worksheets). However, all associated sample results were NDs and no other calibration QC acceptance criteria were exceeded. Therefore, no sample data will be qualified as a result.

Blanks

No target analytes were detected in the blanks.

Internal Standards (ISs)

All IS area and RT QC acceptance criteria were met.

Surrogates

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

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

All LCS QC acceptance criteria were met. No LCSD analysis was performed. The MSD (PSD) 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)

All MS/MSD (PS/PSD) QC acceptance criteria were met, except as noted above in the summary section.

Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not requested.

Detection Limits/Dilutions

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

Other QC

No field blanks (FBs) were submitted on the AR/COCs. All field duplicate (FD) (sample 197069-009) relative percent differences (RPDs) were <20%. No QC acceptance criteria for the evaluation of FDs are currently in place. It should be noted that the EB (sample 196958-010) from COC 611615, contained in another package (SDG 196958), applies to samples on COC 611613.

No other specific issues were identified which affect data quality.

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Memorandum

DATE: December 28, 2007
TO: File
FROM: David Schwent
SUBJECT: Organic GC/MS Data Review and Validation - SNL
Site: CWL GWM
AR/COC: 611611 and 611613
SDG: 197069
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 2.

Summary

All samples were prepared and analyzed with approved procedures using method EPA8270C (SVOCs). Problems were identified with the data package that result in the qualification of data.

Calibration: The initial calibration percent relative standard deviation (%RSD) of 1,4-naphthoquinone was >15% but <40%. All associated sample results were NDs and will be qualified "UJ,I3."

Blanks: Bis(2-ethylhexyl)phthalate was detected in the method blank (MB) at a concentration > the method detection limit (MDL) but < the practical quantitation limit (PQL). The associated result of sample 197069-002 was a detect <10X the MB concentration and < the PQL and will be qualified "10.0U,B" at the value of the PQL; the associated result of sample -010 was a detect <10X the MB concentration and < the PQL and will be qualified "10.8U,B" at the value of the PQL.

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

Holding Times/Preservation

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

Instrument Tune

All instrument tune requirements were met.

Calibration

All initial and continuing calibration QC acceptance criteria were met, except as noted above in the summary section and the following. The initial calibration intercept values of 21 target analytes were >3X the MDL (see Data Validation Worksheets). However, all associated sample results were non-detects (NDs) and will not be qualified. The initial calibration verification or continuing calibration verification percent differences (%Ds) of three target analytes were >20% with positive bias (see Data Validation Worksheets). However, all associated sample results were NDs and will not be qualified.

Blanks

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

Internal Standards (ISs)

All IS area and RT QC acceptance criteria were met.

Surrogates

All surrogate recovery and retention time QC acceptance criteria were met, except the following. It should be noted that several surrogate percent recoveries (%Rs) in the MS and MSD QC samples were > QC acceptance criteria. No sample data will be qualified as a result.

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

All LCS QC acceptance criteria were met, except the following. The LCS %Rs of six target analytes were > QC acceptance criteria (see Data Validation Worksheets). However, all associated sample results 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)

All MS/MSD QC acceptance criteria were met, except the following. The MS and/or MSD %Rs of four target analytes were > QC acceptance criteria (see Data Validation Worksheets). However, all associated sample results were NDs and will not be qualified.

Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not requested.

Detection Limits/Dilutions

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

Other QC

No field blanks (FBs) were submitted on the AR/COCs. All field duplicate (FD) (sample 197069-010) relative percent differences (RPDs) were <20%. No QC acceptance criteria for the evaluation of FDs are currently in place. It should be noted that the EB (sample 196958-011) from COC 611615, contained in another package (SDG 196958), applies to samples on COC 611613.

No other specific issues were identified that affect data quality.

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Memorandum

DATE: December 27, 2007
TO: File
FROM: David Schwent
SUBJECT: Organic GC Data Review and Validation – SNL
Site: CWL GWM
AR/COC: 611611 and 611613
SDG: 197069
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 2.

Summary

All samples was prepared and analyzed with accepted procedures using method EPA8082 (PCBs). No problems were identified with the data package that result in the qualification of data.

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

Holding Times and Preservation

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

Calibration

All initial and continuing calibration QC acceptance criteria were met.

Blanks

No target analytes were detected in the blanks.

Surrogates

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

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

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)

All MS/MSD QC acceptance criteria were met.

Target Compound Identification/Confirmation

All confirmation QC acceptance criteria were met.

Detection Limits/Dilutions

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

Other QC

No field blanks (FBs) were submitted on the AR/COCs. All field duplicate (FD) (sample 197069-013) relative percent differences (RPDs) were <20%. No QC acceptance criteria for the evaluation of FDs are currently in place. It should be noted that the equipment blank (EB) (sample 196958-014) from COC 611615, contained in another package (SDG 196958), applies to samples on COC 611613.

No other specific issues that affect data quality were identified.

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Memorandum

DATE: December 27, 2007
TO: File
FROM: David Schwent
SUBJECT: Organic GC Data Review and Validation – SNL
Site: CWL GWM
AR/COC: 611611 and 611613
SDG: 197069
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 2.

Summary

All samples was prepared and analyzed with accepted procedures using method EPA8151A (Herbicides). No problems were identified with the data package that result in the qualification of data.

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

Holding Times and Preservation

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

Calibration

All initial and continuing calibration QC acceptance criteria were met.

Blanks

No target analytes were detected in the blanks.

Surrogates

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

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

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)

All MS/MSD QC acceptance criteria were met, except the following. The MS/MSD relative percent difference (RPD) of 2,4,5-TP was > QC acceptance criteria. However, the RPD was above the QC acceptance limit by only 1% and the MS and MSD percent recoveries (%Rs) were well within QC acceptance criteria. Therefore, based on professional judgment, no sample data will be qualified as a result.

Target Compound Identification/Confirmation

All confirmation QC acceptance criteria were met.

Detection Limits/Dilutions

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

Other QC

No field blanks (FBs) were submitted on the AR/COCs. All field duplicate (FD) (sample 197069-016) relative percent differences (RPDs) were <20%. No QC acceptance criteria for the evaluation of FDs are currently in place. It should be noted that the equipment blank (EB) (sample 196958-017) from COC 611615, contained in another package (SDG 196958), applies to samples on COC 611613.

No other specific issues that affect data quality were identified.

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Memorandum

DATE: December 20, 2007
TO: File
FROM: David Schwent
SUBJECT: Inorganic Data Review and Validation - SNL
Site: CWL GWM
AR/COC: 611611 and 611613
SDG: 197069
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 2.

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) of Batch 701473 at a concentration > the method detection limit (MDL) but < the practical quantitation limit (PQL). The associated result of sample 197069-019 was a detect <5X the MB concentration and will be qualified "0.013U,B" at 5X the value of the MB.

Blanks: Cd was detected in the MB of Batch 701473 at a concentration > the MDL but < the PQL. The associated result of sample 197069-019 was a detect <5X the MB concentration and will be qualified "0.00062U,B" at 5X the value of the MB.

Blanks: Sb was detected in the initial calibration blank (ICB) and continuing calibration blank (CCB) of Batch 706934 at a concentration > the MDL but < the PQL. The associated result of sample 197069-019 was a detect <5X the highest calibration blank concentration and will be qualified "0.0050U,B3" at 5X the value of the ICB (highest calibration blank).

Blanks: Tl was detected in the ICB and CCB of Batch 699765 at a concentration > the MDL but < the PQL. The associated result of sample 197069-003 was a detect <5X the highest calibration blank concentration and will be qualified "0.0027U,B3" at 5X the value of the CCB (highest calibration blank).

Blanks: Tl was detected in the ICB and CCB of Batch 701473 at a concentration > the MDL but < the PQL. The associated result of sample 197069-019 was a detect <5X the highest calibration blank concentration and will be qualified "0.0030U,B3" at 5X the value of the CCB (highest calibration blank).

MS/MSD: The MS percent recovery (%R) for Sb of Batch 706934 was <75% but >30%. The associated result of sample 197069-019 was a non-detect (ND) and will be qualified "UJ,MS3." It should be noted that the Sb result for sample -019 has been qualified "U" (ND) due to blank contamination, resulting in a "UJ" qualification due to the low MS %R.

CVAA Analysis:

Blanks: Hg was detected in the ICB and CCB at negative concentrations with absolute values > the MDL but < the PQL. All associated sample results were NDs and will be qualified "UJ,B4."

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

Holding Times/Preservation

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

ICP-MS Instrument Tune

ICP-MS Analysis: The instrument tune data were not reported and could not be evaluated. No sample data should be qualified as a result.

Calibration

All Analyses: All initial and continuing calibration QC acceptance criteria were met, except for the following. Initial calibration y-intercept values and correlation coefficients (R^2) values for target analytes were not reported and could not be evaluated. No sample data should be qualified as a result.

Reporting Limit Verification

All Analyses: All CRA/CRI recoveries met QC acceptance criteria.

Blanks

ICP-MS Analysis: No target analytes were detected in the blanks, except as noted above in the summary section and the following. Tl was detected in the ICB and CCB of Batch 699765 at a concentration > the MDL but < the PQL. However, the associated result of sample 197069-011 was a ND and will not be qualified. As and Sb of Batch 699765 were detected in the CCB at a concentration > the MDL but < the PQL. However, all associated sample results were NDs and will not be qualified. Cu and Zn were detected in the MB of Batch 701473 at concentrations > the MDL but < the PQL. However, the associated results of sample 197069-019 were detects >5X the MB concentration and will not be qualified. V was detected in the equipment blank (EB) (sample 196958-012) at a concentration > the MDL but < the PQL. However, the associated results of samples 197069-003 and -011 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.

ICP-MS Internal Standards

ICP-MS Analysis: Internal standards data were not reported and could not be evaluated. No sample data should be qualified as a result.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

ICP-MS Analysis: All MS (PS) QC acceptance criteria were met, except as noted above in the summary section. No MSD analyses were performed. No sample data will be qualified as a result.

CVAA Analysis: All MS (PS) QC acceptance criteria were met. No MSD analysis was performed. No sample data will be qualified as a result.

Laboratory Replicate

All Analyses: All replicate QC acceptance criteria were met.

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

All Analyses: All LCS QC acceptance criteria were met. No LCSD analyses were performed. The laboratory replicate analyses were used as measures of laboratory precision. No sample data will be qualified as a result.

Detection Limits/Dilutions

All Analyses: All detection limits were properly reported. Sample 197069-019 was diluted 5X for Ni due to high concentration of the target analyte. Associated batch QC samples were diluted at the same dilution factor. No other samples required dilution.

ICP Interference Check Sample (ICS A and AB)

ICP-MS Analysis: The ICS A and ICS AB raw data were not reported and could not be evaluated. No sample data should be qualified as a result. It should be noted that all ICS AB recoveries still met QC acceptance criteria. No sample data should be qualified as a result.

ICP Serial Dilution

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

Other QC

No field blanks (FBs) were submitted on the AR/COCs. All field duplicate (FD) (samples 197069-011 and -012) relative percent differences (RPDs) were <20%. No QC acceptance criteria for the evaluation of FDs are currently in place. It should be noted that the EBs (samples 196958-012 and -013) from COC 611615, contained in another package (SDG 196958), apply to samples on COC 611613.

