National Nuclear Security Administration
Sandia Site Office
P.O. Box 5400
Albuquerque, New Mexico 87185-5400

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Hazardous
Bureau

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

Dear Mr. Bearzi:

On behalf of the Department of Energy (DOE) and Sandia Corporation, DOE is submitting the enclosed proposal for Corrective Action Complete (CAC) for Solid Waste Management Unit 105 (SWMU 105) at Sandia National Laboratories/New Mexico (SNL/NM) (EPA ID No. NM5890110518).

This submittal includes descriptions of site characterization work completed as part of two Voluntary Correction Actions (VCAs): the VCA [now referenced as Phase 1 (P1VCA)] of September 2005, and the Phase 2 VCA Plan (P2VCA) of February 2006. It includes a risk assessment that concludes there is low ecological risk for this site, and that the site as a whole meets risk requirements for residential land use. However, the northwest portion of the site has higher mercury concentrations and meets the risk requirements for industrial land use. As a result, DOE and Sandia are requesting a determination of Corrective Action Complete with controls for this site.

If you have any questions or concerns regarding these changes, please contact me at (505)845-6036, or John Gould at (505) 845-6089.

Sincerely,

Kimberly A Davis for

Patty Wagner
Manager

Enclosure

SNL1121

JUL 2 0 2005

cc w/enclosure:
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CERTIFICATION STATEMENT FOR APPROVAL AND FINAL RELEASE OF DOCUMENTS

Document title: **Proposal for Corrective Action Complete Solid Waste Management Unit 105, Mercury Spill (Building 6536) July 2006**

Document author: **Stacy Griffith, Dept. 6146**

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: Peter B. Davies 7/10/06

Peter B. Davies
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Date

and

Signature: Kimberly A. Davis for 7/20/06

Patty Wagner
Manager
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Sandia Site Office
Owner and Co-Operator

Date

Sandia National Laboratories/New Mexico Environmental Restoration Project

PROPOSAL FOR CORRECTIVE ACTION COMPLETE SOLID WASTE MANAGEMENT UNIT 105, MERCURY SPILL (BUILDING 6536)

July 2006

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.

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D SWMU 105, Mercury Spill (Building 6536), Risk Assessment Report

E SWMU 105, Mercury Spill (Building 6536), Data Sets for the Risk Assessments

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ACRONYMS AND ABBREVIATIONS

AR/COC	Analysis Request/Chain of Custody
bgs	below ground surface
CAC	Corrective Action Complete
COC	constituent of concern
cy	cubic yard(s)
D&D	decontamination and demolition
DOE	U.S. Department of Energy
EB	equipment blank
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration
HI	hazard index
HWB	Hazardous Waste Bureau
IH	Industrial Hygiene
kg	kilogram(s)
m^3	cubic meter(s)
mg	milligram(s)
MVA	mercury vapor analyzer
ND	no detection
NFA	no further action
NMED	New Mexico Environment Department
P1VCA	Phase I Voluntary Corrective Action
P2VCA	Phase II Voluntary Corrective Action
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act
RPD	relative percent difference
SNL/NM	Sandia National Laboratories/New Mexico
SWMU	Solid Waste Management Unit
UCL	upper confidence limit
VCA	Voluntary Corrective Action

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EXECUTIVE SUMMARY

A release of mercury to the environment was discovered in June 2005 in soil adjacent to Building 6536, Solid Waste Management Unit (SWMU) 105, located in Technical Area III at Sandia National Laboratories/New Mexico (SNL/NM). A Voluntary Corrective Action (VCA) was conducted by SNL/NM at SWMU 105 to address the mercury spill. The VCA activities included excavation and off-site disposal of mercury-contaminated soil, collection of confirmatory soil samples, and characterization of the extent of mercury contamination. Both human health and ecological risk assessments were performed using the analytical results of the confirmatory soil samples. The activities of the VCA are consistent with the overall corrective action objectives set forth in Section VI of the Compliance Order on Consent from the New Mexico Environment Department (NMED April 2004). SWMU 105 is being proposed for Corrective Action Complete with Controls.

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1.0 INTRODUCTION

The Solid Waste Management Unit (SWMU) 105 is located in Technical Area III at the U.S. Department of Energy (DOE) Sandia National Laboratories/New Mexico (SNL/NM) facility, which is located on the federally owned Kirtland Air Force Base and permitted to the DOE (Figure 1-1). In August 1994, an administrative no further action (NFA) proposal was submitted to the U.S. Environmental Protection Agency (EPA) (the regulatory authority at the time), which included SWMU 105 (SNL/NM August 1994). In July 1995, SWMU 105 was determined to be appropriate for NFA, and the site was removed from the DOE/Sandia Corporation Resource Conservation and Recovery Act (RCRA) Permit in December 1995 (Davis December 1995). Written notification of a newly discovered subsurface release at SWMU 105 was transmitted to the New Mexico Environment Department (NMED) Hazardous Waste Bureau (HWB) on July 13, 2005 (Wagner July 2005). Due to the nature of the subsurface release, any surface investigation prior to July 2005 would not have detected the contamination. Table 1-1 presents a chronology of events for SWMU 105.

The Environmental Restoration (ER) Project at SNL/NM completed a Voluntary Corrective Action (VCA) at SWMU 105 in order to characterize the extent of mercury contamination in the soil adjacent to Building 6536 and to conduct an expedited remediation of the contamination (Figure 1-2). A Phase I VCA (P1VCA), limited to a portion of the site, was conducted in September 2005 (SNL/NM September 2005). However, mercury contamination was found to be more extensive than initially anticipated, and a second phase was necessary to address the entire site.

1.1 Description and History of Building 6536

Building 6536, the Radiant Heat Facility, was originally constructed as the Re-Entry Burn-Up Facility but has also been used to simulate many types of high-heat environments (Shaw October 2004). The main part of Building 6536 was built in 1967, a mezzanine was added in 1980, and the two westernmost rooms (112 and 113, also known as 6536A and 6536B, respectively) were added in 1983. Room 113 was also known as the Equipment Room. An SNL/NM Industrial Hygiene (IH) report in 1977 states that a mercury vacuum tube exploded (location not specified), but no mercury vapor was detected (SNL/NM February 1977). A 1982 investigation report indicated that approximately 10 cubic centimeters of visible mercury had been spilled on a lab bench (location not specified) and on a desktop (SNL/NM February 1982). The visible mercury was picked up with a mercury vacuum cleaner and no mercury vapor was detected after the cleanup. A third IH report in 1985 states that a minor amount of mercury was spilled in the high bay of Building 6536 (Room 111) and that the level of mercury contamination was within acceptable limits (units of measure or methods of measurement not described) (SNL/NM May 1985). The report states that a mercury decontaminant was used to decontaminate surfaces. Personnel interviews conducted in 1985 during the Comprehensive Environmental Assessment and Response Program indicated that a mercury bath used to measure pressure in equipment was examined in 1972, and it was determined that the bath contained 10 to 13 pounds less mercury than the full volume capacity (DOE September 1987, SNL/NM March 1990). It was unknown whether the bath had ever been at full capacity. At a later, unknown date, the mercury bath was removed. Personnel interviews conducted in 1990 in an attempt to clarify the use and release(s) of mercury in Building 6536 mention the 1977 mercury tube explosion, but stated that the mercury bath referenced never

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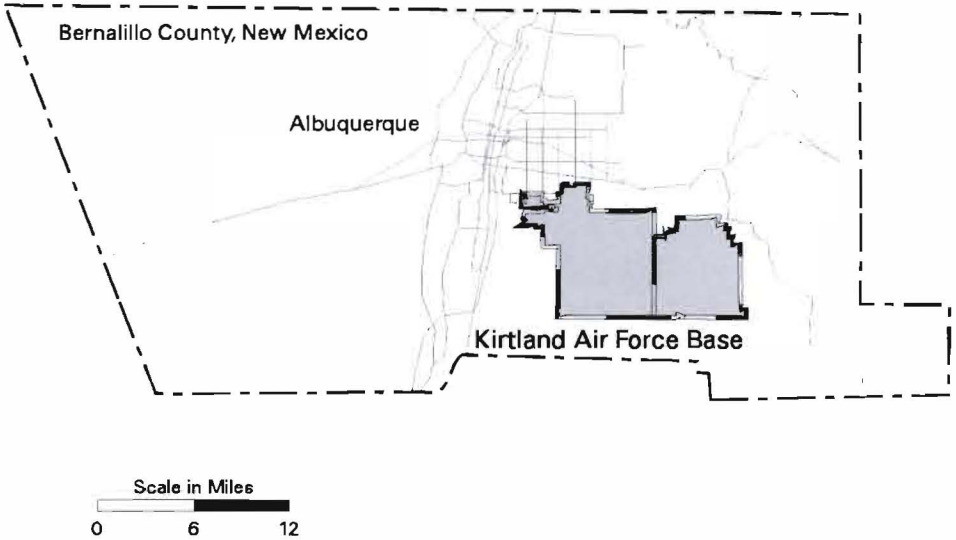
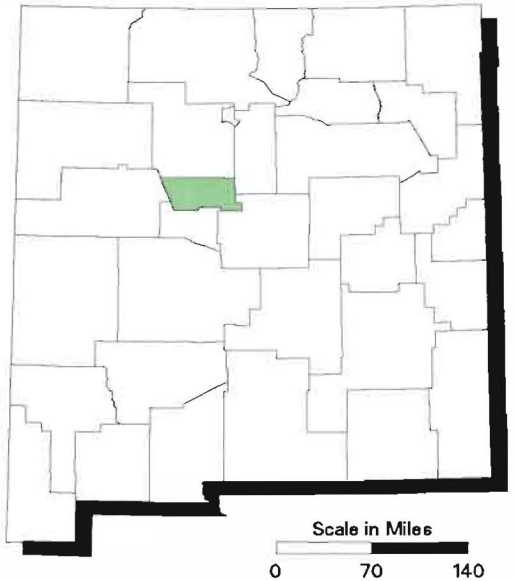
Figure 1-1 Location Map of Sandia National Laboratories / New Mexico & Technical Area III

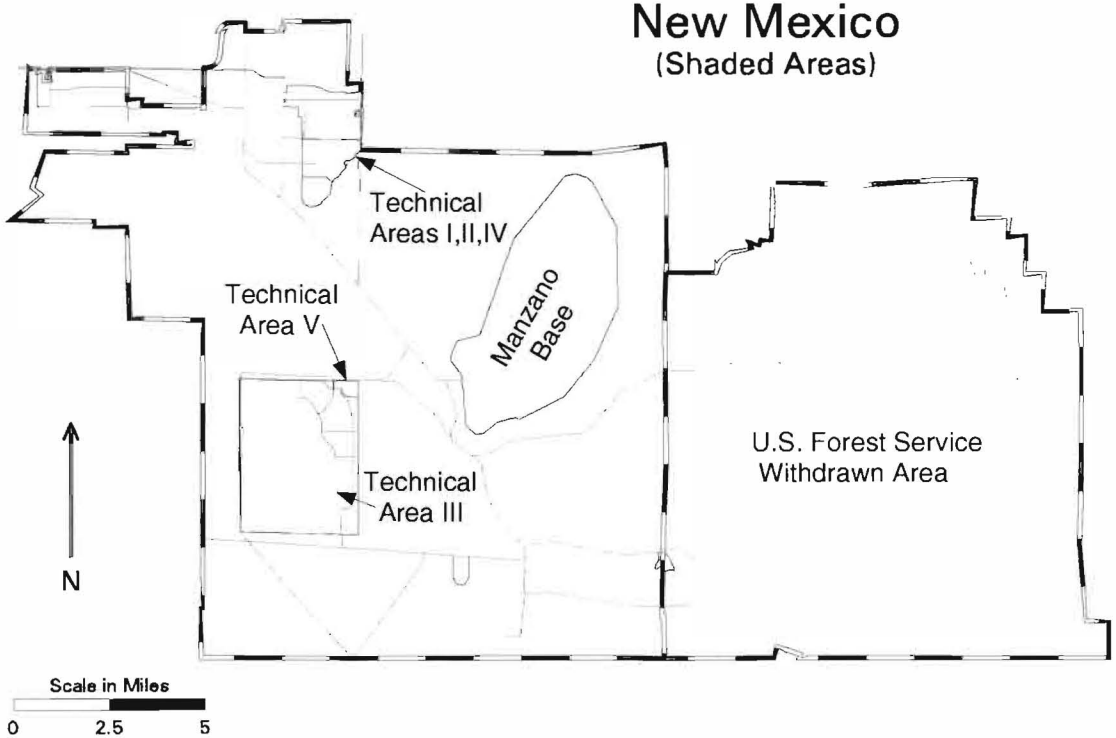


Bernalillo County, New Mexico



Sandia National Laboratories New Mexico

(Shaded Areas)



Source: SNL EGIS Database

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Table 1-1
SWMU 105, Mercury Spill (Building 6536)
Chronology of Events and Documentation

Date	Event	Reference Document
1967	Building 6536 was built in 1967 to provide a laboratory for simulation of high-temperature environments such as those experienced by re-entry vehicles. Over time, testing was expanded to simulate other types of heat environments (such as gasoline fuel fires and solar heat).	"Comprehensive Environmental Assessment and Response Program CEARP Phase 1 Installation Assessment" (DOE September 1987)
1972	A mercury bath used to measure pressure was examined, and it was determined that 10–13 pounds less mercury was present than was expected. The mercury bath was later removed (date not specified).	
February 1977	Investigation report documented the "blow-up of mercury vacuum tube" in Building 6536. No mercury vapor was detected. Affected personnel were tested for mercury in their urine.	"Investigation Report" (SNL/NM February 1977)
February 1982	Industrial Hygiene Services Investigation Report documented "two small (approximately 10 cubic centimeters) quantities of mercury" in Building 6536. Visible mercury was picked up and no mercury vapor was detected.	"Industrial Hygiene Services Investigation Report" (SNL/NM February 1982)
May 1985	Industrial Hygiene Services Investigation Report documented that an employee "spilled a minor amount of mercury" in the high bay (Room 111) of Building 6536. The report states "the mercury contamination was measured near the location of the spill and the level was within acceptable limits."	"Industrial Hygiene Services Investigation Report" (SNL/NM May 1985)
March 1990	Personnel interviews conducted to clarify mercury use in Building 6536 and verify reported incidences of spills.	"Personnel Interviews" (SNL/NM March 1990)
October 1990	Personnel interviews conducted pertaining to SWMU 105 document the 1972 event listed above.	"Interview Notes, 1990 Memorandum attachment to CEARP Interview Notes/Crosswalk 1985" (SNL/NM October 1990)
November 1993	SWMU 105 added to the RCRA Part B HSWA permit.	"Proposed List of Solid Waste Management Units Table 2 Module IV RCRA Part B Permit (HSWA Module) and Supporting Information" (SNL/NM November 1993)
August 1994	SWMU 105 NFA proposal submitted to NMED.	"Proposals for Administrative No Further Action Environmental Restoration FY94" (SNL/NM August 1994)
September 1994	Letter from DOE submitted to EPA and NMED requesting Class 3 Permit Modification to remove 22 SWMUs from list, including SWMU 105.	"Class 3 Permit Modification to Remove a Total of 22 Solid Waste Management Units (SWMUs) from the RCRA HSWA Permit" (Carlson September 1994a and September 1994b)

Refer to footnotes at end of table.

Table 1-1 (Continued)
SWMU 105, Mercury Spill (Building 6536)
Chronology of Events and Documentation

Date	Event	Reference Document
October 1994	Letter from DOE submitted to EPA and NMED supersedes September 1994 letter (makes a correction to original letter).	"Resubmission of September 28, 1994 Letter Requesting a Class 3 Permit Modification to Remove 22 Solid Waste Management Units (SWMUs) from the RCRA HSWA Permit" (Carlson October 1994a and October 1994b)
March 1995	NMED comments received on NFA proposal. Request for identification of the mercury detection equipment and details of previous sampling events as to location, methods of analysis, and results.	"Review Comments for the Proposals for Administrative No Further Action Environmental Restoration Fiscal Year 1994" (Garcia March 1995)
April 1995	The EPA requests additional information regarding previous mercury detection tests, including locations of tests, dates, types of equipment used, and results.	"Review of 22 Proposals for Administrative No Further Action Environmental Restoration FY 94 Submitted to the EPA on October 3, 1994, Class 3 Permit Modification" (Honker April 1995)
May 1995	SNL/NM submitted response to EPA request. However, specific details of the requested information were not available.	"Proposals for Administrative No Further Action Environmental Restoration FY94 Comment Responses to USEPA May 1995" (SNL/NM May 1995)
July 1995	Notification received from EPA that SWMU 105 is appropriate for NFA.	"First Submission NFA Final EPA Determinations Enclosed Copies of Fact Sheet Public Notice and Revised Table 2 Pursuant to Your Class 3 Permit Modification Request for 22 NFA Determination" (Morlock July 1995)
December 1995	Final permit decision issued by EPA.	"Statement Of Basis Final Decision and Response to Comments Summary–Class 3 Permit Modification" (Davis December 1995)
October 2004	Investigative report detailed the history of the facility and provided an assessment of the potential for contamination. This report was completed by SNL/NM Facilities prior to the decontamination and demolition activities.	"Site Information Assessment Report for Building 6536 Radiant Heat Facility" (Shaw October 2004)
June 2005	Mercury release to the environment discovered during Building 6536 demolition.	"SWMU 105, Mercury Spill, Building 6536" (Wagner July 2005)
July 2005	Letter of notification submitted to NMED from DOE regarding previously unknown release at Building 6536.	

Refer to footnotes at end of table.

Table 1-1 (Concluded)
SWMU 105, Mercury Spill (Building 6536)
Chronology of Events and Documentation

Date	Event	Reference Document
September 2005	DOE submitted a work plan to NMED for the P1VCA to be conducted at SWMU 105. Implementation of the plan begins, but modifications to the plan are needed as a second phase.	"Voluntary Corrective Action Plan, SWMU 105" (SNL/NM September 2005)
December 2005	DOE submitted a modified work plan to NMED for the P2VCA to be conducted at SWMU 105.	"Phase Two Voluntary Corrective Action Plan for Solid Waste Management Unit 105, Building 6536" (SNL/NM December 2005)
January 2006	P2VCA activities begin at SWMU 105.	--
February 2006 Final	Final report completed of the chemical characterization, contamination removal, and waste management at Building 6536 during P1VCA.	"Building 6536 Radiant Heat Facility, Characterization and Removal Project Report" (Shaw February 2006)

CEARP = Comprehensive Environmental Assessment and Response Program.
DOE = U.S. Department of Energy.
EPA = U.S. Environmental Protection Agency.
ER = Environmental Restoration.
FY = Fiscal year.
HSWA = Hazardous and Solid Waste Amendments.
NFA = No Further Action.
NMED = New Mexico Environment Department.
P1VCA = Phase I Voluntary Corrective Action.
P2VCA = Phase II Voluntary Corrective Action.
RCRA = Resource Conservation and Recovery Act.
SNL/NM = Sandia National Laboratories/New Mexico.
SWMU = Solid Waste Management Unit.
-- = Not applicable.

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Legend

- SWMU 105 (former Building 6536)
- Paved and Unpaved Road
- Technical Area III
- Technical Area V

Figure 1-2
Location of SWMU 105, Mercury Spill (Building 6536), Technical Area III

0 1000 2000
Scale in Feet

0 240 480
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

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existed (SNL/NM October 1990). Two of the three documented events occurred within Building 6536 prior to the addition of Room 113 in 1983; however, no documentation exists pertaining to the use of instrumentation containing mercury in Room 113.

1.2 History of Release

On May 9, 2005, during decontamination and demolition (D&D) activities at Building 6536, mercury contamination was found inside the building within a concrete trench, located along the northwest wall of Room 113 (Figures 1.2-1 and 1.2-2). On June 29, 2005, elemental mercury was found in soil outside the building when an exterior trench was excavated along the northwest wall of the building (Figure 1.2-3). The release probably originated from a crack in the building foundation adjacent to the interior concrete trench. Soil excavated from the trench was placed alongside the trench into spoils piles. Elemental mercury was visible in the soil remaining in the trench and in large pores in a subsurface concrete block adjacent to the building.

1.3 2005 Soil Sampling and Additional Investigation

After discovery of the mercury release in June 2005, soil samples were collected and analyzed for mercury, and some remediation was conducted. This initial effort is referred to as the P1VCA. The P1VCA was performed by the SNL/NM Facilities D&D personnel with involvement of ER Project personnel and input from NMED HWB personnel. The plan for this effort was documented and submitted in a VCA Plan (SNL/NM September 2005).

Six discrete soil samples were collected from the exterior trench on July 6 and 21, 2005 (Figure 1.3-1). Soil samples were submitted to an off-site laboratory, Severn Trent, for analysis of RCRA metals by EPA Method 6010B and 7471A (EPA November 1986). Samples were recorded on Analysis Request/Chain of Custody (AR/COC) forms, provided in Annex A. The analytical results for the soil samples indicated mercury concentrations ranging from 0.17 milligrams (mg)/kilogram (kg) (near the building foundation) to 39.6 mg/kg (next to the exposed concrete block in the trench) (Table 1.3-1). Four of the six soil samples collected were analyzed for the other RCRA metals. There were no detections of any metals at concentrations above the NMED-approved background values (Dinwiddie September 1997), other than the detections of mercury. All the mercury results exceeded the subsurface background value of less than 0.1 mg/kg. Documentation for the P1VCA soil samples is provided in Annex A (AR/COC forms) and Annex B (data validation reports).

During the week of September 6, 2005, SNL/NM D&D personnel removed the concrete block located adjacent to the northwest wall of Building 6536, and collected residual elemental mercury from both the concrete block surface and the soil surrounding the block. The mercury-contaminated soil was excavated to 4 feet below ground surface (bgs) in the area of the June 2005 release, but more mercury-contaminated soil remained. Despite careful hand-digging to avoid transferring mercury contamination deeper, visible mercury and elevated mercury soil-vapor meter readings still persisted.

Table 1.3-1
SWMU 105, Mercury Spill (Building 6536)
Summary of P1VCA Soil Sampling Analytical Results for Metals
July 2005

Sample Attributes				Metals (EPA Method 6010B/7471A)[a] (mg/kg)							
Record Number[b]	Sample Number	Sample Location	Approximate Sample Depth (ft bgs)	Arsenic	Barium	Cadmium	Chromium (total)	Lead	Selenium	Silver	Mercury
608793	067822-001	Trench Floor	3	NA	NA	NA	NA	NA	NA	NA	**39.6**
608793	067822-002	Trench Floor	3	NA	NA	NA	NA	NA	NA	NA	**20.9**
608793	069601-001	SW Corner #1	3	2.9	95.4	ND (0.061)	6.6	5.2	ND (0.23)	ND (0.043)	**4.7**
608793	069601-002	SW Corner #2	3	3.7	93.0	ND (0.038)	8.8	8.2	ND (0.22)	ND (0.041)	**0.17**
608793	069601-003	Bottom Trench #1	3	3.5	104	ND (0.063)	5.7	4.0	ND (0.25)	ND (0.044)	**1.9**
608793	069601-004	Bottom Trench #2	3	2.6	82.3	0.055	5.7	4.2	ND (0.22)	ND (0.042)	**0.62**
Background Soil Concentrations—Southwest Area Supergroup[c]				4.4	214	0.9	15.9	11.8	<1	<1	<0.1

Note: Values in **bold** exceed background soil concentration.
[a]EPA November 1986.
[b]Analysis request/chain-of-custody record.
[c]Dinwiddie September 1997.
bgs = Below ground surface.
EPA = U.S. Environmental Protection Agency.
ft = Foot (feet)
mg/kg = Milligram(s) per kilogram.
NA = Not analyzed.
ND ( ) = Not detected above method detection limit (shown in parentheses).
SW = Southwest.
SWMU = Solid Waste Management Unit.

Legend

- June 2005 Release Area
- Concrete Trench inside Building
- Former Building 6536 Perimeter
- Equipment Pads (not all shown)
- Drain Line (not all shown)
- Exterior Trench Outline
- SWMU 105

Figure 1.2-1
SWMU 105,
Mercury Spill (Building 6536),
June 2005 Release Area

0 7.5 15
Scale in Feet

0 1.8 3.6
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

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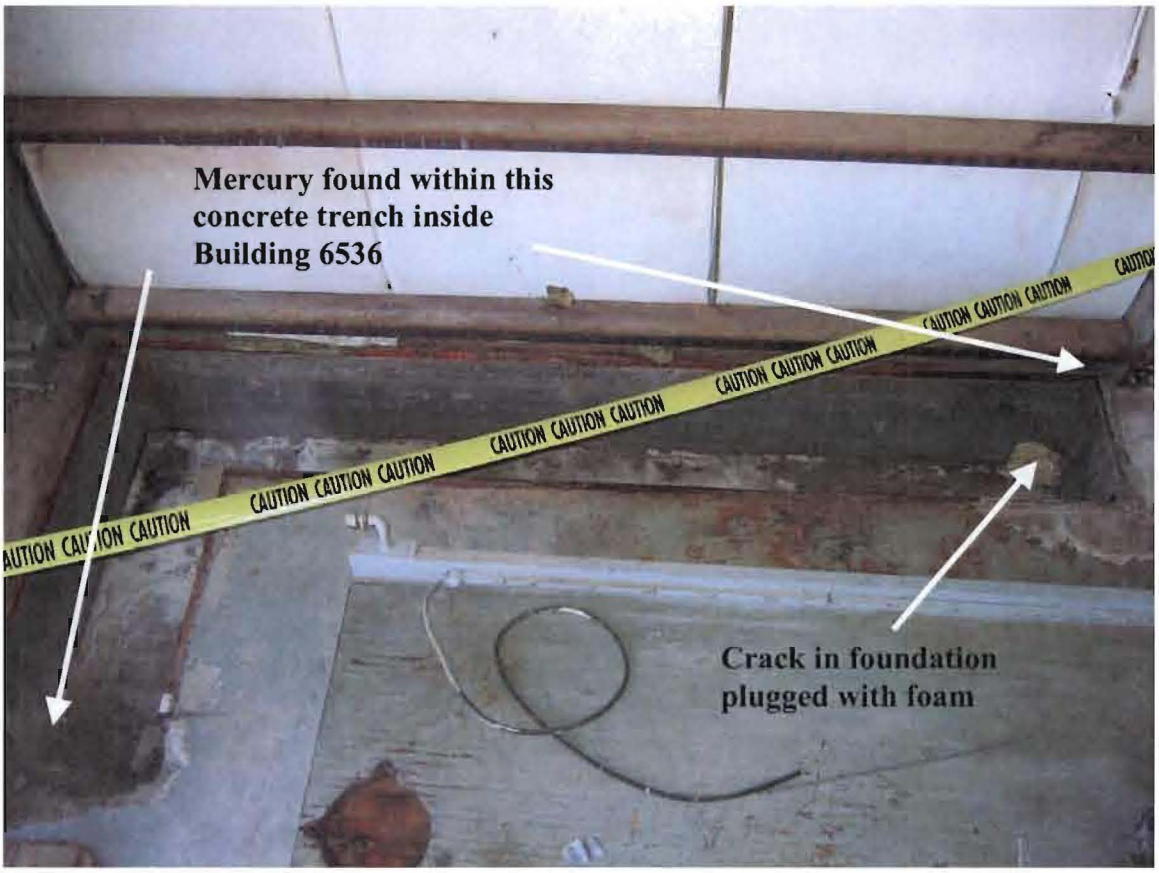


Figure 1.2-2
Photograph showing trench inside Building 6536, July 2005.

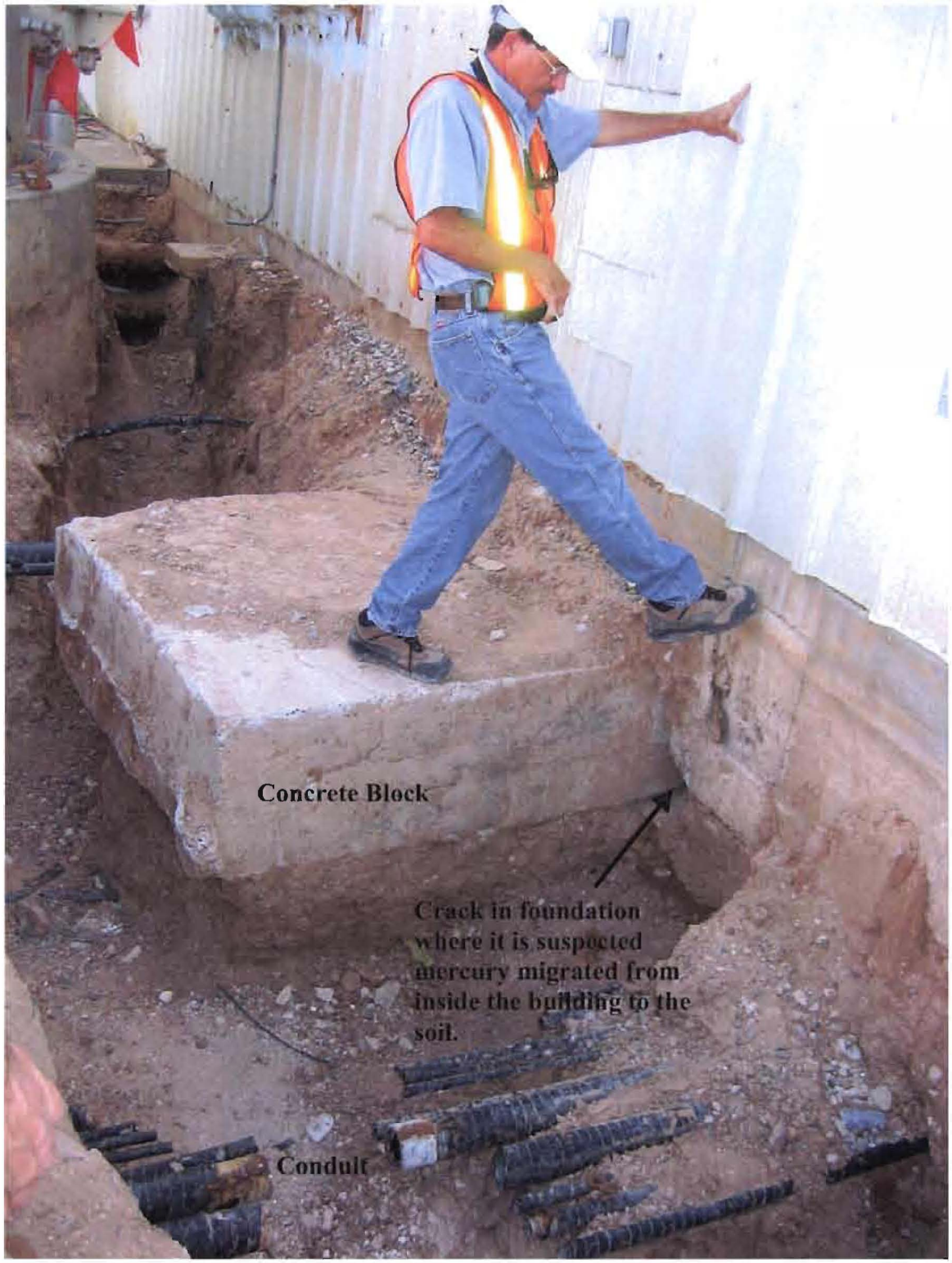
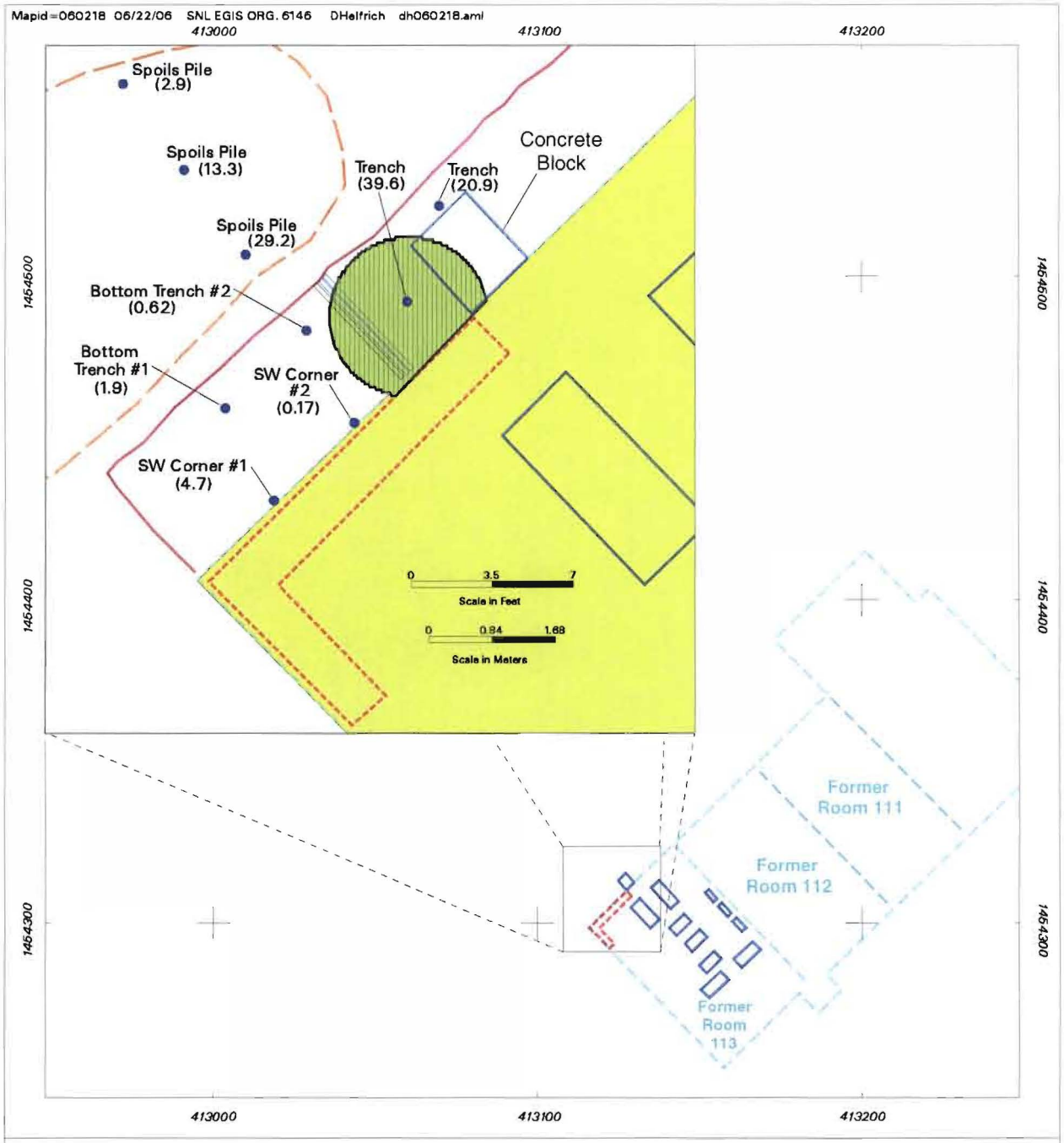


Figure 1.2-3
Photograph showing exterior trench on the northwest wall of Building 6536, July 2005 (view to the northeast).



Legend

- (4.7) Mercury Soil Grab Sample & Concentration (mg/kg)
- Exterior Trench Outline
- Former Building 6536 Perimeter and Rooms
- Equipment Pad / Concrete Block
- Conduit
- Concrete Trench inside Building
- Former P1VCA Soil Pile Location
- June 2005 Release Area
- SWMU 105

Figure 1.3-1
SWMU 105,
Mercury Spill (Building 6536),
P1VCA Soil Sample Locations,
July 2005

0 25 50
Scale in Feet

0 6 12
Scale in Meters

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On October 6, 2005, removal of the Building 6536 Room 113 concrete foundation began at the northwestern corner of the building. After approximately 15 feet of concrete foundation along the southwestern side of the building was removed, in situ soil-vapor readings were taken with a mercury vapor analyzer (MVA). Initial readings indicated nondetections. However, as the foundation removal continued to the south-southeast, positive MVA readings were detected in the soil beneath the foundation. After removal of the building foundation, a 5- by 5-foot grid was established in the area of the former building footprint. In situ soil-vapor readings were collected from the surface in each grid square in an attempt to better define the area and extent of the positive MVA readings (Figure 1.3-2). Positive MVA readings ranging from 0.003 to 0.093 mg/cubic meter (m^3) were detected along the northeastern side of the grid area.

The survey points with the five highest positive MVA readings ranging from 0.013 to 0.093 mg/m^3 were flagged for future investigation activities. All construction debris, concrete rubble, and the mercury-contaminated spoils pile (from the trench excavation) were removed from the site. These waste streams were managed by D&D personnel and disposed of in accordance with SNL/NM waste management policy. Waste disposal documentation is provided in Annex C.

The positive MVA readings beneath the former Room 113 foundation resulted in modification of the original VCA plan into the Phase II VCA (P2VCA) Plan (SNL/NM December 2005). The P2VCA activities began in January 2006 and are described in Chapter 2.0 of this proposal.

The activities and analytical results presented in this section represent a summary of the investigations, evaluations of existing data, and site assessments completed during the P1VCA that are presented in the "Building 6536 Radiant Heat Facility Characterization and Removal Project Report" (Shaw February 2006).

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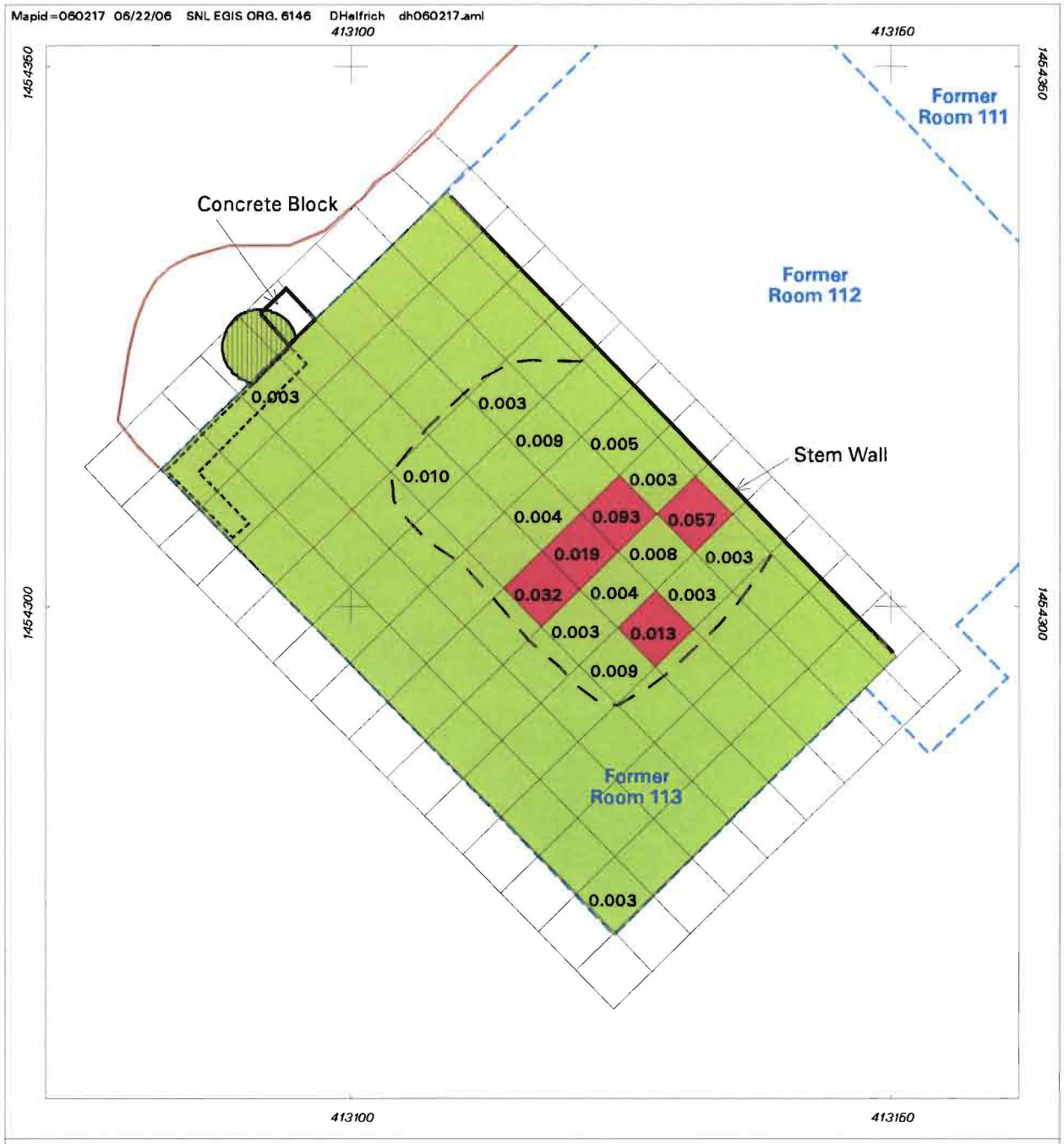

Legend

0.057	Mercury Vapor Concentration (mg/m³)
	June 2005 Release Area
	Sample Grid (5-ft x 5-ft)
	Former Building 6536 Perimeter and Rooms
	Concrete Trench inside Building
	Exterior Trench Outline
	Possible Release Area Under Equipment Pads
	SWMU 105
	Selected Grid Locations

(Mercury Vapor not detected in grid cells without values)

Figure 1.3-2
SWMU 105,
Mercury Spill (Building 6536),
P1VCA Mercury Soil-Vapor Survey,
July 2005

0 7.5 15
Scale in Feet

0 1.8 3.6
Scale in Meters

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2.0 2006 PHASE TWO VOLUNTARY CORRECTIVE ACTION

Based upon the extent of mercury contamination found in the soil during the initial P1VCA activities at SWMU 105, it was necessary for ER Project personnel to conduct further VCA activities as part of the P2VCA (SNL/NM December 2005). The purpose of the P2VCA was to determine the extent of contamination, remove mercury-contaminated soil from the release area, and containerize and prepare the excavated soil for waste disposal. The analytical results were evaluated to determine whether mercury was present in the soil at levels considered hazardous to human health for either the industrial or residential land-use risk scenarios. The primary field activities of the P2VCA were conducted from January through March 2006.

2.1 Confirmatory Soil Sampling and Analysis

The 5- by 5-foot grid that had been established during the D&D activities was used for the P2VCA sampling. Soil samples were collected from varying depths (Table 2.1-1) at boreholes located within each grid square (Figure 2.1-1). Sample locations were selected based upon the results of the D&D investigation and discussions with the NMED. Geoprobe® sampling equipment was used to collect most of the samples from each grid area. All references to the trench area in the following sections refer to the exterior trench excavated outside Room 113 during the D&D activities. Table 2.1-1 provides the number of primary soil samples collected from each area. Duplicate soil samples are discussed in Section 2.4. The site was divided into the following sampling areas based upon the locations of site features as shown in Figure 2.1-1:

- A – the release point in the exterior trench area
- B – the area adjacent to the original release point
- C – the area in which the spoils pile was located during the P1VCA activities (The spoils pile consisted of material excavated from the trench. It was disposed of as part of the P1VCA.)
- D – selected grid locations within the footprint of Room 113 where P1VCA MVA readings were higher than those from adjacent areas (Figure 1.3-2)
- E – locations representing the perimeter of the former Room 113 foundation
- F – the grid area locations within the footprint of Room 113
- G – an area to the northwest of the trench and spoils pile area

In order to avoid confusion, all of the sample depths are expressed as feet bgs as measured from the original ground surface at the site. The collection of soil samples was performed by several methods. The majority of soil samples were collected using a Geoprobe® with a split-spoon sampler lined with a butyl acetate sleeve (Figure 2.1-2). Soil duplicate samples were also collected from soil in the acetate sleeve immediately following the collection of the primary soil sample and placed into a separate sample container.

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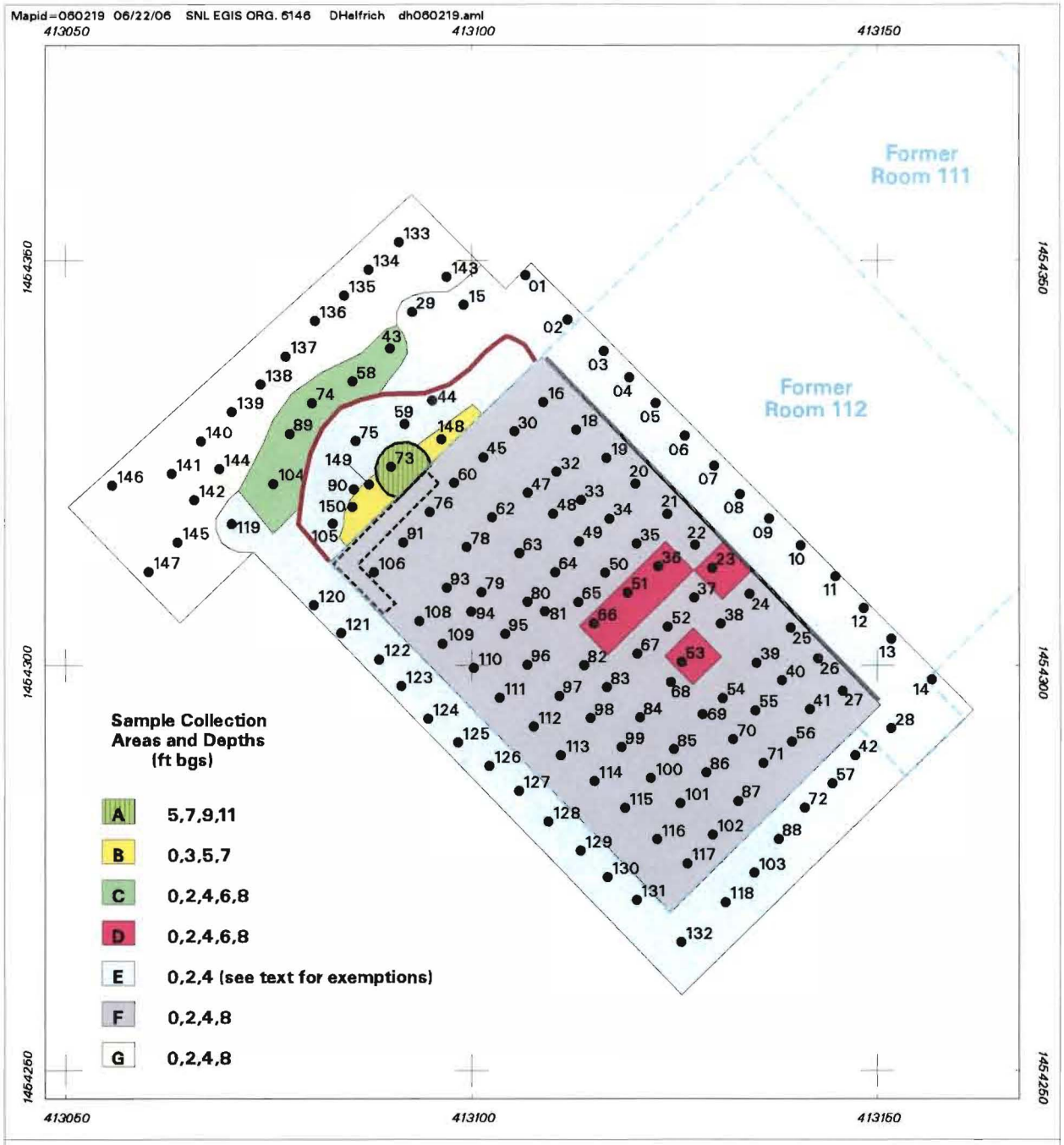

Legend

- Borehole Location (105-BH-##)
- Former Building 6536 Perimeter and Rooms
- Concrete Trench inside Building
- Stem Wall
- Exterior Trench Outline
- June 2005 Release Area

Figure 2.1-1
SWMU 105
Mercury Spill (Building 6536), P2VCA Borehole Locations, January - March 2006

0 10 20
Scale in Feet

0 2.4 4.8
Scale in Meters

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Table 2.1-1
SWMU 105, Mercury Spill (Building 6536)
Specifications of Primary Soil Sampling

Area (as designated in Figure 2.1-1)	Number of Sample Locations in Area	Target Depths (ft bgs)	Number of Primary[a] Soil Samples
A (green striped)	1	7, 9, 11[b]	3
B (yellow)	3	3, 5, 7	9
C (green)	5	0, 2, 4, 6, 8	25
D (pink)	5	0, 2, 4, 6, 8	25
E (blue)	42	0, 2, 4	132[c]
F (gray)	72	0, 2, 4, 8	286[d]
G (pale yellow)	15	0, 2, 4, 8	60
Total	**143**	--	**540**

[a]Sample count does not include duplicate soil samples.
[b]Target depths are expressed as feet below the original ground surface at this site.
[c]Samples also collected at 9 and 11 ft bgs at two locations and 8 ft bgs at two locations.
[d]There were originally 84 soil sample locations within Area F. Five locations were separated into Area D. Seven locations were eliminated from the grid due to space constraints of the actual area in the field. The resulting number of sample locations for Area F was 72. Samples recovered from only two depths at one location due to subsurface obstruction.
bgs = Below ground surface.
ft = Foot (feet).
SWMU = Solid Waste Management Unit.
-- = Not applicable.

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Figure 2.1-2
Photograph showing soil sample collection with the Geoprobe® at SWMU 105, January 2006 (view to the southeast). Workers are wearing Level C personal protective equipment and monitoring with the MVA.

Boreholes located in the trench area include 105-BH-44, -59, -73, -75, -90, -105, -148, -149, and -150. Soil samples from these locations were collected beginning at the surface of the trench (approximately 3 feet bgs) and continuing at 2-foot intervals.

In the trench area, soil samples were collected using the bucket of a backhoe. The steep walls of the trench created a confined space condition and were not suitable for entrance by workers. Soil from a designated sample location and depth was brought to the surface with the bucket and placed on a clean tarp. A soil sample was collected from this material and placed into the sample container (Figure 2.1-3). This process was used to collect samples from all of the designated target depths and locations in the trench. Duplicate soil sample sets were prepared by mixing soil collected from the same bucket in a bowl and then transferring aliquots of the mixed soil into separate sample containers. The unused material was placed back into the excavation and gently tamped with the bucket. Samples from Boreholes 105-BH-44, -59, -75, -90, and -105 were collected in this manner.

Following sampling activities in the trench with the backhoe, the sides and bottom of the trench were smoothed out and conditions in the trench no longer posed a concern as a confined space. Workers were then able to access the borehole locations 105-BH-148, -149, and -150, although the Geoprobe® equipment still could not be maneuvered into the area. The 3-foot samples were collected from the surface of the trench using a hand spade and bowl. The 5- and 7-foot samples were collected using a hand auger (Figure 2.1-4), except in Borehole 105-BH-150 at a depth of 7 feet bgs, where auger refusal was encountered due to a subsurface obstruction. The sample at this location was collected using the backhoe. Primary and duplicate soil sample sets were prepared by mixing soil collected from the hand auger (or backhoe bucket) in a bowl and placing it into separate sample containers. The surface of the trench area was leveled following collection of samples from the 3-, 5-, and 7-foot depths. It was then possible to maneuver the Geoprobe® into position and push through the overburden to collected samples from 9 and 11 feet at Boreholes 105-BH-44, -73, and -75.

Soil samples were recorded on AR/COC forms (Annex A) and submitted to an off-site laboratory, General Engineering Laboratories, Inc., for analysis of total mercury by EPA Method 7471A (EPA November 1986). This method is approved for measuring total mercury (organic and inorganic) in soil samples. Samples A total of 540 discrete confirmatory soil samples and an additional 34 duplicate soil samples were collected and analyzed. The analytical results are discussed in Section 2.3.

2.2 Excavation of Mercury-Contaminated Soil in the Trench Area

After the topography of the trench was reworked so that workers and the Geoprobe® sampling equipment could safely enter the trench area, samples were collected at designated locations surrounding the original release point. A tarp, placed over this area during the P1VCA investigation (Figure 2.2-1), was removed and disposed of, and approximately 1 cubic yard (cy) of soil was excavated and placed onto a clean tarp. The soil on the tarp represented material from Borehole 105-BH-73 at depths of 3 and 5 feet bgs. The soil was spread out onto the tarp and inspected for visible mercury, scanned for mercury vapor using the MVA, and soil samples were collected for analyses. No visible mercury or mercury vapor was detected. This material was later placed into drums and sampled for waste characterization.

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Figure 2.1-3
Photograph showing collection of soil sample at SWMU 105,
February 2006 (view to the east). Soil collected from trench using backhoe.

Figure 2.1-4
Photograph showing soil sample collection with hand augers at
Boreholes 105-BH-148 and -149 at SWMU 105, February 2006 (view to the south).

Figure 2.2-1
Photograph showing trench area following the P1VCA at SWMU 105, November 2005 (view to the northeast). Release area is underneath the yellow tarp in the foreground.

2.3 Confirmatory Soil Sample Analytical Results

The results of the laboratory analyses from the P2VCA are presented in Table 2.3-1. The results table and the discussion in this section include primary and duplicate soil samples. The analytical results for total mercury in the soil samples range from no detection (ND) above the method detection limit to 342 mg/kg. Sample depths in Table 2.3-1 are measured from the original ground surface. Sample depths embedded in the ER Sample Identification number differ from the depths at which samples were collected from the trench areas as described in Section 2.1.

The soil sample results were compared to the NMED-approved surface and subsurface background values for mercury (Dinwiddie September 1997). Figure 2.3-1 shows the surface-soil sample results that exceed the background value of less than 0.25 mg/kg. Figure 2.3-2 shows the subsurface-soil sample results that exceed the background value of less than 0.1 mg/kg.

Samples collected from Area A (green striped) in Figure 2.1-1 represent soil from the original release point and are labeled 105-BH-73. The sample collected from the surface of the trench, at 3 feet bgs, contained 318 J mg/kg of mercury. This material was placed on a tarp for waste characterization and disposal. The sample from 5 feet bgs contained 90.3 J mg/kg of mercury; this material was also placed on the tarp. These sample results do not appear in Table 2.3-1, as they were from material designated as waste and do not represent site confirmatory samples. The 7-foot-bgs confirmatory sample contained 27.5 J mg/kg of mercury, and a duplicate of this sample contained 137 J mg/kg of mercury. These samples exceed the subsurface background value for mercury of less than 0.1 mg/kg. This material was left in place. The samples from 9 and 11 feet bgs contained 0.679 and 0.0574 mg/kg of mercury, respectively. The primary sample from 9 feet bgs and the duplicate sample from 11 feet bgs (0.75 mg/kg of mercury) both had concentrations of mercury that exceed the subsurface background value. SNL/NM and the NMED determined that the vertical extent of mercury contamination had been defined in this area.

Samples collected from Area B (yellow) in Figure 2.1-1 represent soil from areas adjacent to the original release point. These samples are labeled 105-BH-148, -149, and -150. Samples were collected from 3, 5, and 7 feet bgs. The sample results from these three boreholes range from a single ND to 66.9 J mg/kg of mercury. All results, except the one ND, exceed the subsurface background value.

Area C (green) in Figure 2.2-1 represents the ground surface where the spoils pile from the trench excavation was placed during the P1VCA. The spoils pile was removed and disposed of following the P1VCA, and samples were collected from the ground surface and below. There are five boreholes in this area: 105-BH-43, -58, -74, -89, and -104. The results of the surface samples (0 feet bgs) from these locations range from 2.45 J mg/kg at 105-BH-43 to 339 mg/kg of mercury at 105-BH-58. All surface sample concentrations exceed the surface background value for mercury. The subsurface sample results for these boreholes range from ND to 342 mg/kg of mercury from the 8- and 2-foot-bgs samples, respectively, at Borehole 105-BH-43. Of the 27 samples, 18 exceed either the surface or subsurface background value for mercury.

Table 2.3-1
SWMU 105, Mercury Spill (Building 6536)
Summary of Confirmatory Soil Sampling Analytical Results for Mercury
January–March 2006

Sample Attributes				Metals (EPA Method 7471A)[a] (mg/kg)
Record Number[b]	ER Sample ID	Sample Collection Area	Sample Depth (ft bgs)	Mercury
609353	105-BH-1-0-S	E	0	**0.412**
609353	105-BH-1-2-S	E	2	**4.7**
609353	105-BH-1-4-S	E	4	0.0477
609353	105-BH-2-0-S	E	0	0.132
609353	105-BH-2-2-S	E	2	**0.274**
609353	105-BH-2-4-S	E	4	0.00687
609353	105-BH-3-0-S	E	0	0.0157
609353	105-BH-3-2-S	E	2	0.00788
609353	105-BH-3-4-S	E	4	ND (0.00247)
609353	105-BH-3-4-SD	E	4	ND (0.0025)
609353	105-BH-4-0-S	E	0	0.0109
609353	105-BH-4-2-S	E	2	ND (0.00239)
609353	105-BH-4-4-S	E	4	ND (0.00243)
609353	105-BH-5-0-S	E	0	0.021
609353	105-BH-5-2-S	E	2	0.00609
609353	105-BH-5-4-S	E	4	0.0281
609353	105-BH-6-0-S	E	0	0.0166
609353	105-BH-6-2-S	E	2	0.00699
609353	105-BH-6-4-S	E	4	ND (0.00245)
609352	105-BH-7-0-S	E	0	0.012
609352	105-BH-7-2-S	E	2	0.00822
609352	105-BH-7-4-S	E	4	ND (0.00248)
609352	105-BH-8-0-S	E	0	0.0116
609352	105-BH-8-2-S	E	2	0.0295
609352	105-BH-8-4-S	E	4	0.00307
609352	105-BH-9-0-S	E	0	0.0104
609352	105-BH-9-2-S	E	2	0.0132
609352	105-BH-9-4-S	E	4	ND (0.00241)
609352	105-BH-9-4-SD	E	4	ND (0.00244)
609352	105-BH-10-0-S	E	0	0.0114
609352	105-BH-10-2-S	E	2	0.00876
609352	105-BH-10-4-S	E	4	0.00298
609352	105-BH-11-0-S	E	0	0.0117
609352	105-BH-11-2-S	E	2	0.00259
609352	105-BH-11-4-S	E	4	0.0028
609352	105-BH-12-0-S	E	0	0.0129
609352	105-BH-12-2-S	E	2	0.00807
609352	105-BH-12-4-S	E	4	0.00359
609354	105-BH-13-0-S	E	0	0.01
609354	105-BH-13-2-S	E	2	0.0141
609354	105-BH-13-4-S	E	4	ND (0.00241)
609354	105-BH-14-0-S	E	0	0.007
Background concentration (surface/subsurface)[c]				<0.25/<0.1

Refer to footnotes at end of table.

Table 2.3-1 (Continued)
SWMU 105, Mercury Spill (Building 6536)
Summary of Confirmatory Soil Sampling Analytical Results for Mercury
January–March 2006

Sample Attributes				Metals (EPA Method 7471A[a]) (mg/kg)
Record Number[b]	ER Sample ID	Sample Collection Area	Sample Depth (ft bgs)	Mercury
609354	105-BH-14-2-S	E	2	0.0055
609354	105-BH-14-4-S	E	4	0.00341
609370	105-BH-15-0-S	E	0	0.0864 J
609370	105-BH-15-2-S	E	2	0.0187
609370	105-BH-15-4-S	E	4	ND (0.00246)
609370	105-BH-15-8-S	E	8	ND (0.00248)
609358	105-BH-16-0-S	F	0	0.0228
609358	105-BH-16-2-S	F	2	0.0216
609358	105-BH-16-4-S	F	4	0.00684
609358	105-BH-16-8-S	F	8	0.00296
609360	105-BH-18-0-S	F	0	0.0371
609360	105-BH-18-2-S	F	2	0.00527
609360	105-BH-18-4-S	F	4	0.00393
609360	105-BH-18-8-S	F	8	ND (0.00248)
609362	105-BH-19-0-S	F	0	0.0201
609362	105-BH-19-2-S	F	2	0.00333
609362	105-BH-19-4-S	F	4	ND (0.00246)
609362	105-BH-19-8-S	F	8	**0.173**
609365	105-BH-20-0-S	F	0	0.0161
609365	105-BH-20-2-S	F	2	0.00316
609365	105-BH-20-4-S	F	4	0.011
609365	105-BH-20-8-S	F	8	0.00299
609371	105-BH-21-0-S	F	0	0.125
609371	105-BH-21-2-S	F	2	ND (0.00235)
609371	105-BH-21-2-SD	F	2	0.0163
609371	105-BH-21-4-S	F	8	0.0039
609371	105-BH-21-8-S	F	8	0.00631
609373	105-BH-22-0-S	F	0	0.0119
609373	105-BH-22-2-S	F	2	0.0178
609373	105-BH-22-4-S	F	4	0.00341
609373	105-BH-22-8-S	F	8	0.00341
609351	105-BH-23-0-S	D	0	**6.87**
609351	105-BH-23-2-S	D	2	0.0172
609351	105-BH-23-4-S	D	4	0.029
609351	105-BH-23-6-S	D	6	0.0158
609351	105-BH-23-8-S	D	8	0.0163
609375	105-BH-24-0-S	F	0	0.0335
609375	105-BH-24-2-S	F	2	0.012 J
609375	105-BH-24-4-S	F	4	0.00371 J
609375	105-BH-24-8-S	F	8	0.00578 J
609377	105-BH-25-0-S	F	0	0.00636 J
609377	105-BH-25-2-S	F	2	ND (0.00245)
Background concentration (surface/subsurface)[c]				<0.25/<0.1

Refer to footnotes at end of table.

Table 2.3-1 (Continued)
SWMU 105, Mercury Spill (Building 6536)
Summary of Confirmatory Soil Sampling Analytical Results for Mercury
January–March 2006

Sample Attributes				Metals (EPA Method 7471A[a]) (mg/kg)
Record Number[b]	ER Sample ID	Sample Collection Area	Sample Depth (ft bgs)	Mercury
609377	105-BH-25-4-S	F	4	0.00577 J
609377	105-BH-25-8-S	F	8	ND (0.00247)
609379	105-BH-26-0-S	F	0	0.00671
609379	105-BH-26-2-S	F	2	0.0134
609379	105-BH-26-4-S	F	4	ND (0.00242)
609379	105-BH-26-4-SD	F	4	ND (0.0024)
609379	105-BH-26-8-S	F	8	ND (0.00249)
609381	105-BH-27-0-S	F	0	0.0168
609381	105-BH-27-2-S	F	2	0.00601
609381	105-BH-27-4-S	F	4	ND (0.00247)
609381	105-BH-27-8-S	F	8	0.00318
609354	105-BH-28-0-S	E	0	0.0113
609354	105-BH-28-2-S	E	2	0.00642
609354	105-BH-28-4-S	E	4	0.00857
609370	105-BH-29-0-S	E	0	**0.595**
609370	105-BH-29-2-S	E	2	0.0195
609370	105-BH-29-4-S	E	4	0.00427
609370	105-BH-29-8-S	E	8	ND (0.00245)
609358	105-BH-30-0-S	F	0	0.0232
609358	105-BH-30-2-S	F	2	0.0182
609358	105-BH-30-4-S	F	4	0.0142
609358	105-BH-30-4-SD	F	4	0.00552
609358	105-BH-30-8-S	F	8	ND (0.00234)
609360	105-BH-32-0-S	F	0	0.2
609360	105-BH-32-2-S	F	2	0.0196
609360	105-BH-32-4-S	F	4	0.0104
609360	105-BH-32-8-S	F	8	0.00721
609362	105-BH-33-0-S	F	0	0.0185
609362	105-BH-33-2-S	F	2	0.0104
609362	105-BH-33-4-S	F	4	ND (0.00244)
609362	105-BH-33-8-S	F	8	ND (0.00241)
609365	105-BH-34-0-S	F	0	0.128
609365	105-BH-34-2-S	F	2	0.0544
609365	105-BH-34-4-S	F	4	0.00307
609365	105-BH-34-4-SD	F	4	0.0116
609365	105-BH-34-8-S	F	8	0.00314
609371	105-BH-35-0-S	F	0	**1.09**
609371	105-BH-35-2-S	F	2	0.0115
609371	105-BH-35-4-S	F	4	0.00666
609371	105-BH-35-8-S	F	8	ND (0.00233)
609351	105-BH-36-0-S	D	0	**0.596**
609351	105-BH-36-2-S	D	2	0.0345
Background concentration (surface/subsurface)[c]				<0.25/<0.1

Refer to footnotes at end of table.

Table 2.3-1 (Continued)
SWMU 105, Mercury Spill (Building 6536)
Summary of Confirmatory Soil Sampling Analytical Results for Mercury
January–March 2006

Sample Attributes				Metals (EPA Method 7471A[a]) (mg/kg)
Record Number[b]	ER Sample ID	Sample Collection Area	Sample Depth (ft bgs)	Mercury
609351	105-BH-36-4-S	D	4	0.0194
609351	105-BH-36-6-S	D	6	0.0322
609351	105-BH-36-8-S	D	8	0.0264
609374	105-BH-37-0-S	F	0	**0.935**
609374	105-BH-37-2-S	F	2	0.015
609374	105-BH-37-4-S	F	4	0.00942
609374	105-BH-37-8-S	F	8	ND (0.00231)
609375	105-BH-38-0-S	F	0	0.0897
609375	105-BH-38-2-S	F	2	0.0115 J
609375	105-BH-38-4-S	F	4	0.0058 J
609375	105-BH-38-4-SD	F	4	0.0042 J
609375	105-BH-38-8-S	F	8	0.0117 J
609377	105-BH-39-0-S	F	0	0.00659 J
609377	105-BH-39-2-S	F	2	0.00289 J
609377	105-BH-39-4-S	F	4	ND (0.00243)
609377	105-BH-39-8-S	F	8	0.00367 J
609379	105-BH-40-0-S	F	0	0.00415 J
609379	105-BH-40-2-S	F	2	0.0107
609379	105-BH-40-4-S	F	4	0.00303
609379	105-BH-40-8-S	F	8	ND (0.00237)
609381	105-BH-41-0-S	F	0	0.028
609381	105-BH-41-2-S	F	2	0.00364
609381	105-BH-41-4-S	F	4	0.003
609381	105-BH-41-8-S	F	8	0.00305
609354	105-BH-42-0-S	E	0	0.0156
609354	105-BH-42-2-S	E	2	0.00589
609354	105-BH-42-4-S	E	4	ND (0.00236)
609349	105-BH-43-0-S	C	0	**2.45 J**
609349	105-BH-43-2-S	C	2	**342**
609366	105-BH-43-4-S	C	4	0.00538
609366	105-BH-43-6-S	C	6	0.0195
609366	105-BH-43-6-SD	C	6	0.00946
609366	105-BH-43-8-S	C	8	ND (0.00241)
609383	105-BH-44-0-S	E	3	**16.5**
609383	105-BH-44-2-S	E	5	**0.972**
609383	105-BH-44-4-S	E	7	**28.3**
609383	105-BH-44-4-SD	E	7	**18.3**
609567	105-BH-44-6-S	E	9	ND (0.00243)
609567	105-BH-44-8-S	E	11	0.00295
609358	105-BH-45-0-S	F	0	**0.767**
609358	105-BH-45-2-S	F	2	0.0239
609358	105-BH-45-4-S	F	4	0.00988
Background concentration (surface/subsurface)[c]				<0.25/<0.1

Refer to footnotes at end of table.