No other specific issues were identified which affect data quality.

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Memorandum - Revised

DATE: February 25, 2008
TO: File
FROM: David Schwent
SUBJECT: General Chemistry Data Review and Validation - SNL
Site: CWL GWM
AR/COC: 611611 and 611613
SDG: 197069
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 2.

Summary

The samples were prepared and analyzed with accepted procedures using methods EPA9012A (total CN) and EPA9034 (acid soluble sulfide). No problems were identified with the data package that result in the qualification of data.

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

Holding Times/Preservation

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

Calibration

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

Blanks

All Analyses: No target analytes were detected in the blanks.

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

All Analyses: All LCS QC acceptance criteria were met. No LCSD analyses were performed. The laboratory replicates were used as measures of laboratory precision. No sample data will be qualified as a result.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

All Analyses: All MS (PS) QC acceptance criteria were met. No MSD analyses were performed. No sample data will be qualified as a result. It should be noted that the MS analysis for total CN was performed on a SNL QC 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. It should be noted that the laboratory replicate analysis for total CN was performed on a SNL QC sample of similar matrix from another SDG. No sample data will be qualified as a result.

Detection Limits/Dilutions

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

Other QC

No field blanks (FBs) were submitted on the AR/COCs. The field duplicate (FD) (sample 197069-014) relative percent difference (RPD) for total CN was <20% and the FD (sample 197069-015) RPD for total sulfide was >20% (24%). No QC acceptance criteria for the evaluation of FDs are currently in place. It should be noted that the EBs (samples 196958-015 and -016) from COC 611615, contained in another package (SDG 196958), apply to samples on COC 611613.

No other specific issues were identified which affect data quality.

Sample Findings Summary

Site: CWL GWM

AR/COC: 611612 and 611616

Organic, Metals, Gen Chem

Sample ID	EPA8260B (VOCs):						EPA8270C (SVOCs):							EPA8082B (PCBs):		EPA8151A (Herbicides):		EPA6020 (ICP-MS):		EPA7470A (CVAA):		EPA9034 (Sulfide):		EPA9012A (Total CN):	
	74-83-9 (bromomethane)	107-05-1 (allyl chloride)	75-05-8 (acetonitrile)	107-12-0 (propionitrile)	78-83-1 (isobutyl alcohol)	67-64-1 (acetone)	193-39-5 (indeno[1,2,3-cd]pyrene)	53-70-3 (dibenzo[a,h]anthracene)	140-57-8 (aramite)	23950-58-5 (pronamide)	56-57-5 (4-nitroquinoline-1-oxide)	70-30-4 (hexachlorophene)	65-85-0 (benzoic acid)	92-87-5 (benzidine)	77-47-4 (hexachlorocyclopentadiene)			EPA6020 (ICP-MS):	7440-47-3 (Cr)	7440-62-2 (V)	EPA7470A (CVAA):	EPA9034 (Sulfide):	EPA9012A (Total CN):	57-12-5 (total CN)	
085332-001 CWL-EB1	R,15	R,15	UJ,14	UJ,14	UJ,14	J-,C3, MS3									All Acceptance criteria met. No sample data will be qualified.										
085333-001 CWL-TB5	R,15	R,15	UJ,14	UJ,14	UJ,14	UJ,MS3																			
085332-002 CWL-EB1							R,15	R,15	UJ, 14	UJ, 13	UJ, 13,14	UJ, 14,C3	UJ, MS5	UJ, MS5					0.012 U,B	0.018 U,B					
085332-010 CWL-EB1																			0.012 U,B						
085332-013 CWL-EB1																									
085332-027 CWL-EB1																									
085342-001 CWL-MW5U	R,15	R,15	UJ,14	UJ,14	UJ,14	UJ,MS3																			UJ,B4
085342-002 CWL-MW5U							R,15	R,15	UJ, 14	UJ, 13	UJ, 13,14	UJ, 14,C3	UJ, MS5	UJ, MS5											
085342-010 CWL-MW5U																			0.012 U,B	0.018 U,B					
085342-013 CWL-MW5U																			0.012 U,B						
085342-027 CWL-MW5U																									UJ,B4
085343-001 CWL-MW5U	R,15	R,15	UJ,14	UJ,14	UJ,14	UJ,MS3																			
085343-002 CWL-MW5U							R,15	R,15	UJ, 14	UJ, 13	UJ, 13,14,C3	UJ, 14,C3	UJ, C3	UJ, MS5	UJ, MS5										
085343-010 CWL-MW5U																		0.012 U,B	0.018 U,B						
085343-013 CWL-MW5U																		0.012 U,B							
085343-027 CWL-MW5U																								UJ,B4	
085344-001 CWL-TB9	R,15	R,15	UJ,14	UJ,14	UJ,14	UJ,MS3																			

Validated By: *David Schwartz*

Date: 12/15/07

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Memorandum

DATE: December 12, 2007
TO: File
FROM: David Schwent
SUBJECT: Organic GC/MS Data Review and Validation - SNL
Site: CWL GWM
AR/COC: 611612 and 611616
SDG: 196635
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 2.

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.

Calibration: The initial calibration intercept value of bromomethane was negative with an absolute value >3X the method detection limit (MDL). All associated sample results were non-detects (NDs) and will be qualified "R,I5."

Calibration: The initial calibration intercept value of allyl chloride was negative with an absolute value >3X the MDL. All associated sample results were NDs and will be qualified "R,I5."

Calibration: The initial calibration response factor (RF) of acetonitrile was <0.05 but >0.01. All associated sample results were NDs and will be qualified "UJ,I4."

Calibration: The initial calibration RF of propionitrile was <0.05 but >0.01. All associated sample results were NDs and will be qualified "UJ,I4."

Calibration: The initial calibration RF of isobutyl alcohol was <0.05 but >0.01. All associated sample results were NDs and will be qualified "UJ,I4."

Calibration: The initial calibration verification (ICV) percent difference (%D) of acetone was >20% but <40% with negative bias (-30.49%) and the continuing calibration verification (CCV) was >20% with positive bias (27.28%). The associated result of sample 196635-001 was a detect and will be qualified "J-,C3" because the ICV with negative bias was the more severe infraction.

MS/MSD: The MS (PS) and MSD (PSD) percent recoveries (%Rs) of acetone were < QC acceptance criteria. The associated result of sample 196635-001 was a detect and will be qualified "J-,MS3"; the associated results of samples -002, -010, -018, and -026 were NDs and will be qualified "UJ,MS3."

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

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

Instrument Tune

All instrument tune requirements were met.

Calibration

All initial and continuing calibration QC acceptance criteria were met, except as noted above in the summary section and the following. The ICV %D of 2-butanone and the CCV %Ds of 2-hexanone and acetone were >20% with positive bias. However, all associated sample results, except the acetone result for sample 196635-001 (qualified in the summary section), were NDs and will not be qualified. The ICV %Ds of 2-hexanone and acetone and the CCV %D of dichlorodifluoromethane were >20% but <40% with negative bias. However, all associated sample results, except the acetone result for sample 196635-001 (qualified in the summary section) were NDs and no other calibration QC acceptance criteria were exceeded. Therefore, no sample data will be qualified as a result.

Blanks

No target analytes were detected in the blanks, except the following. Carbon disulfide was detected in the trip blank (TB) (sample 196635-002) at a concentration > the MDL but < the practical quantitation limit (PQL). However, all associated sample results were NDs and will not be qualified.

Internal Standards (ISs)

All IS area and RT QC acceptance criteria were met.

Surrogates

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

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

All LCS QC acceptance criteria were met. No LCSD analysis was performed. The MSD (PSD) 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)

All MS/MSD (PS/PSD) QC acceptance criteria were met, except as noted above in the summary section.

Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not requested.

Detection Limits/Dilutions

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

Other QC

No field blanks (FBs) were submitted on the AR/COCs. All field duplicate (FD) (sample 196635-018) relative percent differences (RPDs) were <20%. No QC acceptance 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

DATE: December 15, 2007
TO: File
FROM: David Schwent
SUBJECT: Organic GC/MS Data Review and Validation - SNL
Site: CWL GWM
AR/COC: 611612 and 611616
SDG: 196635
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 2.

Summary

All samples were prepared and analyzed with approved procedures using method EPA8270C (SVOCs). Problems were identified with the data package that result in the qualification of data.

Calibration: The initial calibration intercept value of indeno(1,2,3-cd)pyrene was negative with an absolute value >3X the method detection limit (MDL). All associated sample results were non-detects (NDs) and will be qualified "R,I5."

Calibration: The initial calibration intercept value of dibenzo(a,h)anthracene was negative with an absolute value >3X the MDL. All associated sample results were NDs and will be qualified "R,I5."

Calibration: The initial calibration response factor (RF) of aramite was <0.05 but >0.01. All associated sample results were NDs and will be qualified "UJ,I4."

Calibration: The initial calibration percent relative standard deviation (%RSD) of pronamide was >15% but <40%. All associated sample results were NDs and will be qualified "UJ,I3."

Calibration: For 4-nitroquinoline-1-oxide, the initial calibration RF was <0.05 but >0.01 and the initial calibration %RSD was >15% but <40%. All associated sample results were NDs and will be qualified "UJ,I3,I4."

Calibration: For hexachlorophene, the initial calibration RF was <0.05 but >0.01 and the initial calibration verification (ICV) percent difference (%D) was >20% but <40% with negative bias. All associated sample results were NDs and will be qualified "UJ,I4,C3."

Calibration: The continuing calibration verification (CCV) %D of 4-nitroquinoline-1-oxide (analyzed 11-8-07) was >20% but <40% with negative bias. The associated result of sample 196635-019 was a ND and will be qualified "UJ,C3."

Calibration: The CCV %D of benzoic acid (analyzed 11-8-07) was >40% but <60% with negative bias. The associated result of sample 196635-019 was a ND and will be qualified "UJ,C3."

MS/MSD: The MS/MSD relative percent difference (RPD) of benzidine was > QC acceptance criteria. All associated sample results were NDs and will be qualified "UJ,MS5."

MS/MSD: The MS/MSD RPD for of hexachlorocyclopentadiene was > QC acceptance criteria. All associated sample results were NDs and will be qualified "UJ,MS5."

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

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

Instrument Tune

All instrument tune requirements were met.

Calibration

All initial and continuing calibration QC acceptance criteria were met, except as noted above in the summary section and the following. The initial calibration intercept values of 1,3,5-trinitrobenzene and dinoseb were >3X the MDL. However, all associated sample results were NDs and will not be qualified. The ICV or CCV %Ds of twenty target analytes were >20% with positive bias (see Data Validation Worksheets). However, all associated sample results were NDs and will not be qualified. The ICV or CCV %Ds of eleven target analytes were >20% but <40% with negative bias (see Data Validation Worksheets). However, all associated sample results, except the results qualified in the summary section, were NDs and no other calibration QC acceptance criteria were exceeded. Therefore, no sample data will be qualified as a result.

Blanks

No target analytes were detected in the blanks.

Internal Standards (ISs)

All IS area and RT QC acceptance criteria were met.