Table 2.3-1 (Continued)
SWMU 105, Mercury Spill (Building 6536)
Summary of Confirmatory Soil Sampling Analytical Results for Mercury
January–March 2006

Sample Attributes				Metals (EPA Method 7471A[a]) (mg/kg)
Record Number[b]	ER Sample ID	Sample Collection Area	Sample Depth (ft bgs)	Mercury
609358	105-BH-45-8-S	F	8	0.00575
609360	105-BH-47-0-S	F	0	**4.15**
609360	105-BH-47-2-S	F	2	0.0156
609360	105-BH-47-4-S	F	4	0.00493
609360	105-BH-47-8-S	F	8	0.00818
609362	105-BH-48-0-S	F	0	0.0488
609362	105-BH-48-2-S	F	2	0.0107
609362	105-BH-48-2-SD	F	2	0.0117
609362	105-BH-48-4-S	F	4	0.00724
609362	105-BH-48-8-S	F	8	ND (0.00241)
609365	105-BH-49-0-S	F	0	**0.36**
609365	105-BH-49-2-S	F	2	0.0151
609365	105-BH-49-4-S	F	4	0.00607
609365	105-BH-49-8-S	F	8	ND (0.00238)
609371	105-BH-50-0-S	F	0	0.00894
609371	105-BH-50-2-S	F	2	0.0184
609371	105-BH-50-4-S	F	4	0.00436
609371	105-BH-50-8-S	F	8	0.00357
609351	105-BH-51-0-S	D	0	**3.95**
609351	105-BH-51-2-S	D	2	0.0824
609351	105-BH-51-4-S	D	4	0.0176
609351	105-BH-51-6-S	D	6	0.0183
609351	105-BH-51-8-S	D	8	0.0874
609374	105-BH-52-0-S	F	0	**0.85**
609374	105-BH-52-2-S	F	2	0.0124
609374	105-BH-52-4-S	F	4	0.0044
609374	105-BH-52-8-S	F	8	ND (0.00235)
609351	105-BH-53-0-S	D	0	0.0341
609351	105-BH-53-2-S	D	2	0.0166
609351	105-BH-53-4-S	D	4	0.0237
609351	105-BH-53-6-S	D	6	0.014
609351	105-BH-53-8-S	D	8	0.0155
609377	105-BH-54-0-S	F	0	0.00877 J
609377	105-BH-54-2-S	F	2	0.00746 J
609377	105-BH-54-4-S	F	4	0.00587 J
609377	105-BH-54-8-S	F	8	0.00252 J
609379	105-BH-55-0-S	F	0	0.00633
609379	105-BH-55-2-S	F	2	0.0136
609379	105-BH-55-4-S	F	4	ND (0.00242)
609379	105-BH-55-8-S	F	8	0.00498
609381	105-BH-56-0-S	F	0	0.0253
609381	105-BH-56-2-S	F	2	0.0196
Background concentration (surface/subsurface)[c]				<0.25/<0.1

Refer to footnotes at end of table.

Table 2.3-1 (Continued)
SWMU 105, Mercury Spill (Building 6536)
Summary of Confirmatory Soil Sampling Analytical Results for Mercury
January–March 2006

Sample Attributes				Metals (EPA Method 7471A[a]) (mg/kg)
Record Number[b]	ER Sample ID	Sample Collection Area	Sample Depth (ft bgs)	Mercury
609381	105-BH-56-4-S	F	4	ND (0.00241)
609381	105-BH-56-8-S	F	8	ND (0.0025)
609354	105-BH-57-0-S	E	0	0.0328
609354	105-BH-57-2-S	E	2	0.0106
609354	105-BH-57-4-S	E	4	0.0035
609349	105-BH-58-0-S	C	0	**339**
609349	105-BH-58-2-S	C	2	**125**
609366	105-BH-58-4-S	C	4	**0.85**
609366	105-BH-58-6-S	C	6	**7.53**
609366	105-BH-58-8-S	C	8	0.00269
609383	105-BH-59-0-S	E	3	**6.48**
609383	105-BH-59-2-S	E	5	**1.41**
609383	105-BH-59-2-SD	E	5	**1.15**
609383	105-BH-59-4-S	E	7	**0.906**
609358	105-BH-60-0-S	F	0	**0.401**
609358	105-BH-60-2-S	F	2	**0.156**
609358	105-BH-60-4-S	F	4	0.00535
609358	105-BH-60-8-S	F	8	ND (0.00242)
609360	105-BH-62-0-S	F	0	**3.62**
609360	105-BH-62-2-S	F	2	0.0128
609360	105-BH-62-4-S	F	4	0.00527
609360	105-BH-62-8-S	F	8	ND (0.00243)
609362	105-BH-63-0-S	F	0	0.0262
609362	105-BH-63-2-S	F	2	0.0129
609362	105-BH-63-4-S	F	4	0.00797
609362	105-BH-63-8-S	F	8	0.00458
609364	105-BH-64-0-S	F	0	**0.393**
609364	105-BH-64-2-S	F	2	0.0106
609364	105-BH-64-4-S	F	4	0.00884
609364	105-BH-64-4-SD	F	4	0.0168
609364	105-BH-64-8-S	F	8	0.00323
609371	105-BH-65-0-S	F	0	0.162
609371	105-BH-65-2-S	F	2	0.0114
609371	105-BH-65-4-S	F	4	ND (0.00242)
609371	105-BH-65-8-S	F	8	0.00434
609349	105-BH-66-0-S	D	0	0.144 J
609349	105-BH-66-2-S	D	2	0.0143 J
609349	105-BH-66-4-S	D	4	0.0487
609349	105-BH-66-4-SD	D	4	0.00464 J
609349	105-BH-66-6-S	D	6	ND (0.00237)
609349	105-BH-66-8-S	D	8	ND (0.00243)
609374	105-BH-67-0-S	F	0	0.0377
Background concentration (surface/subsurface)[c]				<0.25/<0.1

Refer to footnotes at end of table.

Table 2.3-1 (Continued)
SWMU 105, Mercury Spill (Building 6536)
Summary of Confirmatory Soil Sampling Analytical Results for Mercury
January–March 2006

Sample Attributes				Metals (EPA Method 7471A[a]) (mg/kg)
Record Number[b]	ER Sample ID	Sample Collection Area	Sample Depth (ft bgs)	Mercury
609374	105-BH-67-2-S	F	2	0.0135
609374	105-BH-67-4-S	F	4	0.00601
609374	105-BH-67-8-S	F	8	0.00383
609375	105-BH-68-0-S	F	0	0.0118 J
609375	105-BH-68-2-S	F	2	ND (0.00236)
609375	105-BH-68-4-S	F	4	0.0142
609375	105-BH-68-8-S	F	8	ND (0.00236)
609377	105-BH-69-0-S	F	0	0.0404 J
609377	105-BH-69-2-S	F	2	0.00879 J
609377	105-BH-69-2-SD	F	2	0.0241 J
609377	105-BH-69-4-S	F	4	0.00781
609377	105-BH-69-8-S	F	8	ND (0.00243)
609379	105-BH-70-0-S	F	0	0.0133
609379	105-BH-70-2-S	F	2	0.0137
609379	105-BH-70-4-S	F	4	ND (0.00238)
609379	105-BH-70-8-S	F	8	0.00259
609381	105-BH-71-0-S	F	0	0.0216
609381	105-BH-71-2-S	F	2	0.00265
609381	105-BH-71-4-S	F	4	0.00388
609381	105-BH-71-8-S	F	8	0.00322
609354	105-BH-72-0-S	E	0	0.0914
609354	105-BH-72-2-S	E	2	0.0284
609354	105-BH-72-2-SD	E	2	0.0122
609354	105-BH-72-4-S	E	4	0.00311
609522	105-BH-73-4-S	A	7	**27.5 J**
609522	105-BH-73-4-SD	A	7	**137 J**
609567	105-BH-73-6-S	A	9	**0.679**
609567	105-BH-73-8-S	A	11	0.0574
609567	105-BH-73-8-SD	A	11	**0.75**
609349	105-BH-74-0-S	C	0	**11.8**
609349	105-BH-74-2-S	C	2	**147**
609349	105-BH-74-2-SD	C	2	**75.4**
609366	105-BH-74-4-S	C	4	**0.327**
609366	105-BH-74-6-S	C	6	**4.4**
609366	105-BH-74-8-S	C	8	0.0106
609383	105-BH-75-0-S	E	3	**14.8**
609383	105-BH-75-2-S	E	5	**18.8**
609383	105-BH-75-4-S	E	7	**24.1**
609567	105-BH-75-6-S	E	9	0.00272
609567	105-BH-75-8-S	E	11	**0.448**
609359	105-BH-76-0-S	F	0	0.0102
609359	105-BH-76-2-S	F	2	ND (0.00237)
Background concentration (surface/subsurface)[c]				<0.25/<0.1

Refer to footnotes at end of table.

Table 2.3-1 (Continued)
SWMU 105, Mercury Spill (Building 6536)
Summary of Confirmatory Soil Sampling Analytical Results for Mercury
January–March 2006

Sample Attributes				Metals (EPA Method 7471A[a]) (mg/kg)
Record Number[b]	ER Sample ID	Sample Collection Area	Sample Depth (ft bgs)	Mercury
609359	105-BH-76-4-S	F	4	0.00887
609359	105-BH-76-8-S	F	8	0.00435
609361	105-BH-78-0-S	F	0	0.0234
609361	105-BH-78-2-S	F	2	0.0198
609361	105-BH-78-2-SD	F	2	0.0051
609361	105-BH-78-4-S	F	4	0.00459
609361	105-BH-78-8-S	F	8	0.0077
609363	105-BH-79-0-S	F	0	0.0129
609363	105-BH-79-2-S	F	2	0.014
609364	105-BH-80-0-S	F	0	0.0185
609364	105-BH-80-2-S	F	2	0.0168
609364	105-BH-80-4-S	F	4	0.00524
609364	105-BH-80-8-S	F	8	0.00528
609372	105-BH-81-0-S	F	0	0.00677
609372	105-BH-81-2-S	F	2	0.00951
609372	105-BH-81-4-S	F	4	0.00708
609372	105-BH-81-8-S	F	8	0.00338
609373	105-BH-82-0-S	F	0	0.013
609373	105-BH-82-2-S	F	2	0.0125
609373	105-BH-82-4-S	F	4	0.0116
609373	105-BH-82-8-S	F	8	0.00258
609374	105-BH-83-0-S	F	0	0.0159
609374	105-BH-83-2-S	F	2	0.0137
609374	105-BH-83-4-S	F	4	0.0128
609374	105-BH-83-4-SD	F	4	0.0164
609374	105-BH-83-8-S	F	8	ND (0.00241)
609376	105-BH-84-0-S	F	0	0.00714 J
609376	105-BH-84-2-S	F	2	0.0161
609376	105-BH-84-4-S	F	4	0.0132
609376	105-BH-84-8-S	F	8	ND (0.0025)
609378	105-BH-85-0-S	F	0	0.0102 J
609378	105-BH-85-2-S	F	2	0.0242
609378	105-BH-85-4-S	F	4	0.00721 J
609378	105-BH-85-8-S	F	8	ND (0.00232)
609380	105-BH-86-0-S	F	0	0.00616
609380	105-BH-86-2-S	F	2	0.0153
609380	105-BH-86-2-SD	F	2	0.00725
609380	105-BH-86-4-S	F	4	0.00435
609380	105-BH-86-8-S	F	8	ND (0.00238)
609382	105-BH-87-0-S	F	0	0.00599
609382	105-BH-87-2-S	F	2	0.00571
609382	105-BH-87-4-S	F	4	ND (0.00234)
Background concentration (surface/subsurface)[c]				<0.25/<0.1

Refer to footnotes at end of table.

Table 2.3-1 (Continued)
SWMU 105, Mercury Spill (Building 6536)
Summary of Confirmatory Soil Sampling Analytical Results for Mercury
January–March 2006

Sample Attributes				Metals (EPA Method 7471A[a]) (mg/kg)
Record Number[b]	ER Sample ID	Sample Collection Area	Sample Depth (ft bgs)	Mercury
609382	105-BH-87-8-S	F	8	0.0234
609355	105-BH-88-0-S	E	0	0.126
609355	105-BH-88-2-S	E	2	0.0174
609355	105-BH-88-4-S	E	4	0.00485
609349	105-BH-89-0-S	C	0	**40.3**
609349	105-BH-89-2-S	C	2	**92.5**
609366	105-BH-89-4-S	C	4	**5.97**
609366	105-BH-89-6-S	C	6	**1.96**
609366	105-BH-89-8-S	C	8	0.00384
609383	105-BH-90-0-S	E	3	**8.26**
609383	105-BH-90-2-S	E	5	**4.2**
609383	105-BH-90-4-S	E	7	**2.08**
609359	105-BH-91-0-S	F	0	0.013
609359	105-BH-91-2-S	F	2	0.00315
609359	105-BH-91-4-S	F	4	0.00312
609359	105-BH-91-8-S	F	8	ND (0.00244)
609361	105-BH-93-0-S	F	0	0.0276
609361	105-BH-93-2-S	F	2	0.0206
609361	105-BH-93-4-S	F	4	0.00616
609361	105-BH-93-8-S	F	8	0.00362
609363	105-BH-94-0-S	F	0	0.0144
609363	105-BH-94-2-S	F	2	0.0142
609363	105-BH-94-4-S	F	4	0.0132
609363	105-BH-94-8-S	F	8	ND (0.00247)
609364	105-BH-95-0-S	F	0	0.0396
609364	105-BH-95-2-S	F	2	0.00882
609364	105-BH-95-4-S	F	4	0.00283
609364	105-BH-95-8-S	F	8	ND (0.00241)
609372	105-BH-96-0-S	F	0	0.00883
609372	105-BH-96-2-S	F	2	0.0175
609372	105-BH-96-4-S	F	4	0.00436
609372	105-BH-96-8-S	F	8	0.00261
609373	105-BH-97-0-S	F	0	0.00954
609373	105-BH-97-2-S	F	2	0.0146
609373	105-BH-97-4-S	F	4	0.00451
609373	105-BH-97-8-S	F	8	ND (0.00248)
609374	105-BH-98-0-S	F	0	0.0644
609374	105-BH-98-2-S	F	2	0.00843
609374	105-BH-98-2-SD	F	2	0.0246
609374	105-BH-98-4-S	F	4	ND (0.0025)
609374	105-BH-98-8-S	F	8	ND (0.00246)
609376	105-BH-99-0-S	F	0	0.0219
Background concentration (surface/subsurface)[c]				<0.25/<0.1

Refer to footnotes at end of table.

Table 2.3-1 (Continued)
SWMU 105, Mercury Spill (Building 6536)
Summary of Confirmatory Soil Sampling Analytical Results for Mercury
January–March 2006

Sample Attributes				Metals (EPA Method 7471A[a]) (mg/kg)
Record Number[b]	ER Sample ID	Sample Collection Area	Sample Depth (ft bgs)	Mercury
609376	105-BH-99-2-S	F	2	0.00874 J
609376	105-BH-99-4-S	F	4	0.0123 J
609376	105-BH-99-8-S	F	8	ND (0.00234)
609378	105-BH-100-0-S	F	0	0.00646 J
609378	105-BH-100-2-S	F	2	0.00475 J
609378	105-BH-100-4-S	F	4	0.0393
609378	105-BH-100-4-SD	F	4	0.00624 J
609378	105-BH-100-8-S	F	8	ND (0.00243)
609380	105-BH-101-0-S	F	0	0.00429
609380	105-BH-101-2-S	F	2	ND (0.00242)
609380	105-BH-101-4-S	F	4	0.00654
609380	105-BH-101-8-S	F	8	0.00484
609382	105-BH-102-0-S	F	0	0.0128
609382	105-BH-102-2-S	F	2	0.00524
609382	105-BH-102-4-S	F	4	0.00829
609382	105-BH-102-8-S	F	8	0.0052
609355	105-BH-103-0-S	E	0	0.117
609355	105-BH-103-2-S	E	2	0.0133
609355	105-BH-103-4-S	E	4	0.00954
609355	105-BH-103-4-SD	E	4	0.006
609349	105-BH-104-0-S	C	0	**9.45**
609349	105-BH-104-2-S	C	2	**89.6**
609366	105-BH-104-4-S	C	4	0.0256
609366	105-BH-104-6-S	C	6	**1.22**
609366	105-BH-104-8-S	C	8	0.00238
609383	105-BH-105-0-S	E	3	**24**
609383	105-BH-105-2-S	E	5	**3.22**
609383	105-BH-105-4-S	E	7	0.0116
609359	105-BH-106-0-S	F	0	0.04
609359	105-BH-106-2-S	F	2	**0.135**
609359	105-BH-106-4-S	F	4	0.00459
609359	105-BH-106-8-S	F	8	ND (0.00248)
609361	105-BH-108-0-S	F	0	0.0418
609361	105-BH-108-2-S	F	2	0.014
609361	105-BH-108-4-S	F	4	0.0105
609361	105-BH-108-8-S	F	8	ND (0.00236)
609363	105-BH-109-0-S	F	0	0.0584
609363	105-BH-109-2-S	F	2	ND (0.00244)
609363	105-BH-109-2-SD	F	2	ND (0.0025)
609363	105-BH-109-4-S	F	4	ND (0.00244)
609363	105-BH-109-8-S	F	8	ND (0.00246)
609364	105-BH-110-0-S	F	0	0.0552
Background concentration (surface/subsurface)[c]				<0.25/<0.1

Refer to footnotes at end of table.

Table 2.3-1 (Continued)
SWMU 105, Mercury Spill (Building 6536)
Summary of Confirmatory Soil Sampling Analytical Results for Mercury
January–March 2006

Sample Attributes				Metals (EPA Method 7471A[a]) (mg/kg)
Record Number[b]	ER Sample ID	Sample Collection Area	Sample Depth (ft bgs)	Mercury
609364	105-BH-110-2-S	F	2	0.0105
609364	105-BH-110-4-S	F	4	0.00518
609364	105-BH-110-8-S	F	8	0.00639
609372	105-BH-111-0-S	F	0	0.00967
609372	105-BH-111-2-S	F	2	0.00887
609372	105-BH-111-4-S	F	4	0.0153
609372	105-BH-111-8-S	F	8	ND (0.00244)
609373	105-BH-112-0-S	F	0	0.0115
609373	105-BH-112-2-S	F	2	0.0105
609373	105-BH-112-4-S	F	4	0.00255
609373	105-BH-112-8-S	F	8	ND (0.00235)
609373	105-BH-113-0-S	F	0	0.024
609373	105-BH-113-2-S	F	2	0.0166
609373	105-BH-113-4-S	F	4	0.00479
609373	105-BH-113-8-S	F	8	ND (0.00245)
609376	105-BH-114-0-S	F	0	0.0433
609376	105-BH-114-2-S	F	2	ND (0.00232)
609376	105-BH-114-2-SD	F	2	0.00264
609376	105-BH-114-4-S	F	4	0.0108 J
609376	105-BH-114-8-S	F	8	0.00334 J
609378	105-BH-115-0-S	F	0	0.00249 J
609378	105-BH-115-2-S	F	2	0.00956 J
609378	105-BH-115-4-S	F	4	0.00716 J
609378	105-BH-115-8-S	F	8	ND (0.00245)
609380	105-BH-116-0-S	F	0	0.0496
609380	105-BH-116-2-S	F	2	0.0126
609380	105-BH-116-4-S	F	4	0.00463
609380	105-BH-116-8-S	F	8	ND (0.00243)
609382	105-BH-117-0-S	F	0	0.0091
609382	105-BH-117-2-S	F	2	0.0142
609382	105-BH-117-4-S	F	4	0.00788
609382	105-BH-117-8-S	F	8	0.00497
609355	105-BH-118-0-S	E	0	0.0615
609355	105-BH-118-2-S	E	2	0.0198
609355	105-BH-118-4-S	E	4	0.00574
609349	105-BH-119-0-S	E	0	**9.29**
609349	105-BH-119-2-S	E	2	0.0416
609349	105-BH-119-4-S	E	4	0.0466
609357	105-BH-120-0-S	E	0	**0.407**
609357	105-BH-120-2-S	E	2	**0.364**
609357	105-BH-120-2-SD	E	2	**8.6**
609357	105-BH-120-4-S	E	4	0.0111
Background concentration (surface/subsurface)[c]				<0.25/<0.1

Refer to footnotes at end of table.

Table 2.3-1 (Continued)
SWMU 105, Mercury Spill (Building 6536)
Summary of Confirmatory Soil Sampling Analytical Results for Mercury
January–March 2006

Sample Attributes				Metals (EPA Method 7471A[a]) (mg/kg)
Record Number[b]	ER Sample ID	Sample Collection Area	Sample Depth (ft bgs)	Mercury
609357	105-BH-121-0-S	E	0	0.155
609357	105-BH-121-2-S	E	2	0.00958
609357	105-BH-121-4-S	E	4	0.00274
609355	105-BH-131-4-S	E	4	ND (0.00234)
609357	105-BH-122-0-S	E	0	0.0973
609357	105-BH-122-2-S	E	2	0.0089
609357	105-BH-122-4-S	E	4	0.00479
609356	105-BH-123-0-S	E	0	0.0575
609356	105-BH-123-2-S	E	2	0.00988
609356	105-BH-123-4-S	E	4	0.00826
609356	105-BH-124-0-S	E	0	0.0227
609356	105-BH-124-2-S	E	2	0.0101
609356	105-BH-124-4-S	E	4	0.00807
609356	105-BH-125-0-S	E	0	0.00296
609356	105-BH-125-2-S	E	2	0.00801
609356	105-BH-125-4-S	E	4	0.0252
609356	105-BH-126-0-S	E	0	**2.39**
609356	105-BH-126-2-S	E	2	0.0501
609356	105-BH-126-4-S	E	4	0.0114
609356	105-BH-127-0-S	E	0	**6.97**
609356	105-BH-127-2-S	E	2	**1.53**
609356	105-BH-127-4-S	E	4	0.0122
609356	105-BH-127-4-SD	E	4	**0.89**
609356	105-BH-128-0-S	E	0	**0.371**
609356	105-BH-128-2-S	E	2	**0.16**
609356	105-BH-128-4-S	E	4	0.026
609356	105-BH-129-0-S	E	0	0.0631
609356	105-BH-129-2-S	E	2	0.054
609356	105-BH-129-4-S	E	4	0.00481
609355	105-BH-130-0-S	E	0	0.138
609355	105-BH-130-2-S	E	2	**0.832**
609355	105-BH-130-4-S	E	4	0.00603
609355	105-BH-131-0-S	E	0	0.0843
609355	105-BH-131-2-S	E	2	0.0184
609355	105-BH-131-2-SD	E	2	0.00963
609355	105-BH-132-0-S	E	0	0.129
609355	105-BH-132-2-S	E	2	**1.77**
609355	105-BH-132-4-S	E	4	0.00738
609367	105-BH-133-0-S	G	0	**8.09**
609367	105-BH-133-2-S	G	2	**0.16**
609367	105-BH-133-4-S	G	4	0.00769
609367	105-BH-133-8-S	G	8	0.00444
Background concentration (surface/subsurface)[c]				<0.25/<0.1

Refer to footnotes at end of table.

Table 2.3-1 (Continued)
SWMU 105, Mercury Spill (Building 6536)
Summary of Confirmatory Soil Sampling Analytical Results for Mercury
January–March 2006

Sample Attributes				Metals (EPA Method 7471A[a]) (mg/kg)
Record Number[b]	ER Sample ID	Sample Collection Area	Sample Depth (ft bgs)	Mercury
609367	105-BH-134-0-S	G	0	0.0142
609367	105-BH-134-2-S	G	2	0.0173
609367	105-BH-134-4-S	G	4	0.00337
609367	105-BH-134-4-SD	G	4	0.00346
609367	105-BH-134-8-S	G	8	ND (0.00247)
609367	105-BH-135-0-S	G	0	**5.05**
609367	105-BH-135-2-S	G	2	0.019
609367	105-BH-135-4-S	G	4	0.00399
609367	105-BH-135-8-S	G	8	0.0031
609367	105-BH-136-0-S	G	0	**7.93**
609367	105-BH-136-2-S	G	2	0.0455
609367	105-BH-136-4-S	G	4	0.0515
609367	105-BH-136-8-S	G	8	0.00864
609367	105-BH-137-0-S	G	0	**13.5**
609367	105-BH-137-2-S	G	2	**5.14**
609367	105-BH-137-4-S	G	4	**3.33**
609367	105-BH-137-8-S	G	8	0.00455 J
609368	105-BH-138-0-S	G	0	**6.05**
609368	105-BH-138-2-S	G	2	**16.3**
609368	105-BH-138-4-S	G	4	**4.28**
609368	105-BH-138-8-S	G	8	0.0177
609368	105-BH-139-0-S	G	0	**5.74**
609368	105-BH-139-2-S	G	2	0.078
609368	105-BH-139-4-S	G	4	**3.6**
609368	105-BH-139-8-S	G	8	0.00686 J
609368	105-BH-140-0-S	G	0	**12.6**
609368	105-BH-140-2-S	G	2	0.0201
609368	105-BH-140-2-SD	G	2	**2.66**
609368	105-BH-140-4-S	G	4	0.0205
609368	105-BH-140-8-S	G	8	**0.631**
609368	105-BH-141-0-S	G	0	**3.36**
609368	105-BH-141-2-S	G	2	**0.869**
609368	105-BH-141-4-S	G	4	0.006 J
609368	105-BH-141-8-S	G	8	0.0763
609369	105-BH-142-0-S	G	0	**26.4**
609369	105-BH-142-2-S	G	2	**0.459**
609369	105-BH-142-4-S	G	4	**0.102 J**
609369	105-BH-142-8-S	G	8	**0.124 J**
609369	105-BH-143-0-S	G	0	**0.316 J**
609369	105-BH-143-2-S	G	2	0.0112 J
609369	105-BH-143-4-S	G	4	0.0095 J
609369	105-BH-143-8-S	G	8	ND (0.00246) R
Background concentration (surface/subsurface)[c]				<0.25/<0.1

Refer to footnotes at end of table.

Table 2.3-1 (Continued)
SWMU 105, Mercury Spill (Building 6536)
Summary of Confirmatory Soil Sampling Analytical Results for Mercury
January–March 2006

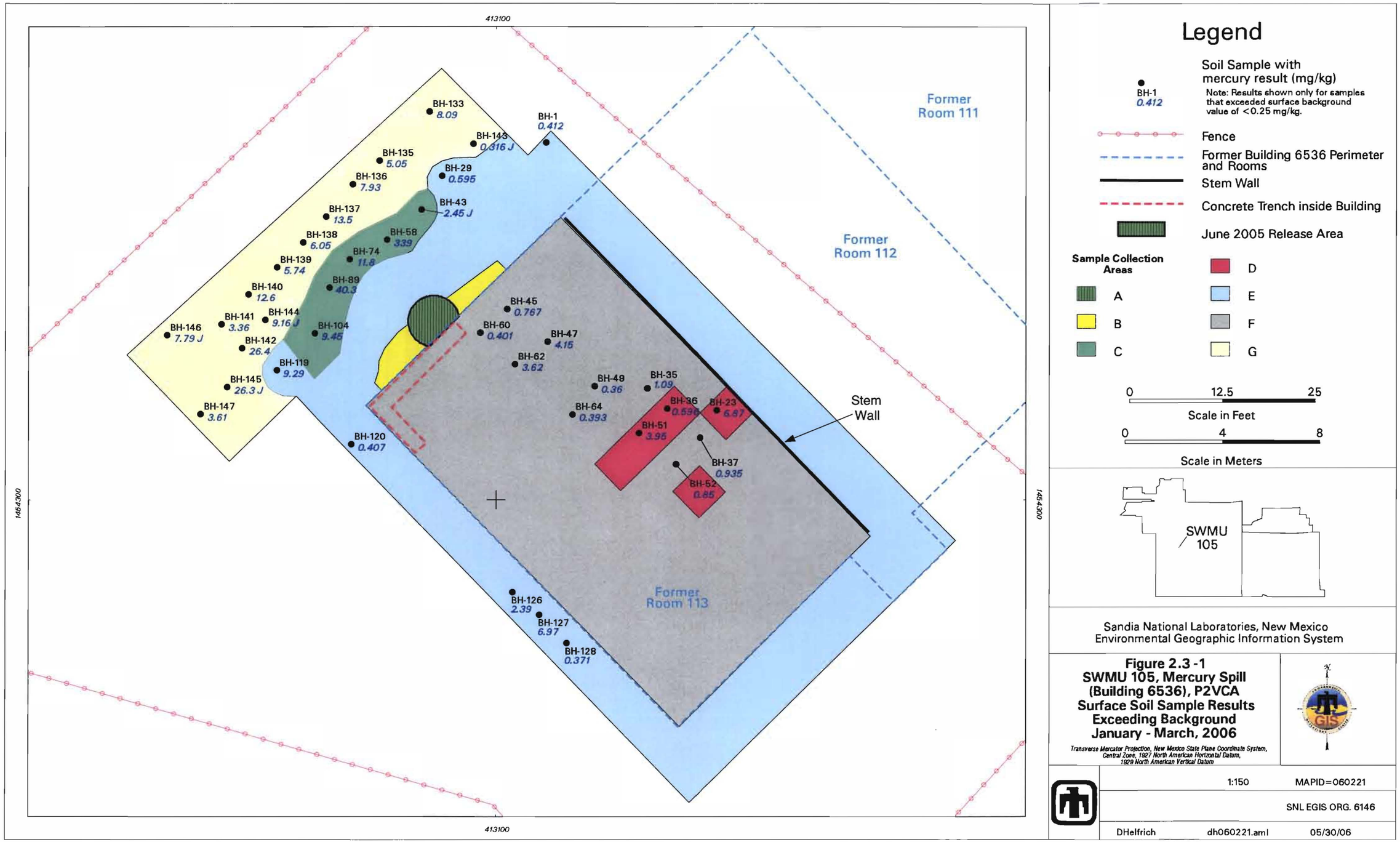
Sample Attributes				Metals (EPA Method 7471A[a]) (mg/kg)
Record Number[b]	ER Sample ID	Sample Collection Area	Sample Depth (ft bgs)	Mercury
609369	105-BH-144-0-S	G	0	**9.16 J**
609369	105-BH-144-2-S	G	2	0.00387 J
609369	105-BH-144-4-S	G	4	**0.147 J**
609369	105-BH-144-8-S	G	8	**4.46 J**
609370	105-BH-145-0-S	G	0	**26.3 J**
609370	105-BH-145-2-S	G	2	**0.278 J**
609370	105-BH-145-4-S	G	4	0.0325 J
609370	105-BH-145-8-S	G	8	**0.113 J**
609370	105-BH-146-0-S	G	0	**7.79 J**
609370	105-BH-146-2-S	G	2	**0.807 J**
609370	105-BH-146-4-S	G	4	0.0264 J
609370	105-BH-146-8-S	G	8	0.0829 J
609370	105-BH-146-8-SD	G	8	**0.11 J**
609521	105-BH-147-0-S	G	0	**3.61**
609521	105-BH-147-2-S	G	2	0.0115
609521	105-BH-147-2-SD	G	2	0.0154
609521	105-BH-147-4-S	G	4	ND (0.119)
609521	105-BH-147-8-S	G	8	0.0697
609523	105-BH-148-0-S	B	3	**66.9 J**
609523	105-BH-148-2-S	B	5	**0.238 J**
609523	105-BH-148-4-S	B	7	ND (0.00241 J)
609523	105-BH-149-0-S	B	3	**1.47 J**
609523	105-BH-149-2-S	B	5	**0.255 J**
609523	105-BH-149-2-SD	B	5	**0.963 J**
609523	105-BH-149-4-S	B	7	**1.93 J**
609523	105-BH-150-0-S	B	3	**3.07 J**
609523	105-BH-150-2-S	B	5	**0.216 J**
609523	105-BH-150-4-S	B	7	**0.167 J**
Background concentration (surface/subsurface)[c]				<0.25/<0.1
Quality Assurance/Quality Control Samples (EPA Method 7470A[a]) (mg/L)				
609349	105-EB-1	NA		0.000148 J
609351	105-EB-2	NA		ND (0.00005)
609354	105-EB-3	NA		ND (0.00005)
609357	105-EB-4	NA		ND (0.00005)
609358	105-EB-5	NA		ND (0.00005
609366	105-EB-6	NA		ND (0.00005 J)
609370	105-EB-7	NA		ND (0.00005)
609371	105-EB-8	NA		ND (0.00005 J)
609374	105-EB-9	NA		ND (0.00005 J)

Refer to footnotes at end of table.

Table 2.3-1 (Concluded)
SWMU 105, Mercury Spill (Building 6536)
Summary of Confirmatory Soil Sampling Analytical Results for Mercury
January–March 2006

Sample Attributes				Metals (EPA Method 7471A[a]) (mg/kg)
Record Number[b]	ER Sample ID	Sample Collection Area	Sample Depth (ft bgs)	Mercury
Quality Assurance/Quality Control Samples (EPA Method 7470A[a]) (mg/L)				
609378	105-EB-10	NA	NA	0.000052
609381	105-EB-11	NA	NA	ND (0.00005)
609383	105-EB-12	NA	NA	ND (0.00005 J)
609522	105-EB-13	NA	NA	ND (0.00005)
609567	105-EB-14	NA	NA	ND (0.00005)

Note: Values in **bold** exceed background soil concentration.
[a]EPA November 1986.
[b]Analysis request/chain-of-custody record.
[c]Dinwiddie September 1997.
bgs = Below ground surface.
BH = Borehole.
EB = Equipment blank.
EPA = U.S. Environmental Protection Agency.
ER = Environmental Restoration.
ft = Foot (feet).
ID = Identification.
J = Estimated concentration.
MDL = Method detection limit.
mg/kg = Milligram(s) per kilogram.
mg/L = Milligram(s) per liter.
NA = Not applicable.
ND ( ) = Not detected above the MDL, shown in parentheses.
ND (J) = Not detected, uncertainty in the detection limit shown in parentheses, see Data Validation Report (Annex B).
R = Value is unusable, see Data Validation Report (Annex B).
S = Soil sample.
SD = Soil sample duplicate.
SWMU = Solid Waste Management Unit.


413100
1454300
BH-133 8.09
BH-1 0.412
BH-143 0.316 J
BH-135 5.05
BH-29 0.595
BH-136 7.93
BH-43 2.45 J
BH-137 13.5
BH-58 339
BH-138 6.05
BH-74 11.8
BH-139 5.74
BH-89 40.3
BH-140 12.6
BH-144 9.16 J
BH-141 3.36
BH-104 9.45
BH-146 7.79 J
BH-142 26.4
BH-119 9.29
BH-145 26.3 J
BH-147 3.61
BH-120 0.407
BH-45 0.767
BH-60 0.401
BH-47 4.15
BH-62 3.62
BH-49 0.36
BH-35 1.09
BH-36 0.536
BH-23 6.87
BH-64 0.393
BH-51 3.95
BH-37 0.935
BH-52 0.85
BH-126 2.39
BH-127 6.97
BH-128 0.371
Former Room 111
Former Room 112
Former Room 113
Stem Wall
Legend
Soil Sample with mercury result (mg/kg)
BH-1 0.412
Note: Results shown only for samples that exceeded surface background value of <0.25 mg/kg.
Fence
Former Building 6536 Perimeter and Rooms
Stem Wall
Concrete Trench inside Building
June 2005 Release Area
Sample Collection Areas
A
B
C
D
E
F
G
0 12.5 25
Scale in Feet
0 4 8
Scale in Meters
SWMU 105
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
Figure 2.3 -1
SWMU 105, Mercury Spill (Building 6536), P2VCA Surface Soil Sample Results Exceeding Background January - March, 2006
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone, 1927 North American Horizontal Datum, 1929 North American Vertical Datum
1:150
MAPID=060221
SNL EGIS ORG. 6146
DHelfrich
dh060221.aml
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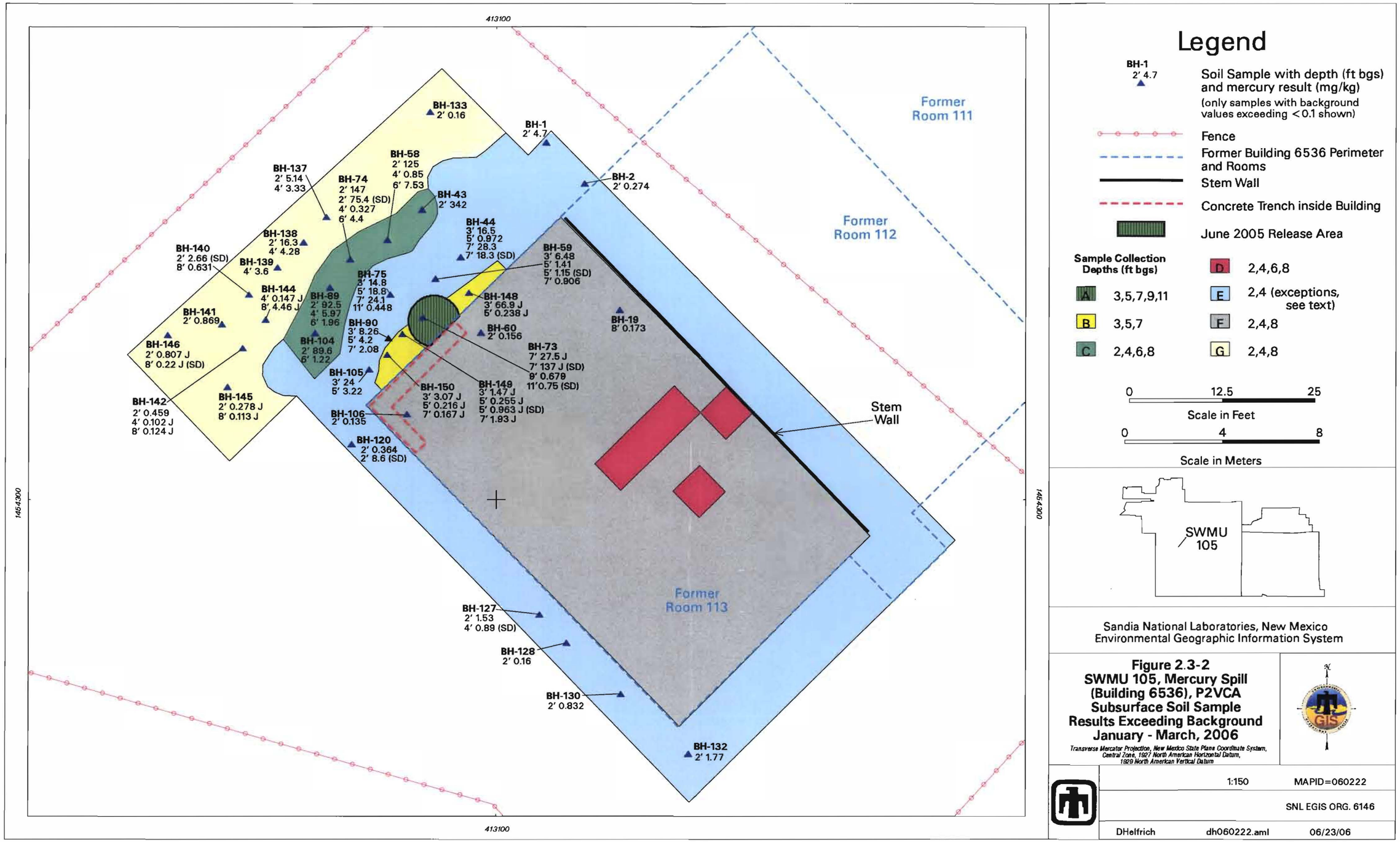

Legend

BH-1
2' 4.7
Soil Sample with depth (ft bgs) and mercury result (mg/kg)
(only samples with background values exceeding <0.1 shown)

Fence

Former Building 6536 Perimeter and Rooms

Stem Wall

Concrete Trench inside Building

June 2005 Release Area

Sample Collection Depths (ft bgs)			
A	3,5,7,9,11	D	2,4,6,8
B	3,5,7	E	2,4 (exceptions, see text)
C	2,4,6,8	F	2,4,8
		G	2,4,8

0 12.5 25
Scale in Feet

0 4 8
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Figure 2.3-2
SWMU 105, Mercury Spill (Building 6536), P2VCA Subsurface Soil Sample Results Exceeding Background January - March, 2006

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone, 1927 North American Horizontal Datum, 1929 North American Vertical Datum

1:150 MAPID=060222

SNL EGIS ORG. 6146

DHelfrich dh060222.aml 06/23/06

Area D (pink) in Figure 2.2-1 represents locations where P1VCA soil-vapor detections were higher than those from adjacent areas. Five boreholes, 105-BH-23, -36, -51, -53, and -66, were sampled at 0, 2, 4, 6, and 8 feet bgs. The analytical results for surface samples at 105-BH-23, -36, and -51 exceed the background value. No subsurface sample results for mercury exceed the background value.

The former footprint of Room 113 was surrounded with a row of sample locations representing the perimeter of Room 113 (Area E [blue] in Figure 2.1-1). There are 42 borehole locations in this area, and samples were collected at 0, 2, and 4 feet bgs in most locations. The perimeter borehole locations that were within, or nearby, the trench area include 105-BH-15, -29, -44, -59, -75, -90, -105, and -119. Boreholes 105-BH-15 and -29 also included a soil sample from 8 feet bgs; both results were ND. The remaining boreholes were sampled at 3, 5, and 7 feet bgs, with Boreholes 105-BH-44 and -75 also sampled at 9 and 11 feet bgs. The results for the surface samples range from 0.00296 to 24 mg/kg of mercury, with 12 of 42 samples exceeding the background value. The subsurface sample results range from ND to 28.3 mg/kg of mercury, with 21 of 93 samples exceeding the background value.

Sample locations within the footprint of Room 113 are designated as area F (gray) in Figure 2.1-1. There were 79 proposed borehole locations, but that number was reduced to 72. The grid row of borehole locations 105-BH-17, -31, -46, -61, -77, -92, and -107 was eliminated as the actual spacing on the ground had to be adjusted to accommodate the topography. This row of locations was not needed. Samples were collected at 0, 2, 4, and 8 feet bgs in this area. The results of the surface samples range from 0.00249 J to 4.15 mg/kg of mercury, with 9 of 72 samples exceeding the background value. The subsurface sample results range from ND to 0.173 mg/kg of mercury, with only 3 of 229 samples exceeding the background value.

After reviewing the preliminary analytical results from the trench and spoils pile areas, an additional 15 borehole locations (105-BH-133 through -147) were added to the northwest of the trench area (Area G [pale yellow] in Figure 2.1-1). Soil samples were collected from 0, 2, 4, and 8 feet bgs. Results from the surface samples range from 0.0142 to 26.4 mg/kg of mercury, with 14 of 15 samples exceeding the background value. The subsurface sample results from this area range from ND to 16.3 mg/kg of mercury, with 15 of 49 samples exceeding the background value.

2.4 Quality Assurance/Quality Control

Field quality control (QC) samples were collected as specified in the Quality Assurance (QA) Plan (SNL/NM April 1996) and in the P2VCA Plan (SNL/NM December 2005). Table 2.4-1 presents the QC requirements for the SWMU 105 P2VCA. As part of the QA requirements, all of the data were validated according to current SNL/NM data validation procedures. The field QC sample results are presented in Section 2.5.

The results of the soil duplicate samples are presented in Table 2.3-1 and have been included in the data set of confirmatory soil samples discussed in Section 2.3.

Equipment blank (EB) sample results are also presented in Table 2.3-1. The EB samples were analyzed by EPA Method 7470A (EPA November 1986). The results for the EB samples range from ND to 0.000148 J mg/liter of mercury.

Table 2.4-1
SWMU 105, Mercury Spill (Building 6536), Field Quality Control Sample Requirements for January–March 2006 Confirmatory Soil Samples

Sample Type	Frequency	Total Number of Samples	Matrix
Duplicate Soil Samples	~5%	34	Soil
Equipment Blank Samples	1 per day	14	Aqueous

SWMU = Solid Waste Management Unit.

To assess the variability of the sample matrix, a calculation of relative percent difference (RPD) between the result of a soil sample and the duplicate of that sample is performed as a demonstration of the accuracy. RPDs cannot be calculated for ND results or those that are estimated with a J qualifier. There were 34 sets of soil samples and duplicates that were analyzed for mercury and 21 sets of results were suitable for calculating RPDs (Table 2.4-2). The RPD values ranged from 3 to 197. This wide range demonstrates the variability of a soil matrix and the heterogeneity of mercury contamination.

2.5 Data Validation

All of the sample results (soil and EB) were verified/validated according to "Data Validation Procedure for Chemical and Radiochemical Data," Rev. 01 (SNL/NM December 2003). Reviews confirmed that all the data results from the analytical laboratory, except for one sample, are defensible and therefore acceptable for use in this Corrective Action Complete (CAC) proposal, fulfilling the data quality objective requirements. Some of the sample results have been qualified with a J, defined as an estimated value. The data validation reports are provided in Annex B. One sample result, 105-BH-143 at 8 feet bgs, received an R qualifier. This rejected determination was due to failure in meeting the laboratory QA/QC requirements (Annex B).

2.6 Waste Management

Mercury-contaminated soil was excavated from the original release point and containerized into 55-gallon, steel drums. Approximately 1 cy of soil was disposed of as hazardous waste according to SNL/NM policy. The waste disposal request forms are provided in Annex C.

Table 2.4-2
SWMU 105, Mercury Spill (Building 6536), Relative Percent Difference Calculations

ER Sample ID	Mercury (mg/kg) Primary Sample	Mercury (mg/kg) Duplicate Sample	RPD
105-BH-3-4-S	ND	ND	--
105-BH-9-4-S	ND	ND	--
105-BH-21-2-S	ND	0.0163	--
105-BH-26-4-S	ND	ND	--
105-BH-30-4-S	0.0142	0.00552	88
105-BH-34-4-S	0.00307	0.0116	116
105-BH-38-4-S	0.0058 J	0.0042 J	--
105-BH-43-6-S	0.0195	0.00946	69
105-BH-44-4-S	28.3	18.3	43
105-BH-48-2-S	0.0107	0.0117	9
105-BH-59-2-S	1.41	1.15	20
105-BH-64-4-S	0.00884	0.0168	62
105-BH-66-4-S	0.0487	0.00464 J	--
105-BH-69-2-S	0.00879 J	0.0241 J	--
105-BH-72-2-S	0.0284	0.0122	80
105-BH-73-4-S	27.5 J	137 J	--
105-BH-73-8-S	0.0574	0.75	172
105-BH-74-2-S	147	75.4	64
105-BH-78-2-S	0.0198	0.0051	118
105-BH-83-4-S	0.0128	0.0164	25
105-BH-86-2-S	0.0153	0.00725	71
105-BH-98-2-S	0.00843	0.0246	98
105-BH-100-4-S	0.0393	0.00624 J	--
105-BH-103-4-S	0.00954	0.006	46
105-BH-109-2-S	ND	ND	--
105-BH-114-2-S	ND	0.00264 J	--
105-BH-120-2-S	0.364	8.6	184
105-BH-127-4-S	0.0122	0.89	195
105-BH-131-2-S	0.0184	0.00963	63
105-BH-134-4-S	0.00337	0.00346	3
105-BH-140-2-S	0.0201	2.66	197
105-BH-146-8-S	0.0829 J	0.11 J	--
105-BH-147-2-S	0.0115	0.0154	29
105-BH-149-2-S	0.255 J	0.963 J	--

BH = Borehole.
ER = Environmental Restoration.
ID = Identification.
J = Estimated value.
mg/kg = Milligrams per kilogram.
ND = Not detected above method detection limit.
RPD = Relative percent difference is calculated with the following equation and rounded to nearest whole number:

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

where: R_1 = Analysis result.
R_2 = Duplicate analysis result.

S = Soil (matrix).
SWMU = Solid Waste Management Unit.
-- = Not calculated.

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3.0 CONCEPTUAL SITE MODEL

The conceptual site model for SWMU 105 is based upon the constituents of concern (COCs) identified from operational history information, process knowledge, and previous investigations. This chapter summarizes the nature and extent of the contamination and the environmental fate of the COCs. Figure 3-1 illustrates the conceptual site model for SWMU 105.

3.1 Nature and Extent of Contamination

The only COC for SWMU 105 has been identified as elemental mercury. The operational history of the site provided evidence that equipment containing mercury had been used inside Building 6536 and that there had been releases of mercury within the building. Other potential types and sources of contamination were identified and eliminated from consideration during the P1VCA (Shaw February 2006). The only COC identified as released to the environment was elemental mercury. The analytical methods used are appropriate for characterizing the identified COC.

The sampling activities conducted during the P2VCA are considered to have resulted in soil samples that adequately represent the soil beneath the foundation of Room 113, as well as the immediate surrounding area. The sampling target depths are sufficient to determine the vertical extent of mercury contamination.

The highest levels of mercury in the soil were present in the uppermost portion of the soil column (typically within the 0- to 2-foot depths). Samples were collected to a depth of 8 feet bgs across the site, except in the trench area where the maximum sample depth was 11 feet bgs. A discussion that took place on March 6, 2006, with the NMED during the sampling event prompted the collection of additional samples from three locations (105-BH-44, -73, and -75) at 9 and 11 feet bgs. The vertical and horizontal extent of contamination has therefore been defined by the sampling and analyses.

SWMU 105 is currently an inactive site at which the building has been demolished, and the primary source of contamination has been eliminated. As a result, migration of any residual mercury in the soil is predominately dependent upon precipitation and occasional surface-water flow. The borehole data collected are adequate for characterizing the migration of mercury in the subsurface.

3.2 Environmental Fate and Transport

The primary release(s) of mercury to the environment at SWMU 105 was to the soil along the northwest foundation wall of Building 6536, Room 113. It is neither clear nor documented as to how or why mercury was present in Room 113. All documentation indicates that two of the three reported incidences of mercury releases in the building occurred prior to the construction of Room 113. Wind, water, and biota are natural mechanisms of COC transport from the primary release point; however, because the area of the release point is relatively small and the source has been removed, these are not considered to be of potential significance. Infiltration of precipitation is also considered to be low at SWMU 105. Because groundwater at the site is

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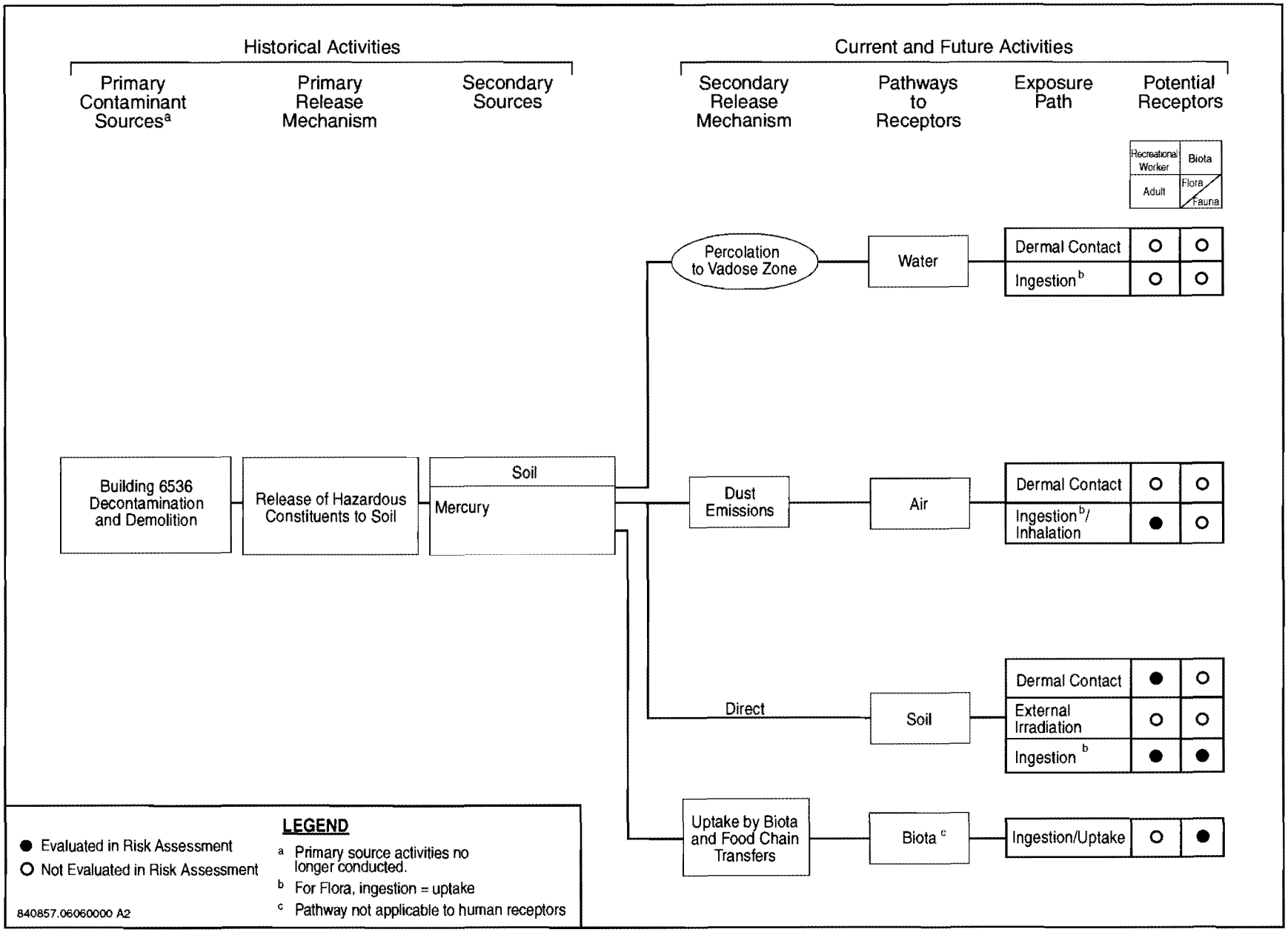

Figure 3-1

SWMU 105, Mercury Spill (Building 6536), Conceptual Site Model Flow Diagram

497 feet bgs (SNL/NM April 2004), the potential for COCs to reach groundwater through the unsaturated zone above the water table is extremely low.

The COCs at SWMU 105 are limited to a single constituent, elemental mercury.

Wind, water, and biota are considered to be of low significance as potential transport mechanisms at this site. Significant leaching into the subsurface soil is unlikely, and leaching into the groundwater at this site is highly unlikely. The potential for transformation of the COC is low.

In summary, the design and execution of the confirmatory soil sampling for SWMU 105 was appropriate and adequate to determine the nature and extent of the residual mercury in the soil at the site.

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4.0 SITE ASSESSMENTS

The site assessments for SWMU 105 include risk assessment analyses for human health and ecological risks. Complete details of the human health and ecological risk assessments and uncertainties are provided in Annex D. All data collected for the P1VCA and the P2VCA (except one sample result with an R qualification) are suitable for use in the human health and ecological risk assessments. Two risk assessments were performed for SWMU 105. The first assessment used the data collected from the entire site (Table 1.3-1, mercury only, and Table 2.3-1). For conservatism, a second assessment was performed using a limited data set that included the P1VCA mercury results and results from only those P2VCA boreholes located northwest of the Room 113 foundation (Figure 4-1). This included the six samples collected from the trench area locations during the P1VCA and during the P2VCA, the spoils pile area, and the additional row added at the very northwestern edge of boreholes. The majority of the sample results that exceeded either the surface or the subsurface background values are in these areas. Of the 31 surface samples, 29 sample results exceeded the background value, and of the 113 subsurface samples, 59 sample results exceeded the background value. Using this limited data set provides a representative distribution of residual mercury contamination in the area of primary concern, which exhibited the highest concentrations of mercury in the soil. Six sample locations from the P1VCA, 32 borehole locations from the P2VCA, and a total of 144 soil sample analyses are represented in this data set. The limited data set used in the second risk assessment is provided in Table E-1 in Annex E, and the data set excluded from the second risk assessment is provided in Table E-2.

4.1 Human Health Risk Assessments

SWMU 105 has been recommended for an industrial land-use scenario (DOE et al. September 1995). Because the soil at the site contains an inorganic COC at levels above the background values, it was necessary to perform a human health risk assessment for the site. Section 4.1.1 presents the results of the human health risk assessment for the entire data set and Section 4.1.2 presents the results for the limited data set.

SWMU 105 contains an identified inorganic COC. Because of the location of the site, the designated industrial land-use scenario, and the nature of contamination, potential exposure pathways identified for the site include soil ingestion, dermal contact, and dust and volatile inhalation for the chemical COC. The same exposure pathways are applied to the residential land-use scenario.

4.1.1 Human Health Risk Assessment for Entire Data Set

Using conservative assumptions and a reasonable maximum exposure approach to risk assessment, calculations for the nonradiological COC (mercury) show that for the industrial land-use scenario the hazard index (HI) (1.19) is slightly greater than the accepted numerical guidance from the NMED. The HI for the residential land-use scenario is 15.0, which is also above the accepted numerical guidance. There was no quantified estimated excess cancer risk; thus, excess cancer risk is below the acceptable risk value provided by the NMED for both

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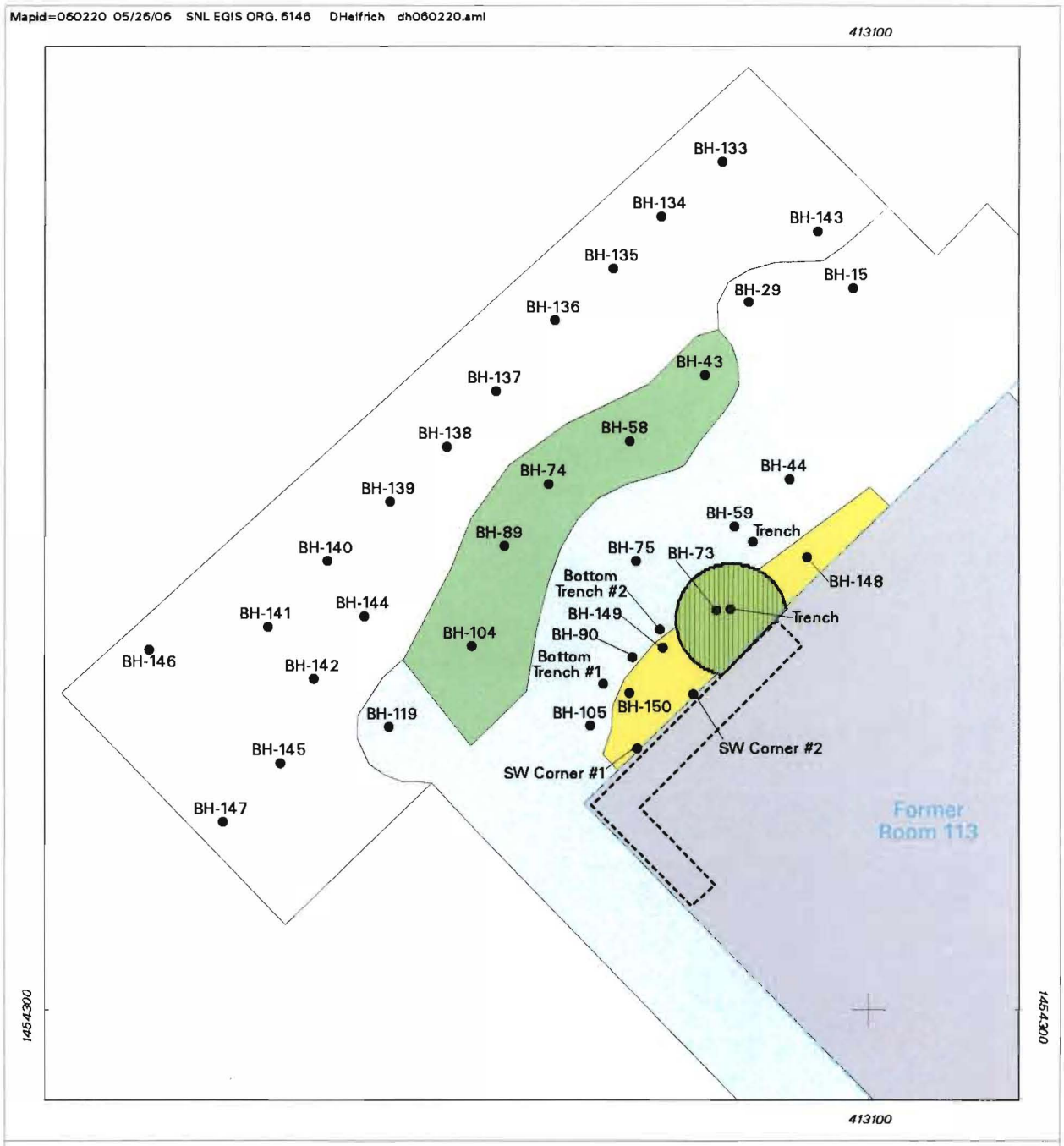

Legend

- Soil Sample
- Former Building 6536 Perimeter
- Concrete Trench inside Building
- June 2005 Release Area - A

Sample Collection Area

B, E, G, C, F

Figure 4-1
SWMU 105,
Mercury Spill (Building 6536),
Boreholes for Risk Assessment
of Limited Area

0 5 10
Scale in Feet

0 1.2 2.4
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

840857.06060000 A9

the industrial and residential land-use scenarios (Bearzi January 2001). No quantified HI or estimated excess cancer risk are associated with the background constituent under either the industrial or residential land-use scenarios for SWMU 105.

Although the HIs for mercury were above the NMED guidelines for the industrial and residential land-use scenarios, the maximum concentration of mercury was used in the risk calculation. Because the site has been adequately characterized, the average concentration is more representative of actual conditions for the entire site. Using the 95% upper confidence limit (UCL) of the mean concentration of mercury for the entire data set (7.7 mg/kg, summarized in Annex D) reduces the total HIs to 0.03 and 0.34 for the industrial and residential land-use scenarios, respectively. Thus, by using a realistic concentration in the risk calculations that more accurately depicts conditions for the entire site, the total HIs are below NMED guidelines. Table 4.1-1 summarizes the HIs and the excess cancer risk calculated using the entire data set from SWMU 105.

Table 4.1-1
SWMU 105, Mercury Spill (Building 6536) Summation of Risks Using the Entire Data Set

Land-Use Scenario	Hazard Index (using maximum concentration of mercury)	Hazard Index (using UCL of the mean concentration of mercury)	Excess Cancer Risk
Industrial	**1.19**	0.03	--
Residential	**15.0**	0.34	--
NMED Guidance	<1	<1	<1E-5

Note: Values in **bold** exceed the NMED guidance.
NMED = New Mexico Environment Department.
SWMU = Solid Waste Management Unit.
UCL = Upper Confidence Limit.
-- = Not quantified.

4.1.2 Human Health Risk Assessment for Limited Data Set

Performing the same human health risk assessment for SWMU 105 using the limited data set, the maximum concentration for mercury remains the same as do the calculations for the HIs for both the industrial and residential land-use scenarios. There was no quantified estimated excess cancer risk; thus, excess cancer risk is below the acceptable risk value provided by the NMED for both the industrial and residential land-use scenarios (Bearzi January 2001). No quantified HI or estimated excess cancer risk are associated with the background constituent under either the industrial or residential land-use scenarios for SWMU 105.

Although the HIs were above the NMED guidelines for the industrial and residential land-use scenarios, the maximum concentration was used in the risk calculation. Using the 95% UCL of the mean concentration of mercury (30.5 mg/kg, summarized in Annex D) for the limited data set reduces the total HIs to 0.11 and 1.34 for the industrial and residential land-use scenarios, respectively. The HI for the industrial land-use scenario is below the NMED guidance, but the HI for the residential land-use scenario is above the guidance value. Table 4.1-2 summarizes the HIs and the excess cancer risk calculated using the limited data set from SWMU 105.

Table 4.1-2
SWMU 105, Mercury Spill (Building 6536), Summation of Risks Using the Limited Data Set

Land-Use Scenario	Hazard Index (using maximum concentration of mercury	Hazard Index (using UCL of the mean concentration of mercury)	Excess Cancer Risk
Industrial	**1.19**	0.11	--
Residential	**15**	**1.34**	--
NMED Guidance	<1	<1	<1E-5

Note: Values in **bold** exceed the NMED guidance.
NMED = New Mexico Environment Department.
SWMU = Solid Waste Management Unit.
UCL = Upper Confidence Limit.
-- = Not quantified.

4.2 Ecological Risk Assessments

Ecological risks associated with SWMU 105 were estimated through a risk assessment that incorporated site-specific information, when available. Hazard quotients greater than unity were initially predicted; however, closer examination of the exposure assumptions revealed an overestimation of risk primarily due to conservative toxicity benchmarks; the use of the maximum concentration, maximum bioavailability, and maximum area use to estimate exposure. Based upon this final analysis, the potential for ecological risks associated with SWMU 105 is expected to be low.

5.0 RECOMMENDATION FOR CORRECTIVE ACTION COMPLETE WITH CONTROLS DETERMINATION

5.1 Rationale

Based upon field data and the human and ecological risk assessment analyses, a determination of CAC with controls (NMED April 2004) is recommended for SWMU 105 for the following reasons:

- The soil has been sampled and adequately characterized for mercury, the COC present at SWMU 105.
- No mercury contamination is present in the soil at levels considered hazardous to human health for the industrial land-use scenario.
- The potential for ecological risks associated with SWMU 105 is expected to be low.

5.2 Criterion

The evidence provided in Section 5.1 supports the recommendation for a determination of CAC with controls (NMED April 2004) for SWMU 105. This is consistent with the NMED NFA Criterion 5, which states, "the SWMU/AOC [Area of Concern] has been characterized or remediated in accordance with current applicable state or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use" (NMED March 1998).

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6.0 REFERENCES

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ANNEX A
SWMU 105, Mercury Spill (Building 6536)
Analysis Request/Chain-of-Custody Forms

CONTRACT LABORATORY

ANALYSIS REQUEST AND CHAIN OF CUSTODY

Page 1 of 1

Internal Lab Batch No. N/A

AR/COC 608368

Dept. No./Mail Stop:	10826	Date Samples Shipped:	7/7/05	Project/Task No.: 63916-4.5.1	☐ Waste Characterization
Project/Task Manager:	Nick Durand	Carrier/Waybill No.	52757	SMO Authorization:	Send Preliminary/Copy Report to:
Project Name:	Bldg 6536	Lab Contact:	Ed Kao	Contract # PO 21673	
Record Center Code:	NA	Lab Destination:	Severn Trent St. Louis	SMO SUPPLIED BOTTLES	☐ Validation Required
Logbook Ref. No.:	NA	SMO Contact/Phone:	P. Pulissant 844-3185		☐ Released by COC No.:
Service Order No.:	CFO 163-05	Send Report to SMO:	L. Herrera 844-3199		Bill To: Sandia National Labs (Accounts Payable) P.O. Box 5800, MS-0154 Albuquerque, NM., 87185-0154
Location	Tech Area				
Building	Room				

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Beginning Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preservative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
067822-001	trench	4"	NA	7/6/05 @ 1350	S	AG	250ml	None	G	SA	Hg	
067822-002	trench	na	NA	7/6/05 @ 1355	S	AG	250ml	None	G	SA	Hg	
067822-003	spoils pile	na	NA	7/6/05 @ 1422	S	AG	250ml	None	G	SA	Hg, ~~composite with 4&5 for~~ TCLP	
067822-004	spoils pile	1'	NA	7/6/05 @ 1430	S	AG	250ml	None	G	SA	Hg ~~composite with 3&5 for~~ TCLP	
067822-005	spoils pile	na	NA	7/6/05 @ 1435	S	AG	250ml	None	G	SA	Hg, ~~composite with 3&4 for~~ TCLP	

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

Abnormal Conditions on Receipt

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	Don Watenpaugh	Don Watenpaugh	DW	Shaw 2628912

3 DAY RCRA 8 TCLP mets

*Please list as separate report.

Lab Use

1.Relinquished by	Don Watenpaugh	Org. Shaw	Date 7/7/05	Time 0905	4.Relinquished by	Org.	Date	Time
1. Received by	[illegible]	Org. SMO	Date 7/7/05	Time 0905	4. Received by	Org.	Date	Time
2.Relinquished by	[illegible]	Org. SMO	Date 7/7/05	Time 1745	5.Relinquished by	Org.	Date	Time
2. Received by	[illegible]	Org. SRL	Date SRL	Time 0800	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

CONTRAC ABORATORY

ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Page 1 of __

Batch No. SMO Use

AR/COC 608793

Dept. No./Mail Stop:	10826	Date Samples Shipped:		Project/Task No.: 83916 4.5.1	☑ Waste Characterization
Project/Task Manager:	Nick Durand	Carrier/Waybill No.		SMO Authorization:	Send Preliminary/Copy Report to:
Project Name:	Bldg 6536	Lab Contact:	Ed Kao	Contract # PO 21673	Larry Ring and Brenda Langkoph
Record Center Code:		Lab Destination:	Severn Trent St. Louis		☐ Validation Required
Logbook Ref. No.:		SMO Contact/Phone:	P. Puissant 844-3185		☐ Released by COC No.:
Service Order No.:	CFO 163-05	Send Report to SMO:	L. Herrera 844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area III				P.O. Box 5800, MS-0154
Building 6536	Room				Albuquerque, NM., 87185-0154

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Beginning Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preservative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
069601-001	SW corner #1	NA	NA	7/21/05 1353	soil	P	500ML	4° C	G	SA	Total RCRA Metals	
069601-002	SW corner #2	NA	NA	7/21/05 1357	soil	P	500ML	4° C	G	SA	Total RCRA Metals	
069601-003	Bottom trench #1	NA	NA	7/21/05 1400	soil	P	500ML	4° C	G	SA	Total RCRA Metals	
069601-004	Bottom trench #2	NA	NA	7/21/05 1403	soil	P	500ML	4° C	G	SA	Total RCRA Metals	

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

Abnormal Conditions on Receipt

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	Larry Ring	Larry Ring	LR	Shaw 262-8930
	Don Watenpaugh	Don Watenpaugh	DW	Shaw 262-8912

*Please list as separate report.

Lab Use

1.Relinquished by Don Watenpaugh	Org. Shaw	Date 7/21/05	Time 1455	4.Relinquished by	Org.	Date	Time
1. Received by Larry Ring	Org. CH2M	Date 7-21-05	Time 1455	4. Received by	Org.	Date	Time
2.Relinquished by	Org.	Date	Time	5.Relinquished by	Org.	Date	Time
2. Received by	Org.	Date	Time	5. Received by	Org.	Date	Time
3.Relinquished by	Org.	Date	Time	6.Relinquished by	Org.	Date	Time
3. Received by	Org.	Date	Time	6. Received by	Org.	Date	Time

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. PM

SMO Use

AR/COC 609349

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	1-25-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization -Send preliminary/copy report to:
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	59712	SMO Authorization: [illegible]	
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	☐ Released by COC No.:
Record Center Code:	NA	Lab Destination:	Gel	See below order	☑ Validation Required
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		Bill To: Sandia National Labs (Accounts Payable)
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		P.O. Box 5800 MS 0154
Location	Tech Area				Albuquerque, NM 87185-0154
Building	Room				154536 %

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
074114-002	105-BH-43-0-S	0	105	012406/1140	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	001
074115-002	105-BH-43-2-S	2	105	012406/1145	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	002
074174-002	105-BH-58-0-S	0	105	012406/1132	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	003
074175-002	105-BH-58-2-S	2	105	012406/1135	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	004
074236-002	105-BH-74-0-S	0	105	012406/1115	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	005
074237-002	105-BH-74-2-S	2	105	012406/1124	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	006
074238-002	105-BH-74-2-SD	2	105	012406/1124	S	G	125 ml	4C	G	DU	Mercury (EPA 7471A)	007
074296-002	105-BH-89-0-S	0	105	012406/1103	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	008
074297-002	105-BH-89-2-S	2	105	012406/1113	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	009
074355-002	105-BH-104-0-S	0	105	012406/1050	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	010
074356-002	105-BH-104-2-S	2	105	012406/1100	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	011

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☐ 15 Day ☐ 30 Day

Return Samples By: 3 DAY ☒ Negotiated TAT

Sample Tracking Smo Use

Date Entered(mm/dd/yy)

Entered by:

QC Inits.

Special Instructions/QC Requirements

EDD ☑ Yes ☐ No

Level D Package ☑ Yes ☐ No

*Send report to:

Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov

Final report to Stacey Griffith MS1087/Org 6146

(505) 284-2588/ (505) 379-7588

3 day turnaround time

*Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	William Gibson	[illegible]	[illegible]	Weston/6146/284-5232/239-7367
	Jeff Lee	[illegible]	[illegible]	Stone Lion/6146/284-3309/228-9598
	Robert Lynch	[illegible]	RL	Weston/6146/250-7090
	Stacy Griffith	[illegible]	SG	Gram/6146/284-2588/379-7588

1.Relinquished by	[illegible]	Org. 6146	Date 1/25/06	Time 0840	4.Relinquished by	Org.	Date	Time
1. Received by	[illegible]	Org. 6146	Date 1/25/06	Time 0840	4. Received by	Org.	Date	Time
2.Relinquished by	[illegible]	Org. 6146	Date 1/25/06	Time 1035	5.Relinquished by	Org.	Date	Time
2. Received by	[illegible]	Org.	Date 1/26/06	Time 0920	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

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

AR/COC- 609349

Project Name:	P2VCA@SWMU105	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	98046.02.02.09
Location	Tech Area				
Building	Room				

Reference LOV (available at SMO)

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use: Lab Sample ID
074413-002	105-BH-119-0-S	0	105	012406/1015	S	G	125ml	4C	G	SA	Mercury (EPA 7471A)	012
074414-002	105-BH-119-2-S	2	105	012406/1042	S	G	125ml	4C	G	SA	Mercury (EPA 7471A)	013
074415-002	105-BH-119-4-S	4	105	012406/1042	S	G	125ml	4C	G	SA	Mercury (EPA 7471A)	014
074204-002	105-BH-66-0-S	0	105	012406/1445	S	G	125ml	4C	G	SA	Mercury (EPA 7471A)	015
074205-002	105-BH-66-2-S	2	105	012406/1455	S	G	125ml	4C	G	SA	Mercury (EPA 7471A)	016
074206-002	105-BH-66-4-S	4	105	012406/1505	S	G	125ml	4C	G	SA	Mercury (EPA 7471A)	017
074207-002	105-BH-66-4-SD	4	105	012406/1505	S	G	125ml	4C	G	DU	Mercury (EPA 7471A)	018
074208-002	105-BH-66-6-S	6	105	012406/1508	S	G	125ml	4C	G	SA	Mercury (EPA 7471A)	019
074209-002	105-BH-66-8-S	8	105	012406/1513	S	G	125ml	4C	G	SA	Mercury (EPA 7471A)	020
074455-002	105-EB-1	NA	105	012406/1425	DIW	P	250 ml	HNO3	C	EB	Mercury (EPA 7470A)	154540001
		NA	105		DIW	P	250 ml					

Abnormal Conditions on Receipt

LAB USE

Recipient Initials LS

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC **609351**

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	1-26-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	597528-3	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel S.C.	See bottle order	☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154 1546335

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
074031-002	105-BH-23-0-S	0	105	012506/1025	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	001
074032-002	105-BH-23-2-S	2	105	012506/1033	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	002
074033-002	105-BH-23-4-S	4	105	012506/1031	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	003
074034-002	105-BH-23-6-S	6	105	012506/1037	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	004
074035-002	105-BH-23-8-S	8	105	012506/1035	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	005
074085-002	105-BH-36-0-S	0	105	012506/0920	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	006
074086-002	105-BH-36-2-S	2	105	012506/0936	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	007
074087-002	105-BH-36-4-S	4	105	012506/0935	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	008
074088-002	105-BH-36-6-S	6	105	012506/0947	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	009
074089-002	105-BH-36-8-S	8	105	012506/0945	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	010
074145-002	105-BH-51-0-S	0	105	012506/0910	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	011

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☐ 15 Day ☐ 30 Day

Return Samples By: ☐ Negotiated TAT QC inits:

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

Special Instructions/QC Requirements
EDD ☑ Yes ☐ No
Level D Package ☑ Yes ☐ No

*Send report to:
Preliminary report (.pdf) to srgriff@sandia.gov + biangk@sandia.gov
Final report to Stacey Griffith MS1087/Org 6146
(505) 284-2588/ (505) 379-7588

3 day turnaround time

*Please list as separate report.

Abnormal Conditions on Receipt

Lab Use
Temp 3C

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	William Gibson		WG	Weston/6146/284-5232/239-7367
	Jeff Lee		JL	Stone Lion/6146/284-3309/228-9598
	Gilbert Quintana		GQ	Shaw/6146/284-3309/238-9417
	Stacy Griffith		SG	Gram/6146/284-2588
	Robert Lynch		RL	Weston/6146/250-7090

1.Relinquished by	Org. 6146	Date 1-26-06	Time 0850	4.Relinquished by	Org.	Date	Time
1. Received by	Org. 6146	Date 1-26-06	Time 0850	4. Received by	Org.	Date	Time
2.Relinquished by	Org. 6146	Date 1-26-06	Time 1230	5.Relinquished by	Org.	Date	Time
2. Received by	Org. Gel	Date 1-27-06	Time 0930	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

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

AR/COC- 609351

Project Name:	P2VCA@SWMU105	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	98046.02.03.01
Location	Tech Area				
Building	Room				

Reference LOV (available at SMO)

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use: Lab Sample ID
074146-002	105-BH-51-2-S	2	105	012506/0920	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	012
074147-002	105-BH-51-4-S	4	105	012506/0918	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	013
074148-002	105-BH-51-6-S	6	105	012506/0925	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	014
074149-002	105-BH-51-8-S	8	105	012506/0930	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	015
074154-002	105-BH-53-0-S	0	105	012506/0954	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	016
074155-002	105-BH-53-2-S	2	105	012506/1005	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	017
074156-002	105-BH-53-4-S	4	105	012506/1002	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	018
074157-002	105-BH-53-6-S	6	105	012506/1018	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	019
074158-002	105-BH-53-8-S	8	105	012506/1017	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	020
074456-002	105-EB-2	NA	105	012506/1456	S	~~P~~	250 ml	HNO3	G	EB	Mercury (EPA 7470A)	154631001

Abnormal Conditions on Receipt

LAB USE

Recipient Initials MV

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC 609352

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	11/30/06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	59863	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
073973-002	105-BH-7-0-S	0	105	12606/0905	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	154847 001
073974-002	105-BH-7-2-S	2	105	12606/0922	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	002
073975-002	105-BH-7-4-S	4	105	12606/0920	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	003
073976-002	105-BH-8-0-S	0	105	12606/0917	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	004
073977-002	105-BH-8-2-S	2	105	12606/0927	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	005
073978-002	105-BH-8-4-S	4	105	12606/0925	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	006
073979-002	105-BH-9-0-S	0	105	12606/0924	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	007
073980-002	105-BH-9-2-S	2	105	12606/0937	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	008
073981-002	105-BH-9-4-S	4	105	12606/0935	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	009
073982-002	105-BH-9-4-SD	4	105	12606/0935	S	G	125 ml	4C	G	DU	Mercury (EPA 7471A)	010
073983-002	105-BH-10-0-S	0	105	12606/0933	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	011

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☑ 15 Day ☐ 30 Day

Return Samples By: ☐ **Negotiated TAT**

Sample Tracking Smo Use

Date Entered(mm/dd/yy)

Entered by:

QC inits.

Special Instructions/QC Requirements

EDD ☑ **Yes** ☐ **No**

Level D Package ☑ **Yes** ☐ **No**

***Send report to:**

Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov

Final report to Stacy Griffith MS1087/Org 6146

(505) 284-2588/ (505) 379-7588

15 day turnaround time

Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	William Gibson			Weston/6146/284-5232/239-7367
	Robert Lynch			Weston/6146/250-7090

1.Relinquished by	Org. 6146	Date 11/30/06	Time 0940	4.Relinquished by	Org.	Date	Time
1. Received by	Org. 6146	Date 11/30/06	Time 0940	4. Received by	Org.	Date	Time
2.Relinquished by	Org. 6146	Date 11/30/06	Time 1130	5.Relinquished by	Org.	Date	Time
2. Received by	Org.	Date 11/30/06	Time 1910	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

OFF-SITE L. .ORATORY

Analysis Request And Chain Of Custody (Continuation)

AR/COC- 609352

Project Name:	P2VCA@SWMU105	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	98046.02.03.01
Location	Tech Area				
Building	Room				

Reference LOV (available at SMO)

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use: Lab Sample ID
073984-002	105-BH-10-2-S	2	105	12606/0941	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	012
073985-002	105-BH-10-4-S	4	105	12606/0940	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	013
073986-002	105-BH-11-0-S	0	105	12606/0946	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	014
073987-002	105-BH-11-2-S	2	105	12606/0951	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	015
073988-002	105-BH-11-4-S	4	105	12606/0950	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	016
073989-002	105-BH-12-0-S	0	105	12606/0947	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	017
073990-002	105-BH-12-2-S	2	105	12606/0955	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	018
073991-002	105-BH-12-4-S	4	105	12606/0954	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	019

Abnormal Conditions on Receipt **LAB USE**

Recipient Initials LS

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

AR/COC **609353**

SMO Use

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	1-26-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	5975223	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel S.C.		☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Pulssant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To:Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO) 154669%

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
073954-002	105-BH-1-0-S	0	105	012506/1327	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	001
073955-002	105-BH-1-2-S	2	105	012506/1341	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	002
073956-002	105-BH-1-4-S	4	105	012506/1350	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	003
073957-002	105-BH-2-0-S	0	105	012506/1354	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	004
073958-002	105-BH-2-2-S	2	105	012506/1404	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	005
073959-002	105-BH-2-4-S	4	105	012506/1400	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	006
073960-002	105-BH-3-0-S	0	105	012506/1402	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	007
073961-002	105-BH-3-2-S	2	105	012506/1414	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	008
073962-002	105-BH-3-4-S	4	105	012506/1412	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	009
073963-002	105-BH-3-4-SD	4	105	012506/1412	S	G	125 ml	4C	G	DU	Mercury (EPA 7471A) Split QC	010
073964-002	105-BH-4-0-S	0	105	012506/1415	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	011

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☑ 15 Day ☐ 30 Day

Return Samples By: ☐ **Negotiated TAT**

Sample Tracking Smo Use

Date Entered(mm/dd/yy)

Entered by:

QC inits.

Special Instructions/QC Requirements

EDD ☑ Yes ☐ No

Level D Package ☑ Yes ☐ No

***Send report to:**

Preliminary report (.pdf) to srgriff@sandia.gov + biangk@sandia.gov

Final report to Stacey Griffith MS1087/Org 6146

(505) 284-2588/ (505) 379-7588

15 day turnaround time

Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

Temp 3

Sample Team Members

Name	Signature	Init	Company/Organization/Phone/Cellular
William Gibson			Weston/6146/284-5232/239-7367
Jeff Lee			Stone Lion/6146/284-3309/228-9598
Gilbert Quintana			Shaw/6146/284-3309/238-9417
Stacy Griffith		SG	Gram/6146/284-2588/ 379-7588
Robert Lynch		RL	Weston/6146/250-7090

1.Relinquished by	Org. 6146	Date 1-26-06	Time 0845	4.Relinquished by	Org.	Date	Time
1. Received by	Org. 6146	Date 1-26-06	Time 845	4. Received by	Org.	Date	Time
2.Relinquished by	Org. 6146	Date 1-26-06	Time 1230	5.Relinquished by	Org.	Date	Time
2. Received by	Org. GEL	Date 1-27-06	Time 0930	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

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

AR/COC- 609353

Project Name:	P2VCA@SWMU105	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	98046.02.03.01
Location	Tech Area				
Building	Room				

Reference LOV (available at SMO)

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use: Lab Sample ID
073965-002	105-BH-4-2-S	2	105	012506/1423	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	012
073966-002	105-BH-4-4-S	4	105	012506/1421	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	013
073967-002	105-BH-5-0-S	0	105	012506/1425	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	014
073968-002	105-BH-5-2-S	2	105	012506/1432	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	015
073969-002	105-BH-5-4-S	4	105	012506/1436	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	016
073970-002	105-BH-6-0-S	0	105	012506/1434	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	017
073971-002	105-BH-6-2-S	2	105	012506/1445	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	018
073972-002	105-BH-6-4-S	4	105	012506/1444	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	018
												019

Abnormal Conditions on Receipt

LAB USE

Recipient Initials MK

CONTRACT . .3ORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC 609354

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	1-30-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	59863	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
073992-002	105-BH-13-0-S	0	105	012606/1001	S	G	125 ml	4C	G	SA	Mercury (7471A)	154847020
073993-002	105-BH-13-2-S	2	105	012606/1006	S	G	125 ml	4C	G	SA	Mercury (7471A)	154860001
073994-002	105-BH-13-4-S	4	105	012606/1005	S	G	125 ml	4C	G	SA	Mercury (7471A)	002
073995-002	105-BH-14-0-S	0	105	012606/1002	S	G	125 ml	4C	G	SA	Mercury (7471A)	003
073996-002	105-BH-14-2-S	2	105	012606/1010	S	G	125 ml	4C	G	SA	Mercury (7471A)	004
073997-002	105-BH-14-4-S	4	105	012606/1008	S	G	125 ml	4C	G	SA	Mercury (7471A)	005
074053-002	105-BH-28-0-S	0	105	012606/1335	S	G	125 ml	4C	G	SA	Mercury (7471A)	006
074054-002	105-BH-28-2-S	2	105	012606/1340	S	G	125 ml	4C	G	SA	Mercury (7471A)	007
074055-002	105-BH-28-4-S	4	105	012606/1355	S	G	125 ml	4C	G	SA	Mercury (7471A)	008
074111-002	105-BH-42-0-S	0	105	012606/1354	S	G	125 ml	4C	G	SA	Mercury (7471A)	009
074112-002	105-BH-42-2-S	2	105	012606/1352	S	G	125 ml	4C	G	SA	Mercury (7471A)	010

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☑ 15 Day ☐ 30 Day

Return Samples By: ☐ Negotiated TAT

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

Special Instructions/QC Requirements
EDD ☑ Yes ☐ No
Level D Package ☑ Yes ☐ No

Abnormal Conditions on Receipt

Sample Team Members

Name	Signature	Init	Company/Organization/Phone/Cellular
William Gibson	William Gibson	WJG	Weston/6146/284-5232/239-7367
~~Jeff Lee~~			~~Stone Lion/6146/284-3390/228-9698~~
~~Gilbert Quintana~~			~~Shaw/6146/284-8309/238-9417~~
Stacy Griffith		SRG	Gram/6146/284-2588/379-7588
Robert Lynch		RL	Weston/6146/250-7090

*Send report to:
Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov
Final report to Stacey Griffith MS1087/Org 6146
(505) 284-2588/ (505) 379-7588

15 day turnaround time

*Please list as separate report.

Lab Use

1.Relinquished by	Org. 6146	Date 1/30	Time 0930	4.Relinquished by	Org.	Date	Time
1. Received by	Smo Org. 6146	Date 1/30/06	Time 0930	4. Received by	Org.	Date	Time
2.Relinquished by	Smo Org. 6146	Date 1/30/06	Time 1130	5.Relinquished by	Org.	Date	Time
2. Received by	Org.	Date 1/31/06	Time 0910	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

OFF-SITE L. .BORATORY
Analysis Request And Chain Of Custody (Continuation)

AR/COC- 609354

Project Name:	P2VCA@SWMU105	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	98046.02.02.09
Location	Tech Area				
Building	Room				

Reference LOV (available at SMO)

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use: Lab Sample ID
074113-002	105-BH-42-4-S	4	105	012606/1345	S	G	125 ml	4C	G	SA	Mercury (7471A)	011
074171-002	105-BH-57-0-S	0	105	012606/1350	S	G	125 ml	4C	G	SA	Mercury (7471A)	012
074172-002	105-BH-57-2-S	2	105	012606/1355	S	G	125 ml	4C	G	SA	Mercury (7471A)	013
074173-002	105-BH-57-4-S	4	105	012606/1354	S	G	125 ml	4C	G	SA	Mercury (7471A)	014
074230-002	105-BH-72-0-S	0	105	012606/1352	S	G	125 ml	4C	G	SA	Mercury (7471A)	015
074231-002	105-BH-72-2-S	2	105	012606/1359	S	G	125 ml	4C	G	SA	Mercury (7471A)	016
074232-002	105-BH-72-2-SD	2	105	012606/1359	S	G	125 ml	4C	G	DU	Mercury (7471A)	017
074233-002	105-BH-72-4-S	4	105	012606/1358	S	G	125 ml	4C	G	SA	Mercury (7471A)	018
074457-002	105-EB-3	NA	105	012606/1440	DIW	P	250 ml	HNO3	C	EB	Mercury (7470A)	154914.001

Abnormal Conditions on Receipt

LAB USE

Recipient Initials LS

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab N/A

Batch No.

SMO Use

AR/COC **609355**

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	1-30-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	59863	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable) P.O. Box 5800 MS 0154 Albuquerque, NM 87185-0154
Location	Tech Area				
Building	Room				

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
074293-002	105-BH-88-0-S	0	105	012606/1407	S	G	125 ml	4C	G	SA	Mercury (7471A)	154879.009
074294-002	105-BH-88-2-S	2	105	012606/1411	S	G	125 ml	4C	G	SA	Mercury (7471A)	010
074295-002	105-BH-88-4-S	4	105	012606/1410	S	G	125 ml	4C	G	SA	Mercury (7471A)	011
074351-002	105-BH-103-0-S	0	105	012606/1408	S	G	125 ml	4C	G	SA	Mercury (7471A)	012
074352-002	105-BH-103-2-S	2	105	012606/1415	S	G	125 ml	4C	G	SA	Mercury (7471A)	013
074353-002	105-BH-103-4-S	4	105	012606/1413	S	G	125 ml	4C	G	SA	Mercury (7471A)	014
074354-002	105-BH-103-4-SD	4	105	012606/1413	S	G	125 ml	4C	G	DU	Mercury (7471A)	015
074410-002	105-BH-118-0-S	0	105	012606/1417	S	G	125 ml	4C	G	SA	Mercury (7471A)	016
074411-002	105-BH-118-2-S	2	105	012606/1421	S	G	125 ml	4C	G	SA	Mercury (7471A)	017
074412-002	105-BH-118-4-S	4	105	012606/1419	S	G	125 ml	4C	G	SA	Mercury (7471A)	018
074452-002	105-BH-132-0-S	0	105	012606/1432 23	S	G	125 ml	4C	G	SA	Mercury (7471A)	019

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

Abnormal Conditions on Receipt

Lab Use

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	William Gibson		WG	Weston/6146/284-5232/239-7367
	Jeff Lee			Stone Lion/6146/284-3309/228-9598
	Gilbert Quintana			Shaw/6146/284-3309/238-9417
	Stacy Griffith		SG	Gram/6146/284-2588/ 379 7588
	Robert Lynch		RL	Weston/6146/250-7090

Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov

Final report to Stacy Griffith MS1087/Org 6146

(505) 284-2588/ (505) 379-7588

15 day turn around time

Please list as separate report.

1.Relinquished by	Org. 6146	Date 1/30/06	Time 0850	4.Relinquished by	Org.	Date	Time
1. Received by	Org. 6146	Date 1/30/06	Time 0850	4. Received by	Org.	Date	Time
2.Relinquished by	Org. 6146	Date 1/30/06	Time 1100	5.Relinquished by	Org.	Date	Time
2. Received by	Org.	Date 1/31/06	Time 0910	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

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

AR/COC- 609355

Project Name:	P2VCA@SWMU105	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	98046.02.03.01
Location	Tech Area				
Building	Room				

Reference LOV (available at SMO)

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use: Lab Sample ID
074453-002	105-BH-132-2-S	2	105	012606/1427	S	G	125 ml	4C	G	SA	Mercury (7471A)	020
074454-002	105-BH-132-4-S	4	105	012606/1425	S	G	125 ml	4C	G	SA	Mercury (7471A)	15489300
074448-002	105-BH-131-0-S	0	105	012706/1010	S	G	125 ml	4C	G	SA	Mercury (7471A)	002
074449-002	105-BH-131-2-S	2	105	012706/1109	S	G	125 ml	4C	G	SA	Mercury (7471A)	003
074450-002	105-BH-131-2-SD	2	105	012706/1109	S	G	125 ml	4C	G	DU	Mercury (7471A)	004
074451-002	105-BH-131-4-S	4	105	012706/1108	S	G	125 ml	4C	G	SA	Mercury (7471A)	005
074445-002	105-BH-130-0-S	0	105	012706/1011	S	G	125 ml	4C	G	SA	Mercury (7471A)	006
074446-002	105-BH-130-2-S	2	105	012706/1113	S	G	125 ml	4C	G	SA	Mercury (7471A)	007
074447-002	105-BH-130-4-S	4	105	012706/1112	S	G	125 ml	4C	G	SA	Mercury (7471A)	008

Abnormal Conditions on Receipt

LAB USE

Recipient Initials NG

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC 609356

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	1-30-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	59863	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
074442-002	105-BH-129-0-S	0	105	012706/1012	S	G	125 ml	4C	G	SA	Mercury (7471A)	154893009
074443-002	105-BH-129-2-S	2	105	012706/1116	S	G	125 ml	4C	G	SA	Mercury (7471A)	010
074444-002	105-BH-129-4-S	4	105	012706/1115	S	G	125 ml	4C	G	DU	Mercury (7471A)	011
074439-002	105-BH-128-0-S	0	105	012706/1013	S	G	125 ml	4C	G	SA	Mercury (7471A)	012
074440-002	105-BH-128-2-S	2	105	012706/1120	S	G	125 ml	4C	G	SA	Mercury (7471A)	013
074441-002	105-BH-128-4-S	4	105	012706/1118	S	G	125 ml	4C	G	SA	Mercury (7471A)	014
074435-002	105-BH-127-0-S	0	105	012706/1014	S	G	125 ml	4C	G	SA	Mercury (7471A)	015
074436-002	105-BH-127-2-S	2	105	012706/1125	S	G	125 ml	4C	G	SA	Mercury (7471A)	016
074437-002	105-BH-127-4-S	4	105	012706/1123	S	G	125 ml	4C	G	SA	Mercury (7471A)	017
074438-002	105-BH-127-4-SD	4	105	012706/1123	S	G	125 ml	4C	G	~~SA~~ DU	Mercury (7471A)	154905001
074432-002	105-BH-126-0-S	0	105	012706/1015	S	G	125 ml	4C	G	SA	Mercury (7471A)	154893018

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☒ 15 Day ☐ 30 Day

Return Samples By: ☐ **Negotiated TAT** QC Initials:

Sample Tracking Smo Use

Date Entered(mm/dd/yy)

Entered by:

Special Instructions/QC Requirements

EDD ☑ Yes ☐ No

Level D Package ☑ Yes ☐ No

***Send report to:**

Preliminary report (.pdf) to srgriff@sandia.gov + biangk@sandia.gov

Final report to Stacy Griffith MS1087/Org 6146

(505) 284-2588/ (505) 379-7588

15 day turn around time

Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

Sample Team Members

Name	Signature	Init	Company/Organization/Phone/Cellular
William Gibson	William Gibson	WG	Weston/6146/284-5232/239-7367
Jeff Lee	[illegible]	[illegible]	Stone Lion/6146/284-3309/228-9598
Gilbert Quintana	[illegible]	[illegible]	Shaw/6146/284-3309/238-9417
Stacy Griffith	[illegible]	SG	Gram/6146/284-2588/ 379 7588
Robert Lynch	[illegible]	[illegible]	Weston/6146/250-7090

1.Relinquished by [illegible]	Org. 6146	Date 1/30/06	Time 0840	4.Relinquished by	Org.	Date	Time
1. Received by [illegible] SMO	Org. 6146	Date 1/30/06	Time 0840	4. Received by	Org.	Date	Time
2.Relinquished by [illegible] SMO	Org. 6146	Date 1/30/06	Time 1100	5.Relinquished by	Org.	Date	Time
2. Received by M Gallegos	Org.	Date 1/31/06	Time 0910	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

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

AR/COC- 609356

Project Name:	P2VCA@SWMU105	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	98046.02.03.01
Location	Tech Area				
Building	Room				

Reference LOV (available at SMO)

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use Lab Sample ID
074433-002	105-BH-126-2-S	2	105	012706/1131	S	G	125 ml	4C	G	SA	Mercury (7471A)	154893019
074434-002	105-BH-126-4-S	4	105	012706/1129	S	G	125 ml	4C	G	SA	Mercury (7471A)	154893020
074429-002	105-BH-125-0-S	0	105	012706/1016	S	G	125 ml	4C	G	SA	Mercury (7471A)	154905002
074430-002	105-BH-125-2-S	2	105	012706/1135	S	G	125 ml	4C	G	SA	Mercury (7471A)	003
074431-002	105-BH-125-4-S	4	105	012706/1133	S	G	125 ml	4C	G	SA	Mercury (7471A)	004
074426-002	105-BH-124-0-S	0	105	012706/1017	S	G	125 ml	4C	G	SA	Mercury (7471A)	005
074427-002	105-BH-124-2-S	2	105	012706/1140	S	G	125 ml	4C	G	SA	Mercury (7471A)	006
074428-002	105-BH-124-4-S	4	105	012706/1139	S	G	125 ml	4C	G	SA	Mercury (7471A)	007
073938-002	105-BH-123-0-S	0	105	012706/1410	S	G	125 ml	4C	G	SA	Mercury (7471A)	008
073939-002	105-BH-123-2-S	2	105	012706/1416	S	G	125 ml	4C	G	SA	Mercury (7471A)	009
073940-002	105-BH-123-4-S	4	105	012706/1415	S	G	125 ml	4C	G	SA	Mercury (7471A)	010

Abnormal Conditions on Receipt LAB USE

Recipient Initials MG

CONTRACT . BORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC 609357

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	1-30-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	59863	SMO Authorization: [signature] SMO	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
074416-002	105-BH-120-0-S	0	105	012706/1413	S	G	125 ml	4C	G	SA	Mercury (7471A)	154880019
074417-002	105-BH-120-2-S	2	105	012706/1432	S	G	125 ml	4C	G	SA	Mercury (7471A)	020
074418-002	105-BH-120-2-SD	2	105	012706/1432	S	G	125 ml	4C	G	DU	Mercury (7471A)	154879001
074419-002	105-BH-120-4-S	4	105	012706/1430	S	G	125 ml	4C	G	SA	Mercury (7471A)	002
074420-002	105-BH-121-0-S	0	105	012706/1412	S	G	125 ml	4C	G	SA	Mercury (7471A)	003
074421-002	105-BH-121-2-S	2	105	012706/1426	S	G	125 ml	4C	G	SA	Mercury (7471A)	004
074422-002	105-BH-121-4-S	4	105	012706/1425	S	G	125 ml	4C	G	SA	Mercury (7471A)	005
074423-002	105-BH-122-0-S	0	105	012706/1411	S	G	125 ml	4C	G	SA	Mercury (7471A)	006
074424-002	105-BH-122-2-S	2	105	012706/1421	S	G	125 ml	4C	G	SA	Mercury (7471A)	007
074425-002	105-BH-122-4-S	4	105	012706/1420	S	G	125 ml	4C	G	SA	Mercury (7471A)	008
07458-002	105-EB-4	NA	105	012706/1440	DIW	P	250 ml	4C	C	EB	Mercury (7470A)	154914002

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☒ 15 Day ☐ 30 Day

Return Samples By: ☐ **Negotiated TAT**

Sample Tracking Smo Use

Date Entered(mm/dd/yy)

Entered by:

QC Inits:

Special Instructions/QC Requirements

EDD ☑ Yes ☐ No

Level D Package ☑ Yes ☐ No

*Send report to:

Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov.

Final report to Stacy Griffith MS1087/Org 6146

(505) 284-2588/ (505) 379-7588

15 day turn around time

Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	William Gibson	[signature]	WG	Weston/6146/284-5232/239-7367
	Jeff Lee	[signature]		Stone Lion/6146/284-3309/228-9598
	Gilbert Quintana	[signature]		Shaw/6146/284-3309/238-9417
	Stacy Griffith	[signature]		Gram/6146/284-2588/ 379 7588
	Robert Lynch	[signature]		Weston/6146/250-7090

1.Relinquished by [signature]	Org. 6146	Date 1/30/06	Time 0830	4.Relinquished by	Org.	Date	Time
1. Received by [signature] SMO	Org. 6146	Date 1/30/06	Time 0830	4. Received by	Org.	Date	Time
2.Relinquished by [signature] SMO	Org. 6146	Date 1/30/06	Time 1100	5.Relinquished by	Org.	Date	Time
2. Received by [signature]	Org.	Date 1/31/06	Time 0910	5. Received by	Org.	Date	Time
3.Relinquished by	Org.	Date	Time	6.Relinquished by	Org.	Date	Time
3. Received by	Org.	Date	Time	6. Received by	Org.	Date	Time

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

AR/COC 609358

SMO Use

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	1-31-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	59924	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To:Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO)

	Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
01	074002-002	105-BH-16-0-S	0	105	013006/1339	S	G	125 ml	4C	G	SA	Mercury (7471A)	154976-001
02	074003-002	105-BH-16-2-S	2	105	013006/1407	S	G	125 ml	4C	G	SA	Mercury (7471A)	154976-002
03	074004-002	105-BH-16-4-S	4	105	013006/1405	S	G	125 ml	4C	G	SA	Mercury (7471A)	154976-003
04	074005-002	105-BH-16-8-S	8	105	013006/1410	S	G	125 ml	4C	G	SA	Mercury (7471A)	154976-004
05	074059-002	105-BH-30-0-S	0	105	013006/1338	S	G	125 ml	4C	G	SA	Mercury (7471A)	154976-005
06	074060-002	105-BH-30-2-S	2	105	013006/1357	S	G	125 ml	4C	G	SA	Mercury (7471A)	154976-006
07	074061-002	105-BH-30-4-S	4	105	013006/1355	S	G	125 ml	4C	G	SA	Mercury (7471A)	154976-007
08	074062-002	105-BH-30-4-SD	4	105	013006/1355	S	G	125 ml	4C	G	DU	Mercury (7471A) field QC	154976-008
09	074063-002	105-BH-30-8-S	8	105	013006/1359	S	G	125 ml	4C	G	SA	Mercury (7471A)	154976-009
10	074120-002	105-BH-45-0-S	0	105	013006/1123	S	G	125 ml	4C	G	SA	Mercury (7471A)	154976-010
11	074121-002	105-BH-45-2-S	2	105	013006/1348	S	G	125 ml	4C	G	SA	Mercury (7471A)	154976-010

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☒ 15 Day ☐ 30 Day

Return Samples By: ☐ **Negotiated TAT** QC inits.

Sample Tracking Smo Use

Date Entered(mm/dd/yy)

Entered by:

Special Instructions/QC Requirements

EDD ☑ Yes ☐ No

Level D Package ☑ Yes ☐ No

***Send report to:**

Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov

Final report to Stacy Griffith MS1087/Org 6146

(505) 284-2588/ (505) 379-7588

15 day turn around time

Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

Sample Team Members

Name	Signature	Init	Company/Organization/Phone/Cellular
William Gibson		WG	Weston/6146/284-5232/239-7367
Jeff Lee			Stone Lion/6146/284-3309/228-9598
Gilbert Quintana			Shaw/6146/284-3309/238-9417
Stacy Griffith		SG	Gram/6146/284-2588/ 379 7588
Robert Lynch		RL	Weston/6146/250-7090

1.Relinquished by	Org. 6146	Date 1/31/06	Time 0855	4.Relinquished by	Org.	Date	Time
1. Received by	Org. 6146	Date 1/31/06	Time 0855	4. Received by	Org.	Date	Time
2.Relinquished by	Org. 6146	Date 1/31/06	Time 1130	5.Relinquished by	Org.	Date	Time
2. Received by	Org.	Date 2/1/06	Time 0915	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

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

AR/COC- 609358

Project Name:	P2VCA@SWMU105	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	98046.02.02.09
Location	Tech Area				
Building	Room				

Reference LOV (available at SMO)

	Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use: Lab Sample ID
012	074122-002	105-BH-45-4-S	4	105	013006/1347	S	G	125 ml	4C	G	SA	Mercury (7471A)	154976-012
013	074123-002	105-BH-45-8-S	8	105	013006/1353	S	G	125 ml	4C	G	SA	Mercury (7471A)	
014	074180-002	105-BH-60-0-S	0	105	013006/1103	S	G	125 ml	4C	G	SA	Mercury (7471A)	
015	074181-002	105-BH-60-2-S	2	105	013006/1118	S	G	125 ml	4C	G	SA	Mercury (7471A)	
016	074182-002	105-BH-60-4-S	4	105	013006/1116	S	G	125 ml	4C	G	SA	Mercury (7471A)	
017	074183-002	105-BH-60-8-S	8	105	013006/1122	S	G	125 ml	4C	G	SA	Mercury (7471A)	154976-017 A
1	074459-002	105-EB-5	NA	105	013006/1510	W	P	250 ml	HNO3	G	EB	Mercury (7470A) field QC	154976-017 211
							6) 2/2/06						154984-01

Abnormal Conditions on Receipt

LAB USE

Recipient Initials: BKC

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

AR/COC 609359

SMO Use

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	1-31-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	59924	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
074242-002	105-BH-76-0-S	0	105	013006/1056	S	G	125 ml	4C	G	SA	Mercury (7471A)	154981-011
074243-002	105-BH-76-2-S	2	105	013006/1101	S	G	125 ml	4C	G	SA	Mercury (7471A)	154981-01
074244-002	105-BH-76-4-S	4	105	013006/1100	S	G	125 ml	4C	G	SA	Mercury (7471A)	154981-013
074245-002	105-BH-76-8-S	8	105	013006/1105	S	G	125 ml	4C	G	SA	Mercury (7471A)	154981-014
074301-002	105-BH-91-0-S	0	105	013006/1045	S	G	125 ml	4C	G	SA	Mercury (7471A)	154981-015
074302-002	105-BH-91-2-S	2	105	013006/1051	S	G	125 ml	4C	G	SA	Mercury (7471A)	154981-016
074303-002	105-BH-91-4-S	4	105	013006/1049	S	G	125 ml	4C	G	SA	Mercury (7471A)	154981-017
074304-002	105-BH-91-8-S	8	105	013006/1054	S	G	125 ml	4C	G	SA	Mercury (7471A)	154981-018
074360-002	105-BH-106-0-S	0	105	013006/1037	S	G	125 ml	4C	G	SA	Mercury (7471A)	154981-019
074361-002	105-BH-106-2-S	2	105	013006/1038	S	G	125 ml	4C	G	SA	Mercury (7471A)	154981-020
074362-002	105-BH-106-4-S	4	105	013006/1036	S	G	125 ml	4C	G	SA	Mercury (7471A)	154983-01

SA 1/31/06

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

Abnormal Conditions on Receipt

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	William Gibson		WG	Weston/6146/284-5232/239-7367
	Jeff Lee			Stone Lion/6146/284-3309/228-9598
	Gilbert Quintana			Shaw/6146/284-3309/238-9417
	Stacy Griffith		SG	Gram/6146/284-2588/ 379 7588
	Robert Lynch			Weston/6146/250-7090

Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov

Final report to Stacy Griffith MS1087/Org 6146

(505) 284-2588/ (505) 379-7588

15 day turn around time

*Please list as separate report.

Lab Use

1.Relinquished by	Org. 6146	Date 1/31/06	Time 0900	4.Relinquished by	Org.	Date	Time
1. Received by	Org. 6146	Date 1/31/06	Time 0900	4. Received by	Org.	Date	Time
2.Relinquished by	Org. 6146	Date 1-31-06	Time 1130	5.Relinquished by	Org.	Date	Time
2. Received by	Org.	Date 2/1/06	Time 915	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

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

AR/COC- 609359

Project Name:	P2VCA@SWMU105	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	98048.02.02.09
Location	Tech Area				
Building	Room				

Reference LOV (available at SMO)

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use: Lab Sample ID
074363-002	105-BH-106-8-S	8	105	013006/1041	S	G	125 ml	4C	G	SA	Mercury (7471A)	154983-02

Abnormal Conditions on Receipt

LAB USE

Recipient Initials MG

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. NA

SMO Use

AR/COC 609360

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	2-1-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	60018	SMO Authorization: [illegible] SMO	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO) 155136 a/.

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
074010-002	105-BH-18-0-S	0	105	013106/0909	S	G	125 ml	4C	G	SA	Mercury (7471A)	001
074011-002	105-BH-18-2-S	2	105	013106/0943	S	G	125 ml	4C	G	SA	Mercury (7471A)	002
074012-002	105-BH-18-4-S	4	105	013106/0942	S	G	125 ml	4C	G	SA	Mercury (7471A)	003
074013-002	105-BH-18-8-S	8	105	013106/0946	S	G	125 ml	4C	G	SA	Mercury (7471A)	004
074068-002	105-BH-32-0-S	0	105	013106/0908	S	G	125 ml	4C	G	SA	Mercury (7471A)	005
074069-002	105-BH-32-2-S	2	105	013106/0932	S	G	125 ml	4C	G	SA	Mercury (7471A)	006
074070-002	105-BH-32-4-S	4	105	013106/0931	S	G	125 ml	4C	G	SA	Mercury (7471A)	007
074071-002	105-BH-32-8-S	8	105	013106/0935	S	G	125 ml	4C	G	SA	Mercury (7471A)	008
074128-002	105-BH-47-0-S	0	105	013106/0907	S	G	125 ml	4C	G	SA	Mercury (7471A)	009
074129-002	105-BH-47-2-S	2	105	013106/0919	S	G	125 ml	4C	G	SA	Mercury (7471A)	010
074130-002	105-BH-47-4-S	4	105	013106/0917	S	G	125 ml	4C	G	SA	Mercury (7471A)	011

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

Abnormal Conditions on Receipt

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	William Gibson	[illegible]	WG	Weston/6146/284-5232/239-7367
	Jeff Lee	[illegible]	JL	Stone Lion/6146/284-3309/228-9598
	Gilbert Quintana	[illegible]	GQ	Shaw/6146/284-3309/238-9417
	Stacy Griffith	[illegible]	SG	Gram/6146/284-2588/ 379 7588
	Robert Lynch	[illegible]	RL	Weston/6146/250-7090

Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov
Final report to Stacy Griffith MS1087/Org 6146
(505) 284-2588/ (505) 379-7588

15 day turn around time

*Please list as separate report.

Lab Use: Temp 3

1.Relinquished by [illegible]	Org. 6146	Date 2/1/06	Time 0845	4.Relinquished by	Org.	Date	Time
1. Received by [illegible] SMO	Org. 6146	Date 2/1/06	Time 0845	4. Received by	Org.	Date	Time
2.Relinquished by [illegible] SMO	Org. 6146	Date 2/1/06	Time 1200	5.Relinquished by	Org.	Date	Time
2. Received by [illegible]	Org. Gel	Date 2-2-06	Time 0720	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

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

AR/COC- 609360

Project Name:	P2VCA@SWMU105	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	98048.02.02.09
Location	Tech Area				
Building	Room	Reference LOV (available at SMO) 155136			

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use: Lab Sample ID
074131-002	105-BH-47-8-S	8	105	013106/0925	S	G	125 ml	4C	G	SA	Mercury (7471A)	012
074187-002	105-BH-62-0-S	0	105	013006/1447	S	G	125 ml	4C	G	SA	Mercury (7471A)	013
074188-002	105-BH-62-2-S	2	105	013006/1455	S	G	125 ml	4C	G	SA	Mercury (7471A)	014
074189-002	105-BH-62-4-S	4	105	013006/1453	S	G	125 ml	4C	G	SA	Mercury (7471A)	015
074190-002	105-BH-62-8-S	8	105	013006/1457	S	G	125 ml	4C	G	SA	Mercury (7471A)	016

Abnormal Conditions on Receipt

LAB USE

Recipient Initials MK

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC 609361

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	1-31-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	59924	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO)

	Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
018	074250-002	105-BH-78-0-S	0	105	013006/1435	S	G	125 ml	4C	G	SA	Mercury (7471A)	154976-018
019	074251-002	105-BH-78-2-S	2	105	013006/1444	S	G	125 ml	4C	G	SA	Mercury (7471A)	154976-019
01	074252-002	105-BH-78-2-SD	2	105	013006/1444	S	G	125 ml	4C	G	~~SA~~ DU	Mercury (7471A) field QC	154981-001
020	074253-002	105-BH-78-4-S	4	105	013006/1442	S	G	125 ml	4C	G	SA	Mercury (7471A)	154976-020
02	074254-002	105-BH-78-8-S	8	105	013006/1446	S	G	125 ml	4C	G	SA	Mercury (7471A)	154981-002
03	074309-002	105-BH-93-0-S	0	105	013006/1420	S	G	125 ml	4C	G	SA	Mercury (7471A)	
04	074310-002	105-BH-93-2-S	2	105	013006/1433	S	G	125 ml	4C	G	SA	Mercury (7471A)	
05	074311-002	105-BH-93-4-S	4	105	013006/1431	S	G	125 ml	4C	G	SA	Mercury (7471A)	
06	074313-002	105-BH-93-8-S	8	105	013006/1436	S	G	125 ml	4C	G	SA	Mercury (7471A)	
07	074368-002	105-BH-108-0-S	0	105	013006/1415	S	G	125 ml	4C	G	SA	Mercury (7471A)	
08	074369-002	105-BH-108-2-S	2	105	013006/1420	S	G	125 ml	4C	G	SA	Mercury (7471A)	154981-008

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

Abnormal Conditions on Receipt

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	William Gibson	William Gibson	WG	Weston/6146/284-5232/239-7367
	Jeff Lee	[illegible]	[illegible]	Stone Lion/6146/284-3309/228-9598
	Gilbert Quintana	[illegible]	[illegible]	Shaw/6146/284-3309/238-9417
	Stacy Griffith	[illegible]	SG	Gram/6146/284-2588/ 379 7588
	Robert Lynch	[illegible]	[illegible]	Weston/6146/250-7090

Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov
Final report to Stacy Griffith MS1087/Org 6146
(505) 284-2588/ (505) 379-7588

15 day turn around time

Please list as separate report.

Lab Use

1.Relinquished by	Org. 6146	Date 1/31/06	Time 0900	4.Relinquished by	Org.	Date	Time
1. Received by	Org. 6146	Date 1/31/06	Time 0900	4. Received by	Org.	Date	Time
2.Relinquished by	Org. 6146	Date 1/31/06	Time 1130	5.Relinquished by	Org.	Date	Time
2. Received by	Org.	Date 2/1/06	Time 0915	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

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

AR/COC- 609361

Project Name:	P2VCA@SWMU105	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	98046.02.02.09
Location	Tech Area				
Building	Room				

Reference LOV (available at SMO)

	Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use: Lab Sample ID
09	074370-002	105-BH-108-4-S	4	105	013006/1417	S	G	125 ml	4C	G	SA	Mercury (7471A)	154981-009
10	074372-002	105-BH-108-8-S	8	105	013006/1426	S	G	125 ml	4C	G	SA	Mercury (7471A)	154981-010

Abnormal Conditions on Receipt

LAB USE

Recipient Initials BMC

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC 609362

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	2-1-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	60018	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
074014-002	105-BH-19-0-S	0	105	013106/0954	S	G	125 ml	4C	G	SA	Mercury (7471A)	017
074015-002	105-BH-19-2-S	2	105	013106/1000	S	G	125 ml	4C	G	SA	Mercury (7471A)	018
074016-002	105-BH-19-4-S	4	105	013106/0959	S	G	125 ml	4C	G	SA	Mercury (7471A)	019
074017-002	105-BH-19-8-S	8	105	013106/1004	S	G	125 ml	4C	G	SA	Mercury (7471A)	020
074072-002	105-BH-33-0-S	0	105	013106/0955	S	G	125 ml	4C	G	SA	Mercury (7471A)	01
074073-002	105-BH-33-2-S	2	105	013106/1024	S	G	125 ml	4C	G	SA	Mercury (7471A)	02
074074-002	105-BH-33-4-S	4	105	013106/1023	S	G	125 ml	4C	G	SA	Mercury (7471A)	03
074075-002	105-BH-33-8-S	8	105	013106/1026	S	G	125 ml	4C	G	SA	Mercury (7471A)	04
074132-002	105-BH-48-0-S	0	105	013106/0956	S	G	125 ml	4C	G	SA	Mercury (7471A)	05
074133-002	105-BH-48-2-S	2	105	013106/1032	S	G	125 ml	4C	G	SA	Mercury (7471A)	06
074134-002	105-BH-48-2-SD	2	105	013106/1032	S	G	125 ml	4C	G	DU	Mercury (7471A) yield 8x	07

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

Abnormal Conditions on Receipt

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	William Gibson		WG	Weston/6146/284-5232/239-7367
	Jeff Lee			Stone Lion/6146/284-3309/228-9598
	Gilbert Quintana			Shaw/6146/284-3309/238-9417
	Stacy Griffith		SG	Gram/6146/284-2588/ 379 7588
	Robert Lynch			Weston/6146/250-7090

Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov
Final report to Stacy Griffith MS1087/Org 6146
(505) 284-2588/ (505) 379-7588

15 day turn around time

Please list as separate report.

Lab Use

1.Relinquished by		Org. 6146	Date 2/1/06	Time 0850	4.Relinquished by	Org.	Date	Time
1. Received by		Gram Org. 6146	Date 2/1/06	Time 0850	4. Received by	Org.	Date	Time
2.Relinquished by		Gram Org. 6146	Date 2/1/06	Time 1200	5.Relinquished by	Org.	Date	Time
2. Received by		Org. Gel	Date 2-2-06	Time 0720	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

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

AR/COC- 609362

Project Name:	P2VCA@SWMU105	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	98046.02.02.09
Location	Tech Area				
Building	Room				

Reference LOV (available at SMO)

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use Lab Sample ID
074135-002	105-BH-48-4-S	4	105	013106/1030	S	G	125 ml	4C	G	SA	Mercury (7471A)	08
074136-002	105-BH-48-8-S	8	105	013106/1035	S	G	125 ml	4C	G	SA	Mercury (7471A)	09
074191-002	105-BH-63-0-S	0	105	013106/1031	S	G	125 ml	4C	G	SA	Mercury (7471A)	10
074192-002	105-BH-63-2-S	2	105	013106/1041	S	G	125 ml	4C	G	SA	Mercury (7471A)	11
074193-002	105-BH-63-4-S	4	105	013106/1040	S	G	125 ml	4C	G	SA	Mercury (7471A)	12
074195-002	105-BH-63-8-S	8	105	013106/1044	S	G	125 ml	4C	G	SA	Mercury (7471A)	13

Abnormal Conditions on Receipt

LAB USE

Recipient Initials: MK

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab N/A

Batch No.

AR/COC 609363

SMO Use

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	2-1-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	60018	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

155139-14-20 Reference LOV(available at SMO) 155140

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
074255-002	105-BH-79-0-S	0	105	013106/1033	S	G	125 ml	4C	G	SA	Mercury (7471A)	14
074256-002	105-BH-79-2-S	2	105	013106/1102	S	G	125 ml	4C	G	SA	Mercury (7471A)	15
074314-002	105-BH-94-0-S	0	105	013106/1034	S	G	125 ml	4C	G	SA	Mercury (7471A)	16
074315-002	105-BH-94-2-S	2	105	013106/1111	S	G	125 ml	4C	G	SA	Mercury (7471A)	17
074316-002	105-BH-94-4-S	4	105	013106/1110	S	G	125 ml	4C	G	SA	Mercury (7471A)	18
074317-002	105-BH-94-8-S	8	105	013106/1113	S	G	125 ml	4C	G	SA	Mercury (7471A)	19
074373-002	105-BH-109-0-S	0	105	013106/1045	S	G	125 ml	4C	G	SA	Mercury (7471A)	20
074374-002	105-BH-109-2-S	2	105	013106/1120	S	G	125 ml	4C	G	SA	Mercury (7471A)	001
074371-002	105-BH-109-2-SD	2	105	013106/1120	S	G	125 ml	4C	G	DU	Mercury (7471A) field QC	002
074375-002	105-BH-109-4-S	4	105	013106/1118	S	G	125 ml	4C	G	SA	Mercury (7471A)	003
074376-002	105-BH-109-8-S	8	105	013106/1128	S	G	125 ml	4C	G	SA	Mercury (7471A)	004

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

Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov
Final report to Stacy Griffith MS1087/Org 6146
(505) 284-2588/ (505) 379-7588

15 day turn around time

*Please list as separate report.

Abnormal Conditions on Receipt

Lab Use
Temp 3°C

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	William Gibson		WG	Weston/6146/284-5232/239-7367
	Jeff Lee			Stone Lion/6146/284-3309/228-9598
	Gilbert Quintana		GQ	Shaw/6146/284-3309/238-9417
	Stacy Griffith		SRG	Gram/6146/284-2588/ 379 7588
	Robert Lynch		RL	Weston/6146/250-7090

1.Relinquished by	Org. 6146	Date 2/1/06	Time 0900	4.Relinquished by	Org.	Date	Time
1. Received by	Org. 6146	Date 2/1/06	Time 0900	4. Received by	Org.	Date	Time
2.Relinquished by	Org. 6146	Date 2/1/06	Time 1200	5.Relinquished by	Org.	Date	Time
2. Received by	Org. GEL	Date 2-2-06	Time 0920	5. Received by	Org.	Date	Time
3.Relinquished by	Org.	Date	Time	6.Relinquished by	Org.	Date	Time
3. Received by	Org.	Date	Time	6. Received by	Org.	Date	Time

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

AR/COC **609364**

SMO Use

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	2-6-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	60172	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-6171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
074377-002	105-BH-110-0-S	0	105	020206/1000	S	G	125 ml	4C	G	SA	Mercury (7471A) 155416	-001
074378-002	105-BH-110-2-S	2	105	020206/1021	S	G	125 ml	4C	G	SA	Mercury (7471A)	-002
074379-002	105-BH-110-4-S	4	105	020206/1020	S	G	125 ml	4C	G	SA	Mercury (7471A)	-003
074380-002	105-BH-110-8-S	8	105	020206/1024	S	G	125 ml	4C	G	SA	Mercury (7471A)	-004
074318-002	105-BH-95-0-S	0	105	020206/0958	S	G	125 ml	4C	G	SA	Mercury (7471A)	-005
074319-002	105-BH-95-2-S	2	105	020206/1015	S	G	125 ml	4C	G	SA	Mercury (7471A)	-006
074320-002	105-BH-95-4-S	4	105	020206/1014	S	G	125 ml	4C	G	SA	Mercury (7471A)	-007
074321-002	105-BH-95-8-S	8	105	020206/1017	S	G	125 ml	4C	G	SA	Mercury (7471A)	-008
074259-002	105-BH-80-0-S	0	105	020206/0945	S	G	125 ml	4C	G	SA	Mercury (7471A)	-009
074260-002	105-BH-80-2-S	2	105	020206/1005	S	G	125 ml	4C	G	SA	Mercury (7471A)	-010
074261-002	105-BH-80-4-S	4	105	020206/1004	S	G	125 ml	4C	G	SA	Mercury (7471A) 155418	-011

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☒ 15 Day ☐ 30 Day

Return Samples By: ☐ **Negotiated TAT**

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

Special Instructions/QC Requirements
EDD ☑ Yes ☐ No
Level D Package ☑ Yes ☐ No

***Send report to:**
Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov
Final report to Stacy Griffith MS1087/Org 6146
(505) 284-2588/ (505) 379-7588

15 day turn around time
**Please list as separate report.*

Abnormal Conditions on Receipt

Lab Use

Sample Team Members

Name	Signature	Init	Company/Organization/Phone/Cellular
William Gibson			Weston/6146/284-5232/239-7367
Jeff Lee			Stone Lion/6146/284-3309/228-9598
Gilbert Quintana			Shaw/6146/284-3309/238-9417
Stacy Griffith			Gram/6146/284-2588/ 379 7588
Robert Lynch			Weston/6146/250-7090

1.Relinquished by	Org. 6146	Date 2/6/06	Time 0900	4.Relinquished by	Org.	Date	Time
1. Received by	Org. 6146	Date 2/6/06	Time 0900	4. Received by	Org.	Date	Time
2.Relinquished by	Org. 6146	Date 2-6-06	Time 1130	5.Relinquished by	Org.	Date	Time
2. Received by	Org.	Date 2-7-06	Time 930	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

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

AR/COC- 609364

Project Name:	P2VCA@SWMU105	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	98046.02.02.09
Location	Tech Area				
Building	Room				

Reference LOV (available at SMO)

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use: Lab Sample ID
074262-002	105-BH-80-8-S	8	105	020206/1007	S	G	125 ml	4C	G	SA	Mercury (7471A) 155418-	012
074196-002	105-BH-64-0-S	0	105	020206/0922	S	G	125 ml	4C	G	SA	Mercury (7471A)	-013
074197-002	105-BH-64-2-S	2	105	020206/0941	S	G	125 ml	4C	G	SA	Mercury (7471A)	-014
074198-002	105-BH-64-4-S	4	105	020206/0940	S	G	125 ml	4C	G	SA	Mercury (7471A)	-015
074194-002	105-BH-64-4-SD	4	105	020206/0940	S	G	125 ml	4C	G	DU	Mercury (7471A) field dup	-016
074199-002	105-BH-64-8-S	8	105	020206/0944	S	G	125 ml	4C	G	SA	Mercury (7471A)	017

Abnormal Conditions on Receipt

LAB USE

Recipient Initials

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

AR/COC **609365**

SMO Use

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	2-6-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	60172	SMO Authorization: [illegible] SMO	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/558-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:_____
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To:Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room			Reference LOV(available at SMO) 155418	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 Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
074137-002	105-BH-49-0-S	0	105	020206/0923	S	G	125 ml	4C	G	SA	Mercury (7471A) 155418-	01
074138-002	105-BH-49-2-S	2	105	020206/0930	S	G	125 ml	4C	G	SA	Mercury (7471A)	02 019
074139-002	105-BH-49-4-S	4	105	020206/0929	S	G	125 ml	4C	G	SA	Mercury (7471A) 155439-	020
074140-002	105-BH-49-8-S	8	105	020206/0932	S	G	125 ml	4C	G	SA	Mercury (7471A) 155438-	020 RP 01
074076-002	105-BH-34-0-S	0	105	020206/0914	S	G	125 ml	4C	G	SA	Mercury (7471A)	02
074077-002	105-BH-34-2-S	2	105	020206/0924	S	G	125 ml	4C	G	SA	Mercury (7471A)	03
074078-002	105-BH-34-4-S	4	105	020206/0923	S	G	125 ml	4C	G	SA	Mercury (7471A)	04
074079-002	105-BH-34-4-SD	4	105	020206/0923	S	G	125 ml	4C	G	DU	Mercury (7471A) field QC	05
074080-002	105-BH-34-8-S	8	105	020206/0926	S	G	125 ml	4C	G	SA	Mercury (7471A)	06
074018-002	105-BH-20-0-S	0	105	020206/0913	S	G	125 ml	4C	G	SA	Mercury (7471A)	07
074019-002	105-BH-20-2-S	2	105	020206/0917	S	G	125 ml	4C	G	SA	Mercury (7471A) 155438-	08

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

Special Instructions/QC Requirements
EDD ☑ Yes ☐ No
Level D Package ☑ Yes ☐ No
*Send report to:
Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov
Final report to Stacy Griffith MS1087/Org 6146
(505) 284-2588/ (505) 379-7588

Abnormal Conditions on Receipt

Lab Use

	Name	Signature	Init	Company/Organization/Phone/Cellular
Sample Team Members	William Gibson	[signature]	WG	Weston/6146/284-5232/239-7367
	Jeff Lee	[signature]	JL	Stone Lion/6146/284-3309/228-9598
	Gilbert Quintana	[signature]	GQ	Shaw/6146/284-3309/238-9417
2/6/06 [signature]	~~Stacy Griffith~~			~~Gram/6146/284-2588/ 379-7588~~ [signature]
	Robert Lynch	[signature]	RL	Weston/6146/250-7090

15 day turn around time

*Please list as separate report.

1.Relinquished by [signature]	Org. 6146	Date 2/6/06	Time 0845	4.Relinquished by	Org.	Date	Time
1. Received by [signature]	Org. 6146	Date 2/6/06	Time 0845	4. Received by	Org.	Date	Time
2.Relinquished by [signature]	Org. 6146	Date 2-6-06	Time 1130	5.Relinquished by	Org.	Date	Time
2. Received by M. Sotelo	Org.	Date 2-7-06	Time 930	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

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

AR/COC- 609365

Project Name:	P2VCA@SWMU105	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	98046.02.02.09
Location	Tech Area				
Building	Room	Reference LOV (available at SMO)	155439/.		

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use: Lab Sample ID
074020-002	105-BH-20-4-S	4	105	020206/0916	S	G	125 ml	4C	G	SA	Mercury (7471A)	09
074022-002	105-BH-20-8-S	8	105	020206/0920	S	G	125 ml	4C	G	SA	Mercury (7471A)	10

Abnormal Conditions on Receipt

LAB USE

Recipient Initials MG

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC 609366

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	2-1-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	60018	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To:Sandia National Labs (Accounts Payable) P.O. Box 5800 MS 0154 Albuquerque, NM 87185-0154
Location	Tech Area				
Building	Room				

155046%

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
073938-002	105-BH-43-4-S	4	105	013106/1512	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	001
073939-002	105-BH-43-6-S	6	105	013106/1513	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	002
073940-002	105-BH-43-6-SD	6	105	013106/1513	S	G	125 ml	4C	G	DU	Mercury (EPA 7471A)	003
073941-002	105-BH-43-8-S	8	105	013106/1525	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	004
073942-002	105-BH-58-4-S	4	105	013106/1451	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	005
073943-002	105-BH-58-6-S	6	105	013106/1453	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	006
073944-002	105-BH-58-8-S	8	105	013106/1508	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	007
073945-002	105-BH-74-4-S	4	105	013106/1432	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	008
073946-002	105-BH-74-6-S	6	105	013106/1447	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	009
073947-002	105-BH-74-8-S	8	105	013106/1446	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	010
073948-002	105-BH-89-4-S	4	105	013106/1413	S	G	125 ml	4C	G	SA	Mercury (EPA 7471A)	011

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ~~☒ 15 Day~~ ☐ 30 Day

Return Samples By: 2/1/00 ☒ Negotiated TAT 3 ~~Day~~ QC inits.

Sample Tracking Smo Use

Date Entered(mm/dd/yy)

Entered by:

Special Instructions/QC Requirements

EDD ☑ Yes ☐ No

Level D Package ☑ Yes ☐ No

*Send report to:

Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov

Final report to Stacy Griffith MS1087/Org 6146

(505) 284-2588/ (505) 379-7588

3 day turnaround time

*Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

Temp 3°

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	William Gibson		WG	Weston/6146/284-5232/239-7367
	Jeff Lee			Stone Lion/6146/284-3309/228-9598
	Robert Lynch		RL	Weston/6146/250-7090
	Stacy Griffith		SG	Gram/6146/284-2588/379-7588
	Gilbert Quintana			Shaw/6146/238-9417/284-3309

1.Relinquished by	Org. 6146	Date 2/1/06	Time 0900	4.Relinquished by	Org.	Date	Time
1. Received by	Org. 6146	Date 2/1/06	Time 0900	4. Received by	Org.	Date	Time
2.Relinquished by	Org. 6146	Date 2/1/06	Time 1200	5.Relinquished by	Org.	Date	Time
2. Received by	Org. Gel	Date 2-2-06	Time 0700	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

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

AR/COC- 609366

Project Name:	P2VCA@SWMU105	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	98046.02.02.09
Location	Tech Area				
Building	Room				

Reference LOV (available at SMO)

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use: Lab Sample ID
073949-002	105-BH-89-6-S	6	105	013106/1416	S	G	125ml	4C	G	SA	Mercury (EPA 7471A)	012
073950-002	105-BH-89-8-S	8	105	013106/1428	S	G	125ml	4C	G	SA	Mercury (EPA 7471A)	013
073951-002	105-BH-104-4-S	4	105	013106/1356	S	G	125ml	4C	G	SA	Mercury (EPA 7471A)	014
073952-002	105-BH-104-6-S	6	105	013106/1400	S	G	125ml	4C	G	SA	Mercury (EPA 7471A)	015
073953-002	105-BH-104-8-S	8	105	013106/1359	S	G	125ml	4C	G	SA	Mercury (EPA 7471A)	016
074460-002	105-EB-6	NA	105	013106/1530	DIW	P	250 ml	HNO3	C	EB	Mercury (EPA 7470A)	155050.001
		NA	105		DIW	P	250 ml					

Abnormal Conditions on Receipt

LAB USE

Recipient Initials MK

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No.

SMO Use

AR/COC 609367

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	2-2-06	Project/Task No.: 98046.02.02.09 ✓	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf ✓	Carrier/Waybill No.	60048	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105 ✓	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CF056-06 ✓	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO) 155168

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
5526 073~~054~~-002	105-BH-133-0-S	0	105	020106/0855	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5527 073~~055~~-002	105-BH-133-2-S	2	105	020106/0905	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5528 073~~056~~-002	105-BH-133-4-S	4	105	020106/0904	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5529 073~~057~~-002	105-BH-133-8-S	8	105	020106/0910	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5530 073~~058~~-002	105-BH-134-0-S	0	105	020106/0856	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5531 073~~059~~-002	105-BH-134-2-S	2	105	020106/0916	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5532 073~~060~~-002	105-BH-134-4-S	4	105	020106/0915	S	G	125 ml	4C	G	DU	Mercury (7471A)	
5533 073~~061~~-002	105-BH-134-4-SD	4	105	020106/0915	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5534 073~~062~~-002	105-BH-134-8-S	8	105	020106/0920	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5535 073~~063~~-002	105-BH-135-0-S	0	105	020106/0923	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5536 073~~064~~-002	105-BH-135-2-S	2	105	020106/0930	S	G	125 ml	4C	G	SA	Mercury (7471A)	

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☐ 15 Day ☐ 30 Day

Sample Tracking — Smo Use

Date Entered(mm/dd/yy) 02/06/06

Entered by: RL

Special Instructions/QC Requirements

EDD ☑ Yes ☐ No

Level D Package ☑ Yes ☐ No

Abnormal Conditions on Receipt

Return Samples By: ☐ Negotiated TAT QC Inits. WP

Sample Team Members	Name	Signature	Init.	Company/Organization/Phone/Cellular
	William Gibson		WG	Weston/6146/284-5232/239-7367
	Jeff Lee			Stone Lion/6146/284-3309/228-9598
	Gilbert Quintana			Shaw/6146/284-3309/238-9417
	Stacy Griffith		SG	Gram/6146/284-2588/ 379 7588
	Robert Lynch		RL	Weston/6146/250-7090

*Send report to:

Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov

Final report to Stacy Griffith MS1087/Org 6146

(505) 284-2588/ (505) 379-7588

3 day turn around time

*Please list as separate report.

Lab Use

1.Relinquished by	Org. 6146	Date 2-2-06	Time 0850	4.Relinquished by	Org.	Date	Time
1. Received by	Org. 6146	Date 2-2-06	Time 0850	4. Received by	Org.	Date	Time
2.Relinquished by	Org. 6146	Date 2-2-06	Time 1145	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

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

AR/COC- 609367

Project Name:	F2VCA@SWMU105	Project/Task Manger: Brenda Langkopf	Project/Task No.: 98046.02.02.09
Location	Tech Area		
Building	Room	Reference LOV (available at SMO)	

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use Lab Sample ID
5537 073~~065~~-002	105-BH-135-4-S	4	105	020106/0929	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5538 073~~066~~-002	105-BH-135-8-S	8	105	020106/0935	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5539 073~~067~~-002	105-BH-136-0-S	0	105	020106/0924	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5540 073~~068~~-002	105-BH-136-2-S	2	105	020106/0942	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5541 073~~069~~-002	105-BH-136-4-S	4	105	020106/0941	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5542 073~~070~~-002	105-BH-136-8-S	8	105	020106/0946	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5543 073~~071~~-002	105-BH-137-0-S	0	105	020106/0950	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5544 073~~072~~-002	105-BH-137-2-S	2	105	020106/0958	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5545 073~~073~~-002	105-BH-137-4-S	4	105	020106/0956	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5546 073~~074~~-002	105-BH-137-8-S	8	105	020106/1001	S	G	125 ml	4C	G	SA	Mercury (7471A)	
KK per BG												

Abnormal Conditions on Receipt

LAB USE

Recipient Initials_____.

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No.