Surrogates

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

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

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)

All MS/MSD QC acceptance criteria were met, except as noted above in the summary section and the following. The MSD percent recovery (%R) for hexachlorocyclopentadiene was > QC acceptance criteria. However, all associated sample results were NDs and will not be qualified.

Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not requested.

Detection Limits/Dilutions

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

Other QC

No field blanks (FBs) were submitted on the AR/COCs. All field duplicate (FD) (sample 196635-019) RPDs were <20%. No QC acceptance criteria for the evaluation of FDs are currently in place.

No other specific issues were identified that affect data quality.

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Memorandum

DATE: December 12, 2007
TO: File
FROM: David Schwent
SUBJECT: Organic GC Data Review and Validation – SNL
Site: CWL GWM
AR/COC: 611612 and 611616
SDG: 196635
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 2.

Summary

All samples was prepared and analyzed with accepted procedures using method EPA8082 (PCBs). No problems were identified with the data package that result in the qualification of data.

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

Holding Times and Preservation

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

Calibration

All initial and continuing calibration QC acceptance criteria were met.

Blanks

No target analytes were detected in the blanks.

Surrogates

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

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

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)

All MS/MSD QC acceptance criteria were met.

Target Compound Identification/Confirmation

All confirmation QC acceptance criteria were met.

Detection Limits/Dilutions

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

Other QC

No field blanks (FBs) were submitted on the AR/COCs. All field duplicate (FD) (sample 196635-022) relative percent differences (RPDs) were <20%. No QC acceptance criteria for the evaluation of FDs are currently in place.

No other specific issues that affect data quality were identified.

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Memorandum

DATE: December 12, 2007
TO: File
FROM: David Schwent
SUBJECT: Organic GC Data Review and Validation – SNL
Site: CWL GWM
AR/COC: 611612 and 611616
SDG: 196635
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 2.

Summary

All samples was prepared and analyzed with accepted procedures using method EPA8151A (Herbicides). No problems were identified with the data package that result in the qualification of data.

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

Holding Times and Preservation

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

Calibration

All initial and continuing calibration QC acceptance criteria were met.

Blanks

No target analytes were detected in the blanks.

Surrogates

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

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

All LCS QC acceptance criteria were met. No LCSD analyses were performed. The MSD analyses were used as measures of laboratory precision. No sample data will be qualified as a result.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

All MS/MSD QC acceptance criteria were met.

Target Compound Identification/Confirmation

All confirmation QC acceptance criteria were met.

Detection Limits/Dilutions

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

Other QC

No field blanks (FBs) were submitted on the AR/COCs. All field duplicate (FD) (sample 196635-025) relative percent differences (RPDs) were <20%. No QC acceptance criteria for the evaluation of FDs are currently in place.

No other specific issues that affect data quality were identified.

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Memorandum

DATE: December 14, 2007
TO: File
FROM: David Schwent
SUBJECT: Inorganic Data Review and Validation - SNL
Site: CWL GWM
AR/COC: 611612 and 611616
SDG: 196635
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 2.

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: Cr was detected in the method blank (MB) at a concentration > the method detection limit (MDL) but < the practical quantitation limit (PQL). All associated sample results were detects <5X the MB concentration and will be qualified "0.012U,B" at 5X the value of the MB.

Blanks: V was detected in the MB at a concentration > the MDL but < the PQL. The associated results of samples 196635-004, -012, and -020 were detects <5X the MB concentration and will be qualified "0.018U,B" at 5X the value of the MB.

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

Holding Times/Preservation

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

ICP-MS Instrument Tune

ICP-MS Analysis: The instrument tune data were not reported and could not be evaluated. No sample data should be qualified as a result.

Calibration

All Analyses: All initial and continuing calibration QC acceptance criteria were met, except the following. Initial calibration y-intercept values and correlation coefficients (R^2) values for target analytes were not reported and could not be evaluated. No sample data should be qualified as a result.

Reporting Limit Verification

All Analyses: All CRA/CRI recoveries met QC acceptance criteria.

Blanks

ICP-MS Analysis: No target analytes were detected in the blanks, except as noted above in the summary section and the following. Sb was detected in the initial calibration blank (ICB) and Tl was detected in the equipment blank (EB) (sample 196635-004) at concentrations > the MDL but < the PQL. However, all associated sample results were non-detects (NDs) and will not be qualified. It should be noted that the EB results for Cr and V were qualified "U" (ND) by MB contamination and cannot affect other field sample results.

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

ICP-MS Internal Standards

ICP-MS Analysis: Internal standards data were not reported and could not be evaluated. No sample data should be qualified as a result.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

All Analyses: All MS (PS) QC acceptance criteria were met. No MSD analyses were performed. No sample data will be qualified as a result.

Laboratory Replicate

All Analyses: All replicate QC acceptance criteria were met.

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

All Analyses: All LCS QC acceptance criteria were met. No LCSD analyses were performed. The laboratory replicate analyses were used as measures of laboratory precision. No sample data will be qualified as a result.

Detection Limits/Dilutions

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

ICP Interference Check Sample (ICS A and AB)

ICP-MS Analysis: The ICS A and ICS AB raw data were not reported and could not be evaluated. No sample data should be qualified as a result. It should be noted that all ICS AB recoveries still met QC acceptance criteria. No sample data should be qualified as a result.

ICP Serial Dilution

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

Other QC

No field blanks (FBs) were submitted on the AR/COCs. All field duplicate (FD) (samples 196635-020 and -021) relative percent differences (RPDs) were <20%, except for Se (27.4%). No QC acceptance 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

DATE: December 14, 2007
TO: File
FROM: David Schwent
SUBJECT: General Chemistry Data Review and Validation - SNL
Site: CWL GWM
AR/COC: 611612 and 611616
SDG: 196635
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 2.

Summary

The samples were prepared and analyzed with accepted procedures using methods EPA9012A (total CN) and EPA9034 (acid soluble sulfide). Problems were identified with the data package that result in the qualification of data.

Total CN Analysis:

Blanks: Total CN was detected in the continuing calibration blank (CCB) at a negative concentration with absolute value > the method detection limit (MDL) but < the practical quantitation limit (PQL). All associated sample results were non-detects (NDs) and will be qualified "UJ,B4."

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

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

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

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

All Analyses: All LCS QC acceptance criteria were met. No LCSD analyses were performed. The laboratory replicates were used as measures of laboratory precision. No sample data will be qualified as a result.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

All Analyses: All MS (PS) QC acceptance criteria were met. No MSD analyses were performed. No sample data will be qualified as a result.

Replicates

All Analyses: All replicate QC acceptance criteria were met.

Detection Limits/Dilutions

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

Other QC

No field blanks (FBs) were submitted on the AR/COCs. All field duplicate (FD) (samples 196635-023 and -024) relative percent differences (RPDs) were <20%. No QC acceptance criteria for the evaluation of FDs are currently in place.

No other specific issues were identified which affect data quality.

Sample Findings Summary
Revised

Site: CWL GWM

AR/COC: 611615 and 611618

Organic, Metals, Gen Chem

Sample ID	EPA8260B (VOCs):			EPA8270C (SVOCs):			EPA8082B (PCBs):			EPA8151A (Herbicides):			EPA6020 (ICP-MS):			EPA9034 (Sulfide):			EPA9012A (Total CN):		
	67-64-1 (acetone)	78-83-1 (isobutyl alcohol)	75-05-8 (acetonitrile)	193-39-5 (indeno[1,2,3-cd]pyrene)	53-70-3 (dibenzof[a,h]anthracene)	140-57-8 (aramite)	23950-58-5 (pronamide)	56-57-5 (4-nitroquinoline-1-oxide)	70-30-4 (hexachlorophene)	65-85-0 (benzoic acid)	All Herbicide Target Analytes	7439-97-6 (Hg)	EPA6020 (ICP-MS):	EPA9034 (Sulfide):	EPA9012A (Total CN):						
085348-001 CWL-MW6U	R,15,C3, MS3	UJ,14	UJ, 14,C3							All Acceptance criteria met. No sample data will be qualified.					All Acceptance criteria met. No sample data will be qualified.						
085348-002 CWL-MW6U				R,15	R,15	UJ,14	UJ,13	UJ,13, 14,C3	UJ, 14,C3		UJ, C3										
085348-010 CWL-MW6U															UJ,B4						
085349-001 CWL-TB11	R,15,C3, MS3	UJ,14	UJ, 14,C3																		
085340-001 CWL-EB2	R,15,C3, MS3	UJ,14	UJ, 14,C3																		
085340-002 CWL-EB2				R,15	R,15	UJ,14	UJ,13	UJ,13, 14,C3	UJ, 14,C3	UJ, C3											
085340-010 CWL-EB2														UJ,B4							
085340-032 CWL-EB2											UJ,H2, MS1										

Validated By: David Schwartz

Date: 2/25/08 (Revised, DJS)

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Memorandum

DATE: December 18, 2007
TO: File
FROM: David Schwent
SUBJECT: Organic GC/MS Data Review and Validation - SNL
Site: CWL GWM
AR/COC: 611615 and 611618
SDG: 196958
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 2.

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.

Calibration: For acetone, the initial calibration intercept value was negative with an absolute value >3X the method detection limit (MDL) and initial calibration verification (ICV) percent difference (%D) was >20% but <40% with negative bias. All associated sample results were non-detects (NDs) and will be qualified "R,I5,C3."

Calibration: The initial calibration response factor (RF) of isobutyl alcohol was <0.05 but >0.01. All associated sample results were NDs and will be qualified "UJ,I4."

Calibration: For acetonitrile, the initial calibration RF was <0.05 but >0.01 and the ICV %D was >20% but <40% with negative bias. All associated sample results were NDs and will be qualified "UJ,I4,C3."

MS/MSD: The MSD (PSD) percent recovery (%R) of acetone was < QC acceptance criteria but >10%. All associated sample results were NDs and will be qualified "UJ,MS3." It should be noted that all acetone sample results have been previously qualified "R" due to a negative initial calibration intercept value.

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

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

Instrument Tune

All instrument tune requirements were met.

Calibration

All initial and continuing calibration QC acceptance criteria were met, except as noted above in the summary section and the following. The ICV or continuing calibration verification (CCV) %Ds of nine target analytes were >20% but <40% with negative bias. However, all associated sample results, except the results qualified above in the summary section, were NDs and no other calibration QC acceptance criteria were exceeded. Therefore, no sample data will be qualified as a result.

Blanks

No target analytes were detected in the blanks, except the following. 1,2,4-trichlorobenzene was detected in the method blank (MB) at a concentration > the MDL but < the practical quantitation limit (PQL). However, all associated sample results were NDs and will not be qualified. Carbon disulfide was detected in the trip blank (TB) (sample 196958-009) at a concentration > the MDL but < the PQL. However, all associated sample results were NDs and will not be qualified.

Internal Standards (ISs)

All IS area and RT QC acceptance criteria were met.

Surrogates

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

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

All LCS QC acceptance criteria were met, except the following. The LCS %R of pentachloroethane was < QC acceptance criteria but >10%. All associated sample results were NDs. However, up to five LCS %R infractions are allowed since more than 74 LCS analytes were reported. Therefore, the associated sample results will not be qualified. No LCSD analysis was performed. The MSD (PSD) 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)

All MS/MSD (PS/PSD) QC acceptance criteria were met, except as noted above in the summary section.

Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not requested.

Detection Limits/Dilutions

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

Other QC

No field blanks (FBs) or field duplicates (FDs) were submitted on the AR/COCs. It should be noted that the equipment blank (EB) (sample 196958-010) applies to samples on COC 611613 contained in another package (SDG 197069).

No other specific issues were identified which affect data quality.

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Memorandum

DATE: December 18, 2007
TO: File
FROM: David Schwent
SUBJECT: Organic GC/MS Data Review and Validation - SNL
Site: CWL GWM
AR/COC: 611615 and 611618
SDG: 196958
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 2.

Summary

All samples were prepared and analyzed with approved procedures using method EPA8270C (SVOCs). Problems were identified with the data package that result in the qualification of data.

Calibration: The initial calibration intercept value of indeno(1,2,3-cd)pyrene was negative with an absolute value >3X the method detection limit (MDL). All associated sample results were non-detects (NDs) and will be qualified "R,I5."

Calibration: The initial calibration intercept value of dibenzo(a,h)anthracene was negative with an absolute value >3X the MDL. All associated sample results were NDs and will be qualified "R,I5."

Calibration: The initial calibration response factor (RF) of aramite was <0.05 but >0.01. All associated sample results were NDs and will be qualified "UJ,I4."

Calibration: The initial calibration percent relative standard deviation (%RSD) of pronamide was >15% but <40%. All associated sample results were NDs and will be qualified "UJ,I3."

Calibration: For 4-nitroquinoline-1-oxide, the initial calibration RF was <0.05 but >0.01, the initial calibration %RSD was >15% but <40, and the continuing calibration verification (CCV) percent difference (%D) was >20% but <40% with negative bias. All associated sample results were NDs and will be qualified "UJ,I3,I4,C3."

Calibration: For hexachlorophene, the initial calibration RF was <0.05 but >0.01 and the initial calibration verification (ICV) %D was >20% but <40% with negative bias. All associated sample results were NDs and will be qualified "UJ,I4,C3."

Calibration: The CCV %D of benzoic acid was >40% but <60% with negative bias. All associated sample results were NDs and will be qualified "UJ,C3."

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

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

Instrument Tune

All instrument tune requirements were met.

Calibration

All initial and continuing calibration QC acceptance criteria were met, except as noted above in the summary section and the following. The initial calibration intercept values of 1,3,5-trinitrobenzene and dinoseb were >3X the MDL. However, all associated sample results were NDs and will not be qualified. The ICV or CCV %Ds of fifteen target analytes were >20% with positive bias (see Data Validation Worksheets). However, all associated sample results were NDs and will not be qualified. The ICV or CCV %Ds of nine target analytes were >20% but <40% with negative bias (see Data Validation Worksheets). However, all associated sample results, except the results qualified above in the summary section, were NDs and no other calibration QC acceptance criteria were exceeded. Therefore, no sample data will be qualified as a result.

Blanks

No target analytes were detected in the blanks.

Internal Standards (ISs)

All IS area and RT QC acceptance criteria were met.

Surrogates

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

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

All LCS QC acceptance criteria were met, except the following. The LCS percent recoveries (%Rs) of benzidine, di-n-octylphthalate, and hexachlorocyclopentadiene were > QC acceptance criteria. However, all associated sample results 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)

All MS/MSD QC acceptance criteria were met.

Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not requested.

Detection Limits/Dilutions

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

Other QC

No field blanks (FBs) or field duplicates (FDs) were submitted on the AR/COCs. It should be noted that the equipment blank (EB) (sample 196958-011) applies to samples on COC 611613 contained in another package (SDG 197069).

No other specific issues were identified that affect data quality.

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Memorandum - Revised

DATE: February 25, 2008
TO: File
FROM: David Schwent
SUBJECT: General Chemistry Data Review and Validation - SNL
Site: CWL GWM
AR/COC: 611615 and 611618
SDG: 196958
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 2.

Summary

The samples were prepared and analyzed with accepted procedures using methods EPA9012A (total CN) and EPA9034 (acid soluble sulfide). No problems were identified with the data package that result in the qualification of data.

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

Holding Times/Preservation

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

Calibration

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

Blanks

All Analyses: No target analytes were detected in the blanks.

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

All Analyses: All LCS QC acceptance criteria were met. No LCSD analyses were performed. The laboratory replicates were used as measures of laboratory precision. No sample data will be qualified as a result.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

All Analyses: All MS (PS) QC acceptance criteria were met. No MSD analyses were performed. No sample data will be qualified as a result. It should be noted that the MS analysis for total sulfide was performed on a SNL QC 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. It should be noted that the laboratory replicate analysis for total sulfide was performed on a SNL QC sample of similar matrix from another SDG. No sample data will be qualified as a result.

Detection Limits/Dilutions

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

Other QC

No field blanks (FBs) or field duplicates (FDs) were submitted on the AR/COCs. It should be noted that the equipment blanks (EBs) (samples 196958-015 and -016) apply to samples on COC 611613 contained in another package (SDG 197069).

No other specific issues were identified which affect data quality.

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Memorandum

DATE: December 18, 2007
TO: File
FROM: David Schwent
SUBJECT: Organic GC Data Review and Validation – SNL
Site: CWL GWM
AR/COC: 611615 and 611618
SDG: 196958
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 2.

Summary

All samples was prepared and analyzed with accepted procedures using method EPA8151A (Herbicides). Problems were identified with the data package that result in the qualification of data.

Holding Time/Preservation: Sample 196958-017 of Batch 701767 was re-extracted beyond the method specified holding time but within 2X the holding time. All associated sample results were non-detects (NDs) and will be qualified "UJ,H2."

MS/MSD: No MS/MSD analyses were performed for Batch 701767. As a result, there was no measure of matrix-specific accuracy for the field sample of the batch. All associated results of sample 196958-017 were NDs and will be qualified "UJ,MS1" due to lack of matrix-specific accuracy data.

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

Holding Times and Preservation

The samples were extracted and analyzed within the prescribed holding times and properly preserved, except as noted above in the summary section.

Calibration

All initial and continuing calibration QC acceptance criteria were met.

Blanks

No target analytes were detected in the blanks.

Surrogates

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

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

All LCS/LCSD QC acceptance criteria were met. The MSD analysis was used as a measure of laboratory precision for Batch 699152 and the LCSD analysis was used as a measure of laboratory precision for Batch 701767. No sample data will be qualified as a result.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

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

Target Compound Identification/Confirmation

All confirmation QC acceptance criteria were met.

Detection Limits/Dilutions

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

Other QC

No field blanks (FBs) or field duplicates (FDs) were submitted on the AR/COCs. It should be noted that the equipment blank (EB) (sample 196958-017) applies to samples on COC 611613 contained in another package (SDG 197069).

No other specific issues that affect data quality were identified.

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Memorandum

DATE: December 18, 2007
TO: File
FROM: David Schwent
SUBJECT: Inorganic Data Review and Validation - SNL
Site: CWL GWM
AR/COC: 611615 and 611618
SDG: 196958
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 2.

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 initial calibration blank (ICB) and continuing calibration blank (CCB) at negative concentrations with absolute values > the MDL but < the PQL. The associated results of samples 196958-003 and -012 were non-detects (NDs) and will be qualified "UJ,B4."

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

Holding Times/Preservation

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

ICP-MS Instrument Tune

ICP-MS Analysis: The instrument tune data were not reported and could not be evaluated. No sample data should be qualified as a result.

Calibration

All Analyses: All initial and continuing calibration QC acceptance criteria were met, except for the following. Initial calibration y-intercept values and correlation coefficients (R^2) values for target analytes were not reported and could not be evaluated. No sample data should be qualified as a result.

Reporting Limit Verification

All Analyses: All CRA/CRI recoveries met QC acceptance criteria.

Blanks

ICP-MS Analysis: No target analytes were detected in the blanks, except the following. Sb was detected in the CCB at a concentration > the method detection limit (MDL) but < the practical quantitation limit (PQL). However, all associated sample results 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.

ICP-MS Internal Standards

ICP-MS Analysis: Internal standards data were not reported and could not be evaluated. No sample data should be qualified as a result.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

All Analyses: All MS (PS) QC acceptance criteria were met. No MSD analyses were performed. No sample data will be qualified as a result.

Laboratory Replicate

All Analyses: All replicate QC acceptance criteria were met.

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

All Analyses: All LCS QC acceptance criteria were met. No LCSD analyses were performed. The laboratory replicate analyses were used as measures of laboratory precision. No sample data will be qualified as a result.

Detection Limits/Dilutions

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

ICP Interference Check Sample (ICS A and AB)

ICP-MS Analysis: The ICS A and ICS AB raw data were not reported and could not be evaluated. No sample data should be qualified as a result. It should be noted that all ICS AB recoveries still met QC acceptance criteria. No sample data should be qualified as a result.

ICP Serial Dilution

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

Other QC

No field blanks (FBs) or field duplicates (FDs) were submitted on the AR/COCs. It should be noted that the equipment blanks (EBs) (samples 196958-012 and -013) apply to samples on COC 611613 contained in another package (SDG 197069).

No other specific issues were identified which affect data quality.

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Memorandum

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SUBJECT: General Chemistry Data Review and Validation - SNL
Site: CWL GWM
AR/COC: 611615 and 611618
SDG: 196958
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 2.

Summary

The samples were prepared and analyzed with accepted procedures using methods EPA9012A (total CN) and EPA9034 (acid soluble sulfide). Problems were identified with the data package that result in the qualification of data.

Total CN Analysis:

Calibration: The initial calibration intercept value of total CN was negative with an absolute value >3X the method detection limit (MDL). All associated sample results were non-detects (NDs) and will be qualified "R,I5."

Blanks: Total CN was detected in the initial calibration blank (ICB), continuing calibration blank (CCB), and method blank (MB) at negative concentrations with absolute values > the MDL but < the practical quantitation limit (PQL). All associated sample results were NDs and will be qualified "UJ,B4,B5." It should be noted that total CN sample results have been qualified "R" due to a negative initial calibration intercept value.

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

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

Calibration

Total CN Analysis: All initial and continuing calibration QC acceptance criteria were met, except as noted above in the summary section.

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

Blanks

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

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

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

All Analyses: All LCS QC acceptance criteria were met. No LCSD analyses were performed. The laboratory replicates were used as measures of laboratory precision. No sample data will be qualified as a result.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

All Analyses: All MS (PS) QC acceptance criteria were met. No MSD analyses were performed. No sample data will be qualified as a result. It should be noted that the MS analysis for total sulfide was performed on a SNL QC 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. It should be noted that the laboratory replicate analysis for total sulfide was performed on a SNL QC sample of similar matrix from another SDG. No sample data will be qualified as a result.

Detection Limits/Dilutions

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

Other QC

No field blanks (FBs) or field duplicates (FDs) were submitted on the AR/COCs. It should be noted that the equipment blanks (EBs) (samples 196958-015 and -016) apply to samples on COC 611613 contained in another package (SDG 197069).

No other specific issues were identified which affect data quality.