SMO Use

AR/COC 609368

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	2-2-06	Project/Task No.: 98046.02.02.09 ✓	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf ✓	Carrier/Waybill No.	62048	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105 ✓	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:
Logbook Ref. No.	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No	CFC56-06 ✓	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room	Reference LOV(available at SMO)	155168		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 Type	Container Volume	Preservative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
5547 073975-002	105-BH-138-0-S	0	105	020106/0951	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5548 073976-002	105-BH-138-2-S	2	105	020106/1009	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5549 073977-002	105-BH-138-4-S	4	105	020106/1008	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5550 073978-002	105-BH-138-8-S	8	105	020106/1013	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5551 073979-002	105-BH-139-0-S	0	105	020106/1015	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5552 073980-002	105-BH-139-2-S	2	105	020106/1024	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5553 073981-002	105-BH-139-4-S	4	105	020106/1023	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5554 073982-002	105-BH-139-8-S	8	105	020106/1026	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5555 073983-002	105-BH-140-0-S	0	105	020106/1016	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5556 073984-002	105-BH-140-2-S	2	105	020106/1032	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5557 073985-002	105-BH-140-2-SD	2	105	020106/1032.	S	G	125 ml	4C	G	DU	Mercury (7471A)	

RMMA	☐ Yes ☑ No Ref. No.	Sample Tracking Smo Use	Special Instructions/QC Requirements
Sample Disposal	☐ Return to Client ☑ Disposal by lab	Date Entered(mm/dd/yy) 02/06/06	EDD ☑ Yes ☐ No
Turnaround Time	☐ 7 Day ☐ 15 Day ☐ 30 Day	Entered by: RL	Level D Package ☑ Yes ☐ No
Return Samples By:	☐ Negotiated TAT	QC Inits. WOP	*Send report to:

Abnormal Conditions on Receipt

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	William Gibson		WG	Weston/6146/284-5232/239-7367
	Jeff Lee			Stone Lion/6146/284-3309/228-9598
	Gilbert Quintana			Shaw/6146/284-3309/238-9417
	Stacy Griffith		SG	Gram/6146/284-2588/ 379 7588
	Robert Lynch		RL	Weston/6146/250-7090

Preliminary report (.pdf) to srgriff@sandia.gov + biangk@sandia.gov

Final report to Stacy Griffith MS1087/Org 6146

(505) 284-2588/ (505) 379-7588

3 day turn around time

Please list as separate report.

Lab Use

1.Relinquished by		Org. 6146	Date 2/2/06	Time 0945	4.Relinquished by	Org.	Date	Time
1. Received by		Org. 6146	Date 2-2-06	Time 0945	4. Received by	Org.	Date	Time
2.Relinquished by		Org. 6146	Date 2-2-06	Time 1145	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

OFF-SITE LABORATORY

Analysis Request And Chain Of Custody (Continuation)

AR/COC- 609368

Project Name:	P2VCA@SWMU105	Project/Task Manger: Brenda Langkopf				Project/Task No.: 98046.02.02.09						
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	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
5558 073~~086~~-002	105-BH-140-4-S	4	105	020106/1031	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5559 073~~087~~-002	105-BH-140-8-S	8	105	020106/1037	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5560 073~~088~~-002	105-BH-141-0-S	0	105	020106/1030	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5561 073~~089~~-002	105-BH-141-2-S	2	105	020106/1044	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5562 073~~090~~-002	105-BH-141-4-S	4	105	020106/1043	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5563 073~~091~~-002	105-BH-141-8-S	8	105	020106/1048	S	G	125 ml	4C	G	SA	Mercury (7471A)	

Abnormal Conditions on Receipt

LAB USE

Recipient Initials _____

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No.

SMO Use

AR/COC 609369

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	2-2-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	60048	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No	CF056-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO) 155168

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preservative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
5564 073~~002~~-002	105-BH-142-0-S	0	105	020106/1053	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5565 073~~003~~-002	105-BH-142-2-S	2	105	020106/1126	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5566 073~~004~~-002	105-BH-142-4-S	4	105	020106/1125	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5567 073~~005~~-002	105-BH-142-8-S	8	105	020106/1129	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5568 073~~006~~-002	105-BH-143-0-S	0	105	020106/1400	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5569 073~~007~~-002	105-BH-143-2-S	2	105	020106/1408	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5570 073~~008~~-002	105-BH-143-4-S	4	105	020106/1407	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5571 073~~009~~-002	105-BH-143-8-S	8	105	020106/1413	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5572 074~~000~~-002	105-BH-144-0-S	0	105	020106/1054	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5573 074~~001~~-002	105-BH-144-2-S	2	105	020106/1105	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5574 074~~002~~-002	105-BH-144-4-S	4	105	020106/1116	S	G	125 ml	4C	G	SA	Mercury (7471A)	

RMMA	☐ Yes ☑ No Ref. No.	Sample Tracking	Smo Use
Sample Disposal	☐ Return to Client ☑ Disposal by lab	Date Entered(mm/dd/yy)	02/06/06
Turnaround Time	☐ 7 Day ☐ 15 Day ☐ 30 Day	Entered by:	RK
Return Samples By:	☐ Negotiated TAT	QC Inits.	WP

Special Instructions/QC Requirements
EDD ☑ Yes ☐ No
Level D Package ☑ Yes ☐ No

*Send report to:
Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov
Final report to Stacy Griffith MS1087/Org 6146
(505) 284-2588/ (505) 379-7588

3 day turn around time

*Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	William Gibson		WG	Weston/6146/284-5232/239-7367
	Jerf Lee			Stone Lion/6146/284-3309/228-9598
	Gilbert Quintana			Shaw/6146/284-3309/238-9417
	Stacy Griffith		SRG	Gram/6146/284-2588/ 379 7588
	Robert Lynch		RL	Weston/6146/250-7090

1.Relinquished by		Org. 6146	Date 2-2-06	Time 0900	4.Relinquished by	Org.	Date	Time
1. Received by		Org. 6146	Date 2-2-06	Time 0900	4. Received by	Org.	Date	Time
2.Relinquished by		Org. 6146	Date 2-2-06	Time 1200	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

OFF-SITE LABORATORY

Analysis Request And Chain Of Custody (Continuation)

AR/COC- 609369

Project Name:	P2VCA@SWMU105	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	98046.02.02.09
Location	Tech Area				
Building	Room	Reference LOV (available at SMO)			

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use: Lab Sample ID
074~~008~~ 555-002	105-BH-144-8-S	8	105	020106/1115	S	G	125 ml	4C	G	SA	Mercury (7471A)	

Abnormal Conditions on Receipt

LAB USE

Recipient Initials_____

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No.

SMO Use

AR/COC 609370

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	2-2-06	Project/Task No.: 98046.02.02.09 ✓	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf ✓	Carrier/Waybill No.	60048	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VOA@SWMU105 ✓	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code	NA	Lab Destination:	Gel		☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CF056-06 ✓	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room	Reference LOV(available at SMO)	155168		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 Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
5576 074~~004~~-002	105-BH-145-0-S	0	105	020106/1335	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5577 074~~005~~-002	105-BH-145-2-S	2	105	020106/1340	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5578 074~~006~~-002	105-BH-145-4-S	4	105	020106/1339	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5579 074~~007~~-002	105-BH-145-8-S	8	105	020106/1345	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5580 074~~008~~-002	105-BH-146-0-S	0	105	020106/1336	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5581 074~~009~~-002	105-BH-146-2-S	2	105	020106/1350	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5582 074~~010~~-002	105-BH-146-4-S	4	105	020106/1349	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5583 074~~011~~-002	105-BH-146-8-S	8	105	020106/1355	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5584 074~~012~~-002	105-BH-146-8-SD	8	105	020106/1355	S	G	125 ml	4C	G	DU	Mercury (7471A)	
5585 073~~098~~-002	105-BH-15-0-S	0	105	020106/1404	S	G	125 ml	4C	G	SA	Mercury (7471A)	
5586 073~~099~~-002	105-BH-15-2-S	2.	105	020106/1420	S	G	125 ml	4C	G	SA	Mercury (7471A)	

RMMA	☐ Yes ☑ No Ref. No.	Sample Tracking	Smo Use
Sample Disposal	☐ Return to Client ☑ Disposal by lab	Date Entered(mm/dd/yy)	02/06/06
Turnaround Time	☐ 7 Day ☐ 15 Day ☐ 30 Day	Entered by:	RL
Return Samples By:	☐ Negotiated TAT	QC Inits.	WJP

Special Instructions/QC Requirements
EDD ☑ Yes ☐ No
Level D Package ☑ Yes ☐ No

*Send report to:
Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov
Final report to Stacy Griffith MS1087/Org 6146
(505) 284-2588/ (505) 379-7588

3 day turn around time

*Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	William Gibson	[signature]	WJP	Weston/6146/284-5232/239-7367
	Jeff Lee	[signature]	JL	Stone Lion/6146/284-3309/228-9598
	Gilbert Quintana	[signature]	GQ	Shaw/6146/284-3309/238-9417
	Stacy Griffith	[signature]	SRG	Gram/6146/284-2588/ 379 7588
	Robert Lynch	[signature]		Weston/6146/250-7090

1.Relinquished by	[signature]	Org. 6146	Date 2-2-06	Time 0910	4.Relinquished by	Org.	Date	Time
1. Received by	[signature]	Org. 6146	Date 2-2-06	Time 0910	4. Received by	Org.	Date	Time
2.Relinquished by	[signature]	Org. 6146	Date 2-2-06	Time 1200	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

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

AR/COC- 609370

Project Name:	P2VCA@SWMU105	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	98046.02.02.09
Location	Tech Area				
Building	Room				

Reference LOV (available at SMO)

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use: Lab Sample ID
074000-002 (5587)	105-BH-15-4-S	4	105	020106/1418	S	G	125 ml	4C	G	SA	Mercury (7471A)	
074001-002 (5588)	105-BH-15-8-S	8	105	020106/1423	S	G	125 ml	4C	G	SA	Mercury (7471A)	
074056-002 (5589)	105-BH-29-0-S	0	105	020106/1402	S	G	125 ml	4C	G	SA	Mercury (7471A)	
074057-002 (5590)	105-BH-29-2-S	2	105	020106/1430	S	G	125 ml	4C	G	SA	Mercury (7471A)	
074058-002 (5591)	105-BH-29-4-S	4	105	020106/1428	S	G	125 ml	4C	G	SA	Mercury (7471A)	
074013-002 (5592)	105-BH-29-8-S	8	105	020106/1435	S	G	125 ml	4C	G	SA	Mercury (7471A)	
074461-002	105-EB-7	NA	105	020106/1437	DIW	P	250 ml	HNO3	C	EB	Mercury (7470A)	

Abnormal Conditions on Receipt

LAB USE

Recipient Initials_____

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

AR/COC **609371**

SMO Use

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	2-6-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.:	60172	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
074023-002	105-BH-21-0-S	0	105	020206/1130	S	G	125 ml	4C	G	SA	Mercury (7471A) 155439	-011
074024-002	105-BH-21-2-S	2	105	020206/1132	S	G	125 ml	4C	G	SA	Mercury (7471A)	-012
074021-002	105-BH-21-2-SD	2	105	020206/1132	S	G	125 ml	4C	G	DU	Mercury (7471A) field QC	-013
074025-002	105-BH-21-4-S	4	105	020206/1131	S	G	125 ml	4C	G	SA	Mercury (7471A)	-014
074026-002	105-BH-21-8-S	8	105	020206/1135	S	G	125 ml	4C	G	SA	Mercury (7471A)	-015
074081-002	105-BH-35-0-S	0	105	020206/1107	S	G	125 ml	4C	G	SA	Mercury (7471A)	-016
074082-002	105-BH-35-2-S	2	105	020206/1126	S	G	125 ml	4C	G	SA	Mercury (7471A)	-017
074083-002	105-BH-35-4-S	4	105	020206/1125	S	G	125 ml	4C	G	SA	Mercury (7471A)	-018
074084-002	105-BH-35-8-S	8	105	020206/1127	S	G	125 ml	4C	G	SA	Mercury (7471A)	-019
074141-002	105-BH-50-0-S	0	105	020206/1122 06	S	G	125 ml	4C	G	SA	Mercury (7471A) 155439	-020
074142-002	105-BH-50-2-S	2	105	020206/1106 22	S	G	125 ml	4C	G	SA	Mercury (7471A) 155443	-01 3.1

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

Abnormal Conditions on Receipt

Lab Use

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	William Gibson			Weston/6146/284-5232/239-7367
	Jeff Lee			Stone Lion/6146/284-3309/228-9598
	Gilbert Quintana			Shaw/6146/284-3309/238-9417
	Stacy Griffith			Gram/6146/284-2588/ 379 7588
	Robert Lynch		RC	Weston/6146/250-7090

Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov

Final report to Stacy Griffith MS1087/Org 6146

(505) 284-2588/ (505) 379-7588

15 day turn around time

*Please list as separate report.

1.Relinquished by	Org. 6146	Date 2/6/06	Time 0900	4.Relinquished by	Org.	Date	Time
1. Received by	Org. 6146	Date 2/6/06	Time 0900	4. Received by	Org.	Date	Time
2.Relinquished by	Org. 6146	Date 2/6/06	Time 1130	5.Relinquished by	Org.	Date	Time
2. Received by	Org.	Date 2/7/06	Time 930	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

18

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

AR/COC- 609371

Project Name:	P2VCA@SWMU105	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	98046.02.02.09
Location	Tech Area				
Building	Room				

Reference LOV (available at SMO)

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use Lab Sample ID
074143-002	105-BH-50-4-S	4	105	020206/1120	S	G	125 ml	4C	G	SA	Mercury (7471A)	155443-02
074144-002	105-BH-50-8-S	8	105	020206/1123	S	G	125 ml	4C	G	SA	Mercury (7471A)	155443-03
074200-002	105-BH-65-0-S	0	105	020206/1105	S	G	125 ml	4C	G	SA	Mercury (7471A)	155443-04
074201-002	105-BH-65-2-S	2	105	020206/1110	S	G	125 ml	4C	G	SA	Mercury (7471A)	155443-05
074202-002	105-BH-65-4-S	4	105	020206/1108	S	G	125 ml	4C	G	SA	Mercury (7471A)	155443-06
074203-002	105-BH-65-8-S	8	105	020206/1111	S	G	125 ml	4C	G	SA	Mercury (7471A)	-07
074462-002	105-EB-8	NA	105	020206/1425	DIW	P	250 ml	HNO3	C	EB	Mercury (7470A) field QC	155458-081

7.1

Abnormal Conditions on Receipt LAB USE

Recipient Initials MG

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC 609372

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	2/6/06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	60172	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To:Sandia National Labs.(Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room	Reference LOV(available at SMO)	155443		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 Type	Container Volume	Preservative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
074263-002	105-BH-81-0-S	0	105	020206/1029	S	G	125 ml	4C	G	SA	Mercury (7471A) 155443-	09
074264-002	105-BH-81-2-S	2	105	020206/1051	S	G	125 ml	4C	G	SA	Mercury (7471A)	09
074265-002	105-BH-81-4-S	4	105	020206/1056	S	G	125 ml	4C	G	SA	Mercury (7471A)	10
074266-002	105-BH-81-8-S	8	105	020206/1102	S	G	125 ml	4C	G	SA	Mercury (7471A)	11
074322-002	105-BH-96-0-S	0	105	020206/1028	S	G	125 ml	4C	G	SA	Mercury (7471A)	12
074323-002	105-BH-96-2-S	2	105	020206/1045	S	G	125 ml	4C	G	SA	Mercury (7471A)	13
074324-002	105-BH-96-4-S	4	105	020206/1044	S	G	125 ml	4C	G	SA	Mercury (7471A)	14
074325-002	105-BH-96-8-S	8	105	020206/1049	S	G	125 ml	4C	G	SA	Mercury (7471A)	15
074381-002	105-BH-111-0-S	0	105	020206/1027	S	G	125 ml	4C	G	SA	Mercury (7471A)	16
074382-002	105-BH-111-2-S	2	105	020206/1038	S	G	125 ml	4C	G	SA	Mercury (7471A)	17
074383-002	105-BH-111-4-S	4	105	020206/1036	S	G	125 ml	4C	G	DU	Mercury (7471A) field QC	18

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

Special Instructions/QC Requirements
EDD ☑ Yes ☐ No
Level D Package ☑ Yes ☐ No

Abnormal Conditions on Receipt

*Send report to:
Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov
Final report to Stacy Griffith MS1087/Org 6146
(505) 284-2588/ (505) 379-7588

15 day turn around time

*Please list as separate report.

Lab Use

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	William Gibson		WG	Weston/6146/284-5232/239-7367
	Jeff Lee			Stone Lion/6146/284-3309/228-9598
	Gilbert Quintana			Shaw/6146/284-3309/238-9417
	Stacy Griffith		SG	Gram/6146/284-2588/ 379 7588
	Robert Lynch			Weston/6146/250-7090

1.Relinquished by		Org. 6146	Date 2/6/06	Time 0845	4.Relinquished by	Org.	Date	Time
1. Received by		Smo Org. 6146	Date 2/6/06	Time 0845	4. Received by	Org.	Date	Time
2.Relinquished by		Smo Org. 6146	Date 2-6-06	Time 1130	5.Relinquished by	Org.	Date	Time
2. Received by		Org.	Date 2-7-06	Time 930	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

12

OFF-SITE LABORATORY

Analysis Request And Chain Of Custody (Continuation)

AR/COC- 609372

Project Name:	P2VCA@SWMU105	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	98046.02.02.09
Location	Tech Area				
Building	Room				

Reference LOV (available at SMO)

	Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use: Lab Sample ID
0	074384-002	105-BH-111-8-S	8	105	020206/1040	S	G	125 ml	4C	G	SA	Mercury (7471A) 155443-29	19

Abnormal Conditions on Receipt

LAB USE

Recipient Initials NG

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC 609373

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	2-6-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	60172	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preservative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
074027-002	105-BH-22-0-S	0	105	020306/0955	S	G	125 ml	4C	G	SA	Mercury (7471A) 155443-	20
074028-002	105-BH-22-2-S	2	105	020306/1007	S	G	125 ml	4C	G	SA	Mercury (7471A) 155447-	001 4.1
074029-002	105-BH-22-4-S	4	105	020306/1006	S	G	125 ml	4C	G	SA	Mercury (7471A)	002
074030-002	105-BH-22-8-S	8	105	020306/1011	S	G	125 ml	4C	G	SA	Mercury (7471A)	003
074267-002	105-BH-82-0-S	0	105	020306/0850	S	G	125 ml	4C	G	SA	Mercury (7471A)	004
074268-002	105-BH-82-2-S	2	105	020306/0933	S	G	125 ml	4C	G	SA	Mercury (7471A)	005
074269-002	105-BH-82-4-S	4	105	020306/0932	S	G	125 ml	4C	G	SA	Mercury (7471A)	006
074270-002	105-BH-82-8-S	8	105	020306/0938	S	G	125 ml	4C	G	SA	Mercury (7471A)	007
074326-002	105-BH-97-0-S	0	105	020306/0848	S	G	125 ml	4C	G	SA	Mercury (7471A)	008
074327-002	105-BH-97-2-S	2	105	020306/0914	S	G	125 ml	4C	G	SA	Mercury (7471A)	009
074328-002	105-BH-97-4-S	4	105	020306/0913	S	G	125 ml	4C	G	SA	Mercury (7471A)	010

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

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	William Gibson		WG	Weston/6146/284-5232/239-7367
	Jeff Lee			Stone Lion/6146/284-3309/228-9598
	Gilbert Quintana			Shaw/6146/284-3309/238-9417
	Stacy Griffith		SG	Gram/6146/284-2588/ 379 7588
	Robert Lynch		RL	Weston/6146/250-7090

Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov
Final report to Stacy Griffith MS1087/Org 6146
(505) 284-2588/ (505) 379-7588

15 day turn around time

*Please list as separate report.

Lab Use

1.Relinquished by	Org. 6146	Date 2/6/06	Time 0905	4.Relinquished by	Org.	Date	Time
1. Received by	Org. 6146	Date 2/6/06	Time 0905	4. Received by	Org.	Date	Time
2.Relinquished by	Org. 6146	Date 2-6-06	Time 1130	5.Relinquished by	Org.	Date	Time
2. Received by	Org.	Date 2-7-06	Time 930	5. Received by	Org.	Date	Time
3.Relinquished by	Org.	Date	Time	6.Relinquished by	Org.	Date	Time
3. Received by	Org.	Date	Time	6. Received by	Org.	Date	Time

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

AR/COC- 609373

Project Name:	P2VCA@SWMU105	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	98046.02.02.09
Location	Tech Area				
Building	Room				

Reference LOV (available at SMO)

155447 1.

Lab use

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
074329-002	105-BH-97-8-S	8	105	020306/0918	S	G	125 ml	4C	G	SA	Mercury (7471A)	011
074385-002	105-BH-112-0-S	0	105	020306/0845	S	G	125 ml	4C	G	SA	Mercury (7471A)	012
074386-002	105-BH-112-2-S	2	105	020306/0857	S	G	125 ml	4C	G	SA	Mercury (7471A)	013
074387-002	105-BH-112-4-S	4	105	020306/0856	S	G	125 ml	4C	G	SA	Mercury (7471A)	014
074388-002	105-BH-112-8-S	8	105	020306/0859	S	G	125 ml	4C	G	SA	Mercury (7471A)	015
074389-002	105-BH-113-0-S	0	105	020306/0846	S	G	125 ml	4C	G	SA	Mercury (7471A)	016
074390-002	105-BH-113-2-S	2	105	020306/0905	S	G	125 ml	4C	G	SA	Mercury (7471A)	017
074391-002	105-BH-113-4-S	4	105	020306/0904	S	G	125 ml	4C	G	SA	Mercury (7471A)	018
074392-002	105-BH-113-8-S	8	105	020306/0909	S	G	125 ml	4C	G	SA	Mercury (7471A)	019

Abnormal Conditions on Receipt LAB USE

Recipient Initials MG

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC 609374

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	2-6-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	60172	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To:Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
074090-002	105-BH-37-0-S	0	105	020306/0956	S	G	125 ml	4C	G	SA	Mercury (7471A) 155447	020
074091-002	105-BH-37-2-S	2	105	020306/1017	S	G	125 ml	4C	G	SA	Mercury (7471A) 155452	01 S.1
074092-002	105-BH-37-4-S	4	105	020306/1016	S	G	125 ml	4C	G	SA	Mercury (7471A)	02
074093-002	105-BH-37-8-S	8	105	020306/1024	S	G	125 ml	4C	G	SA	Mercury (7471A)	03
074150-002	105-BH-52-0-S	0	105	020306/0957	S	G	125 ml	4C	G	SA	Mercury (7471A)	04
074151-002	105-BH-52-2-S	2	105	020306/1031	S	G	125 ml	4C	G	SA	Mercury (7471A)	05
074152-002	105-BH-52-4-S	4	105	020306/1030	S	G	125 ml	4C	G	SA	Mercury (7471A)	06
074153-002	105-BH-52-8-S	8	105	020306/1035	S	G	125 ml	4C	G	SA	Mercury (7471A)	07
074210-002	105-BH-67-0-S	0	105	020306/0958	S	G	125 ml	4C	G	SA	Mercury (7471A)	08
074211-002	105-BH-67-2-S	2	105	020306/1043	S	G	125 ml	4C	G	SA	Mercury (7471A)	09
074212-002	105-BH-67-4-S	4	105	020306/1042	S	G	125 ml	4C	G	SA	Mercury (7471A) 155452	10

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

Abnormal Conditions on Receipt

Lab Use

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	William Gibson			Weston/6146/284-5232/239-7367
	Jeff Lee			Stone Lion/6146/284-3309/228-9598
	Gilbert Quintana			Shaw/6146/284-3309/238-9417
	Stacy Griffith		SRG	Gram/6146/284-2588/ 379 7588
	Robert Lynch		RL	Weston/6146/250-7090

Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov
Final report to Stacy Griffith MS1087/Org 6146
(505) 284-2588/ (505) 379-7588

15 day turn around time

*Please list as separate report.

1.Relinquished by	Org. 6146	Date 2/6/06	Time 0905	4.Relinquished by	Org.	Date	Time
1. Received by	Org. 6146	Date 2/6/06	Time 0905	4. Received by	Org.	Date	Time
2.Relinquished by	Org. 6146	Date 2/6/06	Time 1130	5.Relinquished by	Org.	Date	Time
2. Received by	Org.	Date 2/7/06	Time 930	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

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

2/6/06

AR/COC- 609374

Project Name:	P2VCA@SWMU105	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	98046.02.02.09
Location	Tech Area				
Building	Room				

Reference LOV (available at SMO)

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use: Lab Sample ID
074213-002	105-BH-67-8-S	8	105	020306/1053	S	G	125 ml	4C	G	SA	Mercury (7471A) 155452-	11
074271-002	105-BH-83-0-S	0	105	020306/0857 47 44	S	G	125 ml	4C	G	SA	Mercury (7471A)	12
074272-002	105-BH-83-2-S	2	105	020306/0946	S	G	125 ml	4C	G	SA	Mercury (7471A)	13
074273-002	105-BH-83-4-S	4	105	020306/0945	S	G	125 ml	4C	G	SA	Mercury (7471A)	14
074274-002	105-BH-83-4-SD	4	105	020306/0945	S	G	125 ml	4C	G	DU	Mercury (7471A) field QC	15
074275-002	105-BH-83-8-S	8	105	020306/0949	S	G	125 ml	4C	G	SA	Mercury (7471A)	16
074330-002	105-BH-98-0-S	0	105	020306/0849	S	G	125 ml	4C	G	SA	Mercury (7471A)	17
074331-002	105-BH-98-2-S	2	105	020306/0923	S	G	125 ml	4C	G	SA	Mercury (7471A)	18
074332-002	105-BH-98-2-SD	2	105	020306/0923	S	G	125 ml	4C	G	DU	Mercury (7471A) field QC	19
074333-002	105-BH-98-4-S	4	105	020306/0922	S	G	125 ml	4C	G	SA	Mercury (7471A) 155452-	20
074334-002	105-BH-98-8-S	8	105	020306/0926	S	G	125 ml	4C	G	SA	Mercury (7471A) 155436-	001 6.1
074463-002	105-EB-9	NA	105	020306/1115	S	P	250 ml	4C	C	EB	Mercury (7470A) 155458-	002 7.1

Abnormal Conditions on Receipt

LAB USE

Recipient Initials HG

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

AR/COC **609375**

SMO Use

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	2-8-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	60292	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:_____
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To:Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
074036-002	105-BH-24-0-S	0	105	020706/0906	S	G	125 ml	4C	G	SA	Mercury (7471A) 155670-	001
074037-002	105-BH-24-2-S	2	105	020706/0920	S	G	125 ml	4C	G	SA	Mercury (7471A)	002
074038-002	105-BH-24-4-S	4	105	020706/0918	S	G	125 ml	4C	G	SA	Mercury (7471A)	003
074039-002	105-BH-24-8-S	8	105	020706/0926	S	G	125 ml	4C	G	SA	Mercury (7471A)	004
074094-002	105-BH-38-0-S	0	105	020706/0910	S	G	125 ml	4C	G	SA	Mercury (7471A)	005
074095-002	105-BH-38-2-S	2	105	020706/0933	S	G	125 ml	4C	G	SA	Mercury (7471A)	006
074096-002	105-BH-38-4-S	4	105	020706/0931	S	G	125 ml	4C	G	SA	Mercury (7471A)	007
074097-002	105-BH-38-4-SD	4	105	020706/0931	S	G	125 ml	4C	G	DU	Mercury (7471A) field QC	008
074098-002	105-BH-38-8-S	8	105	020706/0937	S	G	125 ml	4C	G	SA	Mercury (7471A)	009
074214-002	105-BH-68-0-S	0	105	020706/1020	S	G	125 ml	4C	G	SA	Mercury (7471A)	010
074215-002	105-BH-68-2-S	2	105	020706/1025	S	G	125 ml	4C	G	SA	Mercury (7471A)	011

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☒ 15 Day ☐ 30 Day

Return Samples By: ☐ Negotiated TAT

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

Special Instructions/QC Requirements
EDD ☑ Yes ☐ No
Level D Package ☑ Yes ☐ No

Abnormal Conditions on Receipt

Sample Team Members WJG

Name	Signature	Init	Company/Organization/Phone/Cellular
William Gibson	William J. Gibson	WJG	Weston/6146/284-5232/239-7367
~~Jeff Lee~~			~~Stone Lion/6146/284-3309/228-9508~~
Gilbert Quintana	Gilbert Quintana	GQ	Shaw/6146/284-3309/238-9417
Stacy Griffith	Stacy Griffith	SRG	Gram/6146/284-2588/ 379 7588
Robert Lynch	Robert Lynch	RL	Weston/6146/250-7090

***Send report to:**
Preliminary report (.pdf) to srgriff@sandia.gov + biangk@sandia.gov
Final report to Stacy Griffith MS1087/Org 6146
(505) 284-2588/ (505) 379-7588

15 day turn around time

Please list as separate report.

Lab Use

1.Relinquished by	Org 6146	Date 2/8/06	Time 0830	4.Relinquished by	Org.	Date	Time
1. Received by SMO	Org. 6146	Date 2/8/06	Time 0830	4. Received by	Org.	Date	Time
2.Relinquished by	Org. 6146	Date 2/8/06	Time 1100	5.Relinquished by	Org.	Date	Time
2. Received by	Org.	Date 2/9/06	Time 0930	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

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

AR/COC- 609375

Project Name:	P2VCA@SWMU105	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	96046.02.02.09
Location	Tech Area				
Building	Room				

Reference LOV (available at SMO) 155670X.

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use: Lab Sample ID
074217-002	105-BH-68-4-S	4	105	020706/1023	S	G	125 ml	4C	G	SA	Mercury (7471A)	012
074218-002	105-BH-68-8-S	8	105	020706/1029	S	G	125 ml	4C	G	SA	Mercury (7471A)	013

Abnormal Conditions on Receipt

LAB USE

Recipient Initials LS

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC 609376

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	2-8-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	160292	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO) 155670%

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preservative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
074276-002	105-BH-84-0-S	0	105	020706/1046	S	G	125 ml	4C	G	SA	Mercury (7471A)	014
074277-002	105-BH-84-2-S	2	105	020706/1058	S	G	125 ml	4C	G	SA	Mercury (7471A)	015
074278-002	105-BH-84-4-S	4	105	020706/1057	S	G	125 ml	4C	G	SA	Mercury (7471A)	016
074279-002	105-BH-84-8-S	8	105	020706/1102	S	G	125 ml	4C	G	SA	Mercury (7471A)	017
074335-002	105-BH-99-0-S	0	105	020706/1104	S	G	125 ml	4C	G	SA	Mercury (7471A)	018
074336-002	105-BH-99-2-S	2	105	020706/1107	S	G	125 ml	4C	G	SA	Mercury (7471A)	019
074337-002	105-BH-99-4-S	4	105	020706/1106	S	G	125 ml	4C	G	SA	Mercury (7471A) 155670-	020
074338-002	105-BH-99-8-S	8	105	020706/1111	S	G	125 ml	4C	G	SA	Mercury (7471A) 155672-	01
074393-002	105-BH-114-0-S	0	105	020706/1133	S	G	125 ml	4C	G	SA	Mercury (7471A)	02
074394-002	105-BH-114-2-S	2	105	020706/1131	S	G	125 ml	4C	G	SA	Mercury (7471A)	03
074395-002	105-BH-114-2-SD	2	105	020706/1131	S	G	125 ml	4C	G	DU	Mercury (7471A) yield QC	04

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☒ 15 Day ☐ 30 Day

Return Samples By: ☐ Negotiated TAT

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

Special Instructions/QC Requirements
EDD ☑ Yes ☐ No
Level D Package ☑ Yes ☐ No

***Send report to:**
Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov
Final report to Stacy Griffith MS1087/Org 6146
(505) 284-2588/ (505) 379-7588

15 day turn around time

**Please list as separate report.*

Abnormal Conditions on Receipt

Lab Use

Sample Team Members WJG

Name	Signature	Init	Company/Organization/Phone/Cellular
William Gibson		WJG	Weston/6146/284-5232/239-7367
~~Jeff Lee~~			~~Stone Lion/6146/284-3309/228-9598~~
Gilbert Quintana		GQ	Shaw/6146/284-3309/238-9417
Stacy Griffith		SG	Gram/6146/284-2588/ 379 7588
Robert Lynch		RL	Weston/6146/250-7090

1.Relinquished by	Org. 6146	Date 2/8/06	Time 0830	4.Relinquished by	Org.	Date	Time
1. Received by	Org. 6146	Date 2/8/06	Time 0830	4. Received by	Org.	Date	Time
2.Relinquished by	Org. 6146	Date 2/8/06	Time 1100	5.Relinquished by	Org.	Date	Time
2. Received by	Org.	Date 2/9/06	Time 0930	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

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

AR/COC- 609376

Project Name:	P2VCA@SWMU105	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	98046.02.02.09
Location	Tech Area				
Building	Room				

Reference LOV (available at SMO)

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use: Lab Sample ID
074396-002	105-BH-114-4-S	4	105	020706/1130	S	G	125 ml	4C	G	SA	Mercury (7471A)	05
074397-002	105-BH-114-8-S	8	105	020706/1149	S	G	125 ml	4C	G	SA	Mercury (7471A) 155672-	06

Abnormal Conditions on Receipt

LAB USE

Recipient Initials LS

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC 609377

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	2-8-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization -Send preliminary/copy report to:
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.:	60292	SMO Authorization:	
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Pulssant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable) P.O. Box 5800 MS 0154 Albuquerque, NM 87185-0154
Location	Tech Area				
Building	Room				

Reference LOV(available at SMO) 155672%

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
074040-002	105-BH-25-0-S	0	105	020706/0907	S	G	125 ml	4C	G	SA	Mercury (7471A) 155672-	07
074041-002	105-BH-25-2-S	2	105	020706/0949	S	G	125 ml	4C	G	SA	Mercury (7471A)	08
074042-002	105-BH-25-4-S	4	105	020706/0947	S	G	125 ml	4C	G	SA	Mercury (7471A)	09
074043-002	105-BH-25-8-S	8	105	020706/0952	S	G	125 ml	4C	G	SA	Mercury (7471A)	10
074099-002	105-BH-39-0-S	0	105	020706/0941	S	G	125 ml	4C	G	SA	Mercury (7471A)	11
074100-002	105-BH-39-2-S	2	105	020706/0957	S	G	125 ml	4C	G	SA	Mercury (7471A)	12
074101-002	105-BH-39-4-S	4	105	020706/0955	S	G	125 ml	4C	G	SA	Mercury (7471A)	13
074102-002	105-BH-39-8-S	8	105	020706/1001	S	G	125 ml	4C	G	SA	Mercury (7471A)	14
074159-002	105-BH-54-0-S	0	105	020706/0911	S	G	125 ml	4C	G	SA	Mercury (7471A)	15
074160-002	105-BH-54-2-S	2	105	020706/1006	S	G	125 ml	4C	G	SA	Mercury (7471A)	16
074161-002	105-BH-54-4-S	4	105	020706/1005	S	G	125 ml	4C	G	SA	Mercury (7471A) 155672-	17

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☒ 15 Day ☐ 30 Day

Return Samples By: ☐ Negotiated TAT

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

Special Instructions/QC Requirements
EDD ☑ Yes ☐ No
Level D Package ☑ Yes ☐ No
***Send report to:**
Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov
Final report to Stacy Griffith MS1087/Org 6146
(505) 284-2588/ (505) 379-7588

Abnormal Conditions on Receipt

Lab Use

Sample Team Members WJG

Name	Signature	Init	Company/Organization/Phone/Cellular
William Gibson	William J. Gibson		Weston/6146/284-5232/239-7367
~~Jeff Lee~~			~~Stone Lion/6146/284-3309/228-9598~~
Gilbert Quintana	Gilbert Quintana	GQ	Shaw/6146/284-3309/238-9417
Stacy Griffith	Stacy Griffith	SRG	Gram/6146/284-2588/ 379 7588
Robert Lynch	Robert Lynch		Weston/6146/250-7090

15 day turn around time

Please list as separate report.

1.Relinquished by	Org. 6146	Date 2/8/06	Time 0830	4.Relinquished by	Org.	Date	Time
1. Received by	Org. 6146	Date 2/8/06	Time 0830	4. Received by	Org.	Date	Time
2.Relinquished by	Org. 6146	Date 2/8/06	Time 1100	5.Relinquished by	Org.	Date	Time
2. Received by	Org.	Date 2/10/06	Time 0930	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

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

AR/COC- 609377

Project Name:	P2VCA@SWMU105	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	98046.02.02.09
Location	Tech Area				
Building	Room	Reference LOV (available at SMO)	155672%		

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use: Lab Sample ID
074162-002	105-BH-54-8-S	8	105	020706/1010	S	G	125 ml	4C	G	SA	Mercury (7471A)	18
074219-002	105-BH-69-0-S	0	105	020706/1037	S	G	125 ml	4C	G	SA	Mercury (7471A)	19
074220-002	105-BH-69-2-S	2	105	020706/1040	S	G	125 ml	4C	G	SA	Mercury (7471A) 155672-	20
074216-002	105-BH-69-2-SD	2	105	020706/1040	S	G	125 ml	4C	G	DU	Mercury (7471A) 155673-	00
075598-002	105-BH-69-4-S	4	105	020706/1039	S	G	125 ml	4C	G	SA	Mercury (7471A)	-002
074221-002	105-BH-69-8-S	8	105	020706/1044	S	G	125 ml	4C	G	SA	Mercury (7471A)	-003

Abnormal Conditions on Receipt

LAB USE

Recipient Initials LS

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC 609378

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	2-8-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	60292	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO) 155673 %

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
074280-002	105-BH-85-0-S	0	105	020706/1045	S	G	125 ml	4C	G	SA	Mercury (7471A)	004
074281-002	105-BH-85-2-S	2	105	020706/1050	S	G	125 ml	4C	G	SA	Mercury (7471A)	005
074282-002	105-BH-85-4-S	4	105	020706/1049	S	G	125 ml	4C	G	SA	Mercury (7471A)	006
074283-002	105-BH-85-8-S	8	105	020706/1055	S	G	125 ml	4C	G	SA	Mercury (7471A)	007
074339-002	105-BH-100-0-S	0	105	020706/1105	S	G	125 ml	4C	G	SA	Mercury (7471A)	008
074340-002	105-BH-100-2-S	2	105	020706/1116	S	G	125 ml	4C	G	SA	Mercury (7471A)	009
074341-002	105-BH-100-4-S	4	105	020706/1115	S	G	125 ml	4C	G	SA	Mercury (7471A)	010
074312-002	105-BH-100-4-SD	4	105	020706/1115	S	G	125 ml	4C	G	DU	Mercury (7471A) yield QC	011
074342-002	105-BH-100-8-S	8	105	020706/1121	S	G	125 ml	4C	G	SA	Mercury (7471A)	012
074398-002	105-BH-115-0-S	0	105	020706/1153	S	G	125 ml	4C	G	SA	Mercury (7471A)	013
074399-002	105-BH-115-2-S	2	105	020706/1156	S	G	125 ml	4C	G	SA	Mercury (7471A)	014

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☒ 15 Day ☐ 30 Day

Return Samples By: ☐ Negotiated TAT

Sample Tracking Smo Use
Date Entered(mm/dd/yy):
Entered by:
QC inits.

Special Instructions/QC Requirements
EDD ☑ Yes ☐ No
Level D Package ☑ Yes ☐ No
***Send report to:**
Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov
Final report to Stacy Griffith MS1087/Org 6146
(505) 284-2588/ (505) 379-7588

15 day turn around time

Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

Sample Team Members

Name	Signature	Init	Company/Organization/Phone/Cellular
William Gibson		WG	Weston/6146/284-5232/239-7367
~~Jeff Lee~~			~~Stone Lion/6146/284-3309/228-9598~~
Gilbert Quintana			Shaw/6146/284-3309/238-9417
Stacy Griffith		SG	Gram/6146/284-2588/ 379 7588
Robert Lynch			Weston/6146/250-7090

1.Relinquished by		Org. 6146	Date 2/8/06	Time 0845	4.Relinquished by	Org.	Date	Time
1. Received by		Org. 6146	Date 2/8/06	Time 0845	4. Received by	Org.	Date	Time
2.Relinquished by		Org.	Date 2/9/06	Time 0930	5.Relinquished by	Org.	Date	Time
2. Received by		Org.	Date 2/9/06	Time 0930	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

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

AR/COC- 60937

Project Name:	P2VCA@SWMU105	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	98046.02.02.09
Location	Tech Area				
Building	Room				

Reference LOV (available at SMO)

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID (Lab use)
074400-002	105-BH-115-4-S	4	105	020706/1155	S	G	125 ml	4C	G	SA	Mercury (7471A) 155673-	01
074401-002	105-BH-115-8-S	8	105	020706/1200	S	G	125 ml	4C	G	SA	Mercury (7471A) 155673-	016
073914-002	105-EB-10	NA	105	020706/1405	DIW	P	250 ml	HNO3	C	EB	Mercury (7470A) 155674-01	

Abnormal Conditions on Receipt

LAB USE

Recipient Initials LS

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC 609379

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	2-9-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	60347	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:_____
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To:Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
074044-002	105-BH-26-0-S	0	105	020806/0856	S	G	125 ml	4C	G	SA	Mercury (7471A)	15571800 1
074045-002	105-BH-26-2-S	2	105	020806/0909	S	G	125 ml	4C	G	SA	Mercury (7471A)	002
074046-002	105-BH-26-4-S	4	105	020806/0907	S	G	125 ml	4C	G	SA	Mercury (7471A)	003
074047-002	105-BH-26-4-SD	4	105	020806/0907	S	G	125 ml	4C	G	DU	Mercury (7471A)	004
074048-002	105-BH-26-8-S	8	105	020806/0911	S	G	125 ml	4C	G	SA	Mercury (7471A)	005
074103-002	105-BH-40-0-S	0	105	020806/0855	S	G	125 ml	4C	G	SA	Mercury (7471A)	006
074104-002	105-BH-40-2-S	2	105	020806/0918	S	G	125 ml	4C	G	SA	Mercury (7471A)	007
074105-002	105-BH-40-4-S	4	105	020806/0917	S	G	125 ml	4C	G	SA	Mercury (7471A)	008
074106-002	105-BH-40-8-S	8	105	020806/0921	S	G	125 ml	4C	G	SA	Mercury (7471A)	009
074163-002	105-BH-55-0-S	0	105	020806/0854	S	G	125 ml	4C	G	SA	Mercury (7471A)	010
074164-002	105-BH-55-2-S	2	105	020806/0931	S	G	125 ml	4C	G	SA	Mercury (7471A)	011

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☒ 15 Day ☐ 30 Day

Return Samples By: ☐ **Negotiated TAT** QC inits.

Sample Tracking Smo Use

Date Entered(mm/dd/yy)

Entered by:

Special Instructions/QC Requirements

EDD ☑ **Yes** ☐ **No**

Level D Package ☑ **Yes** ☐ **No**

***Send report to:**

Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov

Final report to Stacy Griffith MS1087/Org 6146

(505) 284-2588/ (505) 379-7588

15 day turn around time

Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	William Gibson		WJG	Weston/6146/284-5232/239-7367
	Jeff Lee			Stone Lion/6146/284-3309/228-9598
	Gilbert Quintana		GQ	Shaw/6146/284-3309/238-9417
WJG	~~Stacy Griffith~~			~~Gram/6146/284-2588/ 379-7588~~
	Robert Lynch		RL	Weston/6146/250-7090

1.Relinquished by	Org. 6146	Date 2-9-06	Time 0750	4.Relinquished by	Org.	Date	Time
1. Received by SMO	Org. 6146	Date 2-9-06	Time 0750	4. Received by	Org.	Date	Time
2.Relinquished by SMO	Org. 6146	Date 2-9-06	Time 1130	5.Relinquished by	Org.	Date	Time
2. Received by	Org.	Date 2/10/06	Time 0915	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

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

AR/COC- 609379

Project Name:	P2VCA@SWMU105	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	98046.02.02.09
Location	Tech Area				
Building	Room				

Reference LOV (available at SMO)

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use: Lab Sample ID
074165-002	105-BH-55-4-S	4	105	020806/0930	S	G	125 ml	4C	G	SA	Mercury (7471A)	012
074166-002	105-BH-55-8-S	8	105	020806/0936	S	G	125 ml	4C	G	SA	Mercury (7471A)	013
074222-002	105-BH-70-0-S	0	105	020806/0853	S	G	125 ml	4C	G	SA	Mercury (7471A)	014
074223-002	105-BH-70-2-S	2	105	020806/0946	S	G	125 ml	4C	G	SA	Mercury (7471A)	015
074224-002	105-BH-70-4-S	4	105	020806/0945	S	G	125 ml	4C	G	SA	Mercury (7471A)	016
074225-002	105-BH-70-8-S	8	105	020806/0951	S	G	125 ml	4C	G	SA	Mercury (7471A)	017

Abnormal Conditions on Receipt

LAB USE

Recipient Initials: G

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC 609380

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	2-9-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	60347	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
074284-002	105-BH-86-0-S	0	105	020806/0852	S	G	125 ml	4C	G	SA	Mercury (7471A)	155718018
074285-002	105-BH-86-2-S	2	105	020806/1001	S	G	125 ml	4C	G	SA	Mercury (7471A)	019
074286-002	105-BH-86-2-SD	2	105	020806/1001	S	G	125 ml	4C	G	DU	Mercury (7471A)	020
074287-002	105-BH-86-4-S	4	105	020806/1000	S	G	125 ml	4C	G	SA	Mercury (7471A)	155722001
074288-002	105-BH-86-8-S	8	105	020806/1004	S	G	125 ml	4C	G	SA	Mercury (7471A)	002
074343-002	105-BH-101-0-S	0	105	020806/0851	S	G	125 ml	4C	G	SA	Mercury (7471A)	003
074344-002	105-BH-101-2-S	2	105	020806/1025	S	G	125 ml	4C	G	SA	Mercury (7471A)	004
074345-002	105-BH-101-4-S	4	105	020806/1024	S	G	125 ml	4C	G	SA	Mercury (7471A)	005
074346-002	105-BH-101-8-S	8	105	020806/1031	S	G	125 ml	4C	G	SA	Mercury (7471A)	006
074402-002	105-BH-116-0-S	0	105	020806/0850	S	G	125 ml	4C	G	SA	Mercury (7471A)	007
074403-002	105-BH-116-2-S	2	105	020806/1015	S	G	125 ml	4C	G	SA	Mercury (7471A)	008

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

Abnormal Conditions on Receipt

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	William Gibson		WG	Weston/6146/284-5232/239-7367
	Jeff Lee			Stone Lion/6146/284-3309/228-9598
	Gilbert Quintana		GQ	Shaw/6146/284-3309/238-9417
WJG	~~Stacy Griffith~~			~~Grafi/6146/284-2588/ 379 7588~~
	Robert Lynch		RL	Weston/6146/250-7090

Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov
Final report to Stacy Griffith MS1087/Org 6146
(505) 284-2588/ (505) 379-7588

15 day turn around time

*Please list as separate report.

Lab Use

1.Relinquished by		Org. 6146	Date 2/9/06	Time 0800	4.Relinquished by	Org.	Date	Time
1. Received by		Org. 6146	Date 2/9/06	Time 0800	4. Received by	Org.	Date	Time
2.Relinquished by		Org. 6146	Date 2/9/06	Time 1130	5.Relinquished by	Org.	Date	Time
2. Received by		Org.	Date 2/10/06	Time 0915	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

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

AR/COC- 609380

Project Name:	P2VCA@SWMU105	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	98046.02.02.09
Location	Tech Area				
Building	Room				

Reference LOV (available at SMO)

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use: Lab Sample ID
074404-002	105-BH-116-4-S	4	105	020806/1014	S	G	125 ml	4C	G	SA	Mercury (7471A)	15572009
074405-002	105-BH-116-8-S	8	105	020806/1020	S	G	125 ml	4C	G	SA	Mercury (7471A)	010

Abnormal Conditions on Receipt

LAB USE

Recipient Initials LS

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab N/A

Batch No.

SMO Use

AR/COC 609381

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	2-9-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	60347	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:_____
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To:Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
a 074049-002	105-BH-27-0-S	0	105	020806/0903	S	G	125 ml	4C	G	SA	Mercury (7471A)	155725003
b 074050-002	105-BH-27-2-S	2	105	020806/1141	S	G	125 ml	4C	G	SA	Mercury (7471A)	004
d 074051-002	105-BH-27-4-S	4	105	020806/1140	S	G	125 ml	4C	G	SA	Mercury (7471A)	005
f 074052-002	105-BH-27-8-S	8	105	020806/1143	S	G	125 ml	4C	G	SA	Mercury (7471A)	006
c 074107-002	105-BH-41-0-S	0	105	020806/0902	S	G	125 ml	4C	G	SA	Mercury (7471A)	007
c 074108-002	105-BH-41-2-S	2	105	020806/1133	S	G	125 ml	4C	G	SA	Mercury (7471A)	008
e 074109-002	105-BH-41-4-S	4	105	020806/1132	S	G	125 ml	4C	G	SA	Mercury (7471A)	009
g 074110-002	105-BH-41-8-S	8	105	020806/1135	S	G	125 ml	4C	G	SA	Mercury (7471A)	010
f 074167-002	105-BH-56-0-S	0	105	020806/0901	S	G	125 ml	4C	G	SA	Mercury (7471A)	011
h 074168-002	105-BH-56-2-S	2	105	020806/1118	S	G	125 ml	4C	G	SA	Mercury (7471A)	012
i 074169-002	105-BH-56-4-S	4	105	020806/1117	S	G	125 ml	4C	G	SA	Mercury (7471A)	013

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☒ 15 Day ☐ 30 Day

Return Samples By: ☐ **Negotiated TAT**

Sample Tracking Smo Use

Date Entered(mm/dd/yy)

Entered by:

QC Inits.

Special Instructions/QC Requirements

EDD ☑ **Yes** ☐ **No**

Level D Package ☑ **Yes** ☐ **No**

***Send report to:**

Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov

Final report to Stacy Griffith MS1087/Org 6146

(505) 284-2588/ (505) 379-7588

15 day turn around time

Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	William Gibson		WJG	Weston/6146/284-5232/239-7367
	Jeff Lee			Stone Lion/6146/284-3309/228-9598
	Gilbert Quintana			Shaw/6146/284-3309/238-9417
	~~Stacy Griffith~~			~~Grant/6146/284-2588/ 379-7588~~
	Robert Lynch			Weston/6146/250-7090

1.Relinquished by	Org.6146	Date 2-9-06	Time 0815	4.Relinquished by	Org.	Date	Time
1. Received by	Org.6146	Date 2-9-06	Time 0815	4. Received by	Org.	Date	Time
2.Relinquished by	Org.6146	Date 2-9-06	Time 1130	5.Relinquished by	Org.	Date	Time
2. Received by	Org.	Date 2-10-06	Time 0815	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

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

AR/COC- 609381

Project Name:	P2VCA@SWMU105	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	98046.02.02.09
Location	Tech Area				
Building	Room				

Reference LOV (available at SMO)

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use: Lab Sample ID
074170-002	105-BH-56-8-S	4	105	020806/1172	S	G	125 ml	4C	G	SA	Mercury (7471A)	155725014
074226-002	105-BH-71-0-S	8	105	020806/0900	S	G	125 ml	4C	G	SA	Mercury (7471A)	015
074227-002	105-BH-71-2-S	0	105	020806/1111	S	G	125 ml	4C	G	SA	Mercury (7471A)	016
074228-002	105-BH-71-4-S	2	105	020806/1110	S	G	125 ml	4C	G	SA	Mercury (7471A)	017
074229-002	105-BH-71-8-S	4	105	020806/1113	S	G	125 ml	4C	G	SA	Mercury (7471A)	018
073915-002	105-EB-11	NA	105	020806/1131	DIW	P	250 ml	HNO3	C	EB	Mercury (7470A)	155733001

Abnormal Conditions on Receipt

LAB USE

Recipient Initials LS

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC 609382

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	2-9-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	60347	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
074289-002	105-BH-87-0-S	0	105	20806/0859	S	G	125 ml	4C	G	SA	Mercury (7471A)	155722011
074290-002	105-BH-87-2-S	2	105	20806/1101	S	G	125 ml	4C	G	SA	Mercury (7471A)	012
074291-002	105-BH-87-4-S	4	105	20806/1100	S	G	125 ml	4C	G	SA	Mercury (7471A)	013
074292-002	105-BH-87-8-S	8	105	20806/1105	S	G	125 ml	4C	G	SA	Mercury (7471A)	014
074347-002	105-BH-102-0-S	0	105	20806/0858	S	G	125 ml	4C	G	SA	Mercury (7471A)	015
074348-002	105-BH-102-2-S	2	105	20806/1046	S	G	125 ml	4C	G	SA	Mercury (7471A)	016
074349-002	105-BH-102-4-S	4	105	20806/1045	S	G	125 ml	4C	G	SA	Mercury (7471A)	017
074350-002	105-BH-102-8-S	8	105	20806/1053	S	G	125 ml	4C	G	SA	Mercury (7471A)	018
074406-002	105-BH-117-0-S	0	105	20806/0857	S	G	125 ml	4C	G	SA	Mercury (7471A)	019
074407-002	105-BH-117-2-S	2	105	20806/1038	S	G	125 ml	4C	G	SA	Mercury (7471A)	020
074408-002	105-BH-117-4-S	4	105	20806/1037	S	G	125 ml	4C	G	SA	Mercury (7471A)	155725001

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☒ 15 Day ☐ 30 Day

Return Samples By: ☐ Negotiated TAT

Sample Tracking Smo Use

Date Entered(mm/dd/yy)

Entered by:

QC inits.

Special Instructions/QC Requirements

EDD ☑ Yes ☐ No

Level D Package ☑ Yes ☐ No

*Send report to:

Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov

Final report to Stacy Griffith MS1087/Org 6146

(505) 284-2588/ (505) 379-7588

15 day turn around time

*Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	William Gibson		WJG	Weston/6146/284-5232/239-7367
	Jeff Lee			Stone Lion/6146/284-3309/228-9598
	Gilbert Quintana			Shaw/6146/284-3309/238-9417
WJG	~~Stacy Griffith~~			~~Cram/6146/284-2588/ 379-7588~~
	Robert Lynch		RL	Weston/6146/250-7090

1.Relinquished by	Org. 6146	Date 2/9/06	Time 0815	4.Relinquished by	Org.	Date	Time
1. Received by	Org. 6146	Date 2/9/06	Time 0815	4. Received by	Org.	Date	Time
2.Relinquished by	Org. 6146	Date 2/9/06	Time 1130	5.Relinquished by	Org.	Date	Time
2. Received by	Org.	Date 2/10/06	Time 0645	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

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

AR/COC- 609382

Project Name:	P2VCA@SWMU105	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	98046.02.02.09
Location	Tech Area				
Building	Room				

Reference LOV (available at SMO)

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use: Lab Sample ID
0074409-002	105-BH-117-8-S	8	105	20806/1040	S	G	125 ml	4C	G	SA	Mercury (7471A)	15572 5002

Abnormal Conditions on Receipt

LAB USE

Recipient Initials LS

CONTRACT 3ORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC 609383

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	2-15-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	60591	SMO Authorization: 07 Jan 2006	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO) 156189%

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
074116-002	105-BH-44-0-S	0	105	021406/0958	S	G	125 ml	4C	G	SA	Mercury (7471A)	001 . 1
074117-002	105-BH-44-2-S	2	105	021406/1015	S	G	125 ml	4C	G	SA	Mercury (7471A)	002 . 1
074118-002	105-BH-44-4-S	4	105	021406/1020	S	G	125 ml	4C	G	SA	Mercury (7471A)	003 . 1
074119-002	105-BH-44-4-SD	4	105	021406/1020	S	G	125 ml	4C	G	DU	Mercury (7471A) field QC	004 . 1
074176-002	105-BH-59-0-S	0	105	021406/1005	S	G	125 ml	4C	G	SA	Mercury (7471A)	005 . 1
074177-002	105-BH-59-2-S	2	105	021406/1040	S	G	125 ml	4C	G	SA	Mercury (7471A)	006 . 1
074178-002	105-BH-59-2-SD	2	105	021406/1040	S	G	125 ml	4C	G	DU	Mercury (7471A) field QC	007 . 1
074179-002	105-BH-59-4-S	4	105	021406/1045	S	G	125 ml	4C	G	SA	Mercury (7471A)	008 . 1
074239-002	105-BH-75-0-S	0	105	021406/1009	S	G	125 ml	4C	G	SA	Mercury (7471A)	009 . 1
074240-002	105-BH-75-2-S	2	105	021406/1103	S	G	125 ml	4C	G	SA	Mercury (7471A)	010 . 1
074241-002	105-BH-75-4-S	4	105	021406/1108	S	G	125 ml	4C	G	SA	Mercury (7471A)	011 . 1

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☐ 15 Day ☐ 30 Day

Return Samples By: 3 DAY ☒ **Negotiated TAT**

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

Special Instructions/QC Requirements
EDD ☑ Yes ☐ No
Level D Package ☑ Yes ☐ No

Abnormal Conditions on Receipt

***Send report to:**
Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov
Final report to Stacy Griffith MS1087/Org 6146
(505) 284-2588/ (505) 379-7588

3 day turn around time

****Please list as separate report.***

Lab Use

Sample Team Members

Name	Signature	Init	Company/Organization/Phone/Cellular
William Gibson	William Gibson	WG	Weston/6146/284-5232/239-7367
			Weston/6146/250-7090

1.Relinquished by	Org. 6146	Date 2/15/06	Time 0855	4.Relinquished by	Org.	Date	Time
1. Received by	Org. 6146	Date 2/15/06	Time 0855	4. Received by	Org.	Date	Time
2.Relinquished by	Org. 6146	Date 2/15/06	Time 1200	5.Relinquished by	Org.	Date	Time
2. Received by	Org.	Date 2/16/06	Time 0820	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

OFF-SITE L ORATORY
Analysis Request And Chain Of Custody (Continuation)

AR/COC- 609383

Project Name:	P2VCA@SWMU105	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	98046.02.03.01
Location	Tech Area				
Building	Room				

Reference LOV (available at SMO) 156189%

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use: Lab Sample ID
074298-002	105-BH-90-0-S	0	105	021406/1115	S	G	125 ml	4C	G	SA	Mercury (7471A)	012 .1
074299-002	105-BH-90-2-S	2	105	021406/1124	S	G	125 ml	4C	G	SA	Mercury (7471A)	013 .1
074300-002	105-BH-90-4-S	4	105	021406/1131	S	G	125 ml	4C	G	SA	Mercury (7471A)	014 .1
074357-002	105-BH-105-0-S	0	105	021406/1118	S	G	125 ml	4C	G	SA	Mercury (7471A)	015 .1
074358-002	105-BH-105-2-S	2	105	021406/1144	S	G	125 ml	4C	G	SA	Mercury (7471A)	016 .1
074359-002	105-BH-105-4-S	4	105	021406/1150	S	G	125 ml	4C	G	SA	Mercury (7471A)	017 .1
073916-002	105-EB-12	NA	105	021406/1436	DIW	P	250 ml	HNO3	G	EB	Mercury (7470A) Field QC	156195-002 .1

Abnormal Conditions on Receipt

LAB USE

Recipient Initials: MG

CONTRACT BORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC 609521

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	2-15-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	60591	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
075599-002	105-BH-147-0-S	0	105	021406/1406	S	G	125 ml	4C	G	SA	Mercury (7471A)	156189-018.1
075600-002	105-BH-147-2-S	2	105	021406/1421	S	G	125 ml	4C	G	SA	Mercury (7471A)	156189-019.1
075601-002	105-BH-147-2-SD	2	105	021406/1421	S	G	125 ml	4C	G	DU	Mercury (7471A)	field QC 156199-002
075602-002	105-BH-147-4-S	4	105	021406/1423	S	G	125 ml	4C	G	SA	Mercury (7471A)	156189-020.1
075603-002	105-BH-147-8-S	8	105	021406/1426	S	G	125 ml	4C	G	SA	Mercury (7471A)	156194-008.2

RMMA	☐ Yes ☑ No Ref. No.	Sample Tracking	Smo Use
Sample Disposal	☐ Return to Client ☑ Disposal by lab	Date Entered(mm/dd/yy)	
Turnaround Time	☐ 7 Day ☐ 15 Day ☐ 30 Day	Entered by:	
Return Samples By:	3 DAY ☒ Negotiated TAT	QC Inits.	

Special Instructions/QC Requirements
EDD ☑ Yes ☐ No
Level D Package ☑ Yes ☐ No
*Send report to:
Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov.
Final report to Stacy Griffith MS1087/Org 6146
(505) 284-2588/ (505) 379-7588

3 day turn around time

*Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	William Gibson	William Gibson	WG	Weston/6146/284-5232/239-7367

1.Relinquished by William Gibson	Org. 6146	Date 2/15/06	Time 0900	4.Relinquished by	Org.	Date	Time
1. Received by [illegible]	Org. 6146	Date 2/15/06	Time 0900	4. Received by	Org.	Date	Time
2.Relinquished by [illegible]	Org. 6146	Date 2/15/06	Time 1200	5.Relinquished by	Org.	Date	Time
2. Received by Marian [illegible]	Org.	Date 2/16/06	Time 0720	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

CONTR[illegible]T LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

AR/COC 609522

SMO Use

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	2-21-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	66596	SMO Authorization: [illegible]	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Pulssant/505-284-3124		☑ Validation Required
Service Order No	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room	Reference LOV(available at SMO)	156573		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 Type	Container Volume	Preservative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
074234-002	105-BH-73-0-S	0	105	022006/1050	S	G	125 ml	4C	G	SA	Mercury (7471A)	
074235-002	105-BH-73-2-S	2	105	022006/1055	S	G	125 ml	4C	G	SA	Mercury (7471A)	
075604-002	105-BH-73-4-S	4	105	022006/1100	S	G	125 ml	4C	G	SA	Mercury (7471A)	
075605-002	105-BH-73-4-SD	4	105	022006/1100	S	G	125 ml	4C	G	DU	Mercury (7471A)	
073917-002	105-EB-13	NA	105	022006/1105	DIW	P	250 ml	HNO3	C	EB	Mercury (7470A)	

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☐ 15 Day ☐ 30 Day

Return Samples By: 3 DAY ☑ Negotiated TAT

Sample Tracking — Smo Use

Date Entered(mm/dd/yy) 02/28/06

Entered by: RC

QC Inits. [illegible]

Special Instructions/QC Requirements

EDD ☑ Yes ☐ No

Level D Package ☑ Yes ☐ No

*Send report to:

Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov

Final report to Stacy Griffith MS1087/Org 6146

(505) 284-2588/ (505) 379-7588

Abnormal Conditions on Receipt

Lab Use

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	William Gibson	[illegible]	WG	Weston/6146/284-5232/239-7367
	Gilbert Quintana	[illegible]	GQ	Shaw/6146/284-3309/850-8524
	Robert Lynch	[illegible]	RL	Weston/6146/250-7090

* 3 day turn around time

Please list as separate report.

1.Relinquished by [illegible]	Org. 6146	Date 2-21-06	Time 0845	4.Relinquished by	Org.	Date	Time
1. Received by [illegible]	Org. 6146	Date 2-21-06	Time 0845	4. Received by	Org.	Date	Time
2.Relinquished by [illegible]	Org. 6146	Date 2-21-06	Time 1000	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

CONTR T LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC 609523

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	2-21-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	60590	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel		☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room	Reference LOV(available at SMO)	156573		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 Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
075606-002	105-BH-148-0-S	0	105	022006/1310	S	G	125 ml	4C	G	SA	Mercury (7471A)	
075607-002	105-BH-148-2-S	2	105	022006/1333	S	G	125 ml	4C	G	SA	Mercury (7471A)	
075608-002	105-BH-148-4-S	4	105	022006/1338	S	G	125 ml	4C	G	SA	Mercury (7471A)	
075609-002	105-BH-149-0-S	0	105	022006/1315	S	G	125 ml	4C	G	SA	Mercury (7471A)	
075610-002	105-BH-149-2-S	2	105	022006/1341	S	G	125 ml	4C	G	SA	Mercury (7471A)	
075611-002	105-BH-149-2-SD	2	105	022006/1341	S	G	125 ml	4C	G	DU	Mercury (7471A)	
075612-002	105-BH-149-4-S	4	105	022006/1407	S	G	125 ml	4C	G	SA	Mercury (7471A)	
075613-002	105-BH-150-0-S	0	105	022006/1320	S	G	125 ml	4C	G	SA	Mercury (7471A)	
075614-002	105-BH-150-2-S	2	105	022006/1349	S	G	125 ml	4C	G	SA	Mercury (7471A)	
075615-002	105-BH-150-4-S	4	105	022006/1430	S	G	125 ml	4C	G	SA	Mercury (7471A)	

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☐ 15 Day ☐ 30 Day

Return Samples By: 3 DAY ☑ Negotiated TAT

Sample Tracking Smo Use
Date Entered(mm/dd/yy) 02/28/06
Entered by: RK
QC Inits. (M)

Special Instructions/QC Requirements
EDD ☑ Yes ☐ No
Level D Package ☑ Yes ☐ No
*Send report to:
Preliminary report (.pdf) to srgriff@sandia.gov + blangk@sandia.gov
Final report to Stacy Griffith MS1087/Org 6146
(505) 284-2588/ (505) 379-7588

3 day turn around time

*Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	William Gibson			Weston/6146/284-5232/239-7367
	Gilbert Quintana			Shaw/6146/284-3309/850-8524
	Robert Lynch		RL	Weston/6146/250-7090
				Weston/6146/250-7090

1.Relinquished by	Org. 6146	Date 2-21-06	Time 0845	4.Relinquished by	Org.	Date	Time
1. Received by	Org. 6146	Date 2-21-06	Time 0845	4. Received by	Org.	Date	Time
2.Relinquished by	Org. 6146	Date 2-21-06	Time 1000	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

CONTRAC ABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC 609567

Dept. No./Mail Stop:	6146/1087	Date Samples Shipped:	3-8-06	Project/Task No.: 98046.02.02.09	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	61468	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	P2VCA@SWMU105	Lab Contact:	Edie Kent 803/556-8171	Contract #: PO 21671	
Record Center Code:	NA	Lab Destination:	Gel	SUB BOTTLE ORDER	☐ Released by COC No.:
Logbook Ref. No.:	ER047	SMO Contact/Phone:	Pam Puissant/505-284-3124		☑ Validation Required
Service Order No.	CFO56-06	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154 157647

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
075651-002	105-BH-44-6-S	6	105	030706/1510	S	G	125 ml	4C	G	SA	Mercury (7471A)	001
075652-002	105-BH-44-8-S	8	105	030706/1517	S	G	125 ml	4C	G	SA	Mercury (7471A)	002
075653-002	105-BH-73-6-S	6	105	030706/1443	S	G	125 ml	4C	G	SA	Mercury (7471A)	003
075654-002	105-BH-73-8-S	8	105	030706/1454	S	G	125 ml	4C	G	SA	Mercury (7471A)	004
075655-002	105-BH-73-8-SD	8	105	030706/1454	S	G	125 ml	4C	G	DU	Mercury (7471A)	005
075656-002	105-BH-75-6-S	6	105	030706/1415	S	G	125 ml	4C	G	SA	Mercury (7471A)	006
075657-002	105-BH-75-8-S	8	105	030706/1425	S	G	125 ml	4C	G	SA	Mercury (7471A)	007
075658-002	105-EB-14	NA	105	030706/1525	DIW	P	250 ml	HNO3	C	EB	Mercury (7470A)	157648

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☐ 15 Day ☐ 30 Day

Return Samples By: 3 DAY ☑ Negotiated TAT

Sample Tracking Smo Use

Date Entered(mm/dd/yy)

Entered by:

QC Inits.

Special Instructions/QC Requirements

EDD ☑ Yes ☐ No

Level D Package ☑ Yes ☐ No

***Send report to:**

Preliminary report (.pdf) to srgriff@sandia.gov + biangk@sandia.gov

Final report to Stacy Griffith MS1087/Org 6146

(505) 284-2588/ (505) 379-7588

3 day turn around time

Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

Temp 4C

Sample Team Members

Name	Signature	Init	Company/Organization/Phone/Cellular
William Gibson		WG	Weston/6146/284-5232/239-7367
Gilbert Quintana			Shaw/6146/284-3309/850-8524
Robert Lynch		RL	Weston/6146/250-7090

1.Relinquished by	Org. 6146	Date 3/8/06	Time 0855	4.Relinquished by	Org.	Date	Time
1. Received by	Org. 6146	Date 3/8/06	Time 0855	4. Received by	Org.	Date	Time
2.Relinquished by	Org. 6146	Date 3/8/06	Time 1100	5.Relinquished by	Org.	Date	Time
2. Received by	Org. GEL	Date 3/9/06	Time 0945	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

ANNEX B
SWMU 105, Mercury Spill (Building 6536)
Data Validation Reports

Sample Findings Summary

Site: Site

AR/COC: 608793

Inorganic

Sample ID	Method/CAS Number (Analysis/Analyte)	
	EPA6010B (ICP):	EPA7471A (CVAA):
	All Acceptance criteria met. No sample data will be qualified.	All Acceptance criteria met. No sample data will be qualified.