Perchlorate Screening Quarterly Monitoring Report

**Fourth Quarter of Calendar Year 2007
(October, November, and December 2007)**

Sandia National Laboratories, New Mexico

Environmental Restoration Project, Department 6765

March 2008

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
Fourth Quarter of Calendar Year 2007
(October, November, and December 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 fourth quarter of Calendar Year 2007 (CY2007) in response to the requirements of the Order.

During the fourth quarter of CY2007, a groundwater sample was collected from CYN-MW6, the only well currently in the perchlorate-screening monitoring-well network. CYN-MW6 is one of the seven wells in the Burn Site Groundwater monitoring well network. CYN-MW6 was sampled on December 18, 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 6.20 micrograms per liter ($\mu\text{g/L}$). This concentration was verified by subsequent analysis of a duplicate sample, which provided a result of 6.56 $\mu\text{g/L}$. The source for the perchlorate in the groundwater at CYN-MW6 is unknown although a natural source may be present. Because perchlorate concentrations in monitoring well CYN-MW6 have exceeded the screening level, DOE/Sandia initiated a negotiation process with the NMED (SNL/NM March 2007) to determine the frequency of continued monitoring. DOE/Sandia will continue quarterly monitoring perchlorate concentrations in CYN-MW6 until a negotiated sampling schedule is finalized. Recently installed groundwater monitoring well MWL-BW2 will be added to the perchlorate screening monitoring well network for a minimum of four quarters. MWL-BW2 is part of the Mixed Waste Landfill groundwater monitoring network.

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Perchlorate Screening Quarterly Monitoring Report Fourth Quarter of Calendar Year 2007 (October, November, and December 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 fourth 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. Per the letter report, 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 ninth 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),
6. First Quarter of Calendar Year 2007 (SNL/NM June 2007),
7. Second Quarter of Calendar Year 2007 (SNL/NM September 2007), and
8. Third Quarter of Calendar Year 2007 (SNL/NM December 2007).

Because perchlorate concentrations in monitoring well CYN-MW6 (in the Burn Site Groundwater study area) have exceeded the screening level, and because this well had completed the required minimum four quarters of sampling, DOE/Sandia initiated a negotiation process with the NMED (SNL/NM March 2007) to determine the frequency of continued perchlorate monitoring. DOE/Sandia will continue quarterly monitoring perchlorate concentrations in CYN-MW6 until a negotiated sampling schedule is finalized. Recently installed groundwater monitoring well MWL-BW2 (in the Mixed Waste Landfill study area) will be added to the perchlorate screening monitoring well network for a minimum of four quarters starting in the second quarter of CY 2008. Reporting will continue as long as a groundwater monitoring well remains in the perchlorate-screening monitoring well network.

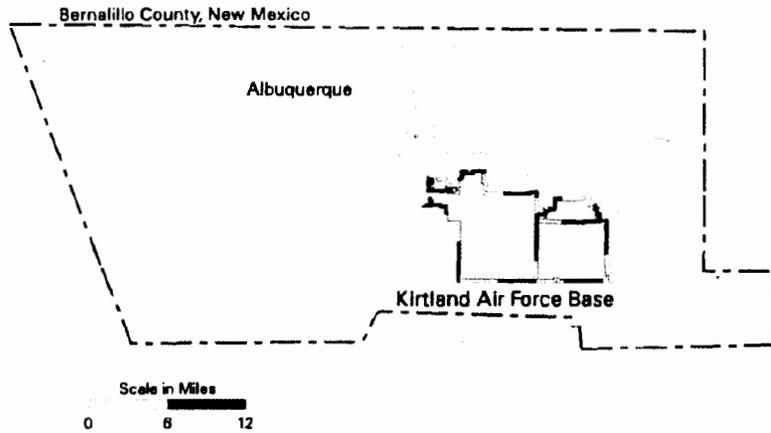
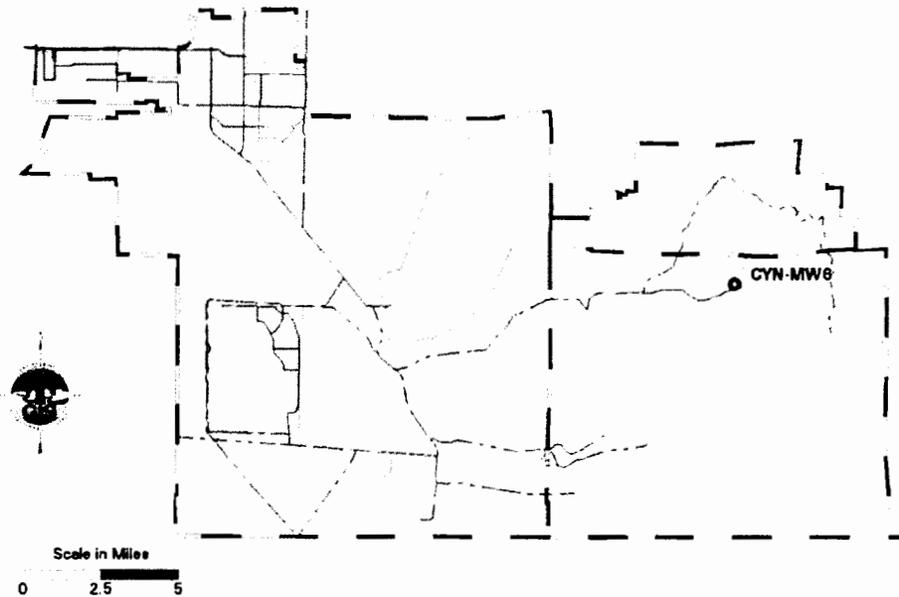
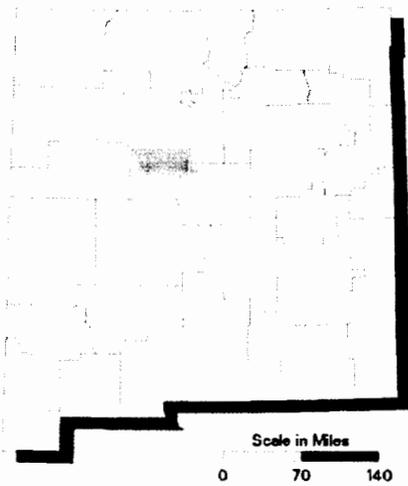


Figure 1
Sandia National Laboratories
New Mexico
Current Perchlorate-Screening
Monitoring-Well Network
(Oct/Nov/Dec 2007)

Bernalillo County, New Mexico



2.0 Scope of Activities

This report provides perchlorate screening results from the fourth quarter of CY2007 (October, November, and December 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, these wells have been removed from the perchlorate screening program. Data for these wells were provided in previous reports, and are not discussed in this current report. Wells discussed in previous perchlorate screening reports include: CYN-MW1D, CYN-MW5, CYN-MW7, CYN-MW8, MRN-2, MRN-3D, MWL-BW1, MWL-MW1, NWT3-MW2, and SWTA3-MW4.

Table 1
Current Perchlorate-Screening Monitoring-Well Network
Fourth Quarter of CY2007 (October, November, and December)

Well	Date Sampled	Number of Consecutive Sampling Events ^a	Remaining Number of Sampling Events ^b	Sampling Method
CYN-MW6	18-DEC-07	8	TBD ^c	Bennett TM Pump

Notes:

^a Includes this sampling event.

^b Per the requirements of Table XI-1 of the Order (NMED April 2004) a well will be removed from the perchlorate-screening monitoring-well network after four quarters unless perchlorate is detected above the screening level/MDL of 4 $\mu\text{g/L}$. 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.

^c TBD = To be determined. This well has been sampled for the required initial four quarters. Because perchlorate concentrations in this well have exceeded the screening level, DOE/Sandia initiated the negotiation process with the NMED to determine the frequency of continued monitoring. DOE/Sandia will continue quarterly monitoring perchlorate concentrations in CYN-MW6 until a negotiated sampling schedule is finalized.

DOE/Sandia performed groundwater sampling at CYN-MW6 on December 18, 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 First Quarter Fiscal Year 2008" (SNL/NM November 2007).

As described in the Mini-SAP, groundwater sampling was performed in conformance with current Sandia Environmental Management, Long Term Environmental Stewardship (LTES) Project field operating procedures (FOPs). A portable BennettTM groundwater sampling system was used to collect the groundwater sample. The sampling pump and tubing bundle were decontaminated prior to installation into monitoring wells in accordance with procedures described in FOP 05-03, "LTES Groundwater Sampling Equipment Decontamination" (SNL/NM 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 with a YSI™ Model 620 Water Quality Meter. Turbidity was measured with a HACH™ Model 2100P turbidity meter. Purging continued until four stable measurements for turbidity, pH, temperature, and SC were obtained. Groundwater stability 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 (COA), 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. The COA is also included in Appendix A.

Table 2
Sample Details for Fourth Quarter of CY2007 Perchlorate Sampling

Well	Sample Identification	AR/COC Number	Date Shipped
CYN-MW6	085446-020 085447-020	611668	18-DEC-07

Notes:
ARCOC = Analysis request and 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 well. In January 2008, DOE/Sandia requested a meeting with NMED to discuss 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 fourth quarter CY2007 perchlorate data is included as Appendix A. Consistent with historical analytical results, perchlorate was detected above the screening level/MDL in the fourth quarter of CY2007 in CYN-MW6.

As shown in Figure 2, the concentrations of perchlorate found in CYN-MW6 in December 2007 (6.20 and 6.56 $\mu\text{g/L}$) are 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, SNL/NM June 2007, SNL/NM September 2007, and SNL/NM December 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 November 2007) were identified during the fourth quarter CY2007 sampling activities.

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

Well ID	Sample Date	ARCO No.	Sample No.	Perchlorate Result ^a (µg/L)	MDL ^b (µg/L)	PQL ^c (µg/L)	MCL ^d (µg/L)	Laboratory Qualifier ^e	Validation Qualifier ^f	Analytical Method ^g	Comments
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-R20	5.94	0.5	2.0	NE			EPA 6850M	Verification/Re-analysis
	12-Sep-07	611581	085249-020	7.74	4.0	12	NE	J		EPA 314.0	
12-Sep-07	611581	085249-R20	6.46	0.5	2.0	NE	Hh	J	EPA 6850M	Verification/Re-analysis	
18-Dec-07	611668	085446-020	6.20	4.0	12	NE	J		EPA 314.0		
18-Dec-07	611668	085447-020	6.56	4.0	12	NE	J		EPA 314.0	Duplicate sample	

Refer to notes on next page.

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

Notes—

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

^aResult

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

µg/L = micrograms per liter.

^bMDL

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.

^cPQL

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.

^dMCL

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.

^eLab Qualifier

H = Analytical holding time was exceeded.

h = Prep holding time was exceeded.

J = Amount detected is below the practical quantitation limit.

^fValidation 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.

^gAnalytical Method

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

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 (EPA April 2005).