Validated By: David Schwent

Mr. David Schwent

Date: 06/01/06

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

Memorandum

DATE: June 1, 2006

TO: File

FROM: David Schwent

SUBJECT: Inorganic Data Review and Validation - SNL
Site: Site 105
AR/COC: 608793
SDG (Lot#): F5G260245
Laboratory: STSL
Project/Task: 98046.02.02.09

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. This validation was performed according to SNL/NM ER Project AOP 00-03 Rev 1.

Summary

The samples were prepared and analyzed with accepted procedures using methods EPA6010B (ICP) and EPA7471A (CVAA). 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

ICP Analysis: No target analytes were detected in the blanks, except the following. As and Pb were detected in the continuing calibration blank (CCB) and Cr was detected in the method blank (MB) at concentrations < the reporting limit (RL). However, all associated sample results were detects > 5X the blank concentration and will not be qualified.

CVAA Analysis: No target analytes were detected in the blanks, except the following. Hg was detected in the CCB at a negative concentration with an absolute value > the detection limit (DL) but < the RL. However, all associated sample results were detects >5X the DL and will not be qualified.

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

All Analyses: All LCS QC acceptance criteria were met.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

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

CVAA Analysis: All MS QC acceptance criteria were met. It should be noted that the MS analysis for Hg was not applied to sample results because the parent sample concentration was >4X the MS spike concentration. No sample data will be qualified as a result. No MSD analysis was performed. The laboratory replicate analysis was used as measure of precision. No sample data will be qualified as a result.

Replicates

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

ICP Serial Dilution

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

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

ICP Interference Check Sample (ICS)

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

CVAA Analysis: No ICS analysis was required by this method.

Detection Limits/Dilutions

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

CVAA Analysis: All detection limits were properly reported. Sample F5G260245-001 was diluted 10X. No other samples required dilution.

Other QC

CVAA Analysis (All Batches): No field duplicates (FDs), field blanks (FBs), or equipment blanks (EBs) were submitted on the ARCOCs.

No other specific issues were identified which affect data quality.

Data Validation Summary

Site/Project: SNL/~~[illegible]~~ Bldg. 6536 DS Sample
Project/Task #: 98046.02.02.09
# of Samples: 4
Matrix: Solid (soil)
AR/COC #: 608793
Laboratory Sample IDs: F5G260245-001 and -004.
Laboratory: STSL
SDG #: (Lot #): F5G260245

QC Element	Analysis									
	Organics				Inorganics				RAD	Other
	VOC	SVOC	Pesticide/ PCB	HPLC (HE)	ICP/AES	GFAA/ AA	CVAA (Hg)	CN		
1. Holding Times/Preservation					✓		✓			
2. Calibrations					↓		↓			
3. Method Blanks										
4. MS/MSD										
5. Laboratory Control Samples										
6. Replicates					↓		↓			
7. Surrogates										
8. Internal Standards										
9. TCL Compound Identification										
10. ICP Interference Check Sample					✓					
11. ICP Serial Dilution					↓					
12. Carrier/Chemical Tracer Recoveries										
13. Other QC					NA		NA			

J = Estimated
U = Not Detected
UJ = Not Detected, Estimated
R = Unusable

Check (√) = Acceptable
Shaded Cells = Not Applicable (also "NA")
NP = Not Provided
Other: _____

Reviewed By: David Schwartz
Date: 5-31-06

Inorganic Metals

Site/Project: SNL / Bldg 6536 AR/COC #: 608793 Laboratory Sample IDs: FSG260245-001 thru -004

Laboratory: STSL SDG #: (Lot #): FSG260245

Methods: EPA 6010B (ICP); 7471A (CVAA)

# of Samples: 4 Matrix: Solid (soil) Batch #s: 5208087 ; 5208172

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB µg/L	Method Blanks Mg/Kg	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba	✓	✓	✓	✓	✓	✓	✓	NA	NA	✓	NA	NA	✓	✓	✓	NA	NA	NA		
7440-41-7 Be																				
7440-43-9 Cd	✓	✓	✓	✓	✓	✓	✓	NA	NA	✓	NA	NA	✓	✓	✓	NA	NA	NA		
7440-70-2 Ca																				
7440-47-3 Cr	✓	✓	✓	✓	✓	0.20	✓	NA	NA	✓	NA	NA	✓	✓	✓	NA	NA	NA		
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag	✓	✓	✓	✓	✓	✓	✓	NA	NA	✓	NA	NA	✓	✓	✓	NA	NA	NA		
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb	✓	✓	✓	✓	1.1	✓	✓	NA	NA	✓	NA	NA	✓	✓	✓	NA	NA	NA		
7782-49-2 Se	✓	↓	↓	↓	✓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓		
7440-38-2 As	✓	↓	↓	↓	1.5	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓		
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	-0.1*	✓	✓	NA	NA	**	~~**~~ NA DS	~~**~~ NA 5-31-06	✓	NA	NA	NA	NA	NA		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. **Solids-to-aqueous conversion:** mg / kg = µg / g : [(µg / g) x (sample mass {g} / sample vol. {ml}) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments: * Applies to only Sample -001.

** MS doesn't pass 4x rule → Not applied to sample results.

Reviewed By: David Schwartz Date: 5-31-06

SF 200 -COC (7/00)

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Page 1 of __

Batch No.

SMO Use

AR/COC 608793

Dept. No./Mail Stop:	10826	Date Samples Shipped:	7-25-05	Project/Task No.: 83916 4.5.1	☑ Waste Characterization
Project/Task Manager:	Nick Durand	Carrier/Waybill No.	52921	SMO Authorization:	Send Preliminary/Copy Report to:
Project Name:	Bldg 6536 CHARACTERIZATION	Lab Contact:	Ed Kao	Contract # PO 21673	Larry Ring and Brenda Langkoph
Record Center Code		Lab Destination:	Severn Trent St. Louis		☐ Validation Required
Logbook Ref. No.:		SMO Contact/Phone:	P. Pulsaant 844-3185		☐ Released by COC No.:
Service Order No.	CFO 163-05 ✓	Send Report to SMO:	L. Herrera 844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area III				P.O. Box 5800, MS-0154
Building 6536	Room	Reference LOV(available at SMO) F5G260245			Albuquerque, NM., 87185-0154

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Beginning Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preservative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
069601-001	SW corner #1	NA	NA	7/21/05 1353	soil	P	500ML	4° C	G	SA	Total RCRA Metals	
069601-002	SW corner #2	NA	NA	7/21/05 1357	soil	P	500ML	4° C	G	SA	Total RCRA Metals	
069601-003	Bottom trench #1	NA	NA	7/21/05 1400	soil	P	500ML	4° C	G	SA	Total RCRA Metals	
069601-004	Bottom trench #2	NA	NA	7/21/05 1403	soil	P	500ML	4° C	G	SA	Total RCRA Metals	

RMMA	☑ Yes ☐ No	Ref. No.	Sample Tracking	SMO Use	Special Instructions/QC Requirements:
Sample Disposal	☐ Return to Client	☑ Disposal by lab	Date Entered(mm/dd/yy) 07/26/05		EDD ☐ Yes ☐ No
Turnaround Time	☑ 7 Day *	☐ 15 Day * ☐ 30 Day	Entered by: RK		Level D Package ☐ Yes ☐ No
Return Samples By:		☐ Negotiated TAT	QC Inits. WP		*Send/e-mail report to:

Abnormal Conditions on Receipt

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	Larry Ring			Shaw 262-8930
	Don Watenpaugh			Shaw 262-8912

*Please list as separate report.

Lab Use

1.Relinquished by	Shaw	Date 7/21/05	Time 1455	4.Relinquished by	Org.	Date	Time
1. Received by	Org. 6146	Date 7-21-05	Time 1455	4. Received by	Org.	Date	Time
2.Relinquished by	Org. 6146	Date 7-25-05	Time 10:00	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 Verification Review (Concluded)

5.0 Problem Resolution

Summarize the findings in the table below. List only samples/fractions for which deficiencies have been noted.

Sample/Fraction No.	Analysis	Problems/Comments/Resolutions

Were deficiencies unresolved? Yes (No)

Based on the review, this data package is complete. (Yes) No

If no, provide: nonconformance report or correction request number _____ and date correction request was submitted:_____

Reviewed by: W. Palencia Date: 8-10-05 Closed by:_____ Date:_____

Contract Verification Review (Continued)

4.0 Calibration and Validation Documentation

Item	Yes	No	Comments
4.1 GC/MS (8260, 8270, etc.) a) 12-hour tune check provided	N/A		
b) Initial calibration provided	N/A		
c) Continuing calibration provided	N/A		
d) Internal standard performance data provided	N/A		
e) Instrument run logs provided	N/A		
4.2 GC/HPLC (8330 and 8010 and 8082) a) Initial calibration provided	N/A		
b) Continuing calibration provided	N/A		
c) Instrument run logs provided	N/A		
4.3 Inorganics (metals) a) Initial calibration provided	X		
b) Continuing calibration provided	X		
c) ICP interference check sample data provided	X		
d) ICP serial dilution provided	X		
e) Instrument run logs provided	X		
4.4 Radiochemistry a) Instrument run logs provided	N/A		

Contract Verification Review (Continued)

3.0 Data Quality Evaluation

Item	Yes	No	If no, Sample ID No./Fraction(s) and Analysis
3.1 Are reporting units appropriate for the matrix and meet contract specified or project-specific requirements? Inorganics and metals reported as ppm (mg/liter or mg/Kg)? Tritium reported in picocuries per liter with percent moisture for soil samples? Units consistent between QC samples and sample data	X		
3.2 Quantitation limit met for all samples	X		
3.3 Accuracy a) Laboratory control samples accuracy reported and met for all samples	X		
b) Surrogate data reported and met for all organic samples analyzed by a gas chromatography technique	N/A		
c) Matrix spike recovery data reported and met		X	MERCURY FAILED RECOVERY LIMITS FOR MATRIX SPIKE
3.4 Precision a) Replicate sample precision reported and met for all inorganic and radiochemistry samples	X		
b) Matrix spike duplicate RPD data reported and met for all organic samples	N/A		
3.5 Blank data a) Method or reagent blank data reported and met for all samples		X	CHROMIUM DETECTED IN BLANK
b) Sampling blank (e.g., field, trip, and equipment) data reported and met	N/A		
3.6 Contractual qualifiers provided: "J"- estimated quantity; "B"-analyte found in method blank above the MDL for organic or above the PQL for inorganic; "U"- analyte undetected (results are below the MDL, IDL, or MDA (radiochemical)); "H"-analysis done beyond the holding time	X		
3.7 Narrative addresses planchet flaming for gross alpha/beta	N/A		
3.8 Narrative included, correct, and complete	X		
3.9 Second column confirmation data provided for methods 8330 (high explosives) and 8082 (pesticides/PCBs)	N/A		

Contract Verification Review (CVR)

Project Leader DURAND | Project Name BLDG. 6536 CHARACTERIZATION | Case No. 83916_4.5.1

AR/COC No. 608793 | Analytical Lab SEVERN TRENT | SDG No. F5G260245

In the tables below, mark any information that is missing or incorrect and give an explanation.

1.0 Analysis Request and Chain of Custody Record and Log-In Information

Line No.	Item	Complete? Yes	Complete? No	If no, explain	Resolved? Yes	Resolved? No
1.1	All items on COC complete - data entry clerk initialed and dated	X				
1.2	Container type(s) correct for analyses requested	X				
1.3	Sample volume adequate for # and types of analyses requested	X				
1.4	Preservative correct for analyses requested	X				
1.5	Custody records continuous and complete	X				
1.6	Lab sample number(s) provided and SNL sample number(s) cross referenced and correct	X				
1.7	Date samples received	X				
1.8	Condition upon receipt information provided	X				

2.0 Analytical Laboratory Report

Line No.	Item	Complete? Yes	Complete? No	If no, explain	Resolved? Yes	Resolved? No
2.1	Data reviewed, signature	X				
2.2	Method reference number(s) complete and correct	X				
2.3	QC analysis and acceptance limits provided (MB, LCS, Replicate)	X				
2.4	Matrix spike/matrix spike duplicate data provided (if requested)	X				
2.5	Detection limits provided; PQL and MDL (or IDL), MDA and L_c	X				
2.6	QC batch numbers provided	X				
2.7	Dilution factors provided and all dilution levels reported	X				
2.8	Data reported in appropriate units and using correct significant figures	X				
2.9	Radiochemistry analysis uncertainty (2 sigma error) and tracer recovery (if applicable) reported	N/A				
2.10	Narrative provided	X				
2.11	TAT met	X				
2.12	Hold times met	X				
2.13	Contractual qualifiers provided	X				
2.14	All requested result and TIC (if requested) data provided	X				

RECORDS CENTER CODE: _____

SMO ANALYTICAL DATA ROUTING FORM

PROJECT NAME: Bldg. 6536 Characterization
PROJECT/TASK: 83916_4,5,1
SNL TASK LEADER: Durand
ORG/MS/CF0#: 10828/0908/CF0163-05
SMO PROJECT LEAD: Palencia
SAMPLE SHIP DATE: 1/31/2005

ARCOC	LAB	LAB ID	PRELIM DATE	FINAL DATE	EDD	EDD ON Q	Cust CD	RC CD
608793	STSL	F5G260245	7/31/2005	8/8/2005	X	X	X	X

DATA PACKAGE TAT:	X	RUSH (7 DAY)		NORMAL
CORRECTIONS REQUESTED BY/DATE:				
PROBLEM #/DATE CORRECTION RECEIVED:				
CVR COMPLETED BY/DATE:		W. Palencia		8-10-05
FINAL TRANSMITTED TO/DATE:		Ring		8-10-05
SENT TO VALIDATION BY/DATE:		N/A		
REVISIONS REQUESTED/REVISIONS RECEIVED (DATE):				
VALIDATION COMPLETED BY/DATE:		DS		6/1/06
COPY TO WM BY/DATE:				
CD REQUESTED BY/DATE				
CD RECEIVED BY/DATE		R. Kavanaugh		8/8/2005
TO ERDMS OR RECORDS CENTER BY/DATE:		R. Kavanaugh		08-11-05

COMMENTS:

Sample Findings Summary

Site: Site 105 | **AR/COC:** 609349 Revised | **Inorganic**

Sample ID	Method/CAS Number (Analysis/Analyte)															
		EPA7470A/7471A (CVAA):														
074114-002 105-BH-43-0-S		J,B2														
074204-002 105-BH-66-0-S		J,B2														
074205-002 105-BH-66-2-S		J,B2														
074207-002 105-BH-66-4-SD		J,B2														
074455-002 105-EB-1		J,B,B3														

Validated By: David Schwent

Mr. David Schwent

Date: 03/16/06

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

Memorandum – Second Revision

DATE: March 16, 2006

TO: File

FROM: David Schwent

SUBJECT: Inorganic Data Review and Validation - SNL
Site: Site 105
AR/COC: 609349
SDG: 154536 and 154540
Laboratory: GEL
Project/Task: 98046.02.02.09

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. This validation was performed according to SNL/NM ER Project AOP 00-03 Rev 1.

Summary

The samples were prepared and analyzed with accepted procedures using method EPA7470A/7471A (CVAA). Problems were identified with the data package that result in the qualification of data.

CVAA Analysis (Batch 497927):

Blanks: In the equipment blank (EB) (Sample 154540-001), Hg was detected at a concentration < reporting limit (RL). The associated results of Samples 154536-001, -015, -016, and -018 were detects <5X the EB concentration and will be qualified "J,B2."

CVAA Analysis (Batch 497929):

Blanks: In the continuing calibration blank (CCB), Hg was detected at a negative concentration with an absolute value > the detection limit (DL) but less < the RL, and in the method blank (MB), Hg was detected at a concentration < the RL. The associated Hg result of Sample 154540-001 was a detect <5X the DL and <5X the MB concentration and will be qualified "J,B,B3."

Data are acceptable. QC measures appear to be adequate. The following sections discuss the data review and validation. Due to the matrix, an LCSD analysis was performed instead of MS/MSD and laboratory replicate analyses (see e-mail, dated 1-20-06). Later, MS/MSD and laboratory replicate analyses were performed on a sample from the COC and original soil field sample batch of this package. The MS/MSD and laboratory replicate analyses were performed on the sample beyond the method specified holding time, but within 2X the holding time, and no sample data will be qualified as a result, based on professional judgment. The MS/MSD and laboratory replicate analyses performed on Sample 157006-001 of SDG 157006 apply to the soil field samples of this package.

Holding Times/Preservation

CVAA Analysis (All Batches): All samples were analyzed within the prescribed holding times and properly preserved.

Calibration

CVAA Analysis (All Batches): All initial and continuing calibration QC acceptance criteria were met.

Blanks

CVAA Analysis (Batch 497927): No target analytes were detected in the blanks, except as noted above in the summary section and the following. Hg was detected in the EB at a concentration < the RL. However, all associated sample results, except the results of Samples 154536-001, -015, -016, and -018, were detects >5X the EB concentration and will not be qualified.

CVAA Analysis (Batch 497929): No target analytes were detected in the blanks, except as noted above in the summary section.

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

CVAA Analysis (Batch 497927): All LCS/LCSD QC acceptance criteria were met. It should be noted that, the MSD analysis was used as a measure of laboratory precision due to low indigenous concentration of the target analyte in the sample used for the QC analyses.

CVAA Analysis (Batch 497929): All LCS/LCSD QC acceptance criteria were met.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

CVAA Analysis (Batch 497927): All MS/MSD QC acceptance criteria were met.

CVAA Analysis (Batch 497929): No MS/MSD analyses were performed. No sample data should be qualified as a result.

Replicates

CVAA Analysis (Batch 497927): All laboratory replicate QC acceptance criteria were met. It should be noted that the MSD analysis was used as a measure of laboratory precision due to low indigenous concentration of the target analyte in the sample used for the QC analyses.

CVAA Analysis (Batch 497929): No laboratory replicate analysis was performed. No sample data should be qualified as a result.

ICP Serial Dilution

CVAA Analysis (Batch 497927): All serial dilution QC acceptance criteria were met.

CVAA Analysis (Batch 497929): No serial dilution analysis was performed. No sample data will be qualified as a result.

ICP Interference Check Sample (ICS)

CVAA Analysis (All Batches): No ICS analysis was required by this method.

Detection Limits/Dilutions

CVAA Analysis (Batch 497927): All detection limits were properly reported. Samples 154536-001, -005, -007, -008, -009, and -011 were diluted 200X; Samples -002, -003, and -006 were diluted 2000X; Sample -004 was diluted 400X; Sample -010 was diluted 100X, Sample -012 was diluted 20X; and Sample -015 was diluted 10X due to over-range concentrations of the target analyte. No other samples required dilution.

CVAA Analysis (Batch 497929): All detection limits were properly reported. No samples required dilution.

Other QC

CVAA Analysis (All Batches): No field blanks (FBs) were submitted on the ARCOC. All field duplicate (FD) relative percent differences (RPDs) were >35%. No specific FD QC acceptance criteria are currently in place.

No other specific issues were identified which affect data quality.

Data Validation Summary - revised

Site/Project: SNL / Site 105 Project/Task #: 98040.02.02.09 # of Samples: 21 Matrix: Soil / aqueous (EB)

AR/COC #: 609349 Laboratory Sample IDs: 154536-001 thru -020

Laboratory: GEL 154540-001 (EB)

SDG #: 154536 / 154540

QC Element	Analysis									
	Organics				Inorganics				RAD	Other
	VOC	SVOC	Pesticide/ PCB	HPLC (HE)	ICP/AES	GFAA/ AA	CVAA (Hg)	CN		
1. Holding Times/Preservation							✓			
2. Calibrations							✓			
3. Method Blanks							J			
4. MS/MSD							~~J, UJ~~ ✓	DS 3-20-06	NA	
5. Laboratory Control Samples			NA				✓			
6. Replicates							~~NA~~ ✓	DS 3-20-06		
7. Surrogates										
8. Internal Standards										
9. TCL Compound Identification										
10. ICP Interference Check Sample										
11. ICP Serial Dilution										
12. Carrier/Chemical Tracer Recoveries										
13. Other QC							NA			

J = Estimated
U = Not Detected
UJ = Not Detected, Estimated
R = Unusable

Check (√) = Acceptable
Shaded Cells = Not Applicable (also "NA")
NP = Not Provided
Other: _____

Reviewed By: David Schwat Date: 2-15-06
Revised 3-20-06

Inorganic Metals - revised

Site/Project: SNL / Site 105 AR/COC #: 609349 Laboratory Sample IDs: 154536-001 thru -020

Laboratory: GEL SDG #: 154536 (154540-001 (FB))

Methods: EPA 7471A / 7470A (CVAA)

# of Samples: 21 Matrix: Soil / aqueous (EB) Batch #s: 497927 / 497929.

CAS #/ Analyte	QC Element																154540-001			
	TAL	ICV	CCV	ICB	CCB ug/L	Method Blanks ug/L	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks ug/L	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	-0.086*	0.133*	✓	✓	✓	~~✓ NA~~	~~✓ NA~~	~~✓ NA~~ 05 3-10-06	~~✓ NA~~	NA	✓	75%*	0.148	NA		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg / kg = µg / g : [(µg / g) x (sample mass (g) / sample vol. (ml)) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments: * Apply to Sample 154540-001 of Batch 497929 only.

** FD RPDs 735%.

Reviewed By: David Schwartz Date: 2-15-06

Revised 3-20-06.

Sample Findings Summary

Site: Site 105 | **AR/COC:** 609353 Revised | **Inorganic**

Sample ID	Method/CAS Number (Analysis/Analyte)															
		EPA7470A/7471A (CVAA):														
		All Acceptance criteria met. No sample data will be qualified.														

Validated By: David Schwent

Mr. David Schwent

Date: 03/16/06

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

Memorandum – Second Revision

DATE: March 16, 2006

TO: File

FROM: David Schwent

SUBJECT: Inorganic Data Review and Validation - SNL
Site: Site 105
AR/COC: 609353
SDG: 154669
Laboratory: GEL
Project/Task: 98046.02.02.09

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. This validation was performed according to SNL/NM ER Project AOP 00-03 Rev 1.

Summary

The samples were prepared and analyzed with accepted procedures using method EPA7471A (CVAA). 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. Due to the matrix, an LCSD analysis was performed instead of MS/MSD and laboratory replicate analyses (see e-mail, dated 1-20-06). Later, MS/MSD and laboratory replicate analyses were performed on a sample from the COC and original soil field sample batch of this package. The MS/MSD and laboratory replicate analyses were performed on the sample beyond the method specified holding time, but within 2X the holding time, and no sample data will be qualified as a result, based on professional judgment. The MS/MSD and laboratory replicate analyses performed on Sample 157006-003 of SDG 157006 apply to the soil field samples of this package.

Holding Times/Preservation

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

Calibration

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

Blanks

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

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

CVAA Analysis: All LCS/LCSD QC acceptance criteria were met. It should be noted that, the laboratory replicate analysis was used as a measure of laboratory precision due to the relatively high indigenous concentration of the target analyte in the sample used for the QC analyses.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

CVAA Analysis: All MS/MSD QC acceptance criteria were met, except the following. The MSD percent recovery (%R) (134%) was >125%. However, the MS %R and MS/MSD relative percent difference (RPD) were well within QC acceptance criteria. Therefore, based on professional judgment, no sample data will be qualified as result.

Replicates

CVAA Analysis: All laboratory replicate QC acceptance criteria were met.

ICP Serial Dilution

CVAA Analysis: All serial dilution QC acceptance criteria were met.

ICP Interference Check Sample (ICS)

CVAA Analysis: No ICS analysis was required by this method.

Detection Limits/Dilutions

CVAA Analysis: All detection limits were properly reported. Sample 154669-002 was diluted 20X due to over-range concentration of the target analyte. No other samples required dilution.

Other QC

CVAA Analysis: No field blanks (FBs) or equipment blanks (EBs) were submitted on the ARCOC. The field duplicate (FD) (Sample 154669-010) RPD was <35%. No specific FD QC acceptance criteria are currently in place.

No other specific issues were identified which affect data quality.

Sample Findings Summary

Site: Site 105 | **AR/COC:** 609351 Revised | **Inorganic**

Sample ID		Method/CAS Number (Analysis/Analyte)															
		EPA7470A/7471A (CVAA):															
		All Acceptance criteria met. No sample data will be qualified.															

Validated By: David Schwent

Mr. David Schwent

Date: 03/16/06

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

Memorandum – Second Revision

DATE: March 16, 2006

TO: File

FROM: David Schwent

SUBJECT: Inorganic Data Review and Validation - SNL
Site: Site 105
AR/COC: 609351
SDG: 154631 and 154633
Laboratory: GEL
Project/Task: 98046.02.02.09

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. This validation was performed according to SNL/NM ER Project AOP 00-03 Rev 1.

Summary

The samples were prepared and analyzed with accepted procedures using method EPA7470A/7471A (CVAA). 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. Due to the matrix, an LCSD analysis was performed instead of MS/MSD and laboratory replicate analyses (see e-mail, dated 1-20-06). Later, MS/MSD and laboratory replicate analyses were performed on a sample from the COC and original soil field sample batch of this package. The MS/MSD and laboratory replicate analyses were performed on the sample beyond the method specified holding time, but within 2X the holding time, and no sample data will be qualified as a result, based on professional judgment. The MS/MSD and laboratory replicate analyses performed on Sample 157006-002 of SDG 157006 apply to the soil field samples of this package.

Holding Times/Preservation

CVAA Analysis (All Batches): All samples were analyzed within the prescribed holding times and properly preserved.

Calibration

CVAA Analysis (All Batches): All initial and continuing calibration QC acceptance criteria were met.

Blanks

CVAA Analysis (All Batches): No target analytes were detected in the blanks.

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

CVAA Analysis (Batch 498333): All LCS/LCSD QC acceptance criteria were met. It should be noted that, the MSD analysis was used as a measure of laboratory precision due to low indigenous concentration of the target analyte in the sample used for the QC analyses.

CVAA Analysis (Batch 498336): All LCS/LCSD QC acceptance criteria were met.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

CVAA Analysis (Batch 498333): All MS/MSD QC acceptance criteria were met.

CVAA Analysis (Batch 498336): No MS/MSD analyses were performed. No sample data should be qualified as a result.

Replicates

CVAA Analysis (Batch 498333): All laboratory replicate QC acceptance criteria were met. It should be noted that the MSD analysis was used as a measure of laboratory precision due to low indigenous concentration of the target analyte in the sample used for the QC analyses.

CVAA Analysis (Batch 498336): No laboratory replicate analysis was performed. No sample data should be qualified as a result.

ICP Serial Dilution

CVAA Analysis (Batch 498333): All serial dilution QC acceptance criteria were met.

CVAA Analysis (Batch 498336): No serial dilution analysis was performed. No sample data will be qualified as a result.

ICP Interference Check Sample (ICS)

CVAA Analysis (All Batches): No ICS analysis was required by this method.

Detection Limits/Dilutions

CVAA Analysis (Batch 498333): All detection limits were properly reported. Sample 154633-006 was diluted 2X and Samples -001 and -011 were diluted 200X due to over-range concentration of the target analyte. No other samples required dilution.

CVAA Analysis (Batch 498336): All detection limits were properly reported. No samples required dilution.

Other QC

CVAA Analysis: No field blanks (FBs) or field duplicates (FDs) were submitted on the ARCOC.

No other specific issues were identified which affect data quality.

Sample Findings Summary

Site: Site 105 **AR/COC:** 609352, 609354, 609355, 609356, 609357 **Inorganic**

Sample ID	Method/CAS Number (Analysis/Analyte)																
	EPA7470A/7471A (CVAA):																
	All Acceptance criteria met. No sample data will be qualified.																

Validated By: David Schwent

Mr. David Schwent

Date: 03/09/06

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

Memorandum

DATE: March 9, 2006

TO: File

FROM: David Schwent

SUBJECT: Inorganic Data Review and Validation - SNL
Site: Site 105
AR/COC: 609352, 609354, 609355, 609356, and 609357
SDG: 154847, 154860, 154879, 154893, 154905, and 154914
Laboratory: GEL
Project/Task: 98046.02.02.09

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. This validation was performed according to SNL/NM ER Project AOP 00-03 Rev 1.

Summary

The samples were prepared and analyzed with accepted procedures using method EPA7470A/7470A (CVAA). 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. Due to the matrix, an LCSD analysis was performed instead of MS/MSD and laboratory replicate analyses (see e-mail, dated 1-20-06). Later, MS/MSD and laboratory replicate analyses were performed on samples from the COCs and original soil field sample batches of this package. The MS/MSD and laboratory replicate analyses were performed on the samples beyond the method specified holding time, but within 2X the holding time, and no sample data will be qualified as a result, based on professional judgment. The MS/MSD and laboratory replicate analyses performed on Samples 157005-001, -002, and -003 of SDG 157005 and Samples 157006-004 and -005 of SDG 157006 apply to the soil field samples of this package.

Holding Times/Preservation

CVAA Analysis (All Batches): All samples were analyzed within the prescribed holding times and properly preserved.

Calibration

CVAA Analysis (All Batches): All initial and continuing calibration QC acceptance criteria were met.

Blanks

CVAA Analysis (All Batches): No target analytes were detected in the blanks.

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

CVAA Analysis (Batch 499595): All LCS/LCSD QC acceptance criteria were met.

CVAA Analysis (All Other Batches): All LCS/LCSD QC acceptance criteria were met. It should be noted that the MSD analyses were used as measures of laboratory precision due to low indigenous concentration of the target analyte in the sample used for the QC analyses.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

CVAA Analysis (Batch 499595): No MS/MSD analyses were performed. No sample data will be qualified as a result.

CVAA Analysis (All Other Batches): All MS/MSD QC acceptance criteria were met.

Replicates

CVAA Analysis (Batch 499595): No laboratory replicate analysis was performed. The LCSD analysis was used as a measure of precision. No sample data will be qualified as a result.

CVAA Analysis (All Other Batches): All laboratory replicate QC acceptance criteria were met. It should be noted that the MSD analyses were used as measures of laboratory precision due to low indigenous concentration of the target analyte in the sample used for the QC analyses.

ICP Serial Dilution

CVAA Analysis (Batch 499595): No serial dilution analysis was performed. No sample data will be qualified as a result.

CVAA Analysis (All Other Batches): All serial dilution QC acceptance criteria were met.

ICP Interference Check Sample (ICS)

CVAA Analysis (All Batches): No ICS analysis was required by this method.

Detection Limits/Dilutions

CVAA Analysis (Batch 499571): All detection limits were properly reported. Sample 154879-001 was diluted 20X and Sample -020 was diluted 10X due to over-range concentrations of the target analyte. No other samples required dilution.

CVAA Analysis (Batch 499577): All detection limits were properly reported. Samples 154893-007, -016, and -018 were diluted 10X and Sample -015 was diluted 20X due to over-range concentration of the target analyte. No other samples required dilution.

CVAA Analysis (Batch 499583): All detection limits were properly reported. Sample 154905-001 was diluted 10X due to over-range concentration of the target analyte. No other samples required dilution.

CVAA Analysis (All Other Batches): All detection limits were properly reported. No samples required dilution.

Other QC

CVAA Analysis (All Batches): No field blanks (FBs) were submitted on the ARCOCs. It should be noted that several field duplicate (FD) relative percent differences (RPDs) were >35%. No specific FD QC acceptance criteria are currently in place. No sample data will be qualified as a result.

No other specific issues were identified which affect data quality.

Data Validation Summary

Site/Project: SNL / Site 105 Project/Task #: 98046.02.02.09 # of Samples: 92 Matrix: Soil / equipment (EBs)

AR/COC #: 609352, 354, 355, 356, 357 Laboratory Sample IDs: 154847-001 thru -020; 154860-001 thru -020; 154879-001 thru -020; 154893-001 thru -020; 154905-001 thru -010; 154914-001 and -002

Laboratory: GEL

SDG #: 154847, 860, 879, 893, 905, 914

QC Element	Analysis									
	Organics				Inorganics				RAD	Other
	VOC	SVOC	Pesticide/ PCB	HPLC (HE)	ICP/AES	GFAA/ AA	CVAA (Hg)	CN		
1. Holding Times/Preservation							✓			
2. Calibrations							↓			
3. Method Blanks							↓			
4. MS/MSD			✓						✓	
5. Laboratory Control Samples			✓	✓					✓	
6. Replicates				✓			✓		✓	
7. Surrogates				↓						
8. Internal Standards										
9. TCL Compound Identification										
10. ICP Interference Check Sample										
11. ICP Serial Dilution										
12. Carrier/Chemical Tracer Recoveries										
13. Other QC							NA			

J = Estimated
U = Not Detected
UJ = Not Detected, Estimated
R = Unusable

Check (√) = Acceptable
Shaded Cells = Not Applicable (also "NA")
NP = Not Provided
Other: _____

Reviewed By: [signature] Date: 2-17-06

Inorganic Metals

Site/Project: SNL/ Site 105 AR/COC #: 609352, 354, 355, 356, 357 Laboratory Sample IDs: 154847-001 thru -020.

Laboratory: GEL SDG #: 154847

Methods: EPA 7471A (CVAA)

# of Samples: 20 Matrix: Soil Batch #s: 499562

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	~~NA~~	~~NA~~	~~NA~~	~~NA~~ DE	~~NA~~ 3-9-06	~~NA~~	NA	✓	~~NA~~	✓	NA		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg / kg = µg / g : [(µg / g) x (sample mass {g} / sample vol. {ml}) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments: ~~A~~ FD RPD <35%.

Reviewed By: David Schwartz Date: 2-16-06

Inorganic Metals

Site/Project: SWL / Site 605 AR/COC #: 609, 352, 354, 355, 356, 357 Laboratory Sample IDs: 154860-001 thru -020.

Laboratory: B-EL SDG #: 154860

Methods: EPA 7471A (CVAA)

# of Samples: 20 Matrix: Soil Batch #s: 499567

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	~~NA~~	~~NA~~ OS	~~NA~~ 3-9-06	~~NA~~	NA	✓	A	✓	NA		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg / kg = µg / g : [(µg / g) x (sample mass (g) / sample vol. (ml)) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments: A FD RPD 735%.

Reviewed By: David Schwent Date: 2-16-06

Inorganic Metals

Site/Project: SNL / Site 105 AR/COC #: 609352, 354, 355, 356, 357. Laboratory Sample IDs: 154879-001 thru -020.

Laboratory: GEL SDG #: 154879

Methods: EPA 7471A (CVAA)

# of Samples: 20 Matrix: Soil Batch #s: 499571

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	~~NA~~	~~NA~~	~~NA~~	~~NA~~	NA	✓	*	✓	NA		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg / kg = µg / g : [(µg / g) x (sample mass {g} / sample vol. {ml}) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments: * FD RPD > 35%

Reviewed By: David Schwartz Date: 2-16-06

Inorganic Metals

Site/Project: SNL / Site 105 AR/COC #: 609352, 354, 355, 356, 357 Laboratory Sample IDs: 154893-001 thru -020.

Laboratory: GEL SDG #: 154893

Methods: EPA 7471A (CVAA)

# of Samples: 20 Matrix: Soil Batch #s: 499577

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	~~NA~~	~~NA~~	~~NA~~	~~NA~~	NA	✓	*	✓	NA		
											DS 3-9-06									
Cyanide CN																				

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg / kg = µg / g : [(µg / g) x (sample mass (g) / sample vol. (ml)) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments: * FD RPD 735%

Reviewed By: David Schwent Date: 2-16-06

Inorganic Metals

Site/Project: SNL/site 105 AR/COC #: 609352,354,355,356,357 Laboratory Sample IDs: 154905-001 thru-010.

Laboratory: GEL SDG #: 154905

Methods: EPA 7471A (CVAA)

# of Samples: 10 Matrix: Soil Batch #s: 499583

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	~~NA~~	~~NA~~ 05	~~NA~~ 3-9-06	~~NA~~	NA	✓	A	✓	NA		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg / kg = µg / g : [(µg / g) x (sample mass {g} / sample vol. {ml}) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments: *FD RPD 735 %

Reviewed By: David Schwent Date: 2-16-06

Inorganic Metals

Site/Project: SDL / Site 105 AR/COC #: 609352, 354, 355, 356, 357 Laboratory Sample IDs: 154914-001 and -002 (EBs)

Laboratory: GEL SDG #: 154914

Methods: EPA 7470A (CVAA)

# of Samples: 2 Matrix: aqueous Batch #s: 499595

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. **Solids-to-aqueous conversion:** mg / kg = µg / g : [(µg / g) x (sample mass {g} / sample vol. {ml}) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments:

Reviewed By: David Schwent Date: 2-16-06

Contract Verification Review (CVR)

Project Leader LANGKOPF | Project Name SITE 105 | Case No. 98046_02.02.09

AR/COC No. 609352, 609354, 609355, 609356 & 609357 | Analytical Lab GEL | SDG No. 154847

In the tables below, mark any information that is missing or incorrect and give an explanation.

1.0 Analysis Request and Chain of Custody Record and Log-In Information

Line No.	Item	Complete? Yes	Complete? No	If no, explain	Resolved? Yes	Resolved? No
1.1	All items on COC complete - data entry clerk initialed and dated	X				
1.2	Container type(s) correct for analyses requested	X				
1.3	Sample volume adequate for # and types of analyses requested	X				
1.4	Preservative correct for analyses requested	X				
1.5	Custody records continuous and complete	X				
1.6	Lab sample number(s) provided and SNL sample number(s) cross referenced and correct	X				
1.7	Date samples received	X				
1.8	Condition upon receipt information provided	X				

2.0 Analytical Laboratory Report

Line No.	Item	Complete? Yes	Complete? No	If no, explain	Resolved? Yes	Resolved? No
2.1	Data reviewed, signature	X				
2.2	Method reference number(s) complete and correct	X				
2.3	QC analysis and acceptance limits provided (MB, LCS, Replicate)	X				
2.4	Matrix spike/matrix spike duplicate data provided (if requested)	N/A				
2.5	Detection limits provided; PQL and MDL (or IDL), MDA and L_c	X				
2.6	QC batch numbers provided	X				
2.7	Dilution factors provided and all dilution levels reported	X				
2.8	Data reported in appropriate units and using correct significant figures	X				
2.9	Radiochemistry analysis uncertainty (2 sigma error) and tracer recovery (if applicable) reported	N/A				
2.10	Narrative provided	X				
2.11	TAT met	X				
2.12	Hold times met	X				
2.13	Contractual qualifiers provided	X				
2.14	All requested result and TIC (if requested) data provided	X				

Contract Verification Review (Continued)

3.0 Data Quality Evaluation

Item	Yes	No	If no, Sample ID No./Fraction(s) and Analysis
3.1 Are reporting units appropriate for the matrix and meet contract specified or project-specific requirements? Inorganics and metals reported as ppm (mg/liter or mg/Kg)? Tritium reported in picocuries per liter with percent moisture for soil samples? Units consistent between QC samples and sample data	X		
3.2 Quantitation limit met for all samples	X		
3.3 Accuracy a) Laboratory control samples accuracy reported and met for all samples	X		
b) Surrogate data reported and met for all organic samples analyzed by a gas chromatography technique	N/A		
c) Matrix spike recovery data reported and met	N/A		
3.4 Precision a) Replicate sample precision reported and met for all inorganic and radiochemistry samples	N/A		
b) Matrix spike duplicate RPD data reported and met for all organic samples	N/A		
3.5 Blank data a) Method or reagent blank data reported and met for all samples	X		
b) Sampling blank (e.g., field, trip, and equipment) data reported and met	X		
3.6 Contractual qualifiers provided: "J"- estimated quantity; "B"-analyte found in method blank above the MDL for organic or above the PQL for inorganic; "U"- analyte undetected (results are below the MDL, IDL, or MDA (radiochemical)); "H"-analysis done beyond the holding time	X		
3.7 Narrative addresses planchet flaming for gross alpha/beta	N/A		
3.8 Narrative included, correct, and complete	X		
3.9 Second column confirmation data provided for methods 8330 (high explosives) and 8082 (pesticides/PCBs)	N/A		

Contract Verification Review (Continued)

4.0 Calibration and Validation Documentation

Item	Yes	No	Comments
4.1 GC/MS (8260, 8270, etc.)			
a) 12-hour tune check provided	N/A		
b) Initial calibration provided	N/A		
c) Continuing calibration provided	N/A		
d) Internal standard performance data provided	N/A		
e) Instrument run logs provided	N/A		
4.2 GC/HPLC (8330 and 8010 and 8082)			
a) Initial calibration provided	N/A		
b) Continuing calibration provided	N/A		
c) Instrument run logs provided	N/A		
4.3 Inorganics (metals)			
a) Initial calibration provided	X		
b) Continuing calibration provided	X		
c) ICP interference check sample data provided	X		
d) ICP serial dilution provided	N/A		
e) Instrument run logs provided	X		
4.4 Radiochemistry			
a) Instrument run logs provided	N/A		

Contract Verification Review (Concluded)

5.0 Problem Resolution

Summarize the findings in the table below. List only samples/fractions for which deficiencies have been noted.

Sample/Fraction No.	Analysis	Problems/Comments/Resolutions

Were deficiencies unresolved? Yes (No)

Based on the review, this data package is complete. (Yes) No

If no, provide: nonconformance report or correction request number _____ and date correction request was submitted:-_____

Reviewed by: W. Palencia Date: 2-14-06 Closed by: _____ Date: _____

Sample Findings Summary

Site: Site 105 | **AR/COC:** 609358, 609359, 609361 | **Inorganic**

Sample ID	Method/CAS Number (Analysis/Analyte)																
	EPA7470A/7471A (CVAA):																
	All Acceptance criteria met. No sample data will be qualified.																

Validated By: David Schwent

Mr. David Schwent

Date: 03/09/06

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

Memorandum

DATE: March 9, 2006

TO: File

FROM: David Schwent

SUBJECT: Inorganic Data Review and Validation - SNL
Site: Site 105
AR/COC: 609358, 609359, and 609361
SDG: 154976, 154981, 154983, and 154984
Laboratory: GEL
Project/Task: 98046.02.02.09

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. This validation was performed according to SNL/NM ER Project AOP 00-03 Rev 1.

Summary

The samples were prepared and analyzed with accepted procedures using method EPA7470A/7471A (CVAA). 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. Due to the matrix, an LCSD analysis was performed instead of MS/MSD and laboratory replicate analyses (see e-mail, dated 1-20-06). Later, MS/MSD and laboratory replicate analyses were performed on samples from the COCs and original soil field sample batches of this package. The MS/MSD and laboratory replicate analyses were performed on the samples beyond the method specified holding time, but within 2X the holding time, and no sample data will be qualified as a result, based on professional judgment. The MS/MSD and laboratory replicate analyses performed on Samples 157005-004, and -005 of SDG 157005 and Sample 157008-001 of SDG 157008 apply to the soil field samples of this package.

Holding Times/Preservation

CVAA Analysis (All Batches): All samples were analyzed within the prescribed holding times and properly preserved.

Calibration

CVAA Analysis (All Batches): All initial and continuing calibration QC acceptance criteria were met.

Blanks

CVAA Analysis (All Batches): No target analytes were detected in the blanks.

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

CVAA Analysis (Batch 500039): All LCS/LCSD QC acceptance criteria were met.

CVAA Analysis (All Other Batches): All LCS/LCSD QC acceptance criteria were met. It should be noted that the MSD analyses were used as measures of laboratory precision due to low indigenous concentration of the target analyte in the sample used for the QC analyses.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

CVAA Analysis (Batch 500039): No MS/MSD analyses were performed. No sample data will be qualified as a result.

CVAA Analysis (All Other Batches): All MS/MSD QC acceptance criteria were met.

Replicates

CVAA Analysis (Batch 500039): No laboratory replicate analysis was performed. The LCSD was used as a measure of precision. No sample data will be qualified as a result.

CVAA Analysis (All Other Batches): All laboratory replicate QC acceptance criteria were met. It should be noted that the MSD analyses were used as measures of laboratory precision due to low indigenous concentration of the target analyte in the sample used for the QC analyses.

ICP Serial Dilution

CVAA Analysis (Batch 500039): No serial dilution analysis was performed. No sample data will be qualified as a result.

CVAA Analysis (All Other Batches): All serial dilution QC acceptance criteria were met.

ICP Interference Check Sample (ICS)

CVAA Analysis (All batches): No ICS analysis was required by this method.

Detection Limits/Dilutions

CVAA Analysis (Batch 500024): All detection limits were properly reported. Sample 154976-010 was diluted 10X due to over-range concentration of the target analyte. No other samples required dilution.

CVAA Analysis (All Other Batches): All detection limits were properly reported. No samples required dilution.

Other QC

CVAA Analysis (All Batches): No field blanks (FBs) were submitted on the ARCOCs. It should be noted that the field duplicate (FD) relative percent differences (RPDs) were >35%. No specific FD QC acceptance criteria are currently in place. No sample data will be qualified as a result.

No other specific issues were identified which affect data quality.

Data Validation Summary

Site/Project: SNL/Site 105 Project/Task #: 98046.02.02.09 # of Samples: 43 Matrix: Soil / aqueous (EB)

AR/COC #: 009358, 359, 361. Laboratory Sample IDs: 154976-001 thru -020; 154981-001 thru -020; 154983-001 and -002; 154984-001 (EB)

Laboratory: GEL

SDG #: 154976

QC Element	Analysis									
	Organics				Inorganics				RAD	Other
	VOC	SVOC	Pesticide/ PCB	HPLC (HE)	ICP/AES	GFAA/ AA	CVAA (Hg)	CN		
1. Holding Times/Preservation							✓			
2. Calibrations							↓			
3. Method Blanks							↓			
4. MS/MSD			✓				↓		✓	
5. Laboratory Control Samples			✓				↓		✓	
6. Replicates				✓			↓		✓	
7. Surrogates				✓						
8. Internal Standards										
9. TCL Compound Identification										
10. ICP Interference Check Sample										
11. ICP Serial Dilution										
12. Carrier/Chemical Tracer Recoveries										
13. Other QC							NA			

J = Estimated
U = Not Detected
UJ = Not Detected, Estimated
R = Unusable

Check (√) = Acceptable
Shaded Cells = Not Applicable (also "NA")
NP = Not Provided
Other: _____

Reviewed By: David Schwartz Date: 7-20-06

Inorganic Metals

Site/Project: SWL/Site 105 AR/COC #: 609358,359,361 Laboratory Sample IDs: 154976-001 thru -020.

Laboratory: CEL SDG #: 154976 ~~001~~ as 2-20-06

Methods: EPA 7471A (CVAA)

# of Samples: 20 Matrix: Soil Batch #s: 500024

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	~~NA~~	~~NA~~	~~NA~~	~~NA~~	NA	✓	~~NA~~	✓	NA		
											OS	3-9-06								
Cyanide CN																				

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg / kg = µg / g : [(µg / g) x (sample mass {g} / sample vol. {ml}) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments:

Reviewed By: Mark Schmat Date: 2-20-06

Inorganic Metals

Site/Project: SLL/Site 105 AR/COC #: 609358, 359, 361 Laboratory Sample IDs: 154983-001 and -002

Laboratory: GEL SDG #: 154983

Methods: EPA 747/A (CVAA)

# of Samples: 2 Matrix: Soil Batch #s: 500032

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	~~NA~~	~~NA~~ DS	~~NA~~ 3-9-06	~~NA~~	NA	✓	✓	✓	NA		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg / kg = µg / g : [(µg / g) x (sample mass (g) / sample vol. (ml)) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments:

Reviewed By: David Schmidt Date: 2-20-06

Inorganic Metals

Site/Project: SLL/Site 105 AR/COC #: 609358, 359, 361 Laboratory Sample IDs: 154983-001 and -002

Laboratory: GEL SDG #: 154983

Methods: EPA 747/A (CVAA)

# of Samples: 2 Matrix: Soil Batch #s: 500032

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	~~NA~~	~~NA~~ DS	~~NA~~ 3-9-06	~~NA~~	NA	✓	✓	✓	NA		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg / kg = µg / g : [(µg / g) x (sample mass (g) / sample vol. (ml)) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments:

Reviewed By: David Schmidt Date: 2-2006

RECORDS CENTER CODE:

SMO ANALYTICAL DATA ROUTING FORM

PROJECT NAME: Site 105 PROJECT/TASK: 98046.02.02.09

SNL TASK LEADER: Langkopf ORG/MS/CF0#: 6146/1087/CF056-06

SMO PROJECT LEAD: Herrera SAMPLE SHIP DATE: 1/31/2006

ARCOC	LAB	LAB ID	PRELIM DATE	FINAL DATE	EDD	EDD ON Q	Cust CD	RC CD
609358	GEL	154976	2/14/2006	2/15/2006	X	X	X	X
609359	GEL	154976	2/14/2006	2/15/2006	X	X	X	X
609361	GEL	154976	2/14/2006	2/15/2006	X	X	X	X

DATA PACKAGE TAT:	X	RUSH (15 day)		NORMAL
CORRECTIONS REQUESTED BY/DATE:				
PROBLEM #/DATE CORRECTION RECEIVED:				
CVR COMPLETED BY/DATE:		W. Palencia		2-15-06
FINAL TRANSMITTED TO/DATE:		S. Griffith		2-15-06
SENT TO VALIDATION BY/DATE:		R. Kavanaugh		02-16-06
REVISIONS REQUESTED/REVISIONS RECEIVED (DATE):				
VALIDATION COMPLETED BY/DATE:		D. Schwent		03-09-06
COPY TO WM BY/DATE:				
CD REQUESTED BY/DATE				
CD RECEIVED BY/DATE		R. Kavanaugh		2/15/2006
TO ERDMS OR RECORDS CENTER BY/DATE:				

COMMENTS: Validation could not be completed until QC sample results were received which was not until 3-7-06.

Inorganic Metals

Site/Project: SNL/Site 105 AR/COC #: 609358, 359, 361 Laboratory Sample IDs: 154984-001

Laboratory: GEL SDG #: 154984

Methods: EPA 7470A (CVAA)

# of Samples: 1 Matrix: aqueous (EB) Batch #s: 500039

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg / kg = µg / g : [(µg / g) x (sample mass {g} / sample vol. {ml}) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments:

Reviewed By: David S. Swart Date: 2-20-06

Contract Verification Review (CVR)

Project Leader LANGKOPF | Project Name SITE 105 | Case No. 98046_02.02.09

AR/COC No. 609358, 609359 & 609361 | Analytical Lab GEL | SDG No. 154976

In the tables below, mark any information that is missing or incorrect and give an explanation.

1.0 Analysis Request and Chain of Custody Record and Log-In Information

Line No.	Item	Complete? Yes	Complete? No	If no, explain	Resolved? Yes	Resolved? No
1.1	All items on COC complete - data entry clerk initialed and dated	X				
1.2	Container type(s) correct for analyses requested	X				
1.3	Sample volume adequate for # and types of analyses requested	X				
1.4	Preservative correct for analyses requested	X				
1.5	Custody records continuous and complete	X				
1.6	Lab sample number(s) provided and SNL sample number(s) cross referenced and correct	X				
1.7	Date samples received	X				
1.8	Condition upon receipt information provided	X				

2.0 Analytical Laboratory Report

Line No.	Item	Complete? Yes	Complete? No	If no, explain	Resolved? Yes	Resolved? No
2.1	Data reviewed, signature	X				
2.2	Method reference number(s) complete and correct	X				
2.3	QC analysis and acceptance limits provided (MB, LCS, Replicate)	X				
2.4	Matrix spike/matrix spike duplicate data provided (if requested)	N/A				
2.5	Detection limits provided; PQL and MDL (or IDL), MDA and L_c	X				
2.6	QC batch numbers provided	X				
2.7	Dilution factors provided and all dilution levels reported	X				
2.8	Data reported in appropriate units and using correct significant figures	X				
2.9	Radiochemistry analysis uncertainty (2 sigma error) and tracer recovery (if applicable) reported	N/A				
2.10	Narrative provided	X				
2.11	TAT met	X				
2.12	Hold times met	X				
2.13	Contractual qualifiers provided	X				
2.14	All requested result and TIC (if requested) data provided	X				

Contract Verification Review (Continued)

3.0 Data Quality Evaluation

Item	Yes	No	If no, Sample ID No./Fraction(s) and Analysis
3.1 Are reporting units appropriate for the matrix and meet contract specified or project-specific requirements? Inorganics and metals reported as ppm (mg/liter or mg/Kg)? Tritium reported in picocuries per liter with percent moisture for soil samples? Units consistent between QC samples and sample data	X		
3.2 Quantitation limit met for all samples	X		
3.3 Accuracy a) Laboratory control samples accuracy reported and met for all samples	X		
b) Surrogate data reported and met for all organic samples analyzed by a gas chromatography technique	N/A		
c) Matrix spike recovery data reported and met	N/A		
3.4 Precision a) Replicate sample precision reported and met for all inorganic and radiochemistry samples	N/A		
b) Matrix spike duplicate RPD data reported and met for all organic samples	N/A		
3.5 Blank data a) Method or reagent blank data reported and met for all samples	X		
b) Sampling blank (e.g., field, trip, and equipment) data reported and met	X		
3.6 Contractual qualifiers provided: "J"- estimated quantity; "B"-analyte found in method blank above the MDL for organic or above the PQL for inorganic; "U"- analyte undetected (results are below the MDL, IDL, or MDA (radiochemical)); "H"-analysis done beyond the holding time	X		
3.7 Narrative addresses planchet flaming for gross alpha/beta	N/A		
3.8 Narrative included, correct, and complete	X		
3.9 Second column confirmation data provided for methods 8330 (high explosives) and 8082 (pesticides/PCBs)	N/A		

Contract Verification Review (Continued)

4.0 Calibration and Validation Documentation

Item	Yes	No	Comments
4.1 GC/MS (8260, 8270, etc.) a) 12-hour tune check provided	N/A		
b) Initial calibration provided	N/A		
c) Continuing calibration provided	N/A		
d) Internal standard performance data provided	N/A		
e) Instrument run logs provided	N/A		
4.2 GC/HPLC (8330 and 8010 and 8082) a) Initial calibration provided	N/A		
b) Continuing calibration provided	N/A		
c) Instrument run logs provided	N/A		
4.3 Inorganics (metals) a) Initial calibration provided	X		
b) Continuing calibration provided	X		
c) ICP interference check sample data provided	N/A		
d) ICP serial dilution provided	N/A		
e) Instrument run logs provided	X		
4.4 Radiochemistry a) Instrument run logs provided	N/A		

Contract Verification Review (Concluded)

5.0 Problem Resolution

Summarize the findings in the table below. List only samples/fractions for which deficiencies have been noted.

Sample/Fraction No.	Analysis	Problems/Comments/Resolutions

Were deficiencies unresolved? Yes (No)

Based on the review, this data package is complete. (Yes) No

If no, provide: nonconformance report or correction request number _____ and date correction request was submitted:-_____

Reviewed by: W. Palencia Date: 2-15-06 Closed by:_____ Date:_____

Sample Findings Summary

Site: Site 105 | **AR/COC:** 609360, 609362, 609363 | **Inorganic**

Sample ID	Method/CAS Number (Analysis/Analyte)																
	EPA7471A (CVAA):																
	All Acceptance criteria met. No sample data will be qualified.																

Validated By: David Schwent

Mr. David Schwent

Date: 03/08/06

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

Memorandum

DATE: March 8, 2006

TO: File

FROM: David Schwent

SUBJECT: Inorganic Data Review and Validation - SNL
Site: Site 105
AR/COC: 609360, 609362, and 609363
SDG: 155136, 155139, and 155140
Laboratory: GEL
Project/Task: 98046.02.02.09

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. This validation was performed according to SNL/NM ER Project AOP 00-03 Rev 1.

Summary

The samples were prepared and analyzed with accepted procedures using method EPA7471A (CVAA). 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. Due to the matrix, an LCSD analysis was performed instead of MS/MSD and laboratory replicate analyses (see e-mail, dated 1-20-06). Later, MS/MSD and laboratory replicate analyses were performed on samples from the COCs and original soil field sample batches of this package. The MS/MSD and laboratory replicate analyses were performed on the samples beyond the method specified holding time, but within 2X the holding time, and no sample data will be qualified as a result, based on professional judgment. The MS/MSD and laboratory replicate analyses performed on Samples 157008-003, -004, and -005, of SDG 157008, apply to the soil field samples of this package.

Holding Times/Preservation

CVAA Analysis (All Batches): All samples were analyzed within the prescribed holding times and properly preserved.

Calibration

CVAA Analysis (All Batches): All initial and continuing calibration QC acceptance criteria were met.

Blanks

CVAA Analysis (All Batches): No target analytes were detected in the blanks.

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

CVAA Analysis (All Batches): All LCS/LCSD QC acceptance criteria were met. It should be noted that the MSD analyses were used as measures of laboratory precision due to low indigenous concentration of the target analyte in the sample used for the QC analyses.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

CVAA Analysis (Batch 500439): All MS/MSD QC acceptance criteria were met, except the following. The MSD percent recovery (%R) was < QC acceptance criteria. However, the MS %R and the MS/MSD relative percent difference (RPD) were well within QC acceptance criteria. Therefore, based on professional judgment, no sample data will be qualified as a result.

CVAA Analysis (All Other Batches): All MS/MSD QC acceptance criteria were met.

Replicates

CVAA Analysis (All Batches): All laboratory replicate QC acceptance criteria were met. It should be noted that the MSD analyses were used as measures of laboratory precision due to low indigenous concentration of the target analyte in the sample used for the QC analyses.

ICP Serial Dilution

CVAA Analysis (All Batches): All serial dilution QC acceptance criteria were met.

ICP Interference Check Sample (ICS)

CVAA Analysis (All Batches): No ICS analysis was required by this method.

Detection Limits/Dilutions

CVAA Analysis (Batch 500436): All detection limits were properly reported. Samples 155136-009 and -013 were diluted 20X due to over-range concentrations of the target analyte. No other samples required dilution.

CVAA Analysis (All Other Batches): All detection limits were properly reported. No samples required dilution.

Other QC

CVAA Analysis (All Batches): No field blanks (FBs) were submitted on the ARCOCs. It should be noted that the field duplicate (FD) relative percent differences (RPDs) were <35%. No specific FD QC acceptance criteria are currently in place. No sample data will be qualified as a result.

No other specific issues were identified which affect data quality.

Data Validation Summary

Site/Project: SNL/Site 105 Project/Task #: 98046.02.02.09 # of Samples: 44 Matrix: Soil

AR/COC #: 609360, 362, 363 Laboratory Sample IDs: 155136-001 thru -020; 155139-001 thru -020; 155140-001 thru -004

Laboratory: GEL

SDG #: 155136, 139, 140

QC Element	Analysis									
	Organics				Inorganics				RAD	Other
	VOC	SVOC	Pesticide/ PCB	HPLC (HE)	ICP/AES	GFAA/ AA	CVAA (Hg)	CN		
1. Holding Times/Preservation							✓			
2. Calibrations							↓			
3. Method Blanks										
4. MS/MSD										
5. Laboratory Control Samples			NA						NA	
6. Replicates				NA			↓			
7. Surrogates										
8. Internal Standards										
9. TCL Compound Identification										
10. ICP Interference Check Sample										
11. ICP Serial Dilution										
12. Carrier/Chemical Tracer Recoveries										
13. Other QC							NA			

J = Estimated
U = Not Detected
UJ = Not Detected, Estimated
R = Unusable

Check (√) = Acceptable
Shaded Cells = Not Applicable (also "NA")
NP = Not Provided
Other: _____

Reviewed By: David Schmant Date: 2-23-06

Inorganic Metals

Site/Project: SNL/Site 105 AR/COC #: 609360, 362, 363 Laboratory Sample IDs: 155136-001 thru -020.

Laboratory: CEL SDG #: 155136

Methods: EPA 7471A (CVAA)

# of Samples: 20 Matrix: Soil Batch #s: 500436

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	~~NA~~	~~NA~~	~~NA~~ OS 3-8-06	~~NA~~	NA	✓	NA	✓	NA		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg / kg = µg / g : [(µg / g) x (sample mass (g) / sample vol. (ml)) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments:

Reviewed By: David Schwent Date: 2-23-06

Inorganic Metals

Site/Project: SNL/ Site 105 AR/COC #: 609360, 362, 363 Laboratory Sample IDs: 155139-001 thru -020.

Laboratory: GEL SDG #: 155139

Methods: EPA 7471A (CVAA)

# of Samples: 20 Matrix: Soil Batch #s: 500439

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	~~NA~~ ✓	~~NA~~ ✓	~~NA~~ ✓	~~NA~~ ✓	NA	✓	*✓	✓	NA		
Cyanide CN																				

DS 3-8-06

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg / kg = µg / g : [(µg / g) x (sample mass {g} / sample vol. {ml}) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments: * FD RPD <35%.

Reviewed By: David Schuert Date: 2-22-06

Inorganic Metals

Site/Project: SNL/Site 105 AR/COC #: 609360, 362, 363 Laboratory Sample IDs: 155140-001 thru -004

Laboratory: CEL SDG #: 155140

Methods: EPA 7471A (CVAA)

# of Samples: 4 Matrix: Soil Batch #s: 560442

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	~~NA~~	~~NA~~	~~NA~~	~~NA~~ DS 3-8-06	NA	✓	*✓	NA	NA		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg / kg = µg / g : [(µg / g) x (sample mass {g} / sample vol. {ml}) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments: * FD RPD <35%.

Reviewed By: David Schwent Date: 2-23-06

Contract Verification Review (CVR)

Project Leader: Langkopf | Project Name: Site 105 | Case No.: 98046_02.02.09

AR/COC No.: 609360, 609362, 609363 | Analytical Lab: GEL | SDG No.: 155136

In the tables below, mark any information that is missing or incorrect and give an explanation.

1.0 Analysis Request and Chain of Custody Record and Log-In Information

Line No.	Item	Complete? Yes	Complete? No	If no, explain	Resolved? Yes	Resolved? No
1.1	All items on COC complete - data entry clerk initialed and dated	X				
1.2	Container type(s) correct for analyses requested	X				
1.3	Sample volume adequate for # and types of analyses requested	X				
1.4	Preservative correct for analyses requested	X				
1.5	Custody records continuous and complete	X				
1.6	Lab sample number(s) provided and SNL sample number(s) cross referenced and correct	X				
1.7	Date samples received	X				
1.8	Condition upon receipt information provided	X				

2.0 Analytical Laboratory Report

Line No.	Item	Complete? Yes	Complete? No	If no, explain	Resolved? Yes	Resolved? No
2.1	Data reviewed, signature	X				
2.2	Method reference number(s) complete and correct	X				
2.3	QC analysis and acceptance limits provided (MB, LCS, Replicate)	X				
2.4	Matrix spike/matrix spike duplicate data provided (if requested)	N/A				
2.5	Detection limits provided; PQL and MDL (or IDL), MDA and L_c	X				
2.6	QC batch numbers provided	X				
2.7	Dilution factors provided and all dilution levels reported	X				
2.8	Data reported in appropriate units and using correct significant figures	X				
2.9	Radiochemistry analysis uncertainty (2 sigma error) and tracer recovery (if applicable) reported	N/A				
2.10	Narrative provided	X				
2.11	TAT met	X				
2.12	Hold times met	X				
2.13	Contractual qualifiers provided	X				
2.14	All requested result and TIC (if requested) data provided	X				

Contract Verification Review (Continued)

3.0 Data Quality Evaluation

Item	Yes	No	If no, Sample ID No./Fraction(s) and Analysis
3.1 Are reporting units appropriate for the matrix and meet contract specified or project-specific requirements? Inorganics and metals reported as ppm (mg/liter or mg/Kg)? Tritium reported in picocuries per liter with percent moisture for soil samples? Units consistent between QC samples and sample data	X		
3.2 Quantitation limit met for all samples	X		
3.3 Accuracy a) Laboratory control samples accuracy reported and met for all samples	X		
b) Surrogate data reported and met for all organic samples analyzed by a gas chromatography technique	N/A		
c) Matrix spike recovery data reported and met	N/A		
3.4 Precision a) Replicate sample precision reported and met for all inorganic and radiochemistry samples	N/A		
b) Matrix spike duplicate RPD data reported and met for all organic samples	N/A		
3.5 Blank data a) Method or reagent blank data reported and met for all samples	X		
b) Sampling blank (e.g., field, trip, and equipment) data reported and met	N/A		
3.6 Contractual qualifiers provided: "J"- estimated quantity; "B"-analyte found in method blank above the MDL for organic or above the PQL for inorganic; "U"- analyte undetected (results are below the MDL, IDL, or MDA (radiochemical)); "H"-analysis done beyond the holding time	X		
3.7 Narrative addresses planchet flaming for gross alpha/beta	N/A		
3.8 Narrative included, correct, and complete	X		
3.9 Second column confirmation data provided for methods 8330 (high explosives) and 8082 (pesticides/PCBs)	N/A		

Contract Verification Review (Continued)

4.0 Calibration and Validation Documentation

Item	Yes	No	Comments
4.1 GC/MS (8260, 8270, etc.) a) 12-hour tune check provided	N/A		
b) Initial calibration provided	N/A		
c) Continuing calibration provided	N/A		
d) Internal standard performance data provided	N/A		
e) Instrument run logs provided	N/A		
4.2 GC/HPLC (8330 and 8010 and 8082) a) Initial calibration provided	N/A		
b) Continuing calibration provided	N/A		
c) Instrument run logs provided	N/A		
4.3 Inorganics (metals) a) Initial calibration provided	X		
b) Continuing calibration provided	X		
c) ICP interference check sample data provided	N/A		
d) ICP serial dilution provided	N/A		
e) Instrument run logs provided	X		
4.4 Radiochemistry a) Instrument run logs provided	N/A		

Contract Verification Review (Concluded)

5.0 Problem Resolution
Summarize the findings in the table below. List only samples/fractions for which deficiencies have been noted.

Sample/Fraction No.	Analysis	Problems/Comments/Resolutions

Were deficiencies unresolved? Yes (No)

Based on the review, this data package is complete. (Yes) No

If no, provide: nonconformance report or correction request number _____ and date correction request was submitted _____

Reviewed by: [signature] Date: 02/17/06 Closed by: _____ Date: _____

Sample Findings Summary

Site: Site 105 **AR/COC:** 609364, 609365, 609371, 609372, 609373, 609374 **Inorganic**

Sample ID	Method/CAS Number (Analysis/Analyte)																
	EPA7470A/7471A (CVAA):	7439-97-6 (Hg)															
074462-002 105-EB-8		UJ,B3															
074463-002 105-EB-9		UJ,B3															

Validated By: David Schwent

Mr. David Schwent

Date: 03/10/06

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

Memorandum

DATE: March 10, 2006

TO: File

FROM: David Schwent

SUBJECT: Inorganic Data Review and Validation - SNL
Site: Site 105
AR/COC: 609364, 609365, 609371, 609372, 609373, and 609374
SDG: 155418, 155439, 155443, 155447, 155452, 155456, and 155458
Laboratory: GEL
Project/Task: 98046.02.02.09

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. This validation was performed according to SNL/NM ER Project AOP 00-03 Rev 1.

Summary

The samples were prepared and analyzed with accepted procedures using method EPA7470A/7471A (CVAA). Problems were identified with the data package that result in the qualification of data.

CVAA Analysis (Batch 501846):

Blanks: Hg was detected in the continuing calibration blanks (CCBs) at negative concentrations with absolute values > the detection limit (DL) but < the reporting limit (RL). The associated results of Sample 155458-001 and -002 were non-detects (NDs) and will be qualified "UJ,B3."