Figure 2
Perchlorate Concentrations ($\mu\text{g/L}$) over Time in CYN-MW6

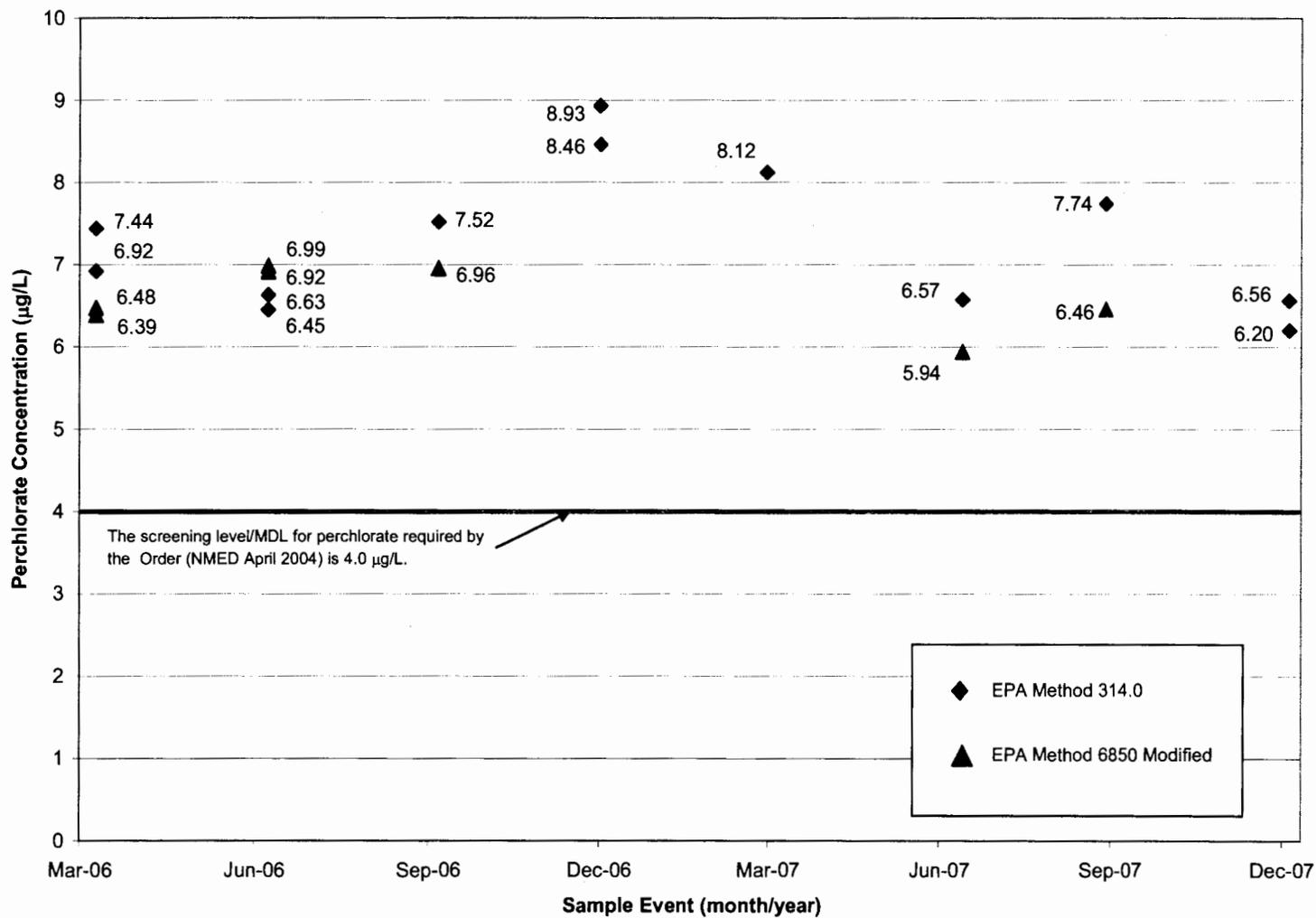


Table 4
Perchlorate Screening Groundwater Monitoring
Field Water Quality Measurements^a, Fourth Quarter of CY2007

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	18-Dec-07	13.49	1040	387.4	6.97	0.35	20.2	2.10

Notes:

^aField 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).

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 (6.20 and 6.56 µg/L) are consistent with the concentrations reported in previous quarters (Figure 2) (SNL/NM June 2006, SNL/NM September 2006, SNL/NM December 2006, SNL/NM March 2007, SNL/NM June 2007, SNL/NM September 2007, and SNL/NM December 2007).
- 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). For the benefit of the reader, the "Summary of Perchlorate Soil Sampling" presented in a previously submitted quarterly report (SNL/NM June 2006) is reproduced in this current report as Appendix C.
- The nature and extent of perchlorate in groundwater at the Burn Site has been sufficiently characterized. Since 2004, four other monitoring wells in the vicinity of the Burn Site have been sampled and analyzed for perchlorate, including CYN-MW1D, CYN-MW5, CYN-MW7, and CYN-MW8. All of these wells were sampled for four quarters and all results were non-detect for perchlorate (Appendix D).
- A human health risk assessment has been performed to evaluate the potential for adverse health effects from the concentrations of perchlorate detected in CYN-MW6 groundwater. The maximum concentration of perchlorate in CYN-MW6 to date (8.93 µg/L) was used in the assessment. The calculated hazard quotient (HQ) of 0.35 is less than the NMED target level of a Hazard Index (the sum of all HQs) of 1.0 (NMED, 2006) (Appendix E).

Recent studies have determined that a substantial reservoir of natural perchlorate is present in vadose zone soils of the arid and semi-arid southwestern United States. The perchlorate is thought to occur with meteoric chloride that has accumulated in these soils over thousands of years. The vadose zone perchlorate reservoir can affect groundwater when recharge from irrigation or other anthropomorphic activities flushes accumulated salts from the unsaturated zone (Rao et al., June 2007). Perchlorate in groundwater thought to be tens of thousands of years old in the Middle Rio Grande Basin of New Mexico has been inferred to be meteoric in origin (Plummer et al., February 2006). This may be the case at Burn Site where water-filled pits used for

testing may have released water to the subsurface and mobilized perchlorate to groundwater.

Because perchlorate concentrations in monitoring well CYN-MW6 have exceeded the screening level, DOE/Sandia initiated a negotiation process with the NMED (SNL/NM March 2007) to determine the frequency of continued monitoring. DOE/Sandia will continue quarterly monitoring of perchlorate in CYN-MW6 until a negotiated sampling schedule is finalized. In January 2008, DOE/Sandia requested a meeting with NMED to discuss the need for continued monitoring or additional characterization work, and potentially, a CME. Recently installed groundwater monitoring well MWL-BW2 at the Mixed Waste Landfill will be added to the perchlorate screening monitoring well network for a minimum of four quarters.

6.0 References

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Appendix A

Analytical Laboratory Certificate of Analysis for the Perchlorate Data

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Report Date: January 8, 2008

Client Sample ID: 085446-020
Sample ID: 199639020
Matrix: AQUEOUS
Collect Date: 18-DEC-07 10:34
Receive Date: 20-DEC-07
Collector: Client

Project: SNLSGWater
Client ID: SNLS003
Client Desc.: CYN-MW6

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Ion Chromatography Federal										
<i>EPA 314.0 Perchlorate by IC"As Received"</i>										
Perchlorate	J	0.0062	0.004	0.012	mg/L	1	MAR112/27/07	1410	713064	1

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 314.0 DOE-AL	

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Report Date: January 8, 2008

Client Sample ID: 085447-020
Sample ID: 199639028
Matrix: AQUEOUS
Collect Date: 18-DEC-07 10:34
Receive Date: 20-DEC-07
Collector: Client

Project: SNLSGWater
Client ID: SNLS003

Client Desc.: CYN-MW6

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Ion Chromatography Federal										
<i>EPA 314.0 Perchlorate by IC "As Received"</i>										
Perchlorate	J	0.00656	0.004	0.012	mg/L	1	MAR112/27/07	1428	713064	1

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 314.0 DOE-AL	

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

Internal Lab

Batch No. *N/A*

SMO Use

AR/COC

611668

Dept. No./Mail Stop: 6765/1089	Date Samples Shipped: <i>12/18/07</i>	Project/Task No. 98026.01.06	<input type="checkbox"/> Waste Characterization
Project/Task Manager: Paul Freshour	Carrier/Waybill No. <i>844218</i>	SMO Authorization: <i>[Signature]</i>	-Send preliminary/copy report to:
Project Name: Bm Site GWM	Lab Contact: Edle Kent/803-556-8171	Contract #: PO 691438	<input type="checkbox"/> Released by CDC No.:
Record Center Code: ER/1333/DAT	Lab Destination: GEL	<i>SUB BOTTLE ORDER</i>	<input checked="" type="checkbox"/> Validation Required
Logbook Ref. No.: ER 058	SMO Contact/Phone: Pam Puissant/505-844-3185		Bill To: Sandia National Labs (Accounts Payable)
Service Order No. CF#003-08	Send Report to SMO: Lorraine Herrera/505-844-3199		P.O. Box 5800 MS 0154

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					
085446-001	CYN-MW6	163	<i>N/A</i>	121807/1022	GW	G	3 x 40ml	HCL	G	SA	VOC (SW846-8260)	<i>013</i>
085446-002	CYN-MW6	163		121807/1023	GW	AG	3 x 1L	4C	G	SA	SVOC (SW846-8270)	<i>014</i>
085446-005	CYN-MW6	163		121807/1027	GW	AG	4 x 1L	4C	G	SA	TPH Diesel (SW846-8015)	<i>015</i>
085446-006	CYN-MW6	163		121807/1030	GW	G	3 x 40ml	HCL	G	SA	TPH Gasoline (SW846-8015)	<i>016</i>
085446-016	CYN-MW6	163		121807/1031	GW	P	250 ml	4C	G	SA	Major Anions (SW846-9058)	<i>017</i>
085446-017	CYN-MW6	163		121807/1032	FGW	P	500 ml	HNO3	G	SA	Major Cations (SW846-6020) <i>ff</i>	<i>018</i>
085446-018	CYN-MW6	163		121807/1033	GW	P	250 ml	H2SO4	G	SA	NPN (353.2)	<i>019</i>
085446-020	CYN-MW6	163		121807/1034	GW	P	250 ml	4C	G	SA	Perchlorate (314.0)	<i>020</i>
085447-001	CYN-MW6	163		121807/1022	GW	G	3 x 40ml	HCL	G	DU	VOC (SW846-8260) <i>field QC</i>	<i>021</i>
085447-002	CYN-MW6	163		121807/1023	GW	AG	3 x 1L	4C	G	DU	SVOC (SW846-8270) <i>field QC</i>	<i>022</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/yy)	Date Entered (mm/dd/yy)	Level D Package <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	*Send report to:	
Turnaround Time <input type="checkbox"/> 7 Day <input type="checkbox"/> 15 Day <input checked="" type="checkbox"/> 30 Day	Negotiated TAT	QC Inits:	Tim Jackson/Org.4133/MS 1089/505-284-2547		
Return Samples By:	Company/Organization/Phone/Cellular		FGW (filtered in field with 40 micron filter)		
Sample Team Members	Name	Signature	Inlt	LAST WELL TO BE SAMPLED FOR CYN	
	William J Gibson	<i>[Signature]</i>	WJG	*Please list as separate report.	
	Robert Lynch	<i>[Signature]</i>	RL		
Alfred Santillanes	<i>[Signature]</i>	AS			Lab Use