Data are acceptable. QC measures appear to be adequate. The following sections discuss the data review and validation. Due to the matrix, an LCSD analysis was performed instead of MS/MSD and laboratory replicate analyses (see e-mail, dated 1-20-06). Later, MS/MSD and laboratory replicate analyses were performed on samples from the COCs and original soil field sample batches of this package. The MS/MSD and laboratory replicate analyses were performed on the samples beyond the method specified holding time, but within 2X the holding time, and no sample data will be qualified as a result, based on professional judgment. The MS/MSD and laboratory replicate analyses performed on Sample 157007-005 of SDG 157007 and Samples 157010-001, -002, -003, -004, and -005 of SDG 157010 apply to the soil field samples of this package.

Holding Times/Preservation

CVAA Analysis (All Batches): All samples were analyzed within the prescribed holding times and properly preserved.

Calibration

CVAA Analysis (All Batches): All initial and continuing calibration QC acceptance criteria were met.

Blanks

CVAA Analysis (Batch 501846): No target analytes were detected in the blanks, except as noted above in the summary section.

CVAA Analysis (All Other Batches): No target analytes were detected in the blanks.

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

CVAA Analysis (Batch 501846): All LCS/LCSD QC acceptance criteria were met.

CVAA Analysis (All Other Batches): All LCS/LCSD QC acceptance criteria were met. It should be noted that the MSD analyses were used as measures of laboratory precision due to low indigenous concentration of the target analyte in the sample used for the QC analyses.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

CVAA Analysis (Batch 501846): No MS/MSD analyses were performed. No sample data will be qualified as a result.

CVAA Analysis (All Other Batches): All MS/MSD QC acceptance criteria were met.

Replicates

CVAA Analysis (Batch 501846): No laboratory replicate analysis was performed. The LCSD analysis was used as a measure of precision. No sample data will be qualified as a result.

CVAA Analysis (All Other Batches): All laboratory replicate QC acceptance criteria were met. It should be noted that the MSD analyses were used as measures of laboratory precision due to low indigenous concentration of the target analyte in the sample used for the QC analyses.

ICP Serial Dilution

CVAA Analysis (Batch 501846): No serial dilution analysis was performed. No sample data will be qualified as a result.

CVAA Analysis (All Other Batches): All serial dilution QC acceptance criteria were met.

ICP Interference Check Sample (ICS)

CVAA Analysis (All Batches): No ICS analysis was required by this method.

Detection Limits/Dilutions

CVAA Analysis (Batch 501857): All detection limits were properly reported. Sample 155439-016 was diluted 10X due to over-range concentrations of the target analyte. No other samples required dilution.

CVAA Analysis (Batch 501864): All detection limits were properly reported. Sample 155447-020 was diluted 10X due to over-range concentration of the target analyte. No other samples required dilution.

CVAA Analysis (Batch 501867): All detection limits were properly reported. Sample 155452-004 was diluted 10X due to over-range concentration of the target analyte. No other samples required dilution.

CVAA Analysis (All Other Batches): All detection limits were properly reported. No samples required dilution.

Other QC

CVAA Analysis (All Batches): No field blanks (FBs) were submitted on the ARCOCs. It should be noted that several field duplicate (FD) relative percent differences (RPDs) were >35%. No specific FD QC acceptance criteria are currently in place. No sample data will be qualified as a result.

No other specific issues were identified which affect data quality.

Data Validation Summary

Site/Project: SNL/Site 105 Project/Task #: 98046.02.02.09 # of Samples: _____ Matrix: Soil

AR/COC #: 609364, 365, 371, 372, 373, 374. Laboratory Sample IDs: 155418

Laboratory: GEL

SDG #: 155418

QC Element	Analysis									
	Organics				Inorganics				RAD	Other
	VOC	SVOC	Pesticide/ PCB	HPLC (HE)	ICP/AES	GFAA/ AA	CVAA (Hg)	CN		
1. Holding Times/Preservation							✓			
2. Calibrations							✓			
3. Method Blanks							UJ, B3		✓	
4. MS/MSD			✓	✓			✓		✓	
5. Laboratory Control Samples			✓				✓			
6. Replicates				✓			✓		✓	
7. Surrogates				✓						
8. Internal Standards										
9. TCL Compound Identification										
10. ICP Interference Check Sample										
11. ICP Serial Dilution										
12. Carrier/Chemical Tracer Recoveries										
13. Other QC							NA			

J = Estimated
U = Not Detected
UJ = Not Detected, Estimated
R = Unusable

Check (√) = Acceptable
Shaded Cells = Not Applicable (also "NA")
NP = Not Provided
Other: _____

Reviewed By: David Schwartz Date: 2-28-06

Inorganic Metals

Site/Project: SNL/Site 105 AR/COC #: 609364,365,371,372, 373, 374 Laboratory Sample IDs: 155418-001 thru -020

Laboratory: GEL SDG #: 155418

Methods: EPA 7471A (CVAA).

# of Samples: 20 Matrix: Soil Batch #s: 501854

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NA	✓	*	✓	NA		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg / kg = µg / g : [(µg / g) x (sample mass {g} / sample vol. {ml}) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments: * FD RPD >35%.

Reviewed By: David Schwent Date: 2-28-06

Inorganic Metals

Site/Project: SNL/Site 105 AR/COC #: 609364,365,371,372,373,374 Laboratory Sample IDs: 155439-001 thru -020

Laboratory: GEL SDG #: 155439

Methods: EPA 7471A (CVAA)

# of Samples: 20 Matrix: Soil Batch #s: 501857

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NA	✓	*	✓	NA		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg / kg = µg / g : [(µg / g) x (sample mass {g} / sample vol. {ml}) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments: 1 of 2 FD RPDs > 35%.

Reviewed By: David Schwent Date: 2-23-06

Inorganic Metals

Site/Project: SNL/ Site 105 AR/COC #: 609364, 365, 371, 372, 373, 374. Laboratory Sample IDs: 155443-001 thru -020

Laboratory: GEL SDG #: 155443

Methods: EPA 7471A (CVAA).

# of Samples: 20 Matrix: Soil Batch #s: 501860

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NA	✓	NA	✓	NA		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. **Solids-to-aqueous conversion:** mg / kg = µg / g : [(µg / g) x (sample mass {g} / sample vol. {ml}) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments:

Reviewed By: David Schwent Date: 2-28-06.

Inorganic Metals

Site/Project: SNL/ Site 105 AR/COC #: 609364,365,371,372,373,374 Laboratory Sample IDs: 155447-001 thru-020

Laboratory: GEL SDG #: 155447

Methods: EPA 7471 A (CVAA)

# of Samples: 20 Matrix: Soil Batch #s: 501864

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NA	✓	NA	✓	NA		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg / kg = µg / g : [(µg / g) x (sample mass {g} / sample vol. {ml}) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments:

Reviewed By: David Schwartz Date: 2-28-06

Inorganic Metals

Site/Project: SNL/Site 105 AR/COC #: 609364, 365, 371, 372, 373, 374 Laboratory Sample IDs: 155452-001 thru -020.

Laboratory: GEL SDG #: 155452-001 thru -020.

Methods: EPA 7471A (CVAA)

# of Samples: 20 Matrix: Soil Batch #s: 501867

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓✓	✓	✓	NA	✓	*	✓	NA			
Cyanide CN																				

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg / kg = µg / g : [(µg / g) x (sample mass {g} / sample vol. {ml}) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments: 1 of 2 FD RPDs >35%.

Reviewed By: David Schuent Date: 2-28-06.

Inorganic Metals

Site/Project: SNL/ Site 105 AR/COC #: 609364, 365, 371, 372, 373, 374 Laboratory Sample IDs: 155456-001

Laboratory: GEL SDG #: 155456

Methods: EPA 7471 A (CVAA)

# of Samples: 1 Matrix: Soil Batch #s: 501870

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NA	✓	NA	✓	NA		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. **Solids-to-aqueous conversion:** mg / kg = µg / g : [(µg / g) x (sample mass {g} / sample vol. {ml}) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments:

Reviewed By: David Schwartz Date: 2-28-06

Inorganic Metals

Site/Project: SMU/Site/05 AR/COC #: 609364, 365, 371, 372, 373, 374. Laboratory Sample IDs: 155458-001 and -002 [EBs]

Laboratory: OEL SDG #: 155458

Methods: EPA 7470A (CVAA)

# of Samples: 2 Matrix: aqueous (EBs) Batch #s: Sol 846

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. **Solids-to-aqueous conversion:** mg / kg = µg / g : [(µg / g) x (sample mass {g} / sample vol. {ml}) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments:

Reviewed By: David Schwartz Date: 2-28-06

RECORDS CENTER CODE:

SMO ANALYTICAL DATA ROUTING FORM

PROJECT NAME: Site 105 PROJECT/TASK: 98046_02.02.09

SNL TASK LEADER: Langkopf ORG/MS/CF0#: 6146/1087/CF056-06

SMO PROJECT LEAD: Herrera SAMPLE SHIP DATE: 2/6/2006

ARCOC	LAB	LAB ID	PRELIM DATE	FINAL DATE	EDD	EDD ON Q	Cust CD	RC CD
609364	GEL	155418	2/16/2006	2/21/2006	X	X	X	X
609365	GEL	155418	2/16/2006	2/21/2006	X	X	X	X
609371	GEL	155418	2/16/2006	2/21/2006	X	X	X	X
609372	GEL	155418	2/16/2006	2/21/2006	X	X	X	X
609373	GEL	155418	2/16/2006	2/21/2006	X	X	X	X
609374	GEL	155418	2/16/2006	2/21/2006	X	X	X	X

DATA PACKAGE TAT:	X	RUSH (3 day)		NORMAL
CORRECTIONS REQUESTED BY/DATE:				
PROBLEM #/DATE CORRECTION RECEIVED:				
CVR COMPLETED BY/DATE:	W. Palencia		2-21-06	
FINAL TRANSMITTED TO/DATE:	S. Griffith		2-21-06	
SENT TO VALIDATION BY/DATE:	R. Kavanaugh		02-28-06	
REVISIONS REQUESTED/REVISIONS RECEIVED (DATE):				
VALIDATION COMPLETED BY/DATE:	D. Schwent		03-10-06	
COPY TO WM BY/DATE:				
CD REQUESTED BY/DATE:				
CD RECEIVED BY/DATE		R. Kavanaugh		2/21/2006
TO ERDMS OR RECORDS CENTER BY/DATE:				

COMMENTS: Validation could not be completed until QC Sample data arrived which was not until 3-9-06.

Contract Verification Review (CVR)

Project Leader LANGKOPF | Project Name SITE 105 | Case No. 98046_02.02.09

AR/COC No. 609364, 609365, 609371, 609372, 609373 & 609374 | Analytical Lab GEL | SDG No. 155168

In the tables below, mark any information that is missing or incorrect and give an explanation.

1.0 Analysis Request and Chain of Custody Record and Log-In Information

Line No.	Item	Complete? Yes	Complete? No	If no, explain	Resolved? Yes	Resolved? No
1.1	All items on COC complete - data entry clerk initialed and dated	X				
1.2	Container type(s) correct for analyses requested	X				
1.3	Sample volume adequate for # and types of analyses requested	X				
1.4	Preservative correct for analyses requested	X				
1.5	Custody records continuous and complete	X				
1.6	Lab sample number(s) provided and SNL sample number(s) cross referenced and correct	X				
1.7	Date samples received	X				
1.8	Condition upon receipt information provided	X				

2.0 Analytical Laboratory Report

Line No.	Item	Complete? Yes	Complete? No	If no, explain	Resolved? Yes	Resolved? No
2.1	Data reviewed, signature	X				
2.2	Method reference number(s) complete and correct	X				
2.3	QC analysis and acceptance limits provided (MB, LCS, Replicate)	X				
2.4	Matrix spike/matrix spike duplicate data provided (if requested)	N/A				
2.5	Detection limits provided; PQL and MDL (or IDL), MDA and L_c	X				
2.6	QC batch numbers provided	X				
2.7	Dilution factors provided and all dilution levels reported	X				
2.8	Data reported in appropriate units and using correct significant figures	X				
2.9	Radiochemistry analysis uncertainty (2 sigma error) and tracer recovery (if applicable) reported	N/A				
2.10	Narrative provided	X				
2.11	TAT met	X				
2.12	Hold times met	X				
2.13	Contractual qualifiers provided	X				
2.14	All requested result and TIC (if requested) data provided	X				

Contract Verification Review (Continued)

3.0 Data Quality Evaluation

Item	Yes	No	If no, Sample ID No./Fraction(s) and Analysis
3.1 Are reporting units appropriate for the matrix and meet contract specified or project-specific requirements? Inorganics and metals reported as ppm (mg/liter or mg/Kg)? Tritium reported in picocuries per liter with percent moisture for soil samples? Units consistent between QC samples and sample data	X		
3.2 Quantitation limit met for all samples	X		
3.3 Accuracy a) Laboratory control samples accuracy reported and met for all samples	X		
b) Surrogate data reported and met for all organic samples analyzed by a gas chromatography technique	N/A		
c) Matrix spike recovery data reported and met	N/A		
3.4 Precision a) Replicate sample precision reported and met for all inorganic and radiochemistry samples	N/A		
b) Matrix spike duplicate RPD data reported and met for all organic samples	N/A		
3.5 Blank data a) Method or reagent blank data reported and met for all samples	X		
b) Sampling blank (e.g., field, trip, and equipment) data reported and met	X		
3.6 Contractual qualifiers provided: "J"- estimated quantity; "B"-analyte found in method blank above the MDL for organic or above the PQL for inorganic; "U"- analyte undetected (results are below the MDL, IDL, or MDA (radiochemical)); "H"-analysis done beyond the holding time	X		
3.7 Narrative addresses planchet flaming for gross alpha/beta	N/A		
3.8 Narrative included, correct, and complete	X		
3.9 Second column confirmation data provided for methods 8330 (high explosives) and 8082 (pesticides/PCBs)	N/A		

Contract Verification Review (Continued)

4.0 Calibration and Validation Documentation

Item	Yes	No	Comments
4.1 GC/MS (8260, 8270, etc.) a) 12-hour tune check provided	N/A		
b) Initial calibration provided	N/A		
c) Continuing calibration provided	N/A		
d) Internal standard performance data provided	N/A		
e) Instrument run logs provided	N/A		
4.2 GC/HPLC (8330 and 8010 and 8082) a) Initial calibration provided	N/A		
b) Continuing calibration provided	N/A		
c) Instrument run logs provided	N/A		
4.3 Inorganics (metals) a) Initial calibration provided	X		
b) Continuing calibration provided	X		
c) ICP interference check sample data provided	N/A		
d) ICP serial dilution provided	N/A		
e) Instrument run logs provided	X		
4.4 Radiochemistry a) Instrument run logs provided	N/A		

Contract Verification Review (Concluded)

5.0 Problem Resolution

Summarize the findings in the table below. List only samples/fractions for which deficiencies have been noted.

Sample/Fraction No.	Analysis	Problems/Comments/Resolutions

Were deficiencies unresolved? Yes (No)

Based on the review, this data package is complete. (Yes) No

If no, provide: nonconformance report or correction request number _____ and date correction request was submitted:-_____

Reviewed by: W. Palencia Date: 2-21-06 Closed by: _____ Date: _____

Sample Findings Summary

Site: Site 105 | AR/COC: 609366 | Inorganic

Sample ID	Method/CAS Number (Analysis/Analyte)																
	EPA7470/7471A (CVAA):	7439-97-6 (Hg)															
074460-002 105-EB-6		UJ,B3															

Validated By: David Schwent

Mr. David Schwent

Date: 03/08/06

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

Memorandum

DATE: March 8, 2006

TO: File

FROM: David Schwent

SUBJECT: Inorganic Data Review and Validation - SNL
Site: Site 105
AR/COC: 609366
SDGs: 155046 and 155050
Laboratory: GEL
Project/Task: 98046.02.02.09

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. This validation was performed according to SNL/NM ER Project AOP 00-03 Rev 1.

Summary

The samples were prepared and analyzed with accepted procedures using method EPA7470A/7471A (CVAA). Problems were identified with the data package that result in the qualification of data.

CVAA Analysis (Batch 500209):

Blanks: Hg was detected in the continuing calibration blank (CCB) at a negative concentration with an absolute value > the detection limit (DL) but < the reporting limit (RL). The associated result of Sample 155050-001 was a non-detect (ND) and will be qualified "UJ,B3."

Data are acceptable. QC measures appear to be adequate. The following sections discuss the data review and validation. Due to the matrix, an LCSD analysis was performed instead of MS/MSD and laboratory replicate analyses (see e-mail, dated 1-20-06). Later, MS/MSD and laboratory replicate analyses were performed on a sample from the COC and original soil field sample batch of this package. The MS/MSD and laboratory replicate analyses were performed on the sample beyond the method specified holding time, but within 2X the holding time, and no sample data will be qualified as a result, based on professional judgment. The MS/MSD and laboratory replicate analyses performed on Sample 157008-002, of SDG 157008, apply to the soil field samples of this package.

Holding Times/Preservation

CVAA Analysis (All Batches): All samples were analyzed within the prescribed holding times and properly preserved.

Calibration

CVAA Analysis (All Batches): All initial and continuing calibration QC acceptance criteria were met.

Blanks

CVAA Analysis (Batch 500206): No target analytes were detected in the blanks.

CVAA Analysis (Batch 500209): No target analytes were detected in the blanks, except as noted above in the summary section.

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

CVAA Analysis (Batch 500206): All LCS/LCSD QC acceptance criteria were met. It should be noted that, the MSD analysis was used as a measure of laboratory precision due to low indigenous concentration of the target analyte in the sample used for the QC analyses.

CVAA Analysis (Batch 500209): All LCS/LCSD QC acceptance criteria were met.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

CVAA Analysis (Batch 500206): All MS/MSD QC acceptance criteria were met.

CVAA Analysis (Batch 500209): No MS/MSD analyses were performed. No sample data should be qualified as a result.

Replicates

CVAA Analysis (Batch 500206): All laboratory replicate QC acceptance criteria were met. It should be noted that the MSD analysis was used as a measure of laboratory precision due to low indigenous concentration of the target analyte in the sample used for the QC analyses.

CVAA Analysis (Batch 500209): No laboratory replicate analysis was performed. No sample data should be qualified as a result.

ICP Serial Dilution

CVAA Analysis (Batch 500206): All serial dilution QC acceptance criteria were met.

CVAA Analysis (Batch 500209): No serial dilution analysis was performed. No sample data will be qualified as a result.

ICP Interference Check Sample (ICS)

CVAA Analysis (All Batches): No ICS analysis was required by this method.

Detection Limits/Dilutions

CVAA Analysis (Batch 500206): All detection limits were properly reported. Samples 155046-005, -012, and -015 were diluted 10X and Samples -006, -009, and -011 were diluted 20X due to over-range concentrations of the target analyte. No other samples required dilution.

CVAA Analysis (Batch 500209): All detection limits were properly reported. No samples required dilution.

Other QC

CVAA Analysis (All Batches): No field blanks (FBs) were submitted on the ARCOCs. It should be noted that the field duplicate (FD) relative percent difference (RPD) was >35%. No specific FD QC acceptance criteria are currently in place. No sample data will be qualified as a result.

No other specific issues were identified which affect data quality.

Data Validation Summary

Site/Project: SNL / Site 105 Project/Task #: 98046 02.02.09 # of Samples: 17 Matrix: Soil / aqueous (EB)

AR/COC #: 609366 Laboratory Sample IDs: 155046-001 thru -016; 155050-001

Laboratory: GEL

SDG #: 155046, 050

QC Element	Analysis									
	Organics				Inorganics				RAD	Other
	VOC	SVOC	Pesticide/ PCB	HPLC (HE)	ICP/AES	GFAA/ AA	CVAA (Hg)	CN		
1. Holding Times/Preservation							✓			
2. Calibrations							↓			
3. Method Blanks							UJ, B3			
4. MS/MSD							✓			
5. Laboratory Control Samples							↓			
6. Replicates							↓			
7. Surrogates										
8. Internal Standards										
9. TCL Compound Identification										
10. ICP Interference Check Sample										
11. ICP Serial Dilution										
12. Carrier/Chemical Tracer Recoveries										
13. Other QC							NA			

J = Estimated
U = Not Detected
UJ = Not Detected, Estimated
R = Unusable

Check (√) = Acceptable
Shaded Cells = Not Applicable (also "NA")
NP = Not Provided
Other: _____

Reviewed By: David Schwartz Date: 2-24-06

Inorganic Metals

Site/Project: SNL / Site 105 AR/COC #: 609366 Laboratory Sample IDs: 155046-001 thru -016

Laboratory: GEL SDG #: 155046

Methods: EPA 747/A (CVAA)

# of Samples: 16 Matrix: Soil Batch #s: 500206

CAS #/ Analyte	QC Element																155050-001			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	~~NA~~	~~NA~~	~~NA~~	~~NA~~ 2-8-06	NA	✓	*	✓	NA		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg / kg = µg / g : [(µg / g) x (sample mass (g) / sample vol. (ml)) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments: * FD RPD >35%.

MSD used as measure of precision for soil samples.

Reviewed By: David Schwent Date: 2-24-06

Inorganic Metals

Site/Project: SRL / Site 105 AR/COC #: 609366 Laboratory Sample IDs: 155050-001 (ER)

Laboratory: GEL SDG #: 155050

Methods: EPA 7470A (CVAA)

# of Samples: 1 Matrix: aqueous (ER) Batch #s: 500209

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB ug/L	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	-0.069	✓	✓	✓	✓	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg / kg = µg / g : [(µg / g) x (sample mass {g} / sample vol. {ml}) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments:

Reviewed By: David Schuet Date: 2-24-06

Contract Verification Review (CVR)

Project Leader Langkopf | Project Name Site 105 | Case No. 98046_02.02.09

AR/COC No. 609366 | Analytical Lab GEL | SDG No. 155046

In the tables below, mark any information that is missing or incorrect and give an explanation.

1.0 Analysis Request and Chain of Custody Record and Log-In Information

Line No.	Item	Complete? Yes	Complete? No	If no, explain	Resolved? Yes	Resolved? No
1.1	All items on COC complete - data entry clerk initialed and dated	X				
1.2	Container type(s) correct for analyses requested	X				
1.3	Sample volume adequate for # and types of analyses requested	X				
1.4	Preservative correct for analyses requested	X				
1.5	Custody records continuous and complete	X				
1.6	Lab sample number(s) provided and SNL sample number(s) cross referenced and correct	X				
1.7	Date samples received	X				
1.8	Condition upon receipt information provided	X				

2.0 Analytical Laboratory Report

Line No.	Item	Complete? Yes	Complete? No	If no, explain	Resolved? Yes	Resolved? No
2.1	Data reviewed, signature	X				
2.2	Method reference number(s) complete and correct	X				
2.3	QC analysis and acceptance limits provided (MB, LCS, Replicate)	X				
2.4	Matrix spike/matrix spike duplicate data provided (if requested)	N/A				
2.5	Detection limits provided: PQL and MDL (or IDL), MDA and L_c	X				
2.6	QC batch numbers provided	X				
2.7	Dilution factors provided and all dilution levels reported	X				
2.8	Data reported in appropriate units and using correct significant figures	X				
2.9	Radiochemistry analysis uncertainty (2 sigma error) and tracer recovery (if applicable) reported	N/A				
2.10	Narrative provided	X				
2.11	TAT met	X				
2.12	Hold times met	X				
2.13	Contractual qualifiers provided	X				
2.14	All requested result and TIC (if requested) data provided	X				

Contract Verification Review (Continued)

3.0 Data Quality Evaluation

Item	Yes	No	If no, Sample ID No./Fraction(s) and Analysis
3.1 Are reporting units appropriate for the matrix and meet contract specified or project-specific requirements? Inorganics and metals reported as ppm (mg/liter or mg/Kg)? Tritium reported in picocuries per liter with percent moisture for soil samples? Units consistent between QC samples and sample data	X		
3.2 Quantitation limit met for all samples	X		
3.3 Accuracy a) Laboratory control samples accuracy reported and met for all samples	X		
b) Surrogate data reported and met for all organic samples analyzed by a gas chromatography technique	N/A		
c) Matrix spike recovery data reported and met	N/A		
3.4 Precision a) Replicate sample precision reported and met for all inorganic and radiochemistry samples	N/A		
b) Matrix spike duplicate RPD data reported and met for all organic samples	N/A		
3.5 Blank data a) Method or reagent blank data reported and met for all samples	X		
b) Sampling blank (e.g., field, trip, and equipment) data reported and met	X		
3.6 Contractual qualifiers provided: "J"- estimated quantity; "B"-analyte found in method blank above the MDL for organic or above the PQL for inorganic; "U"- analyte undetected (results are below the MDL, IDL, or MDA (radiochemical)); "H"-analysis done beyond the holding time	X		
3.7 Narrative addresses planchet flaming for gross alpha/beta	N/A		
3.8 Narrative included, correct, and complete	X		
3.9 Second column confirmation data provided for methods 8330 (high explosives) and 8082 (pesticides/PCBs)	N/A		

Contract Verification Review (Continued)

4.0 Calibration and Validation Documentation

Item	Yes	No	Comments
4.1 GC/MS (8260, 8270, etc.) a) 12-hour tune check provided	N/A		
b) Initial calibration provided	N/A		
c) Continuing calibration provided	N/A		
d) Internal standard performance data provided	N/A		
e) Instrument run logs provided	N/A		
4.2 GC/HPLC (8330 and 8010 and 8082) a) Initial calibration provided	N/A		
b) Continuing calibration provided	N/A		
c) Instrument run logs provided	N/A		
4.3 Inorganics (metals) a) Initial calibration provided	X		
b) Continuing calibration provided	X		
c) ICP interference check sample data provided	N/A		
d) ICP serial dilution provided	N/A		
e) Instrument run logs provided	X		
4.4 Radiochemistry a) Instrument run logs provided	N/A		

Contract Verification Review (Concluded)

5.0 Problem Resolution
Summarize the findings in the table below. List only samples/fractions for which deficiencies have been noted.

Sample/Fraction No.	Analysis	Problems/Comments/Resolutions

Were deficiencies unresolved? Yes (No)

Based on the review, this data package is complete. (Yes) No

If no, provide: nonconformance report or correction request number _____ and date correction request was submitted_____

Reviewed by: [signature] Date: 02/17/06 Closed by:_____ Date:_____

Sample Findings Summary

Site: Site 105 **AR/COC:** 609367, 609368, 609369, 609370 **Inorganic**

Sample ID	Method/CAS Number (Analysis/Analyte)																
	EPA7470A/7471A (CVAA):	7439-97-6 (Hg)															
075546-002 105-BH-137-8-S		J,B3															
075554-002 105-BH-139-8-S		J,B3															
075562-002 105-BH-141-4-S		J,B3															
075566-002 105-BH-142-4-S		J,A2															
075567-002 105-BH-142-8-S		J,A2															
075568-002 105-BH-143-0-S		J,A2															
075569-002 105-BH-143-2-S		J,A2															
075570-002 105-BH-143-4-S		J,A2															
075571-002 105-BH-143-6-S		R,A2															
075572-002 105-BH-144-0-S		J,A2															
075573-002 105-BH-144-2-S		J,A2															
075574-002 105-BH-144-4-S		J,A2															
075575-002 105-BH-144-6-S		J,A2															
075576-002 105-BH-145-0-S		J,A2															
075577-002 105-BH-145-2-S		J,A2															
075578-002 105-BH-145-4-S		J,A2															
075579-002 105-BH-145-8-S		J,A2															
075580-002 105-BH-146-0-S		J,A2															
075581-002 105-BH-146-2-S		J,A2															
075582-002 105-BH-146-4-S		J,A2															
075583-002 105-BH-146-6-S		J,A2															
075584-002 105-BH-146-6-SD		J,A2															
075585-002 105-BH-15-0-S		J,A2															

Validated By: David Schwent

Mr. David Schwent

Date: 03/10/06

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

Memorandum

DATE: March 10, 2006

TO: File

FROM: David Schwent

SUBJECT: Inorganic Data Review and Validation - SNL
Site: Site 105
AR/COC: 609367, 609368, 609369, and 609370
SDG: 155168, 155170, 155180, 155196, and 155197
Laboratory: GEL
Project/Task: 98046.02.02.09

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. This validation was performed according to SNL/NM ER Project AOP 00-03 Rev 1.

Summary

The samples were prepared and analyzed with accepted procedures using method EPA7470A/7471A (CVAA). Problems were identified with the data package that result in the qualification of data.

CVAA Analysis (Batch 500628):

Blanks: Hg was detected in the continuing calibration blanks (CCBs) at concentrations < the reporting limit (RL). The associated results of Samples 155170-001, -009, and -017 were detects <5X the highest CCB concentration and will be qualified "J,B3."

CVAA Analysis (Batch 500632):

MS/MSD: For Hg, the MS percent recovery (%R) (0%) and MSD %R (0%) were <30%. All associated sample results, except the result for Sample 155180-006, were detects and will be qualified "J,A2"; the result for -006 was a non-detect (ND) and will be qualified "R,A2."

Replicates: For Hg, the laboratory replicate relative percent difference (RPD) (106%) was >35%. All associated sample results, except the result for Sample 155180-006, were detects and will be qualified "J"; the result for -006 was a non-detect (ND) and will be qualified "UJ."

Data are acceptable. QC measures appear to be adequate. The following sections discuss the data review and validation. Due to the matrix, an LCSD analysis was performed instead of MS/MSD and laboratory replicate analyses (see e-mail, dated 1-20-06). Later, MS/MSD and laboratory replicate analyses were performed on samples from the COCs and original soil field sample batches of this package. The MS/MSD and laboratory replicate analyses were performed on the samples beyond the method specified holding time, but within 2X the holding time, and no sample data will be qualified as a result, based on professional judgment. The MS/MSD and laboratory replicate analyses performed on Samples 157007-001, -002, -003, and -004 of SDG 157007 apply to the soil field samples of this package.

Holding Times/Preservation

CVAA Analysis (All Batches): All samples were analyzed within the prescribed holding times and properly preserved.

Calibration

CVAA Analysis (All Batches): All initial and continuing calibration QC acceptance criteria were met.

Blanks

CVAA Analysis (Batch 500628): No target analytes were detected in the blanks, except as noted above in the summary section and the following. Hg was detected in the CCBs at concentrations < the RL. However, all associated sample results, except the results of Samples 155170-001, -009, and -017, were detects >5X the highest CCB concentration and will not be qualified.

CVAA Analysis (All Other Batches): No target analytes were detected in the blanks.

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

CVAA Analysis (Batch 500743): All LCS/LCSD QC acceptance criteria were met.

CVAA Analysis (All Other Batches): All LCS/LCSD QC acceptance criteria were met. It should be noted that the MSD or laboratory replicate analyses were used as measures of laboratory precision.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

CVAA Analysis (Batch 500628): All MS/MSD QC acceptance criteria were met, except as noted above in the summary section.

CVAA Analysis (Batch 500743): No MS/MSD analyses were performed. No sample data will be qualified as a result.

CVAA Analysis (All Other Batches): All MS/MSD QC acceptance criteria were met.

Replicates

CVAA Analysis (Batch 500628): All laboratory replicate QC acceptance criteria were met, except as noted above in the summary section.

CVAA Analysis (Batch 500743): No laboratory replicate analysis was performed. The LCSD was used as a measure of precision. No sample data will be qualified as a result.

CVAA Analysis (All Other Batches): All laboratory replicate QC acceptance criteria were met. It should be noted that the MSD analyses were used as measures of laboratory precision due to low indigenous concentration of the target analyte in the sample used for the QC analyses.

ICP Serial Dilution

CVAA Analysis (Batch 500743): No serial dilution analysis was performed. No sample data will be qualified as a result.

CVAA Analysis (All Other Batches): All serial dilution QC acceptance criteria were met.

ICP Interference Check Sample (ICS)

CVAA Analysis (All Batches): No ICS analysis was required by this method.

Detection Limits/Dilutions

CVAA Analysis (Batch 500626): All detection limits were properly reported. Samples 155168-001, -010, -014, -019, and -020 were diluted 20X and Sample -018 was diluted 50X due to over-range concentrations of the target analyte. No other samples required dilution.

CVAA Analysis (Batch 500628): All detection limits were properly reported. Samples 155170-002, -004, -006, -008, -012, and -015 were diluted 20X; Samples -003 and -010 were diluted 50X; Sample -016 was diluted 10X; Sample -014 was diluted 2X; and Sample -019 was diluted 100X due to over-range concentrations of the target analyte. No other samples required dilution.

CVAA Analysis (Batch 500632): All detection limits were properly reported. Samples 155180-007, -010, and -015 were diluted 20X; Sample -016 was diluted 10X; and Sample -011 was diluted 100X due to over-range concentrations of the target analyte. No other samples required dilution.

CVAA Analysis (Batch 500740): All detection limits were properly reported. Sample 155196-004 was diluted 2X due to over-range concentration of the target analyte. No other samples required dilution.

CVAA Analysis (Batch 500743): All detection limits were properly reported. No samples required dilution.

Other QC

CVAA Analysis (All Batches): No field blanks (FBs) were submitted on the ARCOCs. It should be noted that one or more field duplicate (FD) relative percent differences (RPDs) were >35%. No specific FD QC acceptance criteria are currently in place. No sample data will be qualified as a result.

No other specific issues were identified which affect data quality.

Data Validation Summary

Site/Project: SNL/Site 105 Project/Task #: 98046.02.02.09 # of Samples: 68 Matrix: Soil / aqueous (EB)

AR/COC #: 609367, 368, 369, 370 Laboratory Sample IDs: 155168-001 thru -020; 155170-001 thru -020; 155180-001 thru -020; 155196-001 thru -007; 155197-001 (EB)

Laboratory: GEL

SDG #: 155168, 170, 180, 196, 197

QC Element	Analysis									
	Organics				Inorganics				RAD	Other
	VOC	SVOC	Pesticide/ PCB	HPLC (HE)	ICP/AES	GFAA/ AA	CVAA (Hg)	CN		
1. Holding Times/Preservation							✓			
2. Calibrations							✓			
3. Method Blanks							J, B3			
4. MS/MSD			NA				J, R, A2		NA	
5. Laboratory Control Samples							✓			
6. Replicates							J			
7. Surrogates										
8. Internal Standards										
9. TCL Compound Identification										
10. ICP Interference Check Sample										
11. ICP Serial Dilution										
12. Carrier/Chemical Tracer Recoveries										
13. Other QC							NA			

J = Estimated
U = Not Detected
UJ = Not Detected, Estimated
R = Unusable

Check (√) = Acceptable
Shaded Cells = Not Applicable (also "NA")
NP = Not Provided
Other: _____

Reviewed By: David Schwartz Date: 2-22-06

Inorganic Metals

Site/Project: SWL/Site 105 AR/COC #: 609367, 368, 369, 370 Laboratory Sample IDs: 155168-001 thru -020.

Laboratory: GEL SDG #: SDG 155168, 170, 180, 196, 197 → 155168

Methods: EPA 747/A (CVAA)

# of Samples: 20 Matrix: Soil Batch #s: 500676

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	~~NA~~	~~NA~~	~~NA~~	~~NA~~	NA	✓	✓	✓	~~NA~~		
											DS	3-9-06								
Cyanide CN																				

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg / kg = µg / g : [(µg / g) x (sample mass (g) / sample vol. (ml)) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments: * FD RPD <38%.

Reviewed By: David S Lunsford Date: 2-22-06

Inorganic Metals

Site/Project: SWL/Site 105 AR/COC #: 60936, 368, 369, 370 Laboratory Sample IDs: 155168-001 thru -020.

Laboratory: GEL SDG #: SDG 155168, 170, 180, 196, 197 → 155168

Methods: EPA 747/A (CVAA)

# of Samples: 20 Matrix: Soil Batch #s: 500626

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	~~NA~~	~~NA~~	~~NA~~	~~NA~~	NA	✓	✓	✓	~~NA~~		
											DS	3-9-06								
Cyanide CN																				

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg / kg = µg / g : [(µg / g) x (sample mass (g) / sample vol. (ml)) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments: ☆ FD RPD <38%.

Reviewed By: David S Durant Date: 2-22-06

Inorganic Metals

Site/Project: SRL / Site 105 AR/COC #: 609,367,368,369,370 Laboratory Sample IDs: 155170-001 thru -020

Laboratory: C-EL SDG #: 155170

Methods: EPA 7471 A (CVAA)

# of Samples: 20 Matrix: Soil Batch #s: 500628

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB µg/L	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	0.056	✓	✓	✓	✓	~~NA~~	~~NA~~	~~NA~~	~~NA~~	NA	✓	*	✓	NA		
												AS 3-9-06								
Cyanide CN																				

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg / kg = µg / g : [(µg / g) x (sample mass (g) / sample vol. (ml)) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments: * FD RPD 735%.

Reviewed By: David Schwent Date: 2-22-06

Inorganic Metals

Site/Project: ~~SNL~~ / Site 105 AR/COC #: 609367, 368, 369, 370 Laboratory Sample IDs: 155180-001 thru -020

Laboratory: GEL SDG #: 155180

Methods: EPA 7471A (CVAA)

# of Samples: 20 Matrix: Soil Batch #s: 500632

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	~~NA~~ O	~~NA~~ O	~~NA~~ ✓ (NA)	~~NA~~ 106	NA	✓	* ✓	✓	NA		
													OS 3-4-06							
Cyanide CN																				

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg / kg = µg / g : [(µg / g) x (sample mass {g} / sample vol. {ml}) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments: * FD RPD <35%

Reviewed By: David Schwent Date: 2-22-06

Inorganic Metals

Site/Project: SNL / Site 105 AR/COC #: 609367,368,369,370 Laboratory Sample IDs: 155196-001 thru -007

Laboratory: GEL SDG #: 155196

Methods: EPA 7471A (CVAA)

# of Samples: 7 Matrix: Soil Batch #s: 500740

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	~~NA~~	~~NA~~	~~NA~~	~~NA~~	NA	✓	NA	✓	NA		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg / kg = µg / g : [(µg / g) x (sample mass {g} / sample vol. {ml}) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments:

Reviewed By: David Schwartz Date: 7-22-06

Inorganic Metals

Site/Project: SNL/Site 105 AR/COC #: 609367,368,369,370 Laboratory Sample IDs: 155197-001 [EB]

Laboratory: GEL SDG #: 155197

Methods: EPA 7470A (CVAA)

# of Samples: 1 Matrix: aqueous Batch #s: 500743

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg / kg = µg / g : [(µg / g) x (sample mass {g} / sample vol. {ml}) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments:

Reviewed By: David Schwent Date: 2-22-06

Contract Verification Review (CVR)

Project Leader LANGKOPF | Project Name SITE 105 | Case No. 98046_02.02.09

AR/COC No. 609367, 609368, 609369 & 609370 | Analytical Lab GEL | SDG No. 155168

In the tables below, mark any information that is missing or incorrect and give an explanation.

1.0 Analysis Request and Chain of Custody Record and Log-In Information

Line No.	Item	Complete? Yes	Complete? No	If no, explain	Resolved? Yes	Resolved? No
1.1	All items on COC complete - data entry clerk initialed and dated	X				
1.2	Container type(s) correct for analyses requested	X				
1.3	Sample volume adequate for # and types of analyses requested	X				
1.4	Preservative correct for analyses requested	X				
1.5	Custody records continuous and complete	X				
1.6	Lab sample number(s) provided and SNL sample number(s) cross referenced and correct	X				
1.7	Date samples received	X				
1.8	Condition upon receipt information provided	X				

2.0 Analytical Laboratory Report

Line No.	Item	Complete? Yes	Complete? No	If no, explain	Resolved? Yes	Resolved? No
2.1	Data reviewed, signature	X				
2.2	Method reference number(s) complete and correct	X				
2.3	QC analysis and acceptance limits provided (MB, LCS, Replicate)	X				
2.4	Matrix spike/matrix spike duplicate data provided (if requested)	N/A				
2.5	Detection limits provided; PQL and MDL (or IDL), MDA and L_c	X				
2.6	QC batch numbers provided	X				
2.7	Dilution factors provided and all dilution levels reported	X				
2.8	Data reported in appropriate units and using correct significant figures	X				
2.9	Radiochemistry analysis uncertainty (2 sigma error) and tracer recovery (if applicable) reported	N/A				
2.10	Narrative provided	X				
2.11	TAT met	X				
2.12	Hold times met	X				
2.13	Contractual qualifiers provided	X				
2.14	All requested result and TIC (if requested) data provided	X				

Contract Verification Review (Continued)

3.0 Data Quality Evaluation

Item	Yes	No	If no, Sample ID No./Fraction(s) and Analysis
3.1 Are reporting units appropriate for the matrix and meet contract specified or project-specific requirements? Inorganics and metals reported as ppm (mg/liter or mg/Kg)? Tritium reported in picocuries per liter with percent moisture for soil samples? Units consistent between QC samples and sample data	X		
3.2 Quantitation limit met for all samples	X		
3.3 Accuracy a) Laboratory control samples accuracy reported and met for all samples	X		
b) Surrogate data reported and met for all organic samples analyzed by a gas chromatography technique	N/A		
c) Matrix spike recovery data reported and met	N/A		
3.4 Precision a) Replicate sample precision reported and met for all inorganic and radiochemistry samples	N/A		
b) Matrix spike duplicate RPD data reported and met for all organic samples	N/A		
3.5 Blank data a) Method or reagent blank data reported and met for all samples	X		
b) Sampling blank (e.g., field, trip, and equipment) data reported and met	X		
3.6 Contractual qualifiers provided: "J"- estimated quantity; "B"-analyte found in method blank above the MDL for organic or above the PQL for inorganic; "U"- analyte undetected (results are below the MDL, IDL, or MDA (radiochemical)); "H"-analysis done beyond the holding time	X		
3.7 Narrative addresses planchet flaming for gross alpha/beta	N/A		
3.8 Narrative included, correct, and complete	X		
3.9 Second column confirmation data provided for methods 8330 (high explosives) and 8082 (pesticides/PCBs)	N/A		

Contract Verification Review (Concluded)

5.0 Problem Resolution

Summarize the findings in the table below. List only samples/fractions for which deficiencies have been noted.

Sample/Fraction No.	Analysis	Problems/Comments/Resolutions

Were deficiencies unresolved? Yes (No)

Based on the review, this data package is complete. (Yes) No

If no, provide: nonconformance report or correction request number _____ and date correction request was submitted:-_____

Reviewed by: W. Palencia Date: 2-20-06 Closed by:_____ Date:_____

Sample Findings Summary

Site: Site 105 **AR/COC:** 609379, 609380, 609381, 609382 **Inorganic**

Sample ID	Method/CAS Number (Analysis/Analyte)																
	EPA7470A/7471A (CVAA):																
	All Acceptance criteria met. No sample data will be qualified.																

Validated By: David Schwent

Mr. David Schwent

Date: 03/13/06

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

Memorandum

DATE: March 13, 2006

TO: File

FROM: David Schwent

SUBJECT: Inorganic Data Review and Validation - SNL
Site: Site 105
AR/COC: 609379, 609380, 609381, and 609382
SDG: 155718, 155722, 155725, and 15733
Laboratory: GEL
Project/Task: 98046.02.02.09

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. This validation was performed according to SNL/NM ER Project AOP 00-03 Rev 1.

Summary

The samples were prepared and analyzed with accepted procedures using method EPA7470A/7471A (CVAA). 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. Due to the matrix, an LCSD analysis was performed instead of MS/MSD and laboratory replicate analyses (see e-mail, dated 1-20-06). Later, MS/MSD and laboratory replicate analyses were performed on samples from the COCs and original soil field sample batches of this package. The MS/MSD and laboratory replicate analyses were performed on the samples beyond the method specified holding time, but within 2X the holding time, and no sample data will be qualified as a result, based on professional judgment. The MS/MSD and laboratory replicate analyses performed on Samples 157012-004, and -005 of SDG 157012 and Sample 157013-001 of SDG 157013 apply to the soil field samples of this package.

Holding Times/Preservation

CVAA Analysis (All Batches): All samples were analyzed within the prescribed holding times and properly preserved.

Calibration

CVAA Analysis (All Batches): All initial and continuing calibration QC acceptance criteria were met.

Blanks

CVAA Analysis (Batch 503247): No target analytes were detected in the blanks, except the following. In the initial calibration blank (ICB) Hg was detected at a concentration < the reporting limit (RL). However, the associated sample result was a non-detect (ND) and will not be qualified.

CVAA Analysis (All Other Batches): No target analytes were detected in the blanks.

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

CVAA Analysis (Batch 503247): All LCS/LCSD QC acceptance criteria were met.

CVAA Analysis (All Other Batches): All LCS/LCSD QC acceptance criteria were met. It should be noted that the MSD analyses were used as measures of laboratory precision due to low indigenous concentration of the target analyte in the sample used for the QC analyses.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

CVAA Analysis (Batch 503247): No MS/MSD analyses were performed. No sample data will be qualified as a result.

CVAA Analysis (All Other Batches): All MS/MSD QC acceptance criteria were met.

Replicates

CVAA Analysis (Batch 503247): No laboratory replicate analysis was performed. No sample data will be qualified as a result.

CVAA Analysis (All Other Batches): All laboratory replicate QC acceptance criteria were met. It should be noted that the MSD analyses were used as measures of laboratory precision due to low indigenous concentration of the target analyte in the sample used for the QC analyses.

ICP Serial Dilution

CVAA Analysis (Batch 503247): No serial dilution analysis was performed. No sample data will be qualified as a result.

CVAA Analysis (All Batches): All serial dilution QC acceptance criteria were met.

ICP Interference Check Sample (ICS)

CVAA Analysis (All Batches): No ICS analysis was required by this method.

Detection Limits/Dilutions

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

Other QC

CVAA Analysis (All Batches): No field blanks (FBs) were submitted on the ARCOCs. It should be noted that the field duplicate (FD) relative percent difference (RPD) was >35%. No specific FD QC acceptance criteria are currently in place. No sample data will be qualified as a result.

No other specific issues were identified which affect data quality.

Data Validation Summary

Site/Project: SNL/Site 105 Project/Task #: 98046.02.02.02 # of Samples: 59 Matrix: Soil/aqueous (EB)

AR/COC #: 609379, 380, 381, 382 Laboratory Sample IDs: 155718-001 thru -020; 155722-001 thru -020; 155725-001 thru -018; 155733-001 (EB)

Laboratory: GEL

SDG #: 155718

QC Element	Analysis									
	Organics				Inorganics				RAD	Other
	VOC	SVOC	Pesticide/ PCB	HPLC (HE)	ICP/AES	GFAA/ AA	CVAA (Hg)	CN		
1. Holding Times/Preservation							✓			
2. Calibrations										
3. Method Blanks										
4. MS/MSD			NA						NA	
5. Laboratory Control Samples				NA						
6. Replicates										
7. Surrogates									NA	
8. Internal Standards										
9. TCL Compound Identification										
10. ICP Interference Check Sample										
11. ICP Serial Dilution										
12. Carrier/Chemical Tracer Recoveries										
13. Other QC							NA			

J = Estimated
U = Not Detected
UJ = Not Detected, Estimated
R = Unusable

Check (√) = Acceptable
Shaded Cells = Not Applicable (also "NA")
NP = Not Provided
Other: _____

Reviewed By: David Solomon Date: 3-2-06

Inorganic Metals

Site/Project: SMC/Site 105 AR/COC #: 609379, 380, 381, 382 Laboratory Sample IDs: 155718-001 thru-020

Laboratory: GEL SDG #: 155718

Methods: EPA 7471A (CVAA)

# of Samples: 20 Matrix: Soil Batch #s: 503137

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NA	✓	*	✓	NA	-	
Cyanide CN																				

Notes: Shaded rows are RCRA metals. **Solids-to-aqueous conversion:** mg / kg = µg / g : [(µg / g) x (sample mass {g} / sample vol. {ml}) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments: * FD (020) RPD >35%.
FD (004) RPD <35% (NA).

Reviewed By: David Lahner Date: 3-2-06

Inorganic Metals

Site/Project: SNL/Site 105 AR/COC #: 609377380, 381, 382 Laboratory Sample IDs: 155722-001 thru -020

Laboratory: GEL SDG #: 155722

Methods: EPA 7471A (CVAA)

# of Samples: 20 Matrix: Soil Batch #s: 503143

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NA	✓	NA	✓	NA		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. **Solids-to-aqueous conversion:** mg / kg = µg / g : [(µg / g) x (sample mass {g} / sample vol. {ml}) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments:

Reviewed By: David [illegible] Date: 3-2-06

Inorganic Metals

Site/Project: SNL/Site 105 AR/COC #: 609379, 380, 381, 382 Laboratory Sample IDs: 155725-001 thru -018.

Laboratory: GEL SDG #: 155725

Methods: EPA 7471A (CVAA)

# of Samples: 18 Matrix: Soil Batch #s: 503148

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NA	✓	NA	✓	NA		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg / kg = µg / g : [(µg / g) x (sample mass {g} / sample vol. {ml}) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments:

Reviewed By: David Schwert Date: 3-2-06

Inorganic Metals

Site/Project: SNL / Site 105 AR/COC #: 609379, 380, 381, 382 Laboratory Sample IDs: 155733-001 [EB]

Laboratory: GEL SDG #: 155733

Methods: EPA 7470A (CVAA)

# of Samples: 1 Matrix: Aqueous (EB) Batch #s: 503247

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	0.069	✓	✓	✓	✓	—	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg / kg = µg / g : [(µg / g) x (sample mass {g} / sample vol. {ml}) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments:

Reviewed By: David Schwartz Date: 3-2-06

Contract Verification Review (CVR)

Project Leader LANGKOPF | Project Name SITE 105 | Case No. 98046_02.02.09

AR/COC No. 609379, 609380, 609381 & 609382 | Analytical Lab GEL | SDG No. 155718

In the tables below, mark any information that is missing or incorrect and give an explanation.

1.0 Analysis Request and Chain of Custody Record and Log-In Information

Line No.	Item	Complete? Yes	Complete? No	If no, explain	Resolved? Yes	Resolved? No
1.1	All items on COC complete - data entry clerk initialed and dated	X				
1.2	Container type(s) correct for analyses requested	X				
1.3	Sample volume adequate for # and types of analyses requested	X				
1.4	Preservative correct for analyses requested	X				
1.5	Custody records continuous and complete	X				
1.6	Lab sample number(s) provided and SNL sample number(s) cross referenced and correct	X				
1.7	Date samples received	X				
1.8	Condition upon receipt information provided	X				

2.0 Analytical Laboratory Report

Line No.	Item	Complete? Yes	Complete? No	If no, explain	Resolved? Yes	Resolved? No
2.1	Data reviewed, signature	X				
2.2	Method reference number(s) complete and correct	X				
2.3	QC analysis and acceptance limits provided (MB, LCS, Replicate)	X				
2.4	Matrix spike/matrix spike duplicate data provided (if requested)	N/A				
2.5	Detection limits provided; PQL and MDL (or IDL), MDA and L_c	X				
2.6	QC batch numbers provided	X				
2.7	Dilution factors provided and all dilution levels reported	X				
2.8	Data reported in appropriate units and using correct significant figures	X				
2.9	Radiochemistry analysis uncertainty (2 sigma error) and tracer recovery (if applicable) reported	N/A				
2.10	Narrative provided	X				
2.11	TAT met	X				
2.12	Hold times met	X				
2.13	Contractual qualifiers provided	X				
2.14	All requested result and TIC (if requested) data provided	X				

Contract Verification Review (Continued)

3.0 Data Quality Evaluation

Item	Yes	No	If no, Sample ID No./Fraction(s) and Analysis
3.1 Are reporting units appropriate for the matrix and meet contract specified or project-specific requirements? Inorganics and metals reported as ppm (mg/liter or mg/Kg)? Tritium reported in picocuries per liter with percent moisture for soil samples? Units consistent between QC samples and sample data	X		
3.2 Quantitation limit met for all samples	X		
3.3 Accuracy a) Laboratory control samples accuracy reported and met for all samples	X		
b) Surrogate data reported and met for all organic samples analyzed by a gas chromatography technique	N/A		
c) Matrix spike recovery data reported and met	N/A		
3.4 Precision a) Replicate sample precision reported and met for all inorganic and radiochemistry samples	N/A		
b) Matrix spike duplicate RPD data reported and met for all organic samples	N/A		
3.5 Blank data a) Method or reagent blank data reported and met for all samples	X		
b) Sampling blank (e.g., field, trip, and equipment) data reported and met	X		
3.6 Contractual qualifiers provided: "J"- estimated quantity; "B"-analyte found in method blank above the MDL for organic or above the PQL for inorganic; "U"- analyte undetected (results are below the MDL, IDL, or MDA (radiochemical)); "H"-analysis done beyond the holding time	X		
3.7 Narrative addresses planchet flaming for gross alpha/beta	N/A		
3.8 Narrative included, correct, and complete	X		
3.9 Second column confirmation data provided for methods 8330 (high explosives) and 8082 (pesticides/PCBs)	N/A		

Contract Verification Review (Continued)

4.0 Calibration and Validation Documentation

Item	Yes	No	Comments
4.1 GC/MS (8260, 8270, etc.)			
a) 12-hour tune check provided	N/A		
b) Initial calibration provided	N/A		
c) Continuing calibration provided	N/A		
d) Internal standard performance data provided	N/A		
e) Instrument run logs provided	N/A		
4.2 GC/HPLC (8330 and 8010 and 8082)			
a) Initial calibration provided	N/A		
b) Continuing calibration provided	N/A		
c) Instrument run logs provided	N/A		
4.3 Inorganics (metals)			
a) Initial calibration provided	X		
b) Continuing calibration provided	X		
c) ICP interference check sample data provided	N/A		
d) ICP serial dilution provided	N/A		
e) Instrument run logs provided	X		
4.4 Radiochemistry			
a) Instrument run logs provided	N/A		

Contract Verification Review (Concluded)

5.0 Problem Resolution

Summarize the findings in the table below. List only samples/fractions for which deficiencies have been noted.

Sample/Fraction No.	Analysis	Problems/Comments/Resolutions

Were deficiencies unresolved? Yes (No)

Based on the review, this data package is complete. (Yes) No

If no, provide: nonconformance report or correction request number _____ and date correction request was submitted:-_____

Reviewed by: W. Palencia Date: 2-27-06 Closed by: _____ Date: _____

Sample Findings Summary

Site: Site 105 | **AR/COC: 609383,521** | **Inorganic**

Sample ID	Method/CAS Number (Analysis/Analyte)																
	EPA7470A/7471A (CVAA):	7439-97-6 (Hg)															
073916-002 105-EB-12		UJ,B3															

Validated By: David Schwent

Mr. David Schwent

Date: 03/10/06

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

Memorandum

DATE: March 10, 2006

TO: File

FROM: David Schwent

SUBJECT: Inorganic Data Review and Validation - SNL
Site: Site 105
AR/COC: 609383 and 609521
SDG: 156189, 156194, and 156195
Laboratory: GEL
Project/Task: 98046.02.02.09

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. This validation was performed according to SNL/NM ER Project AOP 00-03 Rev 1.

Summary

The samples were prepared and analyzed with accepted procedures using method EPA7470A/7471A (CVAA). Problems were identified with the data package that result in the qualification of data.

CVAA Analysis (Batch 504383):

Blanks: Hg was detected in the continuing calibration blanks (CCBs) at negative concentrations with absolute values > the detection limit (DL) but < the reporting limit (RL). The associated result of Sample 156195-001 was a non-detects (ND) and will be qualified "UJ,B3."

Data are acceptable. QC measures appear to be adequate. The following sections discuss the data review and validation. Due to the matrix, an LCSD analysis was performed instead of MS/MSD and laboratory replicate analyses (see e-mail, dated 1-20-06). Later, MS/MSD and laboratory replicate analyses were performed on samples from the COCs and original soil field sample batches of this package. The MS/MSD and laboratory replicate analyses were performed on the samples beyond the method specified holding time, but within 2X the holding time, and no sample data will be qualified as a result, based on professional judgment. The MS/MSD and laboratory replicate analyses performed on Samples 157013-002 and -003 of SDG 157013 apply to the soil field samples of this package.

Holding Times/Preservation

CVAA Analysis (All Batches): All samples were analyzed within the prescribed holding times and properly preserved.

Calibration

CVAA Analysis (All Batches): All initial and continuing calibration QC acceptance criteria were met.

Blanks

CVAA Analysis (Batch 504383): No target analytes were detected in the blanks, except as noted above in the summary section.

CVAA Analysis (All Other Batches): No target analytes were detected in the blanks.

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

CVAA Analysis (Batch 504383): All LCS/LCSD QC acceptance criteria were met.

CVAA Analysis (All Other Batches): All LCS/LCSD QC acceptance criteria were met. It should be noted that the MSD analyses were used as measures of laboratory precision due to low indigenous concentration of the target analyte in the sample used for the QC analyses.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

CVAA Analysis (Batch 504383): No MS/MSD analyses were performed. No sample data will be qualified as a result.

CVAA Analysis (All Other Batches): All MS/MSD QC acceptance criteria were met.

Replicates

CVAA Analysis (Batch 504838): No laboratory replicate analysis was performed. The LCSD analysis was used as a measure of precision. No sample data will be qualified as a result.

CVAA Analysis (All Other Batches): All laboratory replicate QC acceptance criteria were met. It should be noted that the MSD analyses were used as measures of laboratory precision due to low indigenous concentration of the target analyte in the sample used for the QC analyses.

ICP Serial Dilution

CVAA Analysis (Batch 504838): No serial dilution analysis was performed. No sample data will be qualified as a result.

CVAA Analysis (All Other Batches): All serial dilution QC acceptance criteria were met.

ICP Interference Check Sample (ICS)

CVAA Analysis (All Batches): No ICS analysis was required by this method.

Detection Limits/Dilutions

CVAA Analysis (Batch 504377): All detection limits were properly reported. Sample 156189-002 was diluted 10X; Samples -001, -004 thru -010, -012 thru -016, -018, and -020 were diluted 50X, and Samples -003 and -011 were diluted 100X due to over-range concentrations of the target analyte. No other samples required dilution.

CVAA Analysis (All Other Batches): All detection limits were properly reported. No samples required dilution.

Other QC

CVAA Analysis (All Batches): No field blanks (FBs) were submitted on the ARCOCs. It should be noted that the field duplicate (FD) relative percent differences (RPDs) were <35%. No specific FD QC acceptance criteria are currently in place. No sample data will be qualified as a result.

No other specific issues were identified which affect data quality.

Data Validation Summary

Site/Project: SNL / Site 105 Project/Task #: 98046.02.02.09 # of Samples: 23 Matrix: Soil / aqueous (E[illegible])

AR/COC #: 609383, 521 Laboratory Sample IDs: 156189-001 thru -020; 156194-001 and -002; 156195-001

Laboratory: GEL

SDG #: 156189

QC Element	Analysis									
	Organics				Inorganics				RAD	Other
	VOC	SVOC	Pesticide/ PCB	HPLC (HE)	ICP/AES	GFAA/ AA	CVAA (Hg)	CN		
1. Holding Times/Preservation							✓			
2. Calibrations							↓			
3. Method Blanks							UJ, B3			
4. MS/MSD							✓			
5. Laboratory Control Samples			✓	✓					✓	
6. Replicates				✓			↓		✓	
7. Surrogates										
8. Internal Standards										
9. TCL Compound Identification										
10. ICP Interference Check Sample										
11. ICP Serial Dilution										
12. Carrier/Chemical Tracer Recoveries										
13. Other QC							NA			

J = Estimated
-- Not Detected
Not Detected, Estimated
Unusable

Check (√) = Acceptable
Shaded Cells = Not Applicable (also "NA")
NP = Not Provided
Other: _____

Reviewed By: David Schwartz Date: 3-10-06

Inorganic Metals

Site/Project: SNL/Site 105 AR/COC #: 609383, 521 Laboratory Sample IDs: 156189-001 thru -020

Laboratory: GEL SDG #: 156189

Methods: EPA 7471A (CVAA).

# of Samples: 20 Matrix: Soil Batch #s: 504377

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	**	✓	NA	✓	*	✓	NA		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg / kg = µg / g : [(µg / g) x (sample mass {g} / sample vol. {ml}) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments: * FD(007) RPD >35%.

** MS/MSD RPD used as measure of precision.

Reviewed By: David Schwartz Date: 3-10-06

Inorganic Metals

Site/Project: SWL/Site 105 AR/COC #: 609383, 521 Laboratory Sample IDs: 156194-001 and -002

Laboratory: CBL SDG #: 156194

Methods: EPA 7471A (CVAA)

# of Samples: 2 Matrix: Soil Batch #s: 504380

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	**	✓	NA	✓	* ✓	✓	NA		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg / kg = µg / g : [(µg / g) x (sample mass {g} / sample vol. {ml}) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments: * FD (001) RPD < 35% (NA).

** MS/MSD RPD used as a measure of precision. Reviewed By: David Schwartz Date: 3-16-06

Inorganic Metals

Site/Project: SNL/Site 105 AR/COC #: 609383, 521 Laboratory Sample IDs: 156195-001 (EB)

Laboratory: GEL SDG #: 156195

Methods: EPA 7470A (CVAA)

# of Samples: Matrix: Batch #s: 504383

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	~0.061	✓	✓	✓	✓	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. **Solids-to-aqueous conversion:** mg / kg = µg / g : [(µg / g) x (sample mass {g} / sample vol. {ml}) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments:

Reviewed By: David Schwartz Date: 3-10-06

Contract Verification Review (CVR)

Project Leader: Langkopf | Project Name: Site 105 | Case No.: 98046_02.02.09

AR/COC No.: 609383, 609521 | Analytical Lab: GEL | SDG No.: 156189

In the tables below, mark any information that is missing or incorrect and give an explanation.

1.0 Analysis Request and Chain of Custody Record and Log-In Information

Line No.	Item	Complete? Yes	Complete? No	If no, explain	Resolved? Yes	Resolved? No
1.1	All items on COC complete - data entry clerk initialed and dated	X				
1.2	Container type(s) correct for analyses requested	X				
1.3	Sample volume adequate for # and types of analyses requested	X				
1.4	Preservative correct for analyses requested	X				
1.5	Custody records continuous and complete	X				
1.6	Lab sample number(s) provided and SNL sample number(s) cross referenced and correct	X				
1.7	Date samples received	X				
1.8	Condition upon receipt information provided	X				

2.0 Analytical Laboratory Report

Line No.	Item	Complete? Yes	Complete? No	If no, explain	Resolved? Yes	Resolved? No
2.1	Data reviewed, signature	X				
2.2	Method reference number(s) complete and correct	X				
2.3	QC analysis and acceptance limits provided (MB, LCS, Replicate)	X				
2.4	Matrix spike/matrix spike duplicate data provided (if requested)	N/A		Batch QC is LCS/LCS Dup rather than MS/Dup. Re-analysis of one non-diluted sample will be performed.		
2.5	Detection limits provided; PQL and MDL (or IDL), MDA and L_c	X				
2.6	QC batch numbers provided	X				
2.7	Dilution factors provided and all dilution levels reported	X				
2.8	Data reported in appropriate units and using correct significant figures	X				
2.9	Radiochemistry analysis uncertainty (2 sigma error) and tracer recovery (if applicable) reported	N/A				
2.10	Narrative provided	X				
2.11	TAT met	X				
2.12	Hold times met	X				
2.13	Contractual qualifiers provided	X				
2.14	All requested result and TIC (if requested) data provided	X				

Contract Verification Review (Continued)

4.0 Calibration and Validation Documentation

Item	Yes	No	Comments
4.1 GC/MS (8260, 8270, etc.) a) 12-hour tune check provided	N/A		
b) Initial calibration provided	N/A		
c) Continuing calibration provided	N/A		
d) Internal standard performance data provided	N/A		
e) Instrument run logs provided	N/A		
4.2 GC/HPLC (8330 and 8010 and 8082) a) Initial calibration provided	N/A		
b) Continuing calibration provided	N/A		
c) Instrument run logs provided	N/A		
4.3 Inorganics (metals) a) Initial calibration provided	X		
b) Continuing calibration provided	X		
c) ICP interference check sample data provided	N/A		
d) ICP serial dilution provided	N/A		
e) Instrument run logs provided	X		
4.4 Radiochemistry a) Instrument run logs provided	N/A		

Sample Findings Summary

Site: Site 105 | **AR/COC:** 609522, 609523 | **Inorganic**

Sample ID	Method/CAS Number (Analysis/Analyte)																
	EPA7470A/7471A (CVAA):	7439-97-6 (Hg)															
074234-002 105-BH-73-0-S		J															
074235-002 105-BH-73-2-S		J															
075604-002 105-BH-73-4-S		J															
075605-002 105-BH-73-4-SD		J															
075606-002 105-BH-148-0-S		J															
075607-002 105-BH-148-2-S		J															
075608-002 105-BH-148-4-S		UJ,B3															
075609-002 105-BH-149-0-S		J															
075610-002 105-BH-149-2-S		J															
075611-002 105-BH-149-2-SD		J															
075612-002 105-BH-149-4-S		J															
075613-002 105-BH-150-0-S		J															
075614-002 105-BH-150-2-S		J															
075615-002 105-BH-150-4-S		J															

Validated By: David Schwent

Mr. David Schwent

Date: 03/11/06

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

Memorandum

DATE: March 11, 2006

TO: File

FROM: David Schwent

SUBJECT: Inorganic Data Review and Validation - SNL
Site: Site 105
AR/COC: 609522 and 609523
SDG: 156573 and 156578
Laboratory: GEL
Project/Task: 98046.02.02.09

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. This validation was performed according to SNL/NM ER Project AOP 00-03 Rev 1.

Summary

The samples were prepared and analyzed with accepted procedures using method EPA7470A/7471A (CVAA). Problems were identified with the data package that result in the qualification of data.

CVAA Analysis (Batch 505972):

Blanks: Hg was detected in the continuing calibration blanks (CCBs) at negative concentrations with absolute values > the detection limit (DL) but < the reporting limit (RL). The associated result of Sample 156573-007 was a non-detect (ND) and will be qualified "UJ,B3."

CVAA Analysis (Batch 505972):

Replicates: For Hg, the laboratory replicate relative percent difference (RPD) (76%) was >35%. All associated sample results, except the result for Sample 156573-007, were detects and will be qualified "J"; the result for -007 was a ND and will be qualified "UJ."

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

Holding Times/Preservation

CVAA Analysis (All Batches): All samples were analyzed within the prescribed holding times and properly preserved.

Calibration

CVAA Analysis (All Batches): All initial and continuing calibration QC acceptance criteria were met.

Blanks

CVAA Analysis (Batch 505972): No target analytes were detected in the blanks, except as noted above in the summary section and the following. Hg was detected in the CCBs at negative concentrations with absolute values > the DL but < the RL. However, all associated sample results, except for the result of Sample 156573-007, were detects > the 5X the DL and will not be qualified.

CVAA Analysis (Batch 505975): No target analytes were detected in the blanks.

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

CVAA Analysis (Batch 505972): All LCS QC acceptance criteria were met.

CVAA Analysis (Batch 505975): All LCS/LCSD QC acceptance criteria were met.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

CVAA Analysis (Batch 505972): All MS/MSD QC acceptance criteria were met, except the following. The MS/MSD RPD was >35%. However, the laboratory replicate RPD was used as a measure of precision due to the relatively high concentrations of the target analyte in the samples used QC. No sample data will be qualified as a result.

CVAA Analysis (Batch 505975): No MS/MSD analyses were performed. No sample data will be qualified as a result.

Replicates

CVAA Analysis (Batch 505972): All laboratory replicate QC acceptance criteria were met, except as noted above in the summary section.

CVAA Analysis (Batch 505975): No laboratory replicate analysis was performed. The LCSD was used as a measure of precision. No sample data will be qualified as a result.

ICP Serial Dilution

CVAA Analysis (505972): All serial dilution QC acceptance criteria were met.

CVAA Analysis (Batch 505975): No serial dilution analysis was performed. No sample data will be qualified as a result.

ICP Interference Check Sample (ICS)

CVAA Analysis (All Batches): No ICS analysis was required by this method.

Detection Limits/Dilutions

CVAA Analysis (Batch 505972): All detection limits were properly reported. Samples 156573-008 and -010 were diluted 10X, Sample -011 was diluted 100X, Samples -002, -003, -005, and -012 were diluted 200X, Sample -004 was diluted 400X, and Sample -001 was diluted 2000X due to over-range concentrations of the target analyte. No other samples required dilution.