1. Relinquished by <i>[Signature]</i> Org. 4133 Date <i>12/18/07</i> Time <i>11:30</i>	4. Relinquished by _____ Org. _____ Date _____ Time _____
1. Received by <i>[Signature]</i> Org. 4133 Date <i>12/18/07</i> Time <i>11:30</i>	4. Received by _____ Org. _____ Date _____ Time _____
2. Relinquished by <i>[Signature]</i> Org. 4133 Date <i>12/19/07</i> Time <i>07:15</i>	5. Relinquished by _____ Org. _____ Date _____ Time _____
2. Received by <i>[Signature]</i> Org. _____ Date <i>12/19/07</i> Time <i>10:00</i>	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 _____

Appendix B

Data Validation Sample Findings Summary Sheets for the Perchlorate Data

Sample Findings Summary

Site: Burn Site GWM (ER)

AR/COC: 611666, 611667, and 611668

Organic, Metals, Gen Chem

Sample ID	EPA8260B (VOCs): 67-64-1 (acetone)	EPA8270C (SVOCs): 105-67-9 (2,4-dimethylphenol) 91-20-3 (naphthalene) 83-32-9 (acenaphthene) 86-73-7 (fluorene) 95-95-4 (2,4,5-trichlorophenol) 88-06-2 (2,4,6-trichlorophenol) 120-83-2 (2,4-dichlorophenol) 51-28-5 (2,4-dinitrophenol) 95-57-8 (2-chlorophenol) 534-52-1 (2-methyl-4,6-dinitrophenol) 88-75-5 (2-nitrophenol) 91-94-1 (3,3'-dichlorobenzidine) 35421-08-0 (4-chloro-3-methylphenol) 100-02-7 (4-nitrophenol) 77-47-4 (hexachlorocyclopentadiene) 87-86-5 (pentachlorophenol) 108-95-2 (phenol) 100-01-6 (p-nitroaniline)	EPA8015A/B (DRO): 394878-87-0 (DRO)	EPA8015B (GRO): EPA6020 (ICP-MS): 7439-95-4 (Mg) 7440-23-5 (Na) EPA314.0 (Perchlorate): EPA9056 (Anions): EPA353.2 (Nitrate/nitrite): N599 (nitrate/nitrite)	Other Parameters
085444-001 CYN-EB1	7.71UJ,C3, B1,MS3				
085444-002 CYN-EB1		R,15 R,15 R,15 R,15 UJ,MS5			
085445-001 CYN-TB1	J-,C3,MS3				
085446-001 CYN-MW6	6.66UJ,C3, B1,MS3				
085446-002 CYN-MW6		R,15 R,15 R,15 R,15 UJ,MS5			
085447-001 CYN-MW6	6.71UJ,C3, B1,MS3				
085447-002 CYN-MW6		R,15 R,15 R,15 R,15 UJ,MS5			
085448-001 CYN-TB2	J-,C3,MS3				
085444-005 CYN-EB1	UJ,MS5				
085444-017 CYN-EB1					
085444-018 CYN-EB1					
085443-005 CYN-MW8	UJ,MS5				
085446-005 CYN-MW6	UJ,MS5				
085446-017 CYN-MW6		J,D1 J,D1			
085447-005 CYN-MW6	UJ,MS5				
085447-017 CYN-MW6		J,D1 J,D1			

Validated By:

David Schwartz

Date: 02/05/08

Analytical Quality Associates, Inc.

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Email: minteer@aol.com

Memorandum

DATE: February 5, 2008
TO: File
FROM: David Schwent
SUBJECT: General Chemistry Data Review and Validation - SNL
Site: Burn Site GWM (ER)
AR/COC: 611666, 611667, and 611668
SDG: 199639
Laboratory: GEL
Project/Task No: 98026.01.06

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

Summary

The samples were prepared and analyzed with accepted procedures using methods EPA314.0 (perchlorate), EPA353.2 (nitrate/nitrite by Cd reduction), and EPA9056 (anions). Problems were identified with the data package that result in the qualification of data.

Nitrate/nitrite Analysis:

Blanks: Nitrate/nitrite was detected in the initial calibration blank (ICB), continuing calibration blank (CCB), and method blank (MB) at negative concentrations with absolute values > the method detection limit (MDL) but < the practical quantitation limit (PQL). The associated result of sample 199639-007 was a non-detect (ND) and will be qualified "UJ,B4,B5."

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

Holding Times/Preservation

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

Calibration

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

Blanks

Nitrate/nitrite Analysis: No target analytes were detected in the blanks, except as noted above in the summary section and the following. Nitrate/nitrite was detected in the ICB, CCB, and MB at negative concentrations with absolute values > the MDL but < the PQL. However, the associated results of samples 199639-012, -019, and -027 were detects >5X the MDL and will not be qualified.

Anions Analysis: No target analytes were detected in the blanks, except the following. Chloride and sulfide were detected in the equipment blank (EB) (sample 199639-005) at concentrations > the MDL but < the PQL. However, all associated sample results were detects >5X the EB concentration and will not be qualified.

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

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

All Analyses: All LCS QC acceptance criteria were met. No LCSD analyses were performed. The laboratory replicate analyses were used as measures of laboratory precision. No sample data will be qualified as a result.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

All Analyses: All MS (PS) QC acceptance criteria were met. No MSD analyses were performed. No sample data will be qualified as a result.

Replicates

All Analyses: All replicate QC acceptance criteria were met.

Detection Limits/Dilutions

All detection limits were properly reported. Sample 199639-007 was diluted 5X, sample -012 was diluted 10X, and samples -019 and -027 were diluted 50X for nitrate/nitrite due to high concentration of the target analyte and samples -017 and -025 were diluted 10X for chloride and sulfate due to high concentrations of the target analytes. All associated batch QC samples were diluted at dilution factors that resulted in relative dilution factors to the samples that were $\leq 5X$. No sample data will be qualified as a result. No other samples required dilution.

Other QC

No field blanks (FBs) were submitted on the AR/COCs. The field duplicate (FD) (samples 199639-027 and -028) relative percent differences (RPDs) were <20% and the RPD of FD (sample -025) for bromide was >20%. No QC acceptance criteria for the evaluation of FDs are currently in place.

No other specific issues were identified which affect data quality.

Appendix C

Summary of Perchlorate Soil Sampling in the Burn Site Groundwater Study Area

Appendix C

Summary of Perchlorate Soil Sampling in the Burn Site Groundwater Study Area

In January 2001, the New Mexico Environment Department, Hazardous Waste Bureau (NMED/HWB) collected soil samples for perchlorate analysis from several sites at Sandia National Laboratories, New Mexico (SNL/NM) (NMED January 2001). The *"Data Evaluation Report—Summary of Sitewide Perchlorate Studies"* (Skelly and Griffith January 2003) was prepared to summarize all Sandia and NMED soil and groundwater perchlorate analytical results.

In late 2000, the NMED/HWB requested to sample soils at select Sandia SWMUs based on historical use of rocket propellants at Sandia. In January 2001, NMED/HWB collected 55 surface-soil samples from six Sandia locations (Table 1). The soil samples were analyzed by Aqua Tech Environmental Laboratories (ATEL) by EPA Method 314.0 (Ion Chromatography) with sample-specific MDLs that varied from 10.2 to 15.2 µg/L.

Table 1: Soil Samples Collected for Perchlorate Analysis in 2001.

Area	Location	Sample Matrix	Number of Samples
TA-III/V	Long Sled Track (SWMU 83)	Surface Soils	10
	Short Sled Track (SWMU 240)	Surface Soils	9
	Storage Yard West of SWMU 18	Surface Soils	8
Foothills/ Canyons	"Explosives Test Area" Coyote Canyon Open Dump and Blast Area (SWMU 8 & 58)	Surface Soils	9
	SWMU 81A	Surface soils	11
	Burn Site (SMWU 94)*	Surface soils	8

Note:

* In the original document (NMED January 2001), only SWMU 94 was associated with the Burn Site location; however, samples are also associated with SWMU 65.

As part of the study, NMED/HWB selected eight judgmental soil samples within the Burn Site Study Area at specific locations at SWMUs 65 and 94 (Figure 1). SWMUs 65 and 94 are co-located and contain 13 subunits. [The recently installed (February 2006) groundwater monitoring well CYN-MW6 is located near the center of all these SWMU subunits.] All subunits of SWMUs 65 and 94 have been proposed and accepted for "No Further Action", or "Corrective Action Complete". Tests conducted at these SWMUs from the mid-1960s to the mid-1990s used high explosives on weapons components, shipping containers, and other engineered components (SNL/NM September 1998). There were ten rocket propellant tests conducted at SWMU 65 between January 1984 and August 1993 (SNL/NM September

1998). Although not all rocket propellant contains perchlorate (Copland September 2005), it seems plausible that the propellant used at SWMU 65 may have contained perchlorate.

The eight soil samples (Table 2; NMED January 2001) represent the only soil samples collected in the Burn Site Groundwater Study Area (Figure 1), and all eight samples were nondetect for perchlorate. Although the laboratory MDLs for the 2001 sampling event are relatively high compared to detection limits that can be reached with current analytical methods, the results show that there is no gross perchlorate contamination in site soils.

Table 2: Summary of Perchlorate Analytical Results from Soil Samples Collected in the Burn Site Groundwater Study Area

Location	Sample Location	Sample Date	Sample ID	ATEL Perchlorate Result [EPA 314.0 (IC)] ($\mu\text{g}/\text{Kg}$) ^a
Burn Site (SWMU 94)^b	BURNSITE -- S1	9-Jan-01	101030-12	ND (<15.2)
	BURNSITE -- S2	9-Jan-01	101030-13	ND (<10.6)
	BURNSITE -- S3	9-Jan-01	101030-14	ND (<10.6)
	BURNSITE -- S4	9-Jan-01	101030-15	ND (<11.5)
	BURNSITE -- S5	9-Jan-01	101030-16	ND (<10.9)
	BURNSITE -- S6	9-Jan-01	101030-17	ND (<11.0)
	BURNSITE -- S7	9-Jan-01	101030-18	ND (<11.7)
	BURNSITE -- S8 ^c	9-Jan-01	101030-19	ND (<11.8)

Notes:

ATEL = Aqua Tech Environmental Laboratories (subcontractor to Pinnacle Laboratories).

EPA = (U.S.) Environmental Protection Agency.

IC = Ion chromatography.

ID = Identification.

MDL = Method detection limit.

ND = Not detected.