CVAA Analysis (Batch 505975): All detection limits were properly reported. No samples required dilution.

Other QC

CVAA Analysis (All Batches): No field blanks (FBs) were submitted on the ARCOCs. It should be noted that one or more field duplicate (FD) relative percent differences (RPDs) were >35%. No specific FD QC acceptance criteria are currently in place. No sample data will be qualified as a result.

No other specific issues were identified which affect data quality.

Data Validation Summary

Site/Project: SNL/Site 105 Project/Task #: 98046.02.02.09 # of Samples: 15 Matrix: Soil / aqueous (EB)

AR/COC #: 609522, 523 Laboratory Sample IDs: 156573-001 thru -014;

Laboratory: GEL 156578-001

SDG #: 156573

QC Element	Analysis									
	Organics				Inorganics				RAD	Other
	VOC	SVOC	Pesticide/ PCB	HPLC (HE)	ICP/AES	GFAA/ AA	CVAA (Hg)	CN		
1. Holding Times/Preservation							✓			
2. Calibrations							↓			
3. Method Blanks							UJ, B3			
4. MS/MSD							✓			
5. Laboratory Control Samples							↓			
6. Replicates							J; UJ			
7. Surrogates										
8. Internal Standards										
9. TCL Compound Identification										
10. ICP Interference Check Sample										
11. ICP Serial Dilution										
12. Carrier/Chemical Tracer Recoveries										
13. Other QC										

J = Estimated
U = Not Detected
UJ = Not Detected, Estimated
R = Unusable

Check (√) = Acceptable
Shaded Cells = Not Applicable (also "NA")
NP = Not Provided
Other: _____

Reviewed By: David Schwert Date: 3-11-06

SNL/

Inorganic Metals

Site/Project: Site 105 AR/COC #: 609522, 523 Laboratory Sample IDs: 156573-001 thru -014

Laboratory: GEL SDG #: 156573

Methods: EPA 7471A (CVAA)

# of Samples: 14 Matrix: Soil Batch #s: 505972

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	-0.003	✓	✓	NA	NA	✓	✓	99*	76	NA	✓	**	✓	NA		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg/kg = µg/g; [(µg/g) x (sample mass (g) / sample vol. (ml)) x (1000 ml / 1 liter)] / Dilution Factor = µg/l

Comments: * DUP used as measure of precision due to high Hg conc of QC samples

** FD (-004, -010) RPDs 735%.

Reviewed By: David Schwartz Date: 3-11-06

Inorganic Metals

Site/Project: SNL / Site 105 AR/COC #: 609522, 523 Laboratory Sample IDs: 156578-001 [EB]

Laboratory: GEL SDG #: 156578, ~~578~~ PS 3-11-06

Methods: EPA 7470A (CVAA)

# of Samples: 1 Matrix: Aqueous Batch #s: 505975

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba																				
7440-41-7 Be																				
7440-43-9 Cd																				
7440-70-2 Ca																				
7440-47-3 Cr																				
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag																				
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb																				
7782-49-2 Se																				
7440-38-2 As																				
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	✓	✓	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. **Solids-to-aqueous conversion:** mg / kg = µg / g : [(µg / g) x (sample mass (g) / sample vol. (ml)) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments:

Reviewed By: David Schwartz Date: 3-11-06

Contract Verification Review (CVR)

Project Leader LANGKOPF | Project Name SITE 105 | Case No. 98046_02.02.09

AR/COC No. 609522 & 609523 | Analytical Lab GEL | SDG No. 156573

In the tables below, mark any information that is missing or incorrect and give an explanation.

1.0 Analysis Request and Chain of Custody Record and Log-In Information

Line No.	Item	Complete? Yes	Complete? No	If no, explain	Resolved? Yes	Resolved? No
1.1	All items on COC complete - data entry clerk initialed and dated	X				
1.2	Container type(s) correct for analyses requested	X				
1.3	Sample volume adequate for # and types of analyses requested	X				
1.4	Preservative correct for analyses requested	X				
1.5	Custody records continuous and complete	X				
1.6	Lab sample number(s) provided and SNL sample number(s) cross referenced and correct	X				
1.7	Date samples received	X				
1.8	Condition upon receipt information provided	X				

2.0 Analytical Laboratory Report

Line No.	Item	Complete? Yes	Complete? No	If no, explain	Resolved? Yes	Resolved? No
2.1	Data reviewed, signature	X				
2.2	Method reference number(s) complete and correct	X				
2.3	QC analysis and acceptance limits provided (MB, LCS, Replicate)	X				
2.4	Matrix spike/matrix spike duplicate data provided (if requested)	N/A				
2.5	Detection limits provided; PQL and MDL (or IDL), MDA and L_c	X				
2.6	QC batch numbers provided	X				
2.7	Dilution factors provided and all dilution levels reported	X				
2.8	Data reported in appropriate units and using correct significant figures	X				
2.9	Radiochemistry analysis uncertainty (2 sigma error) and tracer recovery (if applicable) reported	N/A				
2.10	Narrative provided	X				
2.11	TAT met	X				
2.12	Hold times met	X				
2.13	Contractual qualifiers provided	X				
2.14	All requested result and TIC (if requested) data provided	X				

Contract Verification Review (Continued)

3.0 Data Quality Evaluation

Item	Yes	No	If no, Sample ID No./Fraction(s) and Analysis
3.1 Are reporting units appropriate for the matrix and meet contract specified or project-specific requirements? Inorganics and metals reported as ppm (mg/liter or mg/Kg)? Tritium reported in picocuries per liter with percent moisture for soil samples? Units consistent between QC samples and sample data	X		
3.2 Quantitation limit met for all samples	X		
3.3 Accuracy a) Laboratory control samples accuracy reported and met for all samples	X		
b) Surrogate data reported and met for all organic samples analyzed by a gas chromatography technique	N/A		
c) Matrix spike recovery data reported and met	X		
3.4 Precision a) Replicate sample precision reported and met for all inorganic and radiochemistry samples		X	RPD OUTSIDE ACCEPTANCE RANGE FOR SAMPLE REPLICATE
b) Matrix spike duplicate RPD data reported and met for all organic samples	N/A		
3.5 Blank data a) Method or reagent blank data reported and met for all samples	X		
b) Sampling blank (e.g., field, trip, and equipment) data reported and met	X		
3.6 Contractual qualifiers provided: "J"- estimated quantity; "B"-analyte found in method blank above the MDL for organic or above the PQL for inorganic; "U"- analyte undetected (results are below the MDL, IDL, or MDA (radiochemical)); "H"-analysis done beyond the holding time	X		
3.7 Narrative addresses planchet flaming for gross alpha/beta	N/A		
3.8 Narrative included, correct, and complete	X		
3.9 Second column confirmation data provided for methods 8330 (high explosives) and 8082 (pesticides/PCBs)	N/A		

Contract Verification Review (Continued)

4.0 Calibration and Validation Documentation

Item	Yes	No	Comments
4.1 GC/MS (8260, 8270, etc.)			
a) 12-hour tune check provided	N/A		
b) Initial calibration provided	N/A		
c) Continuing calibration provided	N/A		
d) Internal standard performance data provided	N/A		
e) Instrument run logs provided	N/A		
4.2 GC/HPLC (8330 and 8010 and 8082)			
a) Initial calibration provided	N/A		
b) Continuing calibration provided	N/A		
c) Instrument run logs provided	N/A		
4.3 Inorganics (metals)			
a) Initial calibration provided	X		
b) Continuing calibration provided	X		
c) ICP interference check sample data provided	N/A		
d) ICP serial dilution provided	N/A		
e) Instrument run logs provided	X		
4.4 Radiochemistry			
a) Instrument run logs provided	N/A		

Contract Verification Review (Concluded)

5.0 Problem Resolution

Summarize the findings in the table below. List only samples/fractions for which deficiencies have been noted.

Sample/Fraction No.	Analysis	Problems/Comments/Resolutions

Were deficiencies unresolved? Yes (No)

Based on the review, this data package is complete. (Yes) No

If no, provide: nonconformance report or correction request number _____ and date correction request was submitted:_____

Reviewed by: W. Palencia Date: 3-8-06 Closed by:_____ Date:_____

Sample Findings Summary

Site: Site 105 **AR/COC:** 609567 **Inorganic**

Sample ID	Method/CAS Number (Analysis/Analyte)																
	EPA7470A/7471A (CVAA):																
	All Acceptance criteria met. No sample data will be qualified.																

Validated By: David Schwent

Mr. David Schwent

Date: 03/23/06

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

Memorandum

DATE: March 23, 2006

TO: File

FROM: David Schwent

SUBJECT: Inorganic Data Review and Validation - SNL
Site: Site 105
AR/COC: 609567
SDG: 157647 and 157648
Laboratory: GEL
Project/Task: 98046.02.02.09

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. This validation was performed according to SNL/NM ER Project AOP 00-03 Rev 1.

Summary

The samples were prepared and analyzed with accepted procedures using method EPA7470A/7471A (CVAA). 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

CVAA Analysis (All Batches): All samples were analyzed within the prescribed holding times and properly preserved.

Calibration

CVAA Analysis (All Batches): All initial and continuing calibration QC acceptance criteria were met.

Blanks

CVAA Analysis (All Batches): No target analytes were detected in the blanks.

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

CVAA Analysis (Batch 510230): All LCS QC acceptance criteria were met.

CVAA Analysis (Batch 510233): All LCS/LCSD QC acceptance criteria were met.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

CVAA Analysis (Batch 510230): All MS/MSD QC acceptance criteria were met.

CVAA Analysis (Batch 510233): No MS/MSD analyses were performed. No sample data will be qualified as a result.

Replicates

CVAA Analysis (Batch 510230): All laboratory replicate QC acceptance criteria were met, except as noted above in the summary section.

CVAA Analysis (Batch 510233): No laboratory replicate analysis was performed. The LCSD was used as a measure of precision. No sample data will be qualified as a result.

ICP Serial Dilution

CVAA Analysis (510230): All serial dilution QC acceptance criteria were met.

CVAA Analysis (Batch 510233): No serial dilution analysis was performed. No sample data will be qualified as a result.

ICP Interference Check Sample (ICS)

CVAA Analysis (All Batches): No ICS analysis was required by this method.

Detection Limits/Dilutions

CVAA Analysis (Batch 510230): All detection limits were properly reported. Samples 157647-003 and -005 were diluted 20X due to over-range concentrations of the target analyte. No other samples required dilution.

CVAA Analysis (Batch 510233): All detection limits were properly reported. No samples required dilution.

Other QC

CVAA Analysis (All Batches): No field blanks (FBs) were submitted on the ARCOCs. It should be noted that the field duplicate (FD) relative percent difference (RPD) was >35%. No specific FD QC acceptance criteria are currently in place. No sample data will be qualified as a result.

No other specific issues were identified which affect data quality.

Site: BLDG 6536 Characterization **AR/COC:** 608368 **Inorganic**

Sample ID	Method/CAS Number (Analysis/Analyte)																
	Metals (EPA6010B):	CVAA (EPA7470A):	CVAA (EPA7471A):														
	All Acceptance criteria met. No sample data will be qualified.	All Acceptance criteria met. No sample data will be qualified.	All Acceptance criteria met. No sample data will be qualified.														

Validated By: David Schwent

Mr. David Schwent

Date: 07/28/05

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

Memorandum

DATE: July 28, 2005

TO: File

FROM: David Schwent

SUBJECT: Inorganic Data Review and Validation - SNL
Site: BLDG 6536 Characterization
AR/COC: 608368
SDG (LOT) #: F5G080171
Laboratory: STL
Project/Task: 83916.4.5.1

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. This validation was performed according to SNL/NM ER Project AOP 00-03 Rev 1.

Summary

The samples were prepared and analyzed with accepted procedures using method EPA6010B (ICP), EPA7470A (CVAA), and EPA7471A (CVAA). 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

CVAA Analysis (Batch 5192089): No target analytes were detected in the blanks, except the following. Hg was detected in the continuing calibration blank (CCB) at a negative concentration with an absolute value > the detection limit (DL) but < the reporting limit (RL). However, all associated sample results were detects >5X the DL and will not be qualified.

All Other 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. No sample data will be qualified as a result.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

CVAA Analysis (Batch 5192089): All MS QC acceptance criteria were met. It should be noted that the sample concentration was >4X the spike concentration in the MS analysis and, therefore, the MS analysis was not used to evaluate field sample data. No sample data will be qualified as a result. No MSD analyses were performed. The replicate analyses were used as measures of laboratory precision. No sample data will be qualified as a result.

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

Replicates

All Analyses: All replicate QC acceptance criteria were met.

ICP Serial Dilution

CVAA Analysis (Batch 5192089): All serial dilution QC acceptance criteria were met. It should be noted that the serial dilution concentration was <50X the RL in the serial dilution analysis. No sample data will be qualified as a result.

All Other Analyses: All serial dilution QC acceptance criteria were met.

ICP Interference Check Sample (ICS)

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

All Other Analyses: No ICS analyses were required for these methods.

Detection Limits/Dilutions

All Analyses: All detection limits were properly reported. All samples of all batches were diluted due to high target analyte concentration and/or the nature of the matrix (see sample result forms in package for specific dilution factors).

Other QC

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

No other specific issues were identified which affect data quality.

Data Validation Summary

Site/Project: SUL/BLDG. 6536 Charcoal Project/Task #: 83916.4.5.1 # of Samples: 5 Matrix: Soil; Water; water

AR/COC #: 608368 Laboratory Sample IDs: F5G080171-001 thru -005

Laboratory: STL

SDG #: (Lot)# F5G080171

QC Element	Analysis									
	Organics				Inorganics				RAD	Other
	VOC	SVOC	Pesticide/ PCB	HPLC (HE)	ICP/AES	GFAA/ AA	CVAA (Hg)	CN		
1. Holding Times/Preservation					✓		✓			
2. Calibrations					↓		↓			
3. Method Blanks					↓		↓			
4. MS/MSD					↓		↓			
5. Laboratory Control Samples		✓	✓		↓	✓	↓		✓	
6. Replicates		✓	✓		↓	✓	↓		✓	
7. Surrogates			✓		↓		↓			
8. Internal Standards					↓		↓			
9. TCL Compound Identification					↓		↓			
10. ICP Interference Check Sample					✓		↓			
11. ICP Serial Dilution					↓		↓			
12. Carrier/Chemical Tracer Recoveries					↓	✓	↓			
13. Other QC					NA		NA			

J = Estimated
U = Not Detected
UJ = Not Detected, Estimated
R = Unusable

Check (√) = Acceptable
Shaded Cells = Not Applicable (also "NA")
NP = Not Provided
Other: _____

Reviewed By: David Schmeltz Date: 7-27-05

ANNEX C
SWMU 105, Mercury Spill (Building 6536)
Waste Disposal Documentation

From: Ring, Larry
Sent: Thursday, December 29, 2005 9:40 AM
To: Tso, Dezbah
Subject: WDDR 2029949

Dezbah,

I submitted WDDR 2029949 for the last of the 6536 waste yesterday. It included two roll offs of soil, 2- five gallon buckets of water and a 55 gallon drum of soil.

Larry G. Ring
Scientist
Shaw Environmental & Infrastructure
5301 Central NE Suite 700
Albuquerque, New Mexico 87108
505.262.8930 direct
505.220.6512 cell
505.262.8855 fax
www.shawgrp.com

closed
Jan 18, 2006
copy

WASTE DISPOSAL REQUEST

Sandia National Lab les / New Mexico

2024227

Current Status: 21-JUL-2005 CLOSED

Owner / Requestor

Owner: RING, LARRY GENE Org: 108261

Folder: LGRING FOLDER

Req: RING, LARRY GENE

Phone: 5052628930 Mail Stop: 0908 Org: 108261 Login: LGRING PersID: 235255

Three Day: N RMMA: N

Why:

Location of Waste

T Area: TA 3 Building: 6536 Room: OUTSIDE

Comm: SOUTH EAST OF BUILDING 6536

Status History

Initiated: 06-JUL-2005 Reviewed: 06-JUL-2005 Closed: 21-JUL-2005

Submitted: 06-JUL-2005 Approved: 06-JUL-2005 Void:

Work-Days To Process: 11

Line Num	Item Description / Package # - Status	Container Type	Num. of Cont	Quantity	Ssc Name	Project Num: Task Num:	WID	Return
1	MERCURY User's Info: MERCURY P1333050_ CL P1333051_ CL	OVER 30 TO 85 GAL-STEEL-DRUM, OPEN HEAD	2	250 LB	(8) CORROSIVE- LIQUID, ACID, INORGANIC SOLID	83916 4.5.3	A42447	N
2	USED TRANSFORMER OIL User's Info: TRANSFORMER OIL NON PCB P1333052_ CL P1333053_ CL P1333054_ CL P1333055_ CL P1333056_ CL P1333057_ CL P1333058_ CL P1333059_ CL P1333060_ CL P1333061_ CL P1333062_ CL P1333063_ CL P1333064_ CL	OVER 30 TO 85 GAL-STEEL-DRUM, CLOSED HEAD	13	300 LB	NON-REGULATED- LIQUID LIQUID	83916 4.5.3	A41844	N
3	USED TRANSFORMER OIL User's Info: TRANSFORMER OIL NON PCB P1333065_ CL P1333066_ CL P1333067_ CL P1333068_ CL P1333069_ CL P1333070_ CL P1333071_ CL P1333072_ CL P1333073_ CL P1333074_ CL P1333075_ CL P1333076_ CL P1333077_ CL P1333078_ CL P1333079_ CL P1333080_ VO	OVER 30 TO 85 GAL-STEEL-DRUM, OPEN HEAD	16	300 LB	NON-REGULATED- LIQUID LIQUID	83916 4.5.3	A41844	N
4	PCB CONTAMINATED MATERIAL (NO LIQUID) User's Info: PCB CONTAMINTED DEBRIS P1333081_ CL P1333082_ CL P1333083_ CL P1333084_ CL P1333085_ CL P1333086_ CL P1333087_ CL P1333088_ CL P1333089_ CL P1333090_ CL P1333091_ CL P1333092_ CL P1333093_ CL P1333094_ CL P1333095_ CL	OVER 30 TO 85 GAL-STEEL-DRUM, OPEN HEAD	15	350 LB	(9) MISCELLANEOUS- SOLID SOLID	83916 4.5.3	A40045	N
5	FLUORESCENT LIGHTS User's Info: FLOURESCENT LIGHT BULBS P1333096_ CL P1333097_ CL	OVER 5 TO 30 GAL-FIBERBOARD (CARDBOARD)-BOX, UN-LINED	2	90 LB	NON-REGULATED- SOLID SOLID	83916 4.5.3	A40017	N
6	FLUORESCENT LIGHTS User's Info: FLOURESCENT LIGHT BULBS P1333098_ CL	OVER 5 TO 30 GAL-FIBERBOARD (CARDBOARD)-BOX, UN-LINED	1	10 LB	NON-REGULATED- SOLID SOLID	83916 4.5.3	A40017	N
7	NON-PCB BALLASTS (NON-LEAKING/LEAKING) User's Info: NON PCB LIGHT BALLAST P1333099_ CL	OVER 5 TO 30 GAL-STEEL-DRUM, OPEN HEAD	1	25 LB	NON-REGULATED- LIQUID LIQUID	83916 4.5.3	A40584	N
8	PCB BALLASTS (NON-LEAKING) User's Info: PCB CONTAINING LIGHT BALLAST P1333100_ CL	OVER 5 TO 30 GAL-PLASTIC-DRUM, OPEN HEAD	1	25 LB	(9) MISCELLANEOUS- LIQUID LIQUID	83916 4.5.3	A40030	N

WASTE DISPOSAL REQUEST
Sandia National Lab ies / New Mexico

ADDITIONAL INFORMATION REPORT

DR # 2024227

LINE #
1 **Waste Description Additonal Information** (Information/Precautions About This Waste Description)
SPECIAL HANDLING: IRRI. TO EYES/SKIN/RESP. TRACT;
USER INFO: MERCURY WASTE GENERATED FROM CLEANUP OF FREE MERCURY

LINE #
2 **Waste Description Additonal Information** (Information/Precautions About This Waste Description)
SPECIAL HANDLING: AVOID OPEN FLAME;

LINE #
3 **Waste Description Additonal Information** (Information/Precautions About This Waste Description)
SPECIAL HANDLING: AVOID OPEN FLAME;

Line Item Additional Information (*Generator's* Info Pertaining To This Line Only)
LINE # 70 FLOURESCENT LIGHT BULBS(8 FOOT)
5 **Waste Description Additonal Information** (Information/Precautions About This Waste Description)
SPECIAL HANDLING: AVOID DUST;

Line Item Additional Information (*Generator's* Info Pertaining To This Line Only)
LINE # 22- 4 FOOT FLOURESCENT LIGHT BULBS
6 **Waste Description Additonal Information** (Information/Precautions About This Waste Description)
SPECIAL HANDLING: AVOID DUST;

Line Item Additional Information (*Generator's* Info Pertaining To This Line Only)
LINE # 9- NON PCB LIGHT BALLAST
7 **Waste Description Additonal Information** (Information/Precautions About This Waste Description)
SPECIAL HANDLING: AVOID CONTACT;

Line Item Additional Information (*Generator's* Info Pertaining To This Line Only)
LINE # 9- PCB CONTAINING LIGHT BALLAST
8 **Waste Description Additonal Information** (Information/Precautions About This Waste Description)
SPECIAL HANDLING: AVOID CONTACT;

Hazardous Waste Comments Report

Action	Comment Date	Commented By
DR_LINE	06-JUL-2005	MUXWORTHY,TYLER JACOB

Comment
USE THE SECOND P# FOR THE INNER CONTAINER OF ELEMENTAL MERCURY.

WASTE DISPOSAL REQUEST
Sandia National Lab· 'es / New Mexico

2026333

Current Status: **05-DEC-2005** CLOSED

Owner / Requestor

Owner: **RING, LARRY GENE** Org: **10826**

Folder: **LGRING FOLDER**

Req: **DURAND, NICHOLAS**

Phone: **5058449361** Mail Stop: **0908** Org: **10826** Login: **NADURAN** PersID: **103155**

Location of Waste

T Area: **TA 3** Building: **6536** Room: **ALL**

Comm:

Three Day: **N**

Why:

**** NO HW COMMENTS PAGE ****

RMMA: **N**

Status History

Initiated: **25-AUG-2005** Reviewed: **27-OCT-2005** Closed: **05-DEC-2005**

Submitted: **26-OCT-2005** Approved: **15-NOV-2005** Void:

Work-Days To Process: **28**

Line Num	Item Description / Package # - Status	Container Type	Num. of Cont	Quantity	Ssc Name	Project Num:	Task Num:	WID	Return
1	MERCURY CONTAINING ARTICLES (THERMOMETER, SWITCHES, LAMP, ETC.) **User's Info:** MERCURY VAPOR LIGHT BULBS **P1342113**_ CL	OVER 30 TO 85 GAL-STEEL-DRUM, OPEN HEAD	1	75 LB	**(8) CORROSIVE- LIQUID, ACID, INORGANIC** SOLID	83916	4.5.3	A54639	N
2	MERCURY CONTAMINATED MATERIAL/SPILL CLEAN UP (> 1OZ) **User's Info:** MERCURY CONTAMINATED SOIL WITH FREE HG **P1342114**_ CL **P1342115**_ CL **P1342116**_ CL **P1342117**_ CL	OVER 30 TO 85 GAL-STEEL-DRUM, OPEN HEAD	4	2800 LB	**(9) MISCELLANEOUS- SOLID** SOLID	83916	4.5.3	A44497	N
3	MERCURY CONTAMINATED MATERIAL/SPILL CLEAN UP (> 1OZ) **User's Info:** MERCURY CONTAMINATED CAST IRON DRAIN PIPE **P1342118**_ CL **P1342119**_ CL **P1342120**_ CL **P1342121**_ CL **P1342122**_ CL **P1342123**_ CL **P1342124**_ CL	OVER 30 TO 85 GAL-STEEL-DRUM, OPEN HEAD	7	650 LB	**(9) MISCELLANEOUS- SOLID** SOLID	83916	4.5.3	A44497	N
4	INCANDESCENT LIGHT BULBS W/LEAD SOLDER **User's Info:** 42 INCANDESCENT LIGHT BULBS **P1342125**_ CL	OVER 5 TO 30 GAL-PLASTIC-DRUM, OPEN HEAD	1	30 LB	**(9) MISCELLANEOUS- SOLID** SOLID	83916	4.5.3	A40022	N
5	LEAD ACID BATTERY, WET (FOR RECYCLE ONLY) **User's Info:** LEAD ACID BATTERIES **P1342126**_ CL	OVER 5 TO 30 GAL-PLASTIC-DRUM, OPEN HEAD	1	60 LB	**(8) CORROSIVE- LIQUID, ACID, INORGANIC** SOLID	83916	4.5.3	A40004	N
7	USED TRANSFORMER OIL **User's Info:** NON PCB TRANSFORMER OIL (NOS) **P1342127**_ CL	OVER 30 TO 85 GAL-STEEL-DRUM, OPEN HEAD	1	500 LB	**NON-REGULATED- LIQUID** LIQUID	83916	4.5.3	A41844	N
8	OIL & WATER **User's Info:** WATER AND NON PCB TRANSFORMER OIL FROM EQUIPMENT RINSE **P1342128**_ CL	OVER 30 TO 85 GAL-STEEL-DRUM, OPEN HEAD	1	100 LB	**NON-REGULATED- LIQUID** LIQUID	83916	4.5.3	A40327	N

WASTE DISPOSAL REQUEST
Sandia National Lab ies / New Mexico

ADDITIONAL INFORMATION REPORT

DR # 2026333

	Line Item Additional Information (*Generator's* Info Pertaining To This Line Only)
LINE #	HG VAPOR LIGHT BULBS
1	**Waste Description Additonal Information** (Information/Precautions About This Waste Description)
	SPECIAL HANDLING: AVOID CONTACT;
	Line Item Additional Information (*Generator's* Info Pertaining To This Line Only)
LINE #	SOIL WITH FREE HG
2	
	Line Item Additional Information (*Generator's* Info Pertaining To This Line Only)
LINE #	HTG CONTAMINATED CAST IRON DRAIN PIPE
3	
LINE #	
4	**Waste Description Additonal Information** (Information/Precautions About This Waste Description)
	SPECIAL HANDLING: AVOID CONTACT;
	Line Item Additional Information (*Generator's* Info Pertaining To This Line Only)
LINE #	5 EMERGENCY LIGHT BATTERIES FOR RECYCLE
5	
	Line Item Additional Information (*Generator's* Info Pertaining To This Line Only)
LINE #	LEAD FOR RECYCLE
6	
	Line Item Additional Information (*Generator's* Info Pertaining To This Line Only)
LINE #	TRANSFORMER OIL
7	**Waste Description Additonal Information** (Information/Precautions About This Waste Description)
	SPECIAL HANDLING: AVOID OPEN FLAME;

WASTE DISPOSAL REQUEST
Sandia National Lab es / New Mexico

2031898

Current Status: 19-JUN-2006 CLOSED

Owner / Requestor
Owner: CREECH, MARY NELL Org: 06141
Folder: MNCREEC FOLDER
Req: CREECH, MARY NELL
Phone: 5058458045 Mail Stop: 1088 Org: 06141 Login: MNCREEC PersID: 166326

Three Day: N RMMA: N
Why:

Location of Waste
T Area: CTF Building: 9925 Room: OUTSIDE
Comm: 90-DAY ACCUMULATION AREA AT ERFO. PLEASE CALL BILL GIBSON PRIOR TO PICK-UP

Status History
Initiated: 11-APR-2006 Reviewed: 23-MAY-2006 Closed: 19-JUN-2006
Submitted: 23-MAY-2006 Approved: 31-MAY-2006 Void:
Work-Days To Process: 19

Line Num	Item Description / Package # - Status	Container Type	Num. of Cont	Quantity	Ssc Name	Project Num:	Task Num:	WID	Return
1	SOIL CONTAMINATED WITH TRACE METALS (< REGULATORY) User's Info: NON-REGULATED SOIL P1353926_ CL	OVER 30 TO 85 GAL-STEEL-DRUM, OPEN HEAD	1	700 LB	NON-REGULATED- SOLID SOLID	98046	02.02.09	A59439	N
2	SOIL CONTAMINATED WITH TRACE METALS (< REGULATORY) User's Info: NON-REGULATED SOIL P1353927_ CL	OVER 30 TO 85 GAL-STEEL-DRUM, OPEN HEAD	1	700 LB	NON-REGULATED- SOLID SOLID	98046	02.02.09	A59439	N
3	SOIL CONTAMINATED WITH TRACE METALS (< REGULATORY) User's Info: NON-REGULATED SOIL P1353928_ CL	OVER 30 TO 85 GAL-STEEL-DRUM, OPEN HEAD	1	700 LB	NON-REGULATED- SOLID SOLID	98046	02.02.09	A59439	N
4	SOIL CONTAMINATED WITH TRACE METALS (< REGULATORY) User's Info: NON-REGULATED SOIL P1353929_ CL	OVER 30 TO 85 GAL-STEEL-DRUM, OPEN HEAD	1	700 LB	NON-REGULATED- SOLID SOLID	98046	02.02.09	A59439	N

WASTE DISPOSAL REQUEST
Sandia National Lab ies / New Mexico

ADDITIONAL INFORMATION REPORT

DR # 2031898

Disposal Request Additional Information (*Generator's* Info Pertaining To The Whole DR)

ERWM MEMO# ERWM-06-017 START DATE: 3/21/06 90-DAY EXPIRATION DATE: 6/18/06

4 55-GALLON DRUMS OF NON-REGULATED SOIL FROM SWMU 105

Line Item Additional Information (*Generator's* Info Pertaining To This Line Only)

LINE # 105-032106-01

1 **Waste Description Additonal Information (Information/Precautions About This Waste Description)**

USER INFO: SEE ATTACHED ANALYTICAL RESULTS. MERCURY ONLY COC FOR THIS SITE

Line Item Additional Information (*Generator's* Info Pertaining To This Line Only)

LINE # 105-032106-02

2 **Waste Description Additonal Information (Information/Precautions About This Waste Description)**

USER INFO: SEE ATTACHED ANALYTICAL RESULTS. MERCURY ONLY COC FOR THIS SITE

Line Item Additional Information (*Generator's* Info Pertaining To This Line Only)

LINE # 105-032106-03

3 **Waste Description Additonal Information (Information/Precautions About This Waste Description)**

USER INFO: SEE ATTACHED ANALYTICAL RESULTS. MERCURY ONLY COC FOR THIS SITE

Line Item Additional Information (*Generator's* Info Pertaining To This Line Only)

LINE # 105-032106-04

4 **Waste Description Additonal Information (Information/Precautions About This Waste Description)**

USER INFO: SEE ATTACHED ANALYTICAL RESULTS. MERCURY ONLY COC FOR THIS SITE

Hazardous Waste Comments Report

Action	Comment Date	Commented By
DR_ACTION	31-MAY-2006	WAGNER,POLLY JO

Comment
WILL YOU PLEASE E-MAIL OR FAX THE ANALYTICAL FOR THIS DR TO 505-244-3473. THANK YOU.

Action	Comment Date	Commented By
DR_EMAIL_ACTION	31-MAY-2006	WAGNER,POLLY JO

Comment
WDDR_EMAIL_31MAY2006_1028.TXT WILL YOU PLEASE E-MAIL OR FAX THE ANALYTICAL FOR THIS DR TO 505-244-3473. THANK YOU.

SF 2001-CHW (1/98)

CERTIFICATION FORM FOR HAZARDOUS WASTE

Chemical Waste Disposal Request no.: ~~2031989~~ 2031898 6/28/06

PROCESS KNOWLEDGE

a) This waste was generated in: Location: SWMU 105

Room no.: NA

b) Does the waste contain radioactive components? ☐ Yes ☒ No

c) Was the waste in contact with any operation that could have produced radioactive contamination? ☐ Yes ☒ No

d) Was the waste exposed to particle beams capable of inducing radioactivity by activation? ☐ Yes ☒ No

Describe other controls used to prevent contamination: This soil was removed from an area that has not been on the DOE RMMA listing

If process knowledge is inadequate to certify waste as nonradioactive, complete the next section.

SAMPLING AND ANALYSIS

Sampling and Analysis Request No.: N/A

Do the results from the analysis of the waste items verify the absence of radioactive components above background? **Attach data validation** ☐ Yes ☐ No

The undersigned certifies that, to the best of his/her knowledge, the information provided on this requisition is correct and the identified waste contained within the container conform to the performance objective established by DOE for the removal of hazardous waste from a Radioactive Material Management Area (RMMA). Based upon process knowledge and operational procedures or radiological analysis, this waste meets all release criteria for certifying the waste as containing no DOE-added radioactivity (see MN471016, *Radiological Protection Procedures Manual*, Chapter 6, Attachment 6-1).

Generator Signature: Craig J Wood

Generator Name (Print): Craig Wood

Date: 5/30/06

WASTE DISPOSAL REQUEST
Sandia National Labs / New Mexico

2028338

Current Status: 21-NOV-2005 CLOSED

Owner / Requestor

Owner: RING, LARRY GENE Org: 10826
Folder: LGRING FOLDER

Req: DURAND, NICHOLAS
Phone: 5058449361 Mail Stop: 0908 Org: 10826 Login: NADURAN PersID: 103155

Location of Waste

T Area: TA 1 Building: 7500SY Room: OUTSIDE
Comm: 953R SHED

Three Day: N

** NO HW COMMENTS PAGE **

RMMA: N

Why:

Status History

Initiated: 25-OCT-2005 Reviewed: 03-NOV-2005 Closed: 21-NOV-2005
Submitted: 26-OCT-2005 Approved: 15-NOV-2005 Void:
Work-Days To Process: 18

Line Num	Item Description / Package # - Status	Container Type	Num. of Cont	Quantity	Ssc Name	Project Num:	Task Num:	WID	Return
1	FLUORESCENT LIGHTS User's Info: 1 BOX 27 EA. 4 FOOT FLOURESCENT LIGHT BULBS P1342108_ CL	OVER 5 TO 30 GAL-FIBERBOARD (CARDBOARD)-BOX	1	20 LB	NON-REGULATED- SOLID SOLID	83916	4.5.3	A40017	N
2	FLUORESCENT LIGHTS User's Info: 1 BOX 30EA. 54 FOOT FLOURESCENT LIGHT BULBS P1342109_ CL	OVER 5 TO 30 GAL-FIBERBOARD (CARDBOARD)-BOX	1	15 LB	NON-REGULATED- SOLID SOLID	83916	4.5.3	A40017	N
3	MERCURY CONTAMINATED MATERIAL/SPILL CLEAN UP (> 1OZ) User's Info: HG CONTAMINATED P-TRAPS P1342110_ CL	1 TO 5 GAL-PLASTIC-DRUM, OPEN HEAD	1	15 LB	(9) MISCELLANEOUS- SOLID SOLID	83916	4.5.3	A44497	N
4	FLUORESCENT LIGHTS User's Info: 1 BOX 15 EA 10 FOOT FLOURESCENT LIGHT BULBS P1342111_ CL	OVER 5 TO 30 GAL-FIBERBOARD (CARDBOARD)-BOX	1	40 LB	NON-REGULATED- SOLID SOLID	83916	4.5.3	A40017	N
5	FLUORESCENT LIGHTS User's Info: 1 BOX 10 EA 10 FOOT FLOURESCENT LIGHT BULBS P1342112_ CL	OVER 5 TO 30 GAL-FIBERBOARD (CARDBOARD)-BOX	1	15 LB	NON-REGULATED- SOLID SOLID	83916	4.5.3	A40017	N

WASTE DISPOSAL REQUEST
Sandia National Labc es / New Mexico

ADDITIONAL INFORMATION REPORT

DR # 2028338

LINE #
1 **Waste Description Additonal Information** (Information/Precautions About This Waste Description)
SPECIAL HANDLING: AVOID DUST;

LINE #
2 **Waste Description Additonal Information** (Information/Precautions About This Waste Description)
SPECIAL HANDLING: AVOID DUST;

LINE #
4 **Waste Description Additonal Information** (Information/Precautions About This Waste Description)
SPECIAL HANDLING: AVOID DUST;

LINE #
5 **Waste Description Additonal Information** (Information/Precautions About This Waste Description)
SPECIAL HANDLING: AVOID DUST;

Sandia National Laboratories
Operated for the U.S. Department of Energy by
Sandia Corporation
Albuquerque, New Mexico 87185-1087

date: May 30, 2006

to: Craig Wood, MS-1087 (10333)

from: Mary Creech, MS-1088 (6141) 5/30/06

subject: **Waste Characterization and Disposal Request: ERWM Memo 06-016**
Hazard Class: Mercury Contaminated Respirator Cartridges and Air Filter
Solid Waste Management Unit (SWMU) 105
Task leader: Brenda Langkopf

Attached please find the following:

- Hazardous Waste Certification Form
- WDDRs 2031900

This memo details the RCRA waste characterization of respirator cartridges and one equipment air filter used during remediation at SWMU 105. The remediation at SWMU 105 included sampling and removal of soil containing elemental mercury. Based on "Building 6536 Radiant Heat Facility, Characterization and Removal Project Report" finalized in February 2004, the only contaminant of concern at this site was elemental mercury. This material can not be sampled; therefore, has been characterized as hazardous waste by default, as a best management practice. Additionally, during all work at SWMU 105, air monitoring for mercury vapor was conducted. At no point during the work, were elevated high mercury vapor levels indicated. Based on this process knowledge, this material has been characterized as containing mercury greater than regulatory limits, however, not exceeding 260 ppm. This material was not removed from an RMMA; therefore, no radiological data is necessary for disposal. Final accumulation of this material was completed and the waste was placed into the accumulation area on March 21, 2006; therefore, the 90-day expiration date for these items is **June 18, 2006**.

WASTE DISPOSAL REQUEST
Sandia National Labs / New Mexico

2031900

Current Status: 16-JUN-2006 CLOSED

Owner / Requestor
Owner: CREECH, MARY NELL Org: 06141
Folder: MNCREEC FOLDER
Req: CREECH, MARY NELL
Phone: 5058458045 Mail Stop: 1088 Org: 06141 Login: MNCREEC PersID: 166326

Location of Waste
T Area: CTF Building: 9925 Room: OUTSIDE
Comm: 90-DAY ACCUMULATION AREA AT ERFO. PLEASE CALL BILL GIBSON PRIOR TO PICK-UP

Three Day: N
Why:

** NO HW COMMENTS PAGE **

RMMA: N

Status History
Initiated: 11-APR-2006 Reviewed: 23-MAY-2006 Closed: 16-JUN-2006
Submitted: 23-MAY-2006 Approved: 31-MAY-2006 Void:
Work-Days To Process: 18

Line Num	Item Description / Package # - Status	Container Type	Num. of Cont	Quantity	Ssc Name	Project Num:	Task Num:	WID	Return
1	MERCURY LAB TRASH/SPILL DEBRIS >1 OZ	1 TO 5 GAL-PLASTIC-DRUM, OPEN HEAD	1	20 LB	(9) MISCELLANEOUS- SOLID SOLID	98046	02.02.09	A41669	N
User's Info:	RESPIRATOR CARTRIDGES WITH ACTIVATED CARBON/USED AT MERCURY CLEAN-UP SITE, ASSUMED TO HAVE MERCURY CONTAMINATION LEVELS BELOW 260 PPM BASED ON AIR MONITORING PERFORMED DURING WORK								
P1353924	CL								
2	MERCURY LAB TRASH/SPILL DEBRIS >1 OZ	1 TO 5 GAL-PLASTIC-DRUM, OPEN HEAD	1	5 LB	(9) MISCELLANEOUS- SOLID SOLID	98046	02.02.09	A41669	N
User's Info:	AIR FILTER FROM HEAVY EQUIPMENT USED DURING MERCURY CLEAN-UP/ASSUMED TO BE CONTAMINATED WITH MERCURY BELOW 260 PPM BASED ON AIR MONITORING PERFORMED DURING WORK								
P1353925	CL								

WASTE DISPOSAL REQUEST
Sandia National Lab' 'es / New Mexico

ADDITIONAL INFORMATION REPORT

DR # 2031900

Disposal Request Additional Information (*Generator's* Info Pertaining To The Whole DR)

ERWM MEMO# ERWM-06-016 START DATE: 3/21/06 90-DAY EXPIRATION DATE: 6/18/06

5-GALLON BUCKER OF RESPIRATOR CARTRIDGES AND 1 EQUIPMENT AIR FILTER FROM SWMU 105

Line Item Additional Information (*Generator's* Info Pertaining To This Line Only)

LINE # 105-012406-02

1 **Waste Description Additonal Information (Information/Precautions About This Waste Description)**

SPECIAL HANDLING: CAUTION! FREE MERCURY ENTRAPED-SOLID WIPES/ABSORBN;
USER INFO: AIR MONITORING DURING WORK DID NOT INDICATE MERCURY VAPORS, CARTRIDGES USED AS BMP ONLY

Line Item Additional Information (*Generator's* Info Pertaining To This Line Only)

LINE # ????

2 **Waste Description Additonal Information (Information/Precautions About This Waste Description)**

SPECIAL HANDLING: CAUTION! FREE MERCURY ENTRAPED-SOLID WIPES/ABSORBN;
USER INFO: AIR MONITORING DURING WORK DID NOT INDICATE MERCURY VAPORS, FILTER REMOVED AND DISPOSED OF AS BMP ONLY

SF 2001-CHW (1/98)

CERTIFICATION FORM FOR HAZARDOUS WASTE

Chemical Waste Disposal Request no.: 2031900

PROCESS KNOWLEDGE

a) This waste was generated in: Location: SWMU 105

Room no.: NA

b) Does the waste contain radioactive components? ☐ Yes ☒ No

c) Was the waste in contact with any operation that could have produced radioactive contamination? ☐ Yes ☒ No

d) Was the waste exposed to particle beams capable of inducing radioactivity by activation? ☐ Yes ☒ No

Describe other controls used to prevent contamination: This soil was removed from an area that has not been on the DOE RMMA listing

If process knowledge is inadequate to certify waste as nonradioactive, complete the next section.

SAMPLING AND ANALYSIS

Sampling and Analysis Request No.: N/A

Do the results from the analysis of the waste items verify the absence of radioactive components above background? **Attach data validation** ☐ Yes ☐ No

The undersigned certifies that, to the best of his/her knowledge, the information provided on this requisition is correct and the identified waste contained within the container conform to the performance objective established by DOE for the removal of hazardous waste from a Radioactive Material Management Area (RMMA). Based upon process knowledge and operational procedures or radiological analysis, this waste meets all release criteria for certifying the waste as containing no DOE-added radioactivity (see MN471016, *Radiological Protection Procedures Manual*, Chapter 6, Attachment 6-1).

Generator Signature: Craig J Wood

Generator Name (Print): Craig Wood

Date: 5/30/06

Sandia National Laboratories
Operated for the U.S. Department of Energy by
Sandia Corporation
Albuquerque, New Mexico 87185-1087

date: May 30, 2006

to: Craig Wood, MS-1087 (10333)

from: Mary Creech, MS-1088 (6141) MMC 5/30/06

subject: **Waste Characterization and Disposal Request: ERWM Memo 06-017**
Hazard Class: Non-regulated soil
Solid Waste Management Unit (SWMU) 105
Task leader: Brenda Langkopf

Attached please find the following:

- Hazardous Waste Certification Form
- WDDRs 2031898
- Analytical data report

This memo details the RCRA waste characterization of soil removed during the remediation at SWMU 105. The remediation at SWMU 105 included sampling and removal of soil containing elemental mercury. Based on "Building 6536 Radiant Heat Facility, Characterization and Removal Project Report" finalized in February 2004, the only contaminant of concern at this site was elemental mercury. WDDR 2031989 includes 4 55-gallon drums of soil removed from SWMU 105. The drums are approximately 1/3 full and weigh less than 700 lbs. Soil samples were taken after the drums were packaged. Sampling included using an auger to remove soil aliquots from 3 random locations within the each drum. The aliquots were compiled, per drum, and analyzed for mercury by TCLP. The results for each drum is presented in Table 1 below. As you can see each result is below 0.2 ppm; therefore, this soil can be sent for off-site disposal as non-regulated waste. This material was not removed from an RMMA; therefore, no radiological data is necessary for disposal.

Due to the final determination that this soil is non-regulated waste, no 90-day expiration date is applicable.

Table 1. Container Summary

Container ID	Line Item #	Container Type	Mercury Concentration (mg/L)
105-032106-01	1	55-gallon drum	0.0769
105-032106-02	2	55-gallon drum	0.0553
105-032106-03	3	55-gallon drum	0.0737
105-032106-04	4	55-gallon drum	0.0572

GENERAL ENGINEERING LABORATORIES, LLC

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

Certificate of Analysis

Company : Sandia National Laboratories
Address : MS-0756, Org. 7578, Bldg. 823/Rm. 4276
1515 Eubank SE
Albuquerque, New Mexico 87123
Contact: Ms. Pamela M. Puissant
Project: **Level C without EDD**

Report Date: May 2, 2006

Client Sample ID: 077306-009
Sample ID: 161479001
Matrix: Soil
Collect Date: 21-APR-06 09:05
Receive Date: 25-APR-06
Collector: Client

Project: SNLS00102
Client ID: SNLS002

Client Desc.: 105-032106-01-S

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Mercury Analysis-CVAA											
TCLP Hg in Solid											
Mercury		0.0769	0.0005	0.002	mg/L	1	ETL	05/01/06	1408	524829	1

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 1311	SW846 1311 TCLP Leaching -FEDERAL	MXW3	04/26/06	1600	524166
SW846 7470A Prep	EPA 7470A Mercury Prep TCLP Liquid	RDD1	04/28/06	1130	524828

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 7470A	

Notes:
The Qualifiers in this report are defined as follows :

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

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

GENERAL ENGINEERING LABORATORIES, LLC

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

Certificate of Analysis

Company : Sandia National Laboratories
Address : MS-0756, Org. 7578, Bldg. 823/Rm. 4276
1515 Eubank SE
Albuquerque, New Mexico 87123
Contact: Ms. Pamela M. Puissant
Project: **Level C without EDD**

Report Date: May 2, 2006

Client Sample ID: 077306-009
Sample ID: 161479001

Project: SNLS00102
Client ID: SNLS002

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Edith Kent.

Edith M. Kent

Reviewed by

GENERAL ENGINEERING LABORATORIES, LLC

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

Certificate of Analysis

Company : Sandia National Laboratories
Address : MS-0756, Org. 7578, Bldg. 823/Rm. 4276
1515 Eubank SE
Albuquerque, New Mexico 87123
Contact: Ms. Pamela M. Puissant
Project: **Level C without EDD**

Report Date: May 2, 2006

Client Sample ID: 077307-009
Sample ID: 161479002
Matrix: Soil
Collect Date: 21-APR-06 09:08
Receive Date: 25-APR-06
Collector: Client

Project: SNLS00102
Client ID: SNLS002

Client Desc.: 105-032106-02-S

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Mercury Analysis-CVAA											
TCLP Hg in Solid											
Mercury		0.0553	0.0005	0.002	mg/L	1	ETL	05/01/06	1416	524829	1

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 1311	SW846 1311 TCLP Leaching -FEDERAL	MXW3	04/26/06	1600	524166
SW846 7470A Prep	EPA 7470A Mercury Prep TCLP Liquid	RDD1	04/28/06	1130	524828

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 7470A	

Notes:
The Qualifiers in this report are defined as follows :

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

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

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1515 Eubank SE
Albuquerque, New Mexico 87123
Contact: Ms. Pamela M. Puissant
Project: **Level C without EDD**

Report Date: May 2, 2006

Client Sample ID: 077307-009
Sample ID: 161479002

Proiect: SNLS00102
Client ID: SNLS002

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

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1515 Eubank SE
Albuquerque, New Mexico 87123
Contact: Ms. Pamela M. Puissant
Project: **Level C without EDD**

Report Date: May 2, 2006

Client Sample ID: 077308-009
Sample ID: 161479003
Matrix: Soil
Collect Date: 21-APR-06 09:11
Receive Date: 25-APR-06
Collector: Client

Project: SNLS00102
Client ID: SNLS002

Client Desc.: 105-032106-03-S

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Mercury Analysis-CVAA											
TCLP Hg in Solid											
Mercury		0.0737	0.0005	0.002	mg/L	1	ETL	05/01/06	1418	524829	1

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 1311	SW846 1311 TCLP Leaching -FEDERAL	MXW3	04/26/06	1600	524166
SW846 7470A Prep	EPA 7470A Mercury Prep TCLP Liquid	RDD1	04/28/06	1130	524828

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 7470A	

Notes:
The Qualifiers in this report are defined as follows :

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

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

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Company : Sandia National Laboratories
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Albuquerque, New Mexico 87123
Contact: Ms. Pamela M. Puissant
Project: **Level C without EDD**

Report Date: May 2, 2006

Client Sample ID: 077308-009
Sample ID: 161479003

Project: SNLS00102
Client ID: SNLS002

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

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1515 Eubank SE
Albuquerque, New Mexico 87123
Contact: Ms. Pamela M. Puissant
Project: **Level C without EDD**

Report Date: May 2, 2006

Client Sample ID: 077309-009
Sample ID: 161479004
Matrix: Soil
Collect Date: 21-APR-06 09:14
Receive Date: 25-APR-06
Collector: Client

Project: SNLS00102
Client ID: SNLS002

Client Desc.: 105-032106-04-S

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Mercury Analysis-CVAA											
TCLP Hg in Solid											
Mercury		0.0572	0.0005	0.002	mg/L	1	ETL	05/01/06	1420	524829	1

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 1311	SW846 1311 TCLP Leaching -FEDERAL	MXW3	04/26/06	1600	524166
SW846 7470A Prep	EPA 7470A Mercury Prep TCLP Liquid	RDD1	04/28/06	1130	524828

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 7470A	

Notes:
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J Estimated value, the analyte concentration fell above the effective MDL and below the effective PQL
U The analyte was analyzed for but not detected below this concentration. For Organic and Inorganic analytes the result is less than the effective MDL. For radiochemical analytes the result is less than the Decision Level
X Presumptive evidence that the analyte is not present. Please see narrative for further information.
d The 2:1 depletion requirement was not met for this sample
h Prep holding time exceeded

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

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1515 Eubank SE
Albuquerque, New Mexico 87123
Contact: Ms. Pamela M. Puissant
Project: **Level C without EDD**

Report Date: May 2, 2006

Client Sample ID: 077309-009
Sample ID: 161479004

Project: SNLS00102
Client ID: SNLS002

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

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Edith M. Kent

Reviewed by

ANNEX D
SWMU 105, Mercury Spill (Building 6536)
Risk Assessment Report

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SWMU 105: RISK ASSESSMENT REPORT

I. Introduction

Sandia National Laboratories/New Mexico (SNL/NM) completed a site investigation at Solid Waste Management Unit (SWMU) 105, Building 6536, located in Technical Area III. An administrative No Further Action (NFA) proposal was submitted to the U.S. Environmental Protection Agency (EPA) (the regulatory authority at the time) in August 1994 (SNL/NM August 1994). In July 1995, SWMU 105 was determined to be appropriate for NFA and was removed from the U.S. Department of Energy (DOE)/Sandia Corporation Resource Conservation and Recovery Act Permit in December 1995 (Davis December 1995). During decontamination and demolition (D&D) activities at Building 6536, a subsurface release of mercury to the environment at SWMU 105 was discovered, and written notification was transmitted to the New Mexico Environment Department (NMED) Hazardous Waste Bureau on July 13, 2005 (Wagner July 2005). Due to the nature of the subsurface release, any surface investigation prior to July 2005 would not have detected the contamination.

The release of mercury to the environment was discovered at SWMU 105 in June 2005 in soil adjacent to Building 6536. A Voluntary Corrective Action (VCA) was planned and performed. The VCA activities included excavation and off-site disposal of mercury-contaminated soil and comprehensive collection of confirmatory soil samples that determined the horizontal and vertical extent of mercury contamination. A human health and ecological risk assessment were performed using the analytical results of the confirmatory soil samples. The activities of the VCA are consistent with the overall corrective action objectives set forth in Section VI of the Compliance Order on Consent from the NMED (NMED April 2004).

The risk assessments performed for SWMU 105 include analyses for human health and ecological risks. All data collected for the Phase 1 VCA (P1VCA) (SNL/NM September 2005) and the Phase 2 VCA (P2VCA) (SNL/NM December 2005) (except one sample result with an R qualification) are suitable for use in the human health and ecological risk assessments. Two risk assessments were performed for SWMU 105. The first assessment used the data collected from the entire site. For conservatism, a second assessment was performed that used a limited data set that included the P1VCA mercury results and only those results from P2VCA boreholes located northwest of the Building 6536, Room 113 foundation. This included the six samples collected from the trench area locations during the P1VCA and P2VCA, the spoils pile area, and the additional row added at the very northwestern edge of boreholes. The majority of the sample results that exceeded either the surface or the subsurface background values are in these areas. Using this limited data set provides a representative distribution of residual mercury contamination in the area of primary concern, which exhibited the highest concentrations of mercury in the soil. Six sample locations from the P1VCA, 32 borehole locations from the P2VCA, and a total of 144 soil sample analyses are represented in this data set. The limited data set used in the second risk assessment is provided as Table E-1 in Annex E of the SWMU 105 Proposal for Corrective Action Complete (CAC), and the data set excluded from the second risk assessment is provided in Table E-2.

I.1 Site Description and History

Building 6536, the Radiant Heat Facility, was originally constructed as the Re-Entry Burn-Up Facility but has also been used to simulate many types of high-heat environments (Shaw October 2004). The main part of Building 6536 was built in 1967, a mezzanine was added in 1980, and the two westernmost rooms (112 and 113, also known as 6536A and 6536B, respectively) were added in 1983. Room 113 was also known as the Equipment Room. An investigation report in 1977 states that a mercury vacuum tube exploded (location not specified), but no mercury vapor was detected (SNL/NM February 1977). A 1982 Industrial Hygiene (IH) report indicated that approximately 10 cubic centimeters of visible mercury had been spilled on a lab bench (location not specified) and on a desktop (SNL/NM February 1982). The visible mercury was picked up with a mercury vacuum cleaner and no mercury vapor was detected before or after the cleanup. A third IH report in 1985 states that a minor amount of mercury was spilled in the high bay of Building 6536 (Room 111) and the level of mercury contamination was within acceptable limits (units of measure or methods of measurement not described) (SNL/NM May 1985). The report states that a mercury decontaminant was used to decontaminate surfaces. Personnel interviews conducted in 1985 indicated that a mercury bath used to measure pressure in equipment was examined in 1972, and it was determined that the bath contained 10 to 13 pounds less mercury than the full volume capacity (SNL/NM October 1990). It was unknown whether the bath had ever been at full capacity. At a later unknown date, the mercury bath was removed. Personnel interviews conducted in 1990 in an attempt to clarify the use and release(s) of mercury in Building 6536 mention the 1977 mercury tube explosion, but stated that the mercury bath referenced never existed (SNL/NM March 1990). Two of the three documented events occurred within Building 6536 prior to the addition of Room 113 in 1983; however, no documentation exists pertaining to the use of instrumentation containing mercury in Room 113.

Elemental mercury has been identified as the constituent of concern (COC) for SWMU 105.

I.2 History of Release

On May 9, 2005, during decontamination and demolition (D&D) activities at Building 6536, mercury contamination was found inside the building within a concrete trench, located along the northwest wall of Room 113. On June 29, 2005, free mercury was found to be visible in the large pores of a concrete block and in nearby soil outside the building when an exterior trench was excavated along the northwest wall of the building. The release to the soil probably originated from a crack in the building foundation adjacent to the interior concrete trench.

I.3 Summary of the 2005 Phase One Voluntary Corrective Action Plan

The 2005 investigation was performed by the SNL/NM Facilities Management and Operations Center that was conducting the D&D activities and is referred to as the P1VCA. Six discrete soil samples were collected from the exterior trench on July 6 and 21, 2005. The analytical results for the soil samples indicated mercury concentrations ranging from 0.17 to 39.6 milligrams (mg)/kilogram (kg) next to the exposed concrete block, all exceeding the NMED-approved subsurface background value of less than 0.1 mg/kg (Dinwiddie September 1997).

During the week of September 6, 2005, D&D personnel removed the concrete block located adjacent to the northwest wall of Building 6536 and collected residual free mercury from both the concrete block surface and the soil surrounding the block. The mercury-contaminated soil was excavated to 4 feet below ground surface (bgs) in the area of the June 2005 release, but more mercury-contaminated soil remained.

On October 6, 2005, the concrete foundation of the Building 6536 Room 113 was removed. In situ soil-vapor readings were taken with a mercury vapor analyzer (MVA). As the foundation removal continued, positive MVA readings were detected in the soil beneath the foundation. Upon completion of removal of the building foundation, a 5- by 5-foot grid was established in the area of the former building footprint. Positive MVA readings ranging from 0.003 to 0.093 mg/cubic meter (m^3) were detected along the center of the northeastern side of the grid area.

The survey points with the five highest positive MVA readings ranging from 0.013 to 0.093 mg/m^3 were flagged for future investigation activities. All construction debris, concrete rubble, and mercury-contaminated soil (removed during the trench excavation) were removed from the site. These waste streams were managed by D&D personnel and disposed of in accordance with SNL/NM waste management policy.

The activities and analytical results described represent the P1VCA investigation. A summary of the P1VCA data and site assessments are presented in the "Building 6536 Radiant Heat Facility Characterization and Removal Project Report" (Shaw 2006).

I.4 Summary of 2006 Phase Two Voluntary Corrective Action Plan

Based upon the findings of remaining mercury contamination in the soil during the initial P1VCA activities, a Phase 2 investigation conducted by Environmental Restoration (ER) Project personnel was necessary (SNL/NM December 2005). The purpose of the P2VCA was to determine the extent of the contamination, remove mercury-contaminated soil from the original release area, and containerize and dispose of the excavated soil at an off-site waste disposal facility. Analytical results were evaluated to determine whether mercury was present in the soil at levels considered hazardous to human health for either the industrial or residential land-use risk scenarios. The primary activities of the P2VCA were conducted from January through March 2006.

I.5 Collection of Confirmatory Soil Samples

The collection of the P2VCA soil samples was performed by several methods depending upon the terrain encountered at the site. A Geoprobe®, a backhoe and bucket, and hand-auger equipment were used to collect samples. Soil samples were submitted to an off-site laboratory, General Engineering Laboratories, Inc. (GEL), for analysis of total mercury by EPA Method 7471A (EPA November 1986). This method is approved for measuring total mercury (organic and inorganic) in soil samples. Samples were recorded on Analysis Request/Chain of Custody (AR/COC) forms.

I.6 Summary of Confirmatory Soil Sample Results

The analytical results for mercury as a metal in the soil samples collected during the P2VCA range from no detection (ND) above the method detection limit to 342 mg/kg.

The analytical results for the surface samples (labeled 0 feet bgs) from the site range from 0.00249 J to 339 mg/kg. Of the 139 primary surface soil and duplicate samples collected, 46 sample results exceed the surface background value of less than 0.25 mg/kg.

The analytical results for the subsurface samples (greater than 0.5 feet to a maximum of 11 feet bgs) range from ND to 342 mg/kg. Of the 432 primary subsurface soil and duplicate samples collected, 65 sample results exceed the subsurface background value of less than 0.1 mg/kg.

The samples collected from the original release point are labeled Borehole 105-BH-73. The sample collected from the surface of the trench (identified as 0 feet in the sample identification as measured from the surface of the trench) was from a depth of approximately 3 feet bgs and contained 318 J mg/kg of mercury. This material was placed on a tarp for waste disposal. The sample identified as 2 feet (approximately 5 feet bgs) contained 90.3 J mg/kg of mercury, and this material was also placed on the tarp. These sample results are not included in the data set, as they were from material designated as waste and do not represent characterization samples. The 4-foot sample (approximately 7 feet bgs) contained 27.5 J mg/kg of mercury, and a duplicate of this sample contained 137 J mg/kg of mercury. These samples exceed the subsurface background value for mercury of less than 0.1 mg/kg. This material was left in place. The next two samples, from 6 and 8 feet (approximately 9 and 11 feet bgs, respectively) contained 0.679 and 0.0574 mg/kg of mercury, respectively. The results for the primary samples from 6 feet and the duplicate sample from 8 feet (0.75 mg/kg) exceed the subsurface background value. It was determined that the vertical extent of mercury contamination had been defined in this area.

II. Data Quality Objectives

The data quality objectives (DQOs) were presented in the SWMU 105 P2VCA Plan (SNL/NM December 2005). The DQOs outline the quality assurance (QA)/quality control (QC) requirements necessary for producing defensible analytical data suitable for risk assessment purposes. The specific objectives for additional investigative work at SWMU 105 were:

- The advancement of boreholes with a Geoprobe® to define the vertical and horizontal extent of contamination
- The collection and analyses of soil samples to obtain supporting data for a CAC decision
- The collection of QA/QC samples (duplicate soil and equipment blank samples).

Table D-1 summarizes the samples collected and provides the rationale for sample locations.

Table D-1
Summary of SWMU 105 P2VCA Sampling Performed to Meet Data Quality Objectives

SWMU 105 Sampling Area	Sampling Location Rationale	Number of Boreholes in Area	Sample Density (ft bgs) [sampling grid ~5 by 5 ft]	Number of Primary Soil Samples Collected
Original mercury release point (in trench)	Confirm that no significant levels of the COC exist at release point.	1[a]	Samples collected from surface of trench followed by 2-ft intervals (7, 9, and 11 ft[b]).	3
Area adjacent to release point (in trench)	Confirm that no significant levels of the COC exist near release point.	3[a]	Samples collected from surface of trench followed by 2-ft intervals (3, 5, and 7 ft[b]).	9
Location of former spoils piles	Confirm that no significant levels of the COC remain following removal of spoils piles.	5[a]	Samples collected from ground surface followed by 2-ft intervals (0, 2, 4, 6, and 8 ft).	25
Areas of elevated soil-vapor readings	Confirm that no significant levels of the COC exist beneath building foundation.	5	Samples collected from ground surface followed by 2-ft intervals (0, 2, 4, 6, and 8 ft).	25
Perimeter of Room 113	Confirm that no significant levels of the COC have migrated beyond building footprint.	42[c]	Samples collected from ground surface followed by 2-ft intervals (0, 2, and 4 ft).	132[d]
Area within footprint of Room 113	Confirm that no significant levels of the COC exist beneath building foundation.	72	Samples collected from ground surface followed by 2-ft intervals (0, 2, 4, and 8 ft).	286[e]
Area northwest of former spoils piles	Confirm that no significant levels of the COC have migrated beyond the spoils piles.	15[a]	Samples collected from ground surface followed by 2-ft intervals (0, 2, 4, and 8 ft).	60
Total	–	**143**	–	**540**

[a]All boreholes used for the limited data set.
[b]Target depths are expressed as feet below the original ground surface at this site.
[c]Eight boreholes used for the limited data set.
[d]Samples also collected at 9 and 11 ft in two locations and 8 ft in two locations.
[e]Samples recovered from only two depths at one location due to subsurface obstruction.
bgs = Below ground surface.
COC = Constituents of concern.
ft = Foot (feet).
P2VCA = Phase 2 Voluntary Corrective Action.
SWMU = Solid Waste Management Unit.
– = Not applicable.

Table D-2 presents the data quality requirements for sampling at SWMU 105. All samples were submitted to GEL and recorded on AR/COC forms.

Table D-2
Summary of Data Quality Requirements for SWMU 105

Data Set	Analytical Requirement	Data Quality Level	Total Number of Soil Samples Collected
P2VCA Samples collected January–March 2006	Total Mercury (EPA Method 7471A[a])	Defensible	542[b]

[a]EPA November 1986.
[b]The number of samples does not include QA/QC samples such as duplicates and equipment blanks.
EPA = U.S. Environmental Protection Agency.
QA/QC = Quality assurance/quality control.
P2VCA = Phase 2 Voluntary Corrective Action.
SWMU = Solid Waste Management Unit.

Forty-eight QA/QC samples were collected during the P2VCA. The QA/QC samples consisted of 34 soil duplicate and 14 aqueous equipment blank samples (Table D-3). No significant QA/QC problems were identified in any of the QA/QC samples.

Table D-3
Summary of Quality Assurance/Quality Control Samples for SWMU 105

Sample Type	Frequency	Total Number of Samples	Matrix
Duplicate Soil Samples	~5%	34	Soil
Equipment Blank Samples	1 per day	14	Aqueous

SWMU = Solid Waste Management Unit.

All of the sample results (soil and equipment blank) were verified/validated according the "Data Validation Procedure for Chemical and Radiochemical Data, Rev. 01" (SNL/NM December 2003). Reviews confirmed that the data from the analytical laboratory are defensible and therefore acceptable for use in the CAC proposal, fulfilling the DQO requirements. Some of the sample results have been qualified with a J, defined as an estimated value. One sample result received an R qualification due to failure in meeting laboratory QA/QC requirements. This sample was not used in the risk assessments.

III. Determination of Nature, Rate, and Extent of Contamination

The conceptual site model for SWMU 105 is based upon the COC identified from operational history information, process knowledge, and previous investigations. This section summarizes the nature and extent of contamination and the environmental fate of the COC.

III.1 Nature, Extent, and Migration Rate of Contamination

The only COC for SWMU 105 has been identified as elemental mercury. The operational history of the site provided evidence that equipment containing mercury had been used inside Building 6536 and that there had been releases of mercury within the building. Other potential types and sources of contamination were identified and eliminated from consideration during the P1VCA (Shaw 2006). The only contaminant identified as released to the environment was elemental mercury. The presence of mercury vapor in the soil is attributed to the volatilization of the elemental mercury, and not due to a separate source. The analytical methods used are appropriate for characterizing the identified COC.

The sampling activities conducted during the P2VCA are considered to have resulted in soil samples that adequately represent the soil beneath the foundation of Room 113, as well as the immediate surrounding area. The sampling target depths are sufficient to determine the vertical extent of mercury contamination.

The highest levels of mercury in the soil were present in the uppermost portion of the soil column (typically within the 0- to 2-foot depths). Samples were collected to a depth of 8 feet across the site, except in the trench area where the maximum sample depth was 11 feet bgs. A discussion that took place on March 6, 2006, with the NMED during the sampling event prompted the collection of additional samples from three locations (105-BH-44, -73, and -75) at 9 and 11 feet bgs. The vertical and horizontal extent of contamination has therefore been defined by the sampling and analyses.

SWMU 105 is currently an inactive site at which the primary source of contamination has been eliminated. As a result, any migration of residual mercury in the soil is predominately dependent upon precipitation and occasional surface-water flow. The borehole data collected are adequate for characterizing the migration of mercury in the subsurface.

III.2 Environmental Fate and Transport

The primary release(s) of mercury to the environment at SWMU 105 was to the soil along the northwest foundation wall of Building 6536, Room 113. The release may have occurred by a migration of mercury through a crack in the foundation. It is neither clear nor documented as to how or why mercury was present in Room 113. All documentation indicates that two of the three reported incidences of mercury releases in the building occurred prior to the construction of Room 113. Wind, water, and biota are natural mechanisms of COC transport from the primary release point; however, because the area of the release point is relatively small and the source has been removed, these are not considered to be of potential significance. Infiltration of precipitation is also considered to be low at SWMU 105. Because groundwater at the site is 497 feet bgs (SNL/NM April 2004), the potential for the COC to reach groundwater through the unsaturated zone above the water table is extremely low.

The COCs at SWMU 105 are limited to a single constituent, elemental mercury.

Wind, water, and biota are considered to be of low significance as potential transport mechanisms at this site. Significant leaching into the subsurface soil is unlikely, and leaching into the groundwater at this site is highly unlikely. The potential for transformation of the COC is low.

In summary, the design and execution of the confirmatory soil sampling for SWMU 105 was appropriate and adequate to determine the nature and extent of elemental mercury in the soil at the site.