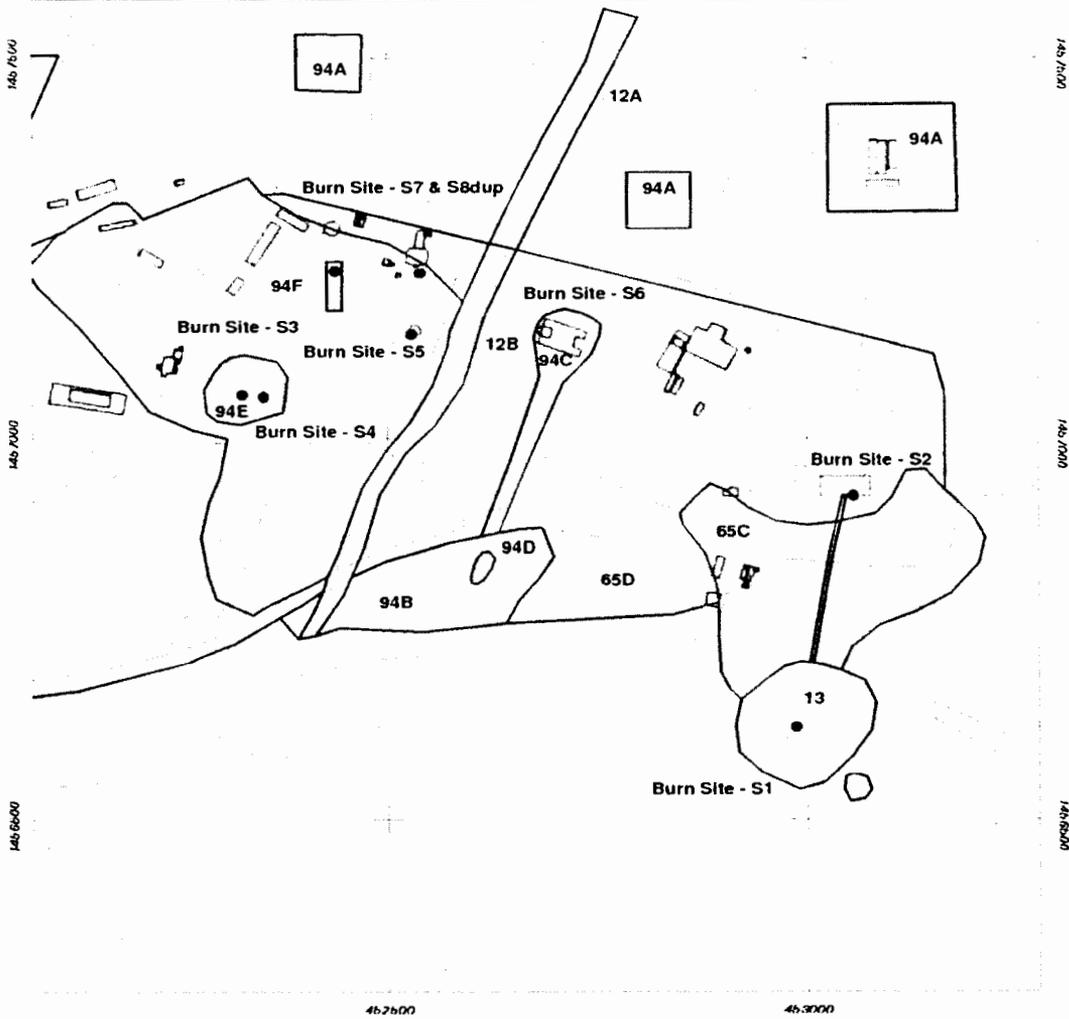
$\mu\text{g}/\text{Kg}$ = Micrograms per kilogram.

^a = MDL not specifically identified on the hard copies of the analytical data sheets; the number provided after the less-than symbol is assumed to be the MDL.

^b = In the original documents (NMED January 2001), only SWMU 94 was associated with the Burn Site location; however, samples are also associated with SWMU 65.

^c = Sample "BURNSITE -- S8" is a duplicate of sample "BURNSITE -- S7".

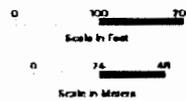
Data summarized from NMED January 2001.



Legend

- Perchlorate Sample Location
- Road / Driveable Area
- SWMU Boundary
- 10-Foot Contour
- Surface Drainage
- Building / Structure

Figure 1
Perchlorate Soil Samples
Collected in the Burn
Site Study Area, January 2001



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

References

- Copland, John R., September 2005. "Hydrogeology of the EOD Well and Possible Sources of Perchlorate at Sandia National Laboratories/New Mexico and Kirtland Air Force Base," Consultant report prepared by CE2 Corporation for Sandia National Laboratories, New Mexico Environmental Restoration Project. September 29, 2005.
- NMED January 2001. New Mexico Environment Department. Perchlorate Study Analytical Data (Soil), transmitted from Pinnacle Laboratories (and their subcontractor laboratory Aqua Tech Environmental Laboratories), Albuquerque, NM to Julie Wanslow and Will Moats, NMED HWB. Two data packages submitted January 29, 2001. [Photocopies of the data packages are available in the SNL/NM ISS Records Center, SHEARS# 259293].
- Sandia National Laboratories, New Mexico (SNL/NM) September 1998. "No Further Action Proposal for Solid Waste Management Unit 65E, Operable Unit 1333," Sandia National Laboratories, New Mexico Environmental Restoration Project. September 15, 1998.
- Skelly, Michael F. and Stacy R. Griffith. January 2003. Memo to Sue Collins (SNL/NM), "Data Evaluation Report—Summary of Sitewide Perchlorate Studies." Sandia National Laboratories Environmental Restoration Project, Albuquerque New Mexico. January 16, 2003.

Appendix D

Summary of Perchlorate Screening Analytical Results for Burn Site Groundwater Monitoring Wells in the Vicinity of CYN-MW6

**Appendix D Summary of Perchlorate Screening Analytical Results for Burn Site
Groundwater Monitoring Wells in the Vicinity of CYN-MW6.**

Well ID	Sample Date	ARCO No.	Sample No.	Perchlorate Result ^a (µg/L)	MDL ^b (µg/L)	PQL ^c (µg/L)	MCL ^d (µg/L)	Laboratory Qualifier ^e	Validation Qualifier ^f	Analytical Method ^g	Comments
CYN-MW1D	23-Sep-04	607808	065731-016	ND	4.0	12	NE	U		EPA 314.0	
	22-Nov-04	608043	066418-020	ND	4.0	12	NE	U		EPA 314.0	
	09-Mar-05	608281	067433-020	ND	4.0	12	NE	U		EPA 314.0	
	06-Dec-05	609270	073545-020	ND	4.0	12	NE	U		EPA 314.0	
CYN-MW5	26-May-04	607546	065032-044	ND	4.0	12	NE	U		EPA 314.0	
	16-Sep-04	607811	065738-016	ND	4.0	12	NE	U		EPA 314.0	
	16-Nov-04	608047	066427-020	ND	4.0	12	NE	U		EPA 314.0	
	22-Feb-05	608285	067442-020	ND	4.0	12	NE	U		EPA 314.0	
CYN-MW7	20-Mar-06	609579	075987-020	ND	4.0	12	NE	U		EPA 314.0	
	13-Jun-06	609923	078676-020	ND	4.0	12	NE	U		EPA 314.0	
	13-Sep-06	610646	081619-020	ND	4.0	12	NE	U		EPA 314.0	
	11-Dec-06	611054	083855-020	ND	4.0	12	NE	U		EPA 314.0	
CYN-MW8	21-Mar-06	609580	075988-020	ND	4.0	12	NE	U		EPA 314.0	
	14-Jun-06	609924	078678-020	ND	4.0	12	NE	U		EPA 314.0	
	14-Sep-06	610647	081620-020	ND	4.0	12	NE	U		EPA 314.0	
			081621-020	ND	4.0	12	NE	U		EPA 314.0	Duplicate sample
	12-Dec-06	611055	083856-020	ND	4.0	12	NE	U		EPA 314.0	

Notes—

^a**Result**

ND = not detected (at method detection limit).

µg/L = micrograms per liter.

^b**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.

^c**PQL**

Practical quantitation limit. The lowest concentration of analytes in a sample that can be reliably determined within specified limits of precision and accuracy by that indicated method under routine laboratory operating conditions.

^d**MCL**

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

^e**Lab Qualifier**

U = Analyte is absent or below the method detection limit.

^f**Validation Qualifier**

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

^g**Analytical Method**

EPA 314.0: U.S. Environmental Protection Agency, November 1999, "Perchlorate in Drinking Water Using Ion Chromatography," EPA 815/R-00-014.

Appendix E

Human Health Risk Assessment for Perchlorate Concentrations found in Groundwater Monitoring Well CYN-MW6

Appendix E

Human Health Risk Assessment for Perchlorate Concentrations found in Groundwater Monitoring Well CYN-MW6

A human health risk screening was conducted to determine whether perchlorate in groundwater might pose a potential unacceptable risk to human receptors at Burn Site Groundwater monitoring well CYN-MW6. Per the NMED and the Compliance Order on Consent (NMED 2004):

VI.K.1.b. Groundwater Perchlorate Screening Level

. . . If perchlorate is detected at 0.004 mg/L or greater, Respondents shall evaluate the nature and extent of the perchlorate contamination. The results of the evaluation of the nature and extent of contamination shall be incorporated into a CME. If, at the time of the CME, no groundwater standard or MCL has been adopted by the EIB, WQCC or EPA for perchlorate, the Respondents shall use the cleanup goal of a HI of one (1.0) and a residential scenario in the CME evaluation to develop the proposed cleanup level.

As of yet, no groundwater standard or MCL has been adopted by the EIB, WQCC, or EPA, so a human health risk screening was required. The maximum groundwater perchlorate concentration was used as the exposure point concentration in the screening risk evaluation. The current and future land use at the burn site is industrial. However, under an industrial scenario there is no current viable exposure pathway for contact with groundwater. Therefore, residential land use was evaluated as the primary decision scenario for the human health screening risk assessment and the primary pathway for residential exposure to groundwater is ingestion.

Based on EPA guidance (EPA, 1989), the risks due to ingestion of groundwater were calculated based on the following equation;

$$HQ = (CW \times IRW \times EF \times ED) / (BW \times AT \times RfDo)$$

where:

HQ = Hazard quotient (unitless)

CW = Perchlorate water concentration 8.93 µg/L or 0.0089 mg/L

IRW = Residential drinking water ingestion of 2 L/d

EF = Exposure frequency of 350 days/year

ED = Exposure duration of 30 years

BW = Body weight of adult 70 kg

AT = Averaging time of resident 30 years x 365 days/yr

RfDo = Oral reference dose 7E-4 mg/kg-day (EPA January 2008)

Based on the maximum concentration for perchlorate, the HQ is 0.35, which is less than the NMED target level of a Hazard Index (HI) of 1.0 (NMED, 2006). [The HI is the sum of the HQs.] Therefore, the perchlorate in groundwater does not pose an unacceptable risk to human health under a residential scenario.

References:

EPA (U.S. Environmental Protection Agency), July 1989. "Risk Assessment Guidance for Superfund, Vol.I, Human Health Evaluation Manual (Part A)," Interim Final, EPA 540/89/002, Office of Emergency and Remedial Response, Washington, D.C. (EPA, 1989).

EPA (U.S. Environmental Protection Agency) January 2008. Integrated Risk Information System Website for Perchlorate and Perchlorate Salts.
<http://www.epa.gov/iriswebp/iris/subst/1007.htm>. Website accessed January 2008.

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

NMED (New Mexico Environment Department), 2006. "Technical Background Document for Development of Soil Screening Levels, Revision 4.0," New Mexico Environment Department, Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program, Santa Fe, New Mexico. (NMED 2006, 092513).