IV. Comparison of COCs to Background Screening Levels

Site history and characterization activities are used to identify potential COCs. The SWMU 105 proposal for CAC with controls describes the identification of the COC and the sampling that was conducted in order to determine the concentration levels of the COC across the site. In order to provide conservatism in this risk assessment, the calculation uses only the maximum concentration value of the COC found for the entire site. The SNL/NM maximum background concentration (Dinwiddie September 1997) was selected to provide the background screen listed in Table D-4. Table D-4 lists the nonradiological COC evaluated for the human health and ecological risk assessments performed for SWMU 105.

V. Fate and Transport

The primary release of the COC at SWMU 105 was to the surface and subsurface soil resulting partly from an imperfection in the building foundation stem wall. Wind, water, and biota are natural mechanisms of COC transport from the primary release point; however, because the discharge was to subsurface soil, none of these mechanisms are considered to be of potential significance as transport mechanisms at this site. Because groundwater at this site is approximately 500 feet bgs, the potential for the COC to reach groundwater through the unsaturated zone above the water table is extremely low.

The only COC at SWMU 105 is mercury. It is a nonradiological analyte (no radiological analytes were evaluated). It is elemental in form and is not considered to be degradable. Transformations of this inorganic constituent could include changes in valence (oxidation/reduction reactions) or incorporation into organic forms.

Table D-5 summarizes the fate and transport processes that can occur at SWMU 105. The COC at this site is a nonradiological inorganic analyte. Wind, surface water, and biota are considered to be of low significance as potential transport mechanisms at this site. Significant leaching into the subsurface soil is unlikely, and leaching into the groundwater at this site is highly unlikely.

Table D-4
Nonradiological COCs for Human Health and Ecological Risk Assessments at SWMU 105 with Comparison to the Associated SNL/NM Background Screening Value, BCF, and Log K_{ow}

COC	Maximum Concentration (All Samples) (mg/kg)	SNL/NM Background Concentration (mg/kg)[a]	Is Maximum COC Concentration Less Than or Equal to the Applicable SNL/NM Background Screening Value?	BCF (maximum aquatic)	Log K_{ow} (for organic COCs)	Bioaccumulator?[b] (BCF>40, Log K_{ow}>4)
Inorganic						
Mercury	**342**	<0.1	**No**	5,500[c]	–	**Yes**

Note: **Bold** indicates the COCs that exceed the background screening values and/or are bioaccumulators.
[a]Dinwiddie September 1997, Southwest Area Supergroup.
[b]NMED March 1998.
[c]Yanicak March 1997.
BCF = Bioconcentration factor.
COC = Constituent of concern.
K_{ow} = Octanol-water partition coefficient.
Log = Logarithm (base 10).
mg/kg = Milligram(s) per kilogram.
NMED = New Mexico Environment Department.
SNL/NM = Sandia National Laboratories/New Mexico.
SWMU = Solid Waste Management Unit.
– = Information not available.

Table D-5
Summary of Fate and Transport at SWMU 105

Transport and Fate Mechanism	Existence at Site	Significance
Wind	Yes	Low
Surface runoff	Yes	Low
Migration to groundwater	No	None
Food chain uptake	Yes	Low
Transformation/degradation	Yes	Low

SWMU = Solid Waste Management Unit.

VI. Human Health Risk Assessment

VI.1 Introduction

The human health risk assessment of this site includes a number of steps that culminate in a quantitative evaluation of the potential adverse human health effects caused by constituents located at the site. The steps to be discussed include the following:

Step 1.	Site data are described that provide information on the potential COCs, as well as the relevant physical characteristics and properties of the site.
Step 2.	Potential pathways are identified by which a representative population might be exposed to the COC.
Step 3.	The potential intake of the COC by the representative population is calculated using a tiered approach. The first component of the tiered approach is a screening procedure that compares the maximum concentration of the COC to an SNL/NM maximum background screening value. COCs that are not eliminated during the first screening procedure are carried forward in the risk assessment process.
Step 4.	Toxicological parameters are identified and referenced for COCs that were not eliminated during the screening procedure.
Step 5.	Potential toxicity effects (specified as a hazard index [HI]) and estimated excess cancer risks are calculated for nonradiological COCs and background.
Step 6.	These values are compared with guidelines established by the EPA, NMED, and DOE to determine whether further evaluation and potential site cleanup are required. Nonradiological COC risk values also are compared to background risk so that an incremental risk can be calculated.
Step 7.	Uncertainties of the above steps are addressed.

VI.2 Step 1. Site Data

Section I.1 of this risk assessment provides the site description and history for SWMU 105. Section II presents a comparison of results to DQOs. Section III discusses the nature, rate, and extent of contamination.

VI.3 Step 2. Pathway Identification

SWMU 105 has been designated with a future land-use scenario of industrial (DOE et al. September 1995) (see Appendix 1 for default exposure pathways and parameters). However,

the residential land-use scenario is also considered in the pathway analysis. Because of the location and characteristics of the potential contaminants, the primary pathway for human exposure is considered to be soil ingestion for the nonradiological COCs. The inhalation pathway for nonradiological COCs is included because the potential exists to inhale dust and volatiles. The dermal pathway is included for the nonradiological COCs because of the potential for the receptor to be exposed to contaminated soil. No water pathways to the groundwater are considered. Depth to groundwater at SWMU 105 is approximately 500 feet bgs. No intake routes through plant, meat, or milk ingestion are considered appropriate for either the industrial or residential land-use scenarios. Figure D-1 shows the conceptual site model flow diagram for SWMU 105.

Pathway Identification

Nonradiological Constituents
Soil ingestion
Inhalation (dust and volatiles)
Dermal contact

VI.4 Step 3. Background Screening Procedure

This section discusses Step 3, the background screening procedure, which compares the maximum COC concentration to the background screening level. The methodology and results are described in the following sections.

VI.4.1 Methodology

The maximum concentration of the nonradiological COC is compared to the approved SNL/NM maximum screening levels for this area (Dinwiddie September 1997). The SNL/NM maximum background concentration was selected to provide the background screen in Table D-4 and used to calculate risk attributable to background in Sections VI.6.2 and VI.7. The COC does not have either a quantifiable or calculated background screening level and therefore is considered in further risk assessment analyses.

VI.4.2 Results

Table D-4 shows the SWMU 105 maximum COC concentration that was compared to the SNL/NM maximum background values (Dinwiddie September 1997) for the human health risk assessment. Mercury is the only COC identified at SWMU 105. The maximum concentration is the same for the entire data set and the limited data set.

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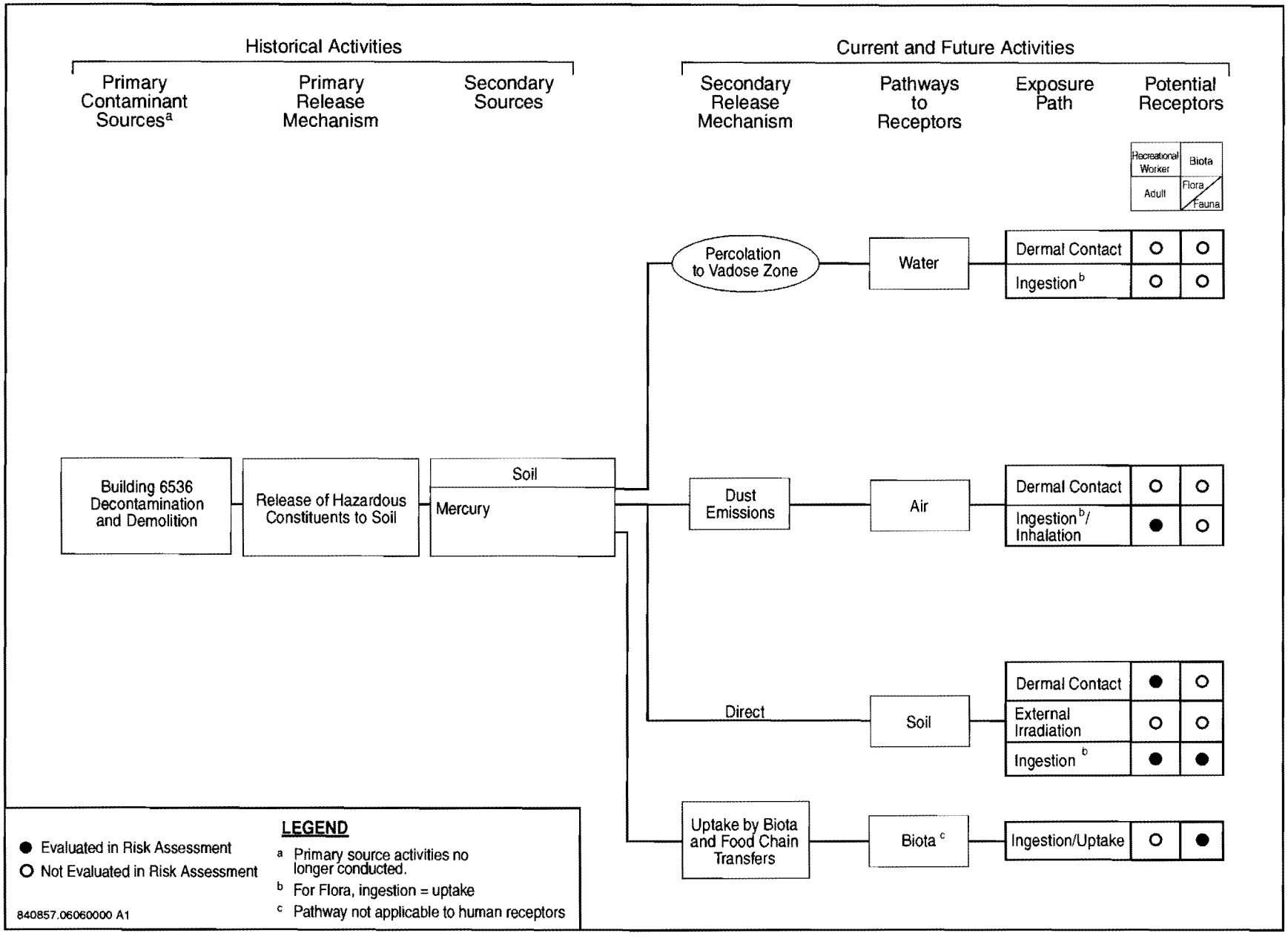

Figure D-1

SWMU 105, Mercury Spill (Building 6536) Conceptual Site Model Flow Diagram

VI.5 Step 4. Identification of Toxicological Parameters

Table D-6 lists the nonradiological COC retained in the risk assessment and provides the values for the available toxicological information. The toxicological values for mercury, the nonradiological COC presented in Table D-6, were obtained from the Integrated Risk Information System (IRIS) (EPA 2004a), the Health Effects Assessment Summary Tables (HEAST) (EPA 1997a), and the Technical Background Document for Development of Soil Screening Levels (NMED February 2004).

VI.6 Step 5. Exposure Assessment and Risk Characterization

Section VI.6.1 describes the exposure assessment for this risk assessment. Section VI.6.2 provides the risk characterization, including the HI and excess cancer risk for both the potential nonradiological COC and associated background for the industrial and residential land-use scenarios.

VI.6.1 Exposure Assessment

Appendix 1 provides the equations and parameter input values used in calculating intake values and subsequent HI and excess cancer risk values for the individual exposure pathways. The appendix shows parameters for both the industrial and residential land-use scenarios. The equations for nonradiological COCs are based upon the Risk Assessment Guidance for Superfund (RAGS) (EPA 1989). Parameters are based upon information from the RAGS (EPA 1989), the Technical Background Document for Development of Soil Screening Levels (NMED February 2004), as well as other EPA and NMED guidance documents, and reflect the reasonable maximum exposure (RME) approach advocated by the RAGS (EPA 1989).

VI.6.2 Risk Characterization

Table D-7 shows an HI of 1.19 for the SWMU 105 nonradiological COC and no quantified estimated excess cancer risk for the designated industrial land-use scenario. The numbers presented include exposure from soil ingestion, dermal contact, and dust and volatile inhalation for the nonradiological COC. Table D-8 shows no quantified HI or estimated excess cancer risk for the SWMU 105 associated background constituents under the designated industrial land-use scenario.

For the nonradiological COC under the residential land-use scenario, the HI is 15.0 with no quantified estimated excess cancer risk. The numbers in the table include exposure from soil ingestion, dermal contact, and dust and volatile inhalation. Although the EPA guidelines (1991) generally recommend that inhalation not be included in a residential land-use scenario, this pathway is included because of the potential for soil in Albuquerque, New Mexico, to be eroded and for dust to be present in predominantly residential areas. Because of the nature of the local soil, other exposure pathways are not considered (see Appendix 1). Table D-8 shows no quantified HI or estimated excess cancer risk for the SWMU 105 associated background constituents under the residential land-use scenario.

Table D-6
Toxicological Parameter Values for SWMU 105 Nonradiological COCs

COC	RfD_o (mg/kg-d)	Confidence[a]	RfD_{inh} (mg/kg-d)	Confidence[a]	SF_o $(mg/kg\text{-}d)^{-1}$	SF_{inh} $(mg/kg\text{-}d)^{-1}$	Cancer Class[b]	ABS
Inorganic								
Mercury	3E-4[c]	–	8.6E-5[d]	M	–	–	D	0.01[e]

[a]Confidence associated with IRIS (EPA 2004a) database values. Confidence: M = medium.
[b]EPA weight-of-evidence classification system for carcinogenicity (EPA 1989) taken from IRIS (EPA 2004a):
D = Not classifiable as to human carcinogenicity.
[c]Toxicological parameter values from HEAST (EPA 1997a).
[d]Toxicological parameter values from IRIS electronic database (EPA 2004a).
[e]Toxicological parameter values from NMED (February 2004).

ABS = Gastrointestinal absorption coefficient.
COC = Constituent of concern.
EPA = U.S. Environmental Protection Agency.
HEAST = Health Effects Assessment Summary Tables.
IRIS = Integrated Risk Information System.
mg/kg-d = Milligram(s) per kilogram-day.
$(mg/kg\text{-}d)^{-1}$ = Per milligram per kilogram-day.
NMED = New Mexico Environment Department.
RfD_{inh} = Inhalation chronic reference dose.
RfD_o = Oral chronic reference dose.
SF_{inh} = Inhalation slope factor.
SF_o = Oral slope factor.
SWMU = Solid Waste Management Unit.
– = Information not available.

Table D-7
Risk Assessment Values for SWMU 105 Nonradiological COCs

COC	Maximum Concentration (All Samples) (mg/kg)	Industrial Land-Use Scenario[a]		Residential Land-Use Scenario[a]	
		Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Inorganic					
Mercury	342	1.19	–	15.0	–
Total		**1.19**	–	**15.0**	–

[a]EPA 1989.
COC = Constituent of concern.
EPA = U.S. Environmental Protection Agency.
mg/kg = Milligram(s) per kilogram.
SWMU = Solid Waste Management Unit.
– = Information not quantified.

Table D-8
Risk Assessment Values for SWMU 105 Nonradiological Background Constituents

COC	Background Concentration[a] (mg/kg)	Industrial Land-Use Scenario[b]		Residential Land-Use Scenario[b]	
		Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Mercury	<0.1	–	–	–	–
Total		–	–	–	–

[a]Dinwiddie September 1997, Southwest Area Supergroup.
[b]EPA 1989.
COC = Constituent of concern.
EPA = U.S. Environmental Protection Agency.
mg/kg = Milligram(s) per kilogram.
SWMU = Solid Waste Management Unit.
– = Information not quantified.

VI.7 Step 6. Comparison of Risk Values to Numerical Guidelines

The human health risk assessment analysis evaluates the potential for adverse health effects for both the industrial (the designated land-use scenario for this site) and residential land-use scenarios.

For the nonradiological COC under the industrial land-use scenario, the HI is 1.19 (slightly greater than the numerical guideline of 1 suggested in the RAGS [EPA 1989]). There was no quantified estimated excess cancer risk. NMED guidance states that cumulative excess lifetime cancer risk must be less than 1E-5 (Bearzi January 2001); thus the excess cancer risk for this site is below the suggested acceptable risk value. This assessment also determines risks considering background concentrations of the potential nonradiological COC for both the industrial and residential land-use scenarios. Assuming the industrial land-use scenario, there is neither a quantifiable HI nor an excess cancer risk for the nonradiological COC. The incremental risk is determined by subtracting risk associated with background from potential COC risk. These numbers are not rounded before the difference is determined and therefore may appear to be inconsistent with numbers presented in tables and within the text. For conservatism, the background constituents that do not have quantified background screening concentrations are assumed to have a hazard quotient (HQ) of 0.00. However, there was no quantified HI or estimated excess cancer risk for the SWMU 105 associated background constituents under the industrial land-use scenario.

The calculated HI for the nonradiological COC under the residential land-use scenario is 15, which is above numerical guidance. There was no quantified estimated excess cancer risk. NMED guidance states that cumulative excess lifetime cancer risk must be less than 1E-5 (Bearzi January 2001); thus the excess cancer risk for this site is below the suggested acceptable risk value. There was no quantified HI or estimated excess cancer risk for the SWMU 105 associated background constituent under the residential land-use scenario.

VI.8 Step 7. Uncertainty Discussion

Because of the location, history of the site, and future land use, there is low uncertainty in the land-use scenario and the potentially affected populations that were considered in performing the risk assessment analysis. Based upon the COC found in the near-surface soil and the location and physical characteristics of the site, there is little uncertainty in the exposure pathways relevant to the analysis.

An RME approach is used to calculate the risk assessment values. Specifically, the parameter values in the calculations are conservative and calculated intakes are probably overestimated. Maximum measured values of COC concentrations are used to provide conservative results.

Table D-6 shows the uncertainties (confidence levels) in nonradiological toxicological parameter values. There is a combination of estimated values and values from the IRIS (EPA 2004a), HEAST (EPA 1997a), and Technical Background Document for Development of Soil Screening Levels (NMED February 2004). Where values are not provided, information is not available from the HEAST (EPA 1997a), IRIS (EPA 2004a), Technical Background Document for Development of Soil Screening Levels (NMED February 2004), Risk Assessment Information System (ORNL 2003), or EPA Regions 6, 9, or 3 (EPA 2004b, EPA 2002a, EPA 2002b).

Because of the conservative nature of the RME approach, uncertainties in toxicological values are not expected to change the conclusion from the risk assessment analysis.

Entire Data Set

Although the HI was above the NMED guideline for the industrial land-use scenario, the maximum concentration was used in the risk calculation. Because the site has been adequately characterized, the average concentration is more representative of actual site conditions. Using the 95% upper confidence limit (UCL) of the mean concentration for mercury for the entire site analytical data set (7.8 mg/kg, summarized in Appendix 2) reduces the total HI to 0.03. Thus, by using a realistic concentration in the risk calculations that more accurately depicts actual site conditions, both the total and incremental HI values are below NMED guidelines.

Although the HI was above the NMED guideline for the residential land-use scenario, the maximum concentration was used in the risk calculation. Because the site has been adequately characterized, the average concentration is more representative of actual site conditions. Using the 95% UCL of the mean concentration for mercury for the entire site analytical data set (7.8 mg/kg, summarized in Appendix 2) reduces the total HI to 0.34. Thus, by using a realistic concentration in the risk calculations that more accurately depicts actual site conditions, both the total and incremental HI values are below NMED guidelines.

Limited Data Set

Although the HI was above the NMED guideline for the industrial land-use scenario, the maximum concentration was used in the risk calculation. Because the site has been adequately characterized, the average concentration is more representative of actual site conditions. Using the 95% UCL of the mean concentration for mercury for the limited analytical data set (30.5 mg/kg, summarized in Appendix 2) reduces the total HI to 0.11. Thus, by using a realistic concentration in the risk calculations that more accurately depicts actual site conditions, both the total and incremental HI values are below NMED guidelines.

Although the HI was above the NMED guideline for the residential land-use scenario, the maximum concentration was used in the risk calculation. Because the site has been adequately characterized, the average concentration is more representative of actual site conditions. Using the 95% UCL of the mean concentration for mercury for the limited analytical data set (30.5 mg/kg, summarized in Appendix 2) reduces the total HI to 1.34. Thus, by using a realistic concentration in the risk calculations that more accurately depicts actual site conditions, both the total and incremental HI values are only slightly above NMED guidelines.

The overall uncertainty in all of the steps in the risk assessment process is not considered to be significant with respect to the conclusion reached.

VI.9 Summary

SWMU 105 contains an identified COC that is the inorganic compound mercury. Because of the location of the site, the designated industrial land-use scenario, and the nature of

contamination, potential exposure pathways identified for this site include soil ingestion, dermal contact, and dust and volatile inhalation for chemical COCs. The same exposure pathways are applied to the residential land-use scenario.

Using conservative assumptions and an RME approach to risk assessment, calculations for the nonradiological COC show that for the industrial land-use scenario the HI (1.19) is slightly greater than the accepted numerical guidance from the EPA. There was no quantified estimated excess cancer risk; thus, excess cancer risk is below the acceptable risk value provided by the NMED for an industrial land-use scenario (Bearzi January 2001). There was no quantified HI or estimated excess cancer risk for the SWMU 105 associated background constituent under the industrial land-use scenario.

Although the HI was above the NMED guideline for the industrial land-use scenario, the maximum concentration was used in the risk calculation. Because the site has been adequately characterized, the average concentration is more representative of actual site conditions. Using the 95% UCL of the mean concentration for mercury for the entire site analytical data set (7.8 mg/kg, summarized in Appendix 2) reduces the total HI to 0.03. Thus, by using a realistic concentration in the risk calculations that more accurately depicts actual site conditions, both the total and incremental HI values are below NMED guidelines.

Although the HI was above the NMED guideline for the industrial land-use scenario, the maximum concentration was used in the risk calculation. Because the site has been adequately characterized, the average concentration is more representative of actual site conditions. Using the 95% UCL of the mean concentration for mercury for the limited analytical data set (30.5 mg/kg, summarized in Appendix 2) reduces the total HI to 0.11. Thus, by using a realistic concentration in the risk calculations that more accurately depicts actual site conditions, both the total and incremental HI values are below NMED guidelines.

Using conservative assumptions and an RME approach to risk assessment, calculations for the nonradiological COC shows that for the residential land-use scenario the HI (15.0) is above the accepted numerical guidance from the EPA. There was no quantified estimated excess cancer risk; thus, excess cancer risk is below the acceptable risk value provided by the NMED for a residential land-use scenario (Bearzi January 2001). There was no quantified HI or estimated excess cancer risk for the SWMU 105 associated background constituent under the residential land-use scenario.

Although the HI was above the NMED guideline for the residential land-use scenario, the maximum concentration was used in the risk calculation. Because the site has been adequately characterized, the average concentration is more representative of actual site conditions. Using the 95% UCL of the mean concentration for mercury for the entire site analytical data set (7.8 mg/kg, summarized in Appendix 2) reduces the total HI to 0.34. Thus, by using a realistic concentration in the risk calculations that more accurately depicts actual site conditions, both the total and incremental HI values are below NMED guidelines.

Although the HI was above the NMED guideline for the residential land-use scenario, the maximum concentration was used in the risk calculation. Because the site has been adequately characterized, the average concentration is more representative of actual site conditions. Using the 95% UCL of the mean concentration for mercury for the limited analytical data set (30.5 mg/kg, summarized in Appendix 2) reduces the total HI to 1.34. Thus, by using a

realistic concentration in the risk calculations that more accurately depicts actual site conditions, both the total and incremental HI values are only slightly above NMED guidelines.

Uncertainties associated with the calculations are considered small relative to the conservatism of the risk assessment analysis. Therefore, it is concluded that this site poses insignificant risk to human health under the industrial land-use scenario when evaluating all of the data for mercury for the entire site, as well as the limited data set.

VII. Ecological Risk Assessment

VII.1 Introduction

This section addresses the ecological risks associated with exposure to the constituent of potential ecological concern (COPEC) in the soil at SWMU 105. A component of the NMED Risk-Based Decision Tree (NMED March 1998) is to conduct an ecological assessment that corresponds with that presented in the EPA's Ecological RAGS (EPA 1997b). The current methodology is tiered and contains an initial scoping assessment followed by a more detailed risk assessment. Initial components of the NMED's decision tree (a discussion of DQOs, data assessment, and evaluations of bioaccumulation as well as fate and transport potential) are addressed in previous sections of this report. Following the completion of the scoping assessment, a determination is made as to whether a more detailed examination of potential ecological risk is necessary. If deemed necessary, the scoping assessment proceeds to a risk assessment whereby a more quantitative estimate of ecological risk is conducted. Although this assessment incorporates conservatisms into the estimation of ecological risks, ecological relevance and professional judgment are also used as recommended by the EPA (1998) to ensure that predicted exposures of selected ecological receptors reflect those reasonably expected to occur at the site.

VII.2 Scoping Assessment

The scoping assessment focuses primarily on the likelihood of exposure of biota at, or adjacent to, the site to constituents associated with site activities. Included in this section are an evaluation of existing data and a comparison of maximum detected concentrations to background concentrations, examination of bioaccumulation potential, and fate and transport potential. A scoping risk-management decision (Section VII.2.4) summarizes the scoping results and assesses the need for further examination of potential ecological impacts.

VII.2.1 Data Assessment

As indicated in Section IV (Table D-4), the inorganic constituent, mercury, is present in the soil within the 0- to 5-foot depth interval at concentrations that exceed the background concentration.

No radiological COPECs are evaluated for SWMU 105.

VII.2.2 Bioaccumulation

Mercury, as listed in Section VII.2.1, is considered to have bioaccumulation potential in aquatic environments (Section IV, Table D-4). However, as directed by the NMED (March 1998), bioaccumulation for inorganic compounds is assessed exclusively based upon maximum reported bioconcentration factors (BCFs) for aquatic species. Because only aquatic BCFs are used to evaluate the bioaccumulation potential for metals, bioaccumulation in terrestrial species is likely to be overpredicted.

VII.2.3 Fate and Transport Potential

The potential for the COPEC to migrate from the source of contamination to other media or biota is discussed in Section V. As noted in Table D-5, wind, surface water, and biota are expected to be of low significance as transport mechanisms for the COPEC at this site. Migration to groundwater is not anticipated. In general, transformation of the COPEC is expected to be of low significance.

VII.2.4 Scoping Risk-Management Decision

Based upon information gathered through the scoping assessment, it is concluded that complete ecological pathways may be associated with SWMU 105 and that the COPEC exists at the site. As a consequence, a risk assessment was deemed necessary to predict the potential level of ecological risk associated with the site.

VII.3 Risk Assessment

As concluded in Section VII.2.4, both complete ecological pathways and a COPEC are associated with SWMU 105. The risk assessment performed for the site involves a quantitative estimate of current ecological risks using exposure models in association with exposure parameters and toxicity information obtained from the literature. The estimation of potential ecological risks is conservative to ensure that ecological risks are not underpredicted.

Components within the risk assessment include the following:

- Problem Formulation—sets the stage for the evaluation of potential exposure and risk.
- Exposure Estimation—provides a quantitative estimate of potential exposure.
- Ecological Effects Evaluation—presents benchmarks used to gauge the toxicity of the COPEC to specific receptors.
- Risk Characterization—characterizes the ecological risk associated with exposure of the receptors to environmental media at the site.
- Uncertainty Assessment—discusses uncertainties associated with the estimation of exposure and risk.

- Risk Interpretation—evaluates ecological risk in terms of the HQ and ecological significance.
- Risk Assessment Scientific/Management Decision Point—presents the decision to risk managers based upon the results of the ecological risk assessment.

VII.3.1 Problem Formulation

Problem formulation is the initial stage of the ecological risk assessment that provides the introduction to the risk evaluation process. Components that are addressed in this section include a discussion of ecological pathways and the ecological setting, identification of COPECs, and selection of ecological receptors. The conceptual model, ecological food webs, and ecological endpoints (other components commonly addressed in a risk assessment) are presented in "Predictive Ecological Risk Assessment Methodology, Environmental Restoration Program, Sandia National Laboratories, New Mexico" (IT July 1998) and are not duplicated here.

VII.3.1.1 Ecological Pathways and Setting

SWMU 105 is less than an acre in size. The site is located in an area originally dominated by grassland habitat; however, this habitat has been highly disturbed in the area of the site (i.e., industrialized). No threatened or endangered species exist at this site (IT February 1995), and no surface-water bodies, seeps, or springs are associated with the site.

Complete ecological pathways may exist at this site through the exposure of plants and wildlife to the COPEC in the soil. It is assumed that direct uptake of the COPEC from the soil is the major route of exposure for plants and that exposure of plants to wind-blown soil is minor. Exposure modeling for the wildlife receptors is limited to the food and soil ingestion pathways. Because of the lack of surface water at this site, exposure to the COPEC through the ingestion of surface water is considered insignificant. Inhalation and dermal contact are also considered insignificant pathways with respect to ingestion (Sample and Suter 1994). Groundwater is not expected to be affected by the COC at this site.

VII.3.1.2 COPECs

Undocumented release of mercury through imperfections in the foundation and stem wall of Building 6536 was the primary source of the COPEC at SWMU 105. Mercury, the inorganic COPEC identified for this site, is listed in Section VII.2.1. The inorganic analyte was screened against the background concentration. Because concentrations of mercury exceed the approved SNL/NM background screening level (Dinwiddie September 1997) for the area, it is considered to be a COPEC. In order to provide conservatism, this ecological risk assessment is based upon the maximum soil concentration of the COPEC measured in the upper 5 feet of soil at this site. Table D-4 presents the maximum concentration for the COPEC.

VII.3.1.3 Ecological Receptors

A nonspecific perennial plant is selected as the receptor to represent plant species at the site (IT July 1998). Vascular plants are the principal primary producers at the site and are key to the diversity and productivity of the wildlife community associated with the site. The deer mouse (*Peromyscus maniculatus*) and the burrowing owl (*Speotyto cunicularia*) are used to represent wildlife use. Because of its opportunistic food habits, the deer mouse represents a mammalian herbivore, omnivore, and insectivore. The burrowing owl represents a top predator at this site. The burrowing owl is present at SNL/NM and is designated a species of management concern by the U.S. Fish and Wildlife Service in Region 2, which includes the state of New Mexico (USFWS September 1995).

VII.3.2 Exposure Estimation

Direct uptake from the soil is considered the only significant route of exposure for terrestrial plants. Exposure modeling for the wildlife receptors is limited to food and soil ingestion pathways. Inhalation and dermal contact are considered insignificant pathways with respect to ingestion (Sample and Suter 1994). Drinking water is also considered to be an insignificant pathway because of the lack of surface water at this site. The deer mouse is modeled under three dietary regimes: as an herbivore (100 percent of its diet as plant material), as an omnivore (50 percent of its diet as plants and 50 percent as soil invertebrates), and as an insectivore (100 percent of its diet as soil invertebrates). The burrowing owl is modeled as a strict predator on small mammals (100 percent of its diet as deer mice). Because the exposure in the burrowing owl from a diet consisting of equal parts of herbivorous, omnivorous, and insectivorous mice would be equivalent to the exposure consisting of only omnivorous mice, the diet of the burrowing owl is modeled with intake of omnivorous mice only. Both species are modeled with soil ingestion comprising 2 percent of the total dietary intake. Table D-9 presents the species-specific factors used in modeling exposures in the wildlife receptors. Justification for use of the factors presented in this table is described in the ecological risk assessment methodology document (IT July 1998).

Although home range is also included in this table, exposures for this risk assessment are modeled using an area use factor of 1.0, implying that all food items and soil ingested come from the site being investigated. The maximum COPEC concentration measured in surface soil samples is used to conservatively estimate potential exposures and risks to plants and wildlife at this site. Table D-10 provides the transfer factors used in modeling the concentration of the COPEC through the food chain. Table D-11 presents the maximum concentration in soil and derived concentrations in tissues of the various food chain elements that are used to model dietary exposures for each of the wildlife receptors.

VII.3.3 Ecological Effects Evaluation

Table D-12 shows benchmark toxicity values for the plant and wildlife receptors. For plants, the benchmark soil concentrations are based upon the lowest-observed-adverse-effect level.

Table D-9
Exposure Factors for Ecological Receptors at SWMU 105

Receptor Species	Class/Order	Trophic Level	Body Weight (kg)[a]	Food Intake Rate (kg/day)[b]	Dietary Composition[c]	Home Range (acres)
Deer Mouse (*Peromyscus maniculatus*)	Mammalia/ Rodentia	Herbivore	2.39E-2[d]	3.72E-3	Plants: 100% (+ Soil at 2% of intake)	2.7E-1[e]
Deer Mouse (*Peromyscus maniculatus*)	Mammalia/ Rodentia	Omnivore	2.39E-2[d]	3.72E-3	Plants: 50% Invertebrates: 50% (+ Soil at 2% of intake)	2.7E-1[e]
Deer Mouse (*Peromyscus maniculatus*)	Mammalia/ Rodentia	Insectivore	2.39E-2[d]	3.72E-3	Invertebrates: 100% (+ Soil at 2% of intake)	2.7E-1[e]
Burrowing owl (*Speotyto cunicularia*)	Aves/ Strigiformes	Carnivore	1.55E-1[f]	1.73E-2	Rodents: 100% (+ Soil at 2% of intake)	3.5E+1[g]

[a]Body weights are in kg wet weight.
[b]Food intake rates are estimated from the allometric equations presented in Nagy (1987). Units are kg dry weight per day.
[c]Dietary compositions are generalized for modeling purposes. Default soil intake value of 2 percent of food intake.
[d]Silva and Downing 1995.
[e]EPA (1993), based upon the average home range measured in semiarid shrubland in Idaho.
[f]Dunning 1993.
[g]Haug et al. 1993.
EPA = U.S. Environmental Protection Agency.
kg = Kilogram(s).
SWMU = Solid Waste Management Unit.

Table D-10
Transfer Factors Used in Exposure Models for COPECs at SWMU 105

COPEC	Soil-to-Plant Transfer Factor	Soil-to-Invertebrate Transfer Factor	Food-to-Muscle Transfer Factor
Inorganic			
Mercury	1.0E+0[a]	1.0E+0[b]	2.5E-1[c]

[a]NCRP January 1989.
[b]Default value.
[c]Baes et al. 1984.
COPEC = Constituent of potential ecological concern.
NCRP = National Council on Radiation Protection and Measurements.
SWMU = Solid Waste Management Unit.

Table D-11
Media Concentrations[a] for COPECs at SWMU 105

COPEC	Soil (Samples ≤ 5 ft bgs) (maximum)[a]	Plant Foliage[b]	Soil Invertebrate[b]	Deer Mouse Tissues[c]
Inorganic				
Mercury	342	342	342	273

[a]In milligrams per kilogram. All biotic media are based upon dry weight of the media. Soil concentration measurements are assumed to have been based upon dry weight. Values have been rounded to two significant digits after calculation.
[b]Product of the soil concentration and the corresponding transfer factor.
[c]Based upon the deer mouse with an omnivorous diet. Product of the average concentration ingested in food and soil times the food-to-muscle transfer factor times a wet weight-dry weight conversion factor of 3.125 (EPA 1993).
bgs = Below ground surface.
COPEC = Constituent of potential ecological concern.
ft = Foot (feet).
SWMU = Solid Waste Management Unit.

Table D-12
Toxicity Benchmarks for Ecological Receptors at SWMU 105

COPEC	Plant Benchmark[a,b]	Mammalian NOAELs			Avian NOAELs		
		Mammalian Test Species[c,d]	Test Species NOAEL[d,e]	Deer Mouse NOAEL[e,f]	Avian Test Species[d]	Test Species NOAEL[d,e]	Burrowing Owl NOAEL[e,g]
Inorganic							
Mercury (inorganic)	0.3	mouse	13.2	14.0	Japanese quail	0.45	0.45

[a]In mg/kg soil dry weight.
[b]Efroymson et al. 1997.
[c]Body weight (in kg) for the NOAEL conversion are 0.030 for the lab mouse.
[d]Sample et al. 1996.
[e]In mg/kg body weight per day.
[f]Based upon NOAEL conversion methodology presented in Sample et al. (1996), using a deer mouse body weight of 0.0239 kg and a mammalian scaling factor of 0.25.
[g]Based upon NOAEL conversion methodology presented in Sample et al. (1996). The avian scaling factor of 0.0 was used, making the NOAEL independent of body weight.
COPEC = Constituents of potential ecological concern.
kg = Kilogram(s).
mg = Milligram(s).
NOAEL = No-observed-adverse-effect level.
SWMU = Solid Waste Management Unit.

For wildlife, the toxicity benchmarks are based upon the no-observed-adverse-effect level (NOAEL) for chronic oral exposure in a taxonomically similar test species.

VII.3.4 Risk Characterization

The maximum concentration in the soil and estimated dietary exposures are compared to plant and wildlife benchmark values, respectively. Table D-13 presents the results of these comparisons. The HQ is used to quantify the comparison with benchmarks for plant and wildlife exposure.

The HQ for SWMU 105 exceeds unity based upon the maximum mercury concentration. As directed by the NMED, HIs are calculated for each of the receptors (the HI is the sum of chemical-specific HQs for all pathways for a given receptor). Again all of the HIs exceed unity, with a maximum HI of 1,100 for the plant.

VII.3.5 Uncertainty Assessment

Many uncertainties are associated with the characterization of ecological risks at SWMU 105. These uncertainties result from assumptions used in calculating risk that could overestimate or underestimate true risk presented at the site. For this risk assessment, assumptions are made that are more likely to overestimate exposures and risk rather than to underestimate them. These conservative assumptions are used to be more protective of the ecological resources potentially affected by the site. Conservatisms incorporated into this risk assessment include the use of maximum analyte concentrations measured in soil to evaluate risk, the use of wildlife toxicity benchmarks based upon NOAEL values, and the incorporation of strict herbivorous and strict insectivorous diets for predicting the extreme HQ value for the deer mouse. Each of these uncertainties, which are consistent among each of the site-specific ecological risk assessments, is discussed in greater detail in the uncertainty section of the ecological risk assessment methodology document for the SNL/NM ER Program (IT July 1998).

The assumption of an area use factor of 1.0 is a source of uncertainty for the burrowing owl at this site. Because SWMU 105 is very small in size and the home range of the burrowing owl is 35 acres, an area use factor of approximately 0 would be justified for this receptor. This is sufficient to reduce the burrowing owl HQ for mercury from 69 to approximately 0. The same discussion, to a lesser extent, is accurate for the deer mouse, and the associated HI would be reduced to less than 1.0.

A further source of uncertainty associated with the prediction of ecological risks at this site is the use of the maximum measured concentration to evaluate exposure and risk. This results in a conservative exposure scenario that does not necessarily reflect actual site conditions. To evaluate the potential effect on risk predictions by using the maximum concentration as the exposure point concentration, the UCL of the mean (Appendix 2) soil concentration was calculated for mercury (9.6 mg/kg) using all of the available mercury site data. Exposure to plants at the 95% UCL concentration for mercury is reduced to an HQ of 32. The deer mouse HQ is reduced to a level below 1, indicating low average risk to this receptor from this COPEC.

Table D-13
HQs for Ecological Receptors at SWMU 105

COPEC	Plant HQ	Deer Mouse HQ (Herbivorous)	Deer Mouse HQ (Omnivorous)	Deer Mouse HQ (Insectivorous)	Burrowing Owl HQ
Inorganic					
Mercury (Inorganic)	**1.1E+03**	**3.9E+00**	**3.9E+00**	**3.9E+00**	**6.9E+01**
HI[a]	**1.1E+03**	**3.9E+00**	**3.9E+00**	**3.9E+00**	**6.9E+01**

Note: Values in **bold** indicate that the HQ or HI exceeds unity.
[a]The HI is the sum of individual HQs.
COPEC = Constituent of potential ecological concern.
HI = Hazard index.
HQ = Hazard quotient.
SWMU = Solid Waste Management Unit.

Using the limited data set to evaluate the potential effect on risk predictions based upon the maximum concentration as the exposure point concentration, the UCL of the mean soil concentration (Appendix 2) was also calculated for mercury (39.9 mg/kg). Exposure to plants at the 95% UCL concentration for mercury is reduced to an HQ of 130. The deer mouse HQ is reduced to a level below 1, indicating low average risk to this receptor from this COPEC.

VII.3.6 Risk Interpretation

Ecological risks associated with SWMU 105 were estimated through a risk assessment that incorporated site-specific information when available. HQs greater than unity were predicted; however, closer examination of the exposure assumptions revealed an overestimation of risk primarily attributed to conservative toxicity benchmarks; the use of the maximum concentration, maximum bioavailability, and maximum area use to estimate exposure. Based upon this final analysis, the potential for ecological risks associated with SWMU 105 is expected to be low.

VII.3.7 Risk Assessment Scientific/Management Decision Point

After potential ecological risks associated with the site have been assessed, a decision is made regarding whether the site should be recommended for CAC with controls (NMED April 2004) or whether additional data should be collected to assess actual ecological risk at the site more thoroughly. With respect to this site, ecological risks are predicted to be low.

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APPENDIX 1
EXPOSURE PATHWAY DISCUSSION FOR CHEMICAL AND RADIONUCLIDE CONTAMINATION

Introduction

Sandia National Laboratories/New Mexico (SNL/NM) uses a default set of exposure routes and associated default parameter values developed for each future land-use designation being considered for SNL/NM Environmental Restoration (ER) Project sites. This default set of exposure scenarios and parameter values are invoked for risk assessments unless site-specific information suggests other parameter values. Because many SNL/NM solid waste management units (SWMUs) have similar types of contamination and physical settings, SNL/NM believes that the risk assessment analyses at these sites can be similar. A default set of exposure scenarios and parameter values facilitates the risk assessments and subsequent review.

The default exposure routes and parameter values used are those that SNL/NM views as resulting in a Reasonable Maximum Exposure (RME) value. Subject to comments and recommendations by the U.S. Environmental Protection Agency (EPA) Region VI and New Mexico Environment Department (NMED), SNL/NM will use these default exposure routes and parameter values in future risk assessments.

At SNL/NM, all SWMUs exist within the boundaries of the Kirtland Air Force Base. Approximately 240 potential waste and release sites have been identified where hazardous, radiological, or mixed materials may have been released to the environment. Evaluation and characterization activities have occurred at all of these sites to varying degrees. Among other documents, the SNL/NM ER draft Environmental Assessment (DOE 1996) presents a summary of the hydrogeology of the sites and the biological resources present. When evaluating potential human health risk the current or reasonably foreseeable land use negotiated and approved for the specific SWMU/AOC, aggregate, or watershed will be used. The following references generally document these land uses: *Workbook: Future Use Management Area 2 (DOE et al. September 1995); Workbook: Future Use Management Area 1 (DOE et al. October 1995); Workbook: Future Use Management Areas 3, 4, 5, and 6 (DOE and USAF January 1996); Workbook: Future Use Management Area 7 (DOE and USAF March 1996)*. At this time, all SNL/NM SWMUs have been tentatively designated for either industrial or recreational future land use. The NMED has also requested that risk calculations be performed based upon a residential land-use scenario. Therefore, all three land-use scenarios will be addressed in this document.

The SNL/NM ER Project has screened the potential exposure routes and identified default parameter values to be used for calculating potential intake and subsequent hazard index (HI), excess cancer risk and dose values. The EPA (EPA 1989) provides a summary of exposure routes that could potentially be of significance at a specific waste site. These potential exposure routes consist of:

- Ingestion of contaminated drinking water
- Ingestion of contaminated soil

- Ingestion of contaminated fish and shellfish
- Ingestion of contaminated fruits and vegetables
- Ingestion of contaminated meat, eggs, and dairy products
- Ingestion of contaminated surface water while swimming
- Dermal contact with chemicals in water
- Dermal contact with chemicals in soil
- Inhalation of airborne compounds (vapor phase or particulate)
- External exposure to penetrating radiation (immersion in contaminated air; immersion in contaminated water; and exposure from ground surfaces with photon-emitting radionuclides)

Based upon the location of the SNL/NM SWMUs and the characteristics of the surface and subsurface at the sites, we have evaluated these potential exposure routes for different land-use scenarios to determine which should be considered in risk assessment analyses (the last exposure route is pertinent to radionuclides only). At SNL/NM SWMUs, there is currently no consumption of fish, shellfish, fruits, vegetables, meat, eggs, or dairy products that originate on site. Additionally, no potential for swimming in surface water is present due to the high-desert environmental conditions. As documented in the RESRAD computer code manual (ANL 1993), risks resulting from immersion in contaminated air or water are not significant compared to risks from other radiation exposure routes.

For the industrial and recreational land-use scenarios, SNL/NM ER has, therefore, excluded the following five potential exposure routes from further risk assessment evaluations at any SNL/NM SWMU:

- Ingestion of contaminated fish and shellfish
- Ingestion of contaminated fruits and vegetables
- Ingestion of contaminated meat, eggs, and dairy products
- Ingestion of contaminated surface water while swimming
- Dermal contact with chemicals in water

That part of the exposure pathway for radionuclides related to immersion in contaminated air or water is also eliminated.

Based upon this evaluation, for future risk assessments the exposure routes that will be considered are shown in Table 1.

Table 1
Exposure Pathways Considered for Various Land-Use scenarios

Industrial	Recreational	Residential
Ingestion of contaminated drinking water	Ingestion of contaminated drinking water	Ingestion of contaminated drinking water
Ingestion of contaminated soil	Ingestion of contaminated soil	Ingestion of contaminated soil
Inhalation of airborne compounds (vapor phase or particulate)	Inhalation of airborne compounds (vapor phase or particulate)	Inhalation of airborne compounds (vapor phase or particulate)
Dermal contact (nonradiological constituents only) soil only	Dermal contact (nonradiological constituents only) soil only	Dermal contact (nonradiological constituents only) soil only
External exposure to penetrating radiation from ground surfaces	External exposure to penetrating radiation from ground surfaces	External exposure to penetrating radiation from ground surfaces

Equations and Default Parameter Values for Identified Exposure Routes

In general, SNL/NM expects that ingestion of compounds in drinking water and soil will be the more significant exposure routes for chemicals; external exposure to radiation may also be significant for radionuclides. All of the above routes will, however, be considered for their appropriate land-use scenarios. The general equation for calculating potential intakes via these routes is shown below. The equations are taken from "Assessing Human Health Risks Posed by Chemicals: Screening-Level Risk Assessment" (NMED March 2000) and "Technical Background Document for Development of Soil Screening Levels" (NMED February 2004). Equations from both documents are based upon the "Risk Assessment Guidance for Superfund" (RAGS): Volume 1 (EPA 1989, 1991). These general equations also apply to calculating potential intakes for radionuclides. A more in-depth discussion of the equations used in performing radiological pathway analyses with the RESRAD code may be found in the RESRAD Manual (ANL 1993). RESRAD is the only code designated by the U.S. Department of Energy (DOE) in DOE Order 5400.5 for the evaluation of radioactively contaminated sites (DOE 1993). The Nuclear Regulatory Commission (NRC) has approved the use of RESRAD for dose evaluation by licensees involved in decommissioning, NRC staff evaluation of waste disposal requests, and dose evaluation of sites being reviewed by NRC staff. EPA Science Advisory Board reviewed the RESRAD model. EPA used RESRAD in their rulemaking on radiation site cleanup regulations. RESRAD code has been verified, undergone several benchmarking analyses, and been included in the International Atomic Energy Agency's VAMP and BIOMOVS II projects to compare environmental transport models.

Also shown are the default values SNL/NM ER will use in RME risk assessment calculations for industrial, recreational, and residential land-use scenarios, based upon EPA and other governmental agency guidance. The pathways and values for chemical contaminants are discussed first, followed by those for radionuclide contaminants. RESRAD input parameters that are left as the default values provided with the code are not discussed. Further information relating to these parameters may be found in the RESRAD Manual (ANL 1993) or by directly accessing the RESRAD websites at: http://web.ead.anl.gov/resrad/home2/ or http://web.ead.anl.gov/resrad/documents/.

Generic Equation for Calculation of Risk Parameter Values

The equation used to calculate the risk parameter values (i.e., hazard quotients/HI, excess cancer risk, or radiation total effective dose equivalent [TEDE] [dose]) is similar for all exposure pathways and is given by:

Risk (or Dose) = Intake x Toxicity Effect (either carcinogenic, noncarcinogenic, or radiological)

$$= C \times (CR \times EFD/BW/AT) \times \text{Toxicity Effect} \quad (1)$$

where;

C = contaminant concentration (site specific)
CR = contact rate for the exposure pathway
EFD= exposure frequency and duration
BW = body weight of average exposure individual
AT = time over which exposure is averaged.

For nonradiological constituents of concern (COCs), the total risk/dose (either cancer risk or HI) is the sum of the risks/doses for all of the site-specific exposure pathways and contaminants. For radionuclides, the calculated radiation exposure, expressed as TEDE is compared directly to the exposure guidelines of 15 millirem per year (mrem/year) for industrial and recreational future use and 75 mrem/year for the unlikely event that institutional control of the site is lost and the site is used for residential purposes (EPA 1997).

The evaluation of the carcinogenic health hazard produces a quantitative estimate for excess cancer risk resulting from the COCs present at the site. This estimate is evaluated for determination of further action by comparison of the quantitative estimate with the potentially acceptable risk of 1E-5 for nonradiological carcinogens. The evaluation of the noncarcinogenic health hazard produces a quantitative estimate (i.e., the HI) for the toxicity resulting from the COCs present at the site. This estimate is evaluated for determination of further action by comparison of this quantitative estimate with the EPA standard HI of unity (1). The evaluation of the health hazard from radioactive compounds produces a quantitative estimate of doses resulting from the COCs present at the site. This estimated dose is used to calculate an assumed risk. However, this calculated risk is presented for illustration purposes only, not to determine compliance with regulations.

The specific equations used for the individual exposure pathways can be found in RAGS (EPA 1989) and are outlined below. The RESRAD Manual (ANL 1993) describes similar equations for the calculation of radiological exposures.

Soil Ingestion

A receptor can ingest soil or dust directly by working in the contaminated soil. Indirect ingestion can occur from sources such as unwashed hands introducing contaminated soil to food that is then eaten. An estimate of intake from ingesting soil will be calculated as follows:

$$I_s = \frac{C_s * IR * CF * EF * ED}{BW * AT}$$

where:

I_s = Intake of contaminant from soil ingestion (milligrams [mg]/kilogram [kg]-day)
C_s = Chemical concentration in soil (mg/kg)
IR = Ingestion rate (mg soil/day)
CF = Conversion factor (1E-6 kg/mg)
EF = Exposure frequency (days/year)
ED = Exposure duration (years)
BW = Body weight (kg)
AT = Averaging time (period over which exposure is averaged) (days)

It should be noted that it is conservatively assumed that the receptor only ingests soil from the contaminated source.

Soil Inhalation

A receptor can inhale soil or dust directly by working in the contaminated soil. An estimate of intake from inhaling soil will be calculated as follows (EPA August 1997):

$$I_s = \frac{C_s * IR * EF * ED * \left(1/VF \text{ or } 1/PEF\right)}{BW * AT}$$

where:

I_s = Intake of contaminant from soil inhalation (mg/kg-day)
C_s = Chemical concentration in soil (mg/kg)
IR = Inhalation rate (cubic meters [m^3]/day)
EF = Exposure frequency (days/year)
ED = Exposure duration (years)
VF = soil-to-air volatilization factor (m^3/kg)
PEF = particulate emission factor (m^3/kg)
BW = Body weight (kg)
AT = Averaging time (period over which exposure is averaged) (days)

Soil Dermal Contact

$$D_a = \frac{C_s * CF * SA * AF * ABS * EF * ED}{BW * AT}$$

where:

D_a = Absorbed dose (mg/kg-day)
C_s = Chemical concentration in soil (mg/kg)
CF = Conversion factor (1E-6 kg/mg)
SA = Skin surface area available for contact (cm^2/event)
AF = Soil to skin adherence factor (mg/cm^2)
ABS = Absorption factor (unitless)
EF = Exposure frequency (events/year)

ED = Exposure duration (years)
BW = Body weight (kg)
AT = Averaging time (period over which exposure is averaged) (days)

Groundwater Ingestion

A receptor can ingest water by drinking it or through using household water for cooking. An estimate of intake from ingesting water will be calculated as follows (EPA August 1997):

$$I_w = \frac{C_w * IR * EF * ED}{BW * AT}$$

where:

I_w = Intake of contaminant from water ingestion (mg/kg/day)
C_w = Chemical concentration in water (mg/liter [L])
IR = Ingestion rate (L/day)
EF = Exposure frequency (days/year)
ED = Exposure duration (years)
BW = Body weight (kg)
AT = Averaging time (period over which exposure is averaged) (days)

Groundwater Inhalation

The amount of a constituent taken into the body via exposure to volatilization from showering or other household water uses will be evaluated using the concentration of the constituent in the water source (EPA 1991 and 1992). An estimate of intake from volatile inhalation from groundwater will be calculated as follows (EPA 1991):

$$I_w = \frac{C_w * K * IR_i * EF * ED}{BW * AT}$$

where:

I_w = Intake of volatile in water from inhalation (mg/kg/day)
C_w = Chemical concentration in water (mg/L)
K = volatilization factor (0.5 L/m^3)
IR_i = Inhalation rate (m^3/day)
EF = Exposure frequency (days/year)
ED = Exposure duration (years)
BW = Body weight (kg)
AT = Averaging time (period over which exposure is averaged—days)

For volatile compounds, volatilization from groundwater can be an important exposure pathway from showering and other household uses of groundwater. This exposure pathway will only be evaluated for organic chemicals with a Henry's Law constant greater than 1×10^{-5} and with a molecular weight of 200 grams/mole or less (EPA 1991).

Tables 2 and 3 show the default parameter values suggested for use by SNL/NM at SWMUs, based upon the selected land-use scenarios for nonradiological and radiological COCs,

respectively. References are given at the end of the table indicating the source for the chosen parameter values. SNL/NM uses default values that are consistent with both regulatory guidance and the RME approach. Therefore, the values chosen will, in general, provide a conservative estimate of the actual risk parameter. These parameter values are suggested for use for the various exposure pathways, based upon the assumption that a particular site has no unusual characteristics that contradict the default assumptions. For sites for which the assumptions are not valid, the parameter values will be modified and documented.

Summary

SNL/NM will use the described default exposure routes and parameter values in risk assessments at sites that have an industrial, recreational, or residential future land-use scenario. There are no current residential land-use designations at SNL/NM ER sites, but NMED has requested this scenario to be considered to provide perspective of the risk under the more restrictive land-use scenario. For sites designated as industrial or recreational land use, SNL/NM will provide risk parameter values based upon a residential land-use scenario to indicate the effects of data uncertainty on risk value calculations or in order to potentially mitigate the need for institutional controls or restrictions on SNL/NM ER sites. The parameter values are based upon EPA guidance and supplemented by information from other government sources. If these exposure routes and parameters are acceptable, SNL/NM will use them in risk assessments for all sites where the assumptions are consistent with site-specific conditions. All deviations will be documented.

Table 2
Default Nonradiological Exposure Parameter Values for Various Land-Use scenarios

Parameter	Industrial	Recreational	Residential
General Exposure Parameters			
Exposure Frequency (day/yr)	250[a,b]	8.7 (4 hr/wk for 52 wk/yr)[a,b]	350[a,b]
Exposure Duration (yr)	25[a,b,c]	30[a,b,c]	30[a,b,c]
Body Weight (kg)	70[a,b,c]	70 Adult[a,b,c] 15 Child[a,b,c]	70 Adult[a,b,c] 15 Child[a,b,c]
Averaging Time (days) for Carcinogenic Compounds (= 70 yr x 365 day/yr) for Noncarcinogenic Compounds (= ED x 365 day/yr)	25,550[a,b] 9,125[a,b]	25,550[a,b] 10,950[a,b]	25,550[a,b] 10,950[a,b]
Soil Ingestion Pathway			
Ingestion Rate (mg/day)	100[a,b]	200 Child[a,b] 100 Adult[a,b]	200 Child[a,b] 100 Adult[a,b]
Inhalation Pathway			
Inhalation Rate (m^3/day)	20[a,b]	15 Child[a] 30 Adult[a]	10 Child[a] 20 Adult[a]
Volatilization Factor (m^3/kg)	Chemical Specific	Chemical Specific	Chemical Specific
Particulate Emission Factor (m^3/kg)	1.36E9[a]	1.36E9[a]	1.36E9[a]
Water Ingestion Pathway			
Ingestion Rate (liter/day)	2.4[a]	2.4[a]	2.4[a]
Dermal Pathway			
Skin Adherence Factor (mg/cm^2)	0.2[a]	0.2 Child[a] 0.07 Adult[a]	0.2 Child[a] 0.07 Adult[a]
Exposed Surface Area for Soil/Dust (cm^2/day)	3,300[a]	2,800 Child[a] 5,700 Adult[a]	2,800 Child[a] 5,700 Adult[a]
Skin Adsorption Factor	Chemical Specific	Chemical Specific	Chemical Specific

[a]Technical Background Document for Development of Soil Screening Levels (NMED 2000).
[b]Risk Assessment Guidance for Superfund, Vol. 1, Part B (EPA 1991).
[c]Exposure Factors Handbook (EPA August 1997).
ED = Exposure duration.
EPA = U.S. Environmental Protection Agency.
hr = Hour(s).
kg = Kilogram(s).
m = Meter(s).
mg = Milligram(s).
NA = Not available.
wk = Week(s).
yr = Year(s).

Table 3
Default Radiological Exposure Parameter Values for Various Land-Use scenarios

Parameter	Industrial	Recreational	Residential
General Exposure Parameters			
Exposure Frequency	8 hr/day for 250 day/yr	4 hr/wk for 52 wk/yr	365 day/yr
Exposure Duration (yr)	25[a,b]	30[a,b]	30[a,b]
Body Weight (kg)	70 Adult[a,b]	70 Adult[a,b]	70 Adult[a,b]
Soil Ingestion Pathway			
Ingestion Rate	100 mg/day[c]	100 mg/day[c]	100 mg/day[c]
Averaging Time (days) (= 30 yr x 365 day/yr)	10,950[d]	10,950[d]	10,950[d]
Inhalation Pathway			
Inhalation Rate (m^3/yr)	7,300[d,e]	10,950[e]	7,300[d,e]
Mass Loading for Inhalation g/m^3	1.36 E-5[d]	1.36 E-5[d]	1.36 E-5[d]
Food Ingestion Pathway			
Ingestion Rate, Leafy Vegetables (kg/yr)	NA	NA	16.5[c]
Ingestion Rate, Fruits, Non-Leafy Vegetables & Grain (kg/yr)	NA	NA	101.8[b]
Fraction Ingested	NA	NA	0.25[b,d]

[a]Risk Assessment Guidance for Superfund, Vol. 1, Part B (EPA 1991).
[b]Exposure Factors Handbook (EPA August 1997).
[c]EPA Region VI guidance (EPA 1996).
[d]For radionuclides, RESRAD (ANL 1993).
[e]SNL/NM (February 1998).
EPA = U.S. Environmental Protection Agency.
g = Gram(s)
hr = Hour(s).
kg = Kilogram(s).
m = Meter(s).
mg = Milligram(s).
NA = Not applicable.
wk = Week(s).
yr = Year(s).

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APPENDIX 2
CALCULATION OF THE UPPER CONFIDENCE LIMITS OF MEAN CONCENTRATIONS

For conservatism, Sandia National Laboratories/New Mexico uses the maximum concentration of the constituents of concern (COCs) for initial risk calculation. If the maximum concentrations produce risk above New Mexico Environment Department (NMED) guidelines, conservatism with this approach is evaluated and, if appropriate, a more realistic approach is applied. When the site has been adequately characterized, an estimate of the mean concentration of the COCs is more representative of actual site conditions. The NMED has proposed the use of the 95, 97.5, or 99% upper confidence limit (UCL) of the mean (depending upon the variants of the data set) to represent average concentrations at a site (NMED February 2004). The UCL is calculated according to NMED guidance (Tharp June 2002) using the U.S. Environmental Protection Agency ProUCL program (EPA April 2002). Attached are the outputs from that program and the calculated UCLs used in the risk analysis.

References

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ATTACHMENT

Human Health SWMU 105 Mercury All Data		
Summary Statistics for	Mercury	
Number of Samples	579	
Minimum	0.001155	
Maximum	342	
Mean	3.51	
Median	0.012	
Standard Deviation	23.47	
Variance	550.9	
Coefficient of Variation	6.692	
Skewness	11.522	
Lilliefors Test Statisitic	0.187	
Lilliefors 5% Critical Value	0.037	
Data not Lognormal at 5% Significance Level		
Data not Normal: Try Non-parametric UCL		
95	% UCL (Assuming Normal Data)	
Student's-t	5.114	
95	% UCL (Adjusted for Skewness)	
Adjusted-CLT	5.611	
Modified-t	5.192	
95	% Non-parametric UCL	
CLT	5.112	
Jackknife	5.114	
Standard Bootstrap	5.088	
Bootstrap-t	6.221	
Chebyshev (Mean, Std)	7.759	

Ecological SWMU 105 Mercury All Data		
Summary Statistics for	Mercury	
Number of Samples	463	
Minimum	0.00116	
Maximum	342	
Mean	4.34	
Median	0.014	
Standard Deviation	26.18	
Variance	685.5	
Coefficient of Variation	6.039	
Skewness	10.298	
Lilliefors Test Statisitic	0.202	
Lilliefors 5% Critical Value	0.041	
Data not Lognormal at 5% Significance Level		
Data not Normal: Try Non-parametric UCL		
95	% UCL (Assuming Normal Data)	
Student's-t	6.341	
95	% UCL (Adjusted for Skewness)	
Adjusted-CLT	6.959	
Modified-t	6.438	
95	% Non-parametric UCL	
CLT	6.337	
Jackknife	6.341	
Standard Bootstrap	6.341	
Bootstrap-t	7.976	
Chebyshev (Mean, Std)	9.639	

Human Health SWMU 105 Mercury Limited Sub Set		
Summary Statistics for	Mercury	
Number of Samples	143	
Minimum	0.001205	
Maximum	342	
Mean	13.78	
Median	0.595	
Standard Deviation	45.82	
Variance	2099.5	
Coefficient of Variation	3.326	
Skewness	5.679	
Lilliefors Test Statisitic	0.090	
Lilliefors 5% Critical Value	0.074	
Data not Lognormal at 5% Significance Level		
Data not Normal: Try Non-parametric UCL		
95	% UCL (Assuming Normal Data)	
Student's-t	20.121	
95	% UCL (Adjusted for Skewness)	
Adjusted-CLT	22.024	
Modified-t	20.425	
95	% Non-parametric UCL	
CLT	20.080	
Jackknife	20.121	
Standard Bootstrap	20.225	
Bootstrap-t	25.208	
Chebyshev (Mean, Std)	30.479	

Ecological SWMU 105 Mercury Limited Sub Set		
Summary Statistics for	Mercury	
Number of Samples	108	
Minimum	0.001205	
Maximum	342	
Mean	18.03	
Median	1.440	
Standard Deviation	52.07	
Variance	2710.8	
Coefficient of Variation	2.888	
Skewness	4.915	
Lilliefors Test Statisitic	0.102	
Lilliefors 5% Critical Value	0.085	
Data not Lognormal at 5% Significance Level		
Data not Normal: Try Non-parametric UCL		
95	% UCL (Assuming Normal Data)	
Student's-t	26.344	
95	% UCL (Adjusted for Skewness)	
Adjusted-CLT	28.804	
Modified-t	26.739	
95	% Non-parametric UCL	
CLT	26.272	
Jackknife	26.344	
Standard Bootstrap	26.340	
Bootstrap-t	33.568	
Chebyshev (Mean, Std)	39.869	

ANNEX E
SWMU 105, Mercury Spill (Building 6536)
Data Sets for the Risk Assessments

Table E-1
SWMU 105, Mercury Spill (Building 6536)
Limited Data Set for the Risk Assessment

Sample Attributes				Metals (EPA Method 7471A)[a] (mg/kg)
Record Number[b]	ER Sample ID	Sample Collection Area	Sample Depth (ft bgs)	Mercury
609370	105-BH-15-0-S	E	0	0.0864 J
609370	105-BH-15-2-S	E	2	0.0187
609370	105-BH-15-4-S	E	4	ND (0.00246)
609370	105-BH-15-8-S	E	8	ND (0.00248)
609370	105-BH-29-0-S	E	0	**0.595**
609370	105-BH-29-2-S	E	2	0.0195
609370	105-BH-29-4-S	E	4	0.00427
609370	105-BH-29-8-S	E	8	ND (0.00245)
609349	105-BH-43-0-S	C	0	**2.45 J**
609349	105-BH-43-2-S	C	2	**342**
609366	105-BH-43-4-S	C	4	0.00538
609366	105-BH-43-6-S	C	6	0.0195
609366	105-BH-43-6-SD	C	6	0.00946
609366	105-BH-43-8-S	C	8	ND (0.00241)
609383	105-BH-44-0-S	E	3	**16.5**
609383	105-BH-44-2-S	E	5	**0.972**
609383	105-BH-44-4-S	E	7	**28.3**
609383	105-BH-44-4-SD	E	7	**18.3**
609567	105-BH-44-6-S	E	9	ND (0.00243)
609567	105-BH-44-8-S	E	11	0.00295
609349	105-BH-58-0-S	C	0	**339**
609349	105-BH-58-2-S	C	2	**125**
609366	105-BH-58-4-S	C	4	**0.85**
609366	105-BH-58-6-S	C	6	**7.53**
609366	105-BH-58-8-S	C	8	0.00269
609383	105-BH-59-0-S	E	3	**6.48**
609383	105-BH-59-2-S	E	5	**1.41**
609383	105-BH-59-2-SD	E	5	**1.15**
609383	105-BH-59-4-S	E	7	**0.906**
609522	105-BH-73-4-S	A	7	**27.5 J**
609522	105-BH-73-4-SD	A	7	**137 J**
609567	105-BH-73-6-S	A	9	**0.679**
609567	105-BH-73-8-S	A	11	0.0574
609567	105-BH-73-8-SD	A	11	**0.75**
609349	105-BH-74-0-S	C	0	**11.8**
609349	105-BH-74-2-S	C	2	**147**
609349	105-BH-74-2-SD	C	2	**75.4**
609366	105-BH-74-4-S	C	4	**0.327**
609366	105-BH-74-6-S	C	6	**4.4**
609366	105-BH-74-8-S	C	8	0.0106
Background Concentration (surface/subsurface)[c]				<0.25/<0.1

Refer to footnotes at end of table.

Table E-1 (Continued)
SWMU 105, Mercury Spill (Building 6536)
Limited Data Set for the Risk Assessment

Sample Attributes				Metals (EPA Method 7471A)[a] (mg/kg)
Record Number[b]	ER Sample ID	Sample Collection Area	Sample Depth (ft bgs)	Mercury
609383	105-BH-75-0-S	E	3	**14.8**
609383	105-BH-75-2-S	E	5	**18.8**
609383	105-BH-75-4-S	E	7	**24.1**
609567	105-BH-75-6-S	E	9	0.00272
609567	105-BH-75-8-S	E	11	**0.448**
609349	105-BH-89-0-S	C	0	**40.3**
609349	105-BH-89-2-S	C	2	**92.5**
609366	105-BH-89-4-S	C	4	**5.97**
609366	105-BH-89-6-S	C	6	**1.96**
609366	105-BH-89-8-S	C	8	0.00384
609383	105-BH-90-0-S	E	3	**8.26**
609383	105-BH-90-2-S	E	5	**4.2**
609383	105-BH-90-4-S	E	7	**2.08**
609349	105-BH-104-0-S	C	0	**9.45**
609349	105-BH-104-2-S	C	2	**89.6**
609366	105-BH-104-4-S	C	4	0.0256
609366	105-BH-104-6-S	C	6	**1.22**
609366	105-BH-104-8-S	C	8	0.00238
609383	105-BH-105-0-S	E	3	**24**
609383	105-BH-105-2-S	E	5	**3.22**
609383	105-BH-105-4-S	E	7	0.0116
609349	105-BH-119-0-S	E	0	**9.29**
609349	105-BH-119-2-S	E	2	0.0416
609349	105-BH-119-4-S	E	4	0.0466
609367	105-BH-133-0-S	G	0	**8.09**
609367	105-BH-133-2-S	G	2	**0.16**
609367	105-BH-133-4-S	G	4	0.00769
609367	105-BH-133-8-S	G	8	0.00444
609367	105-BH-134-0-S	G	0	0.0142
609367	105-BH-134-2-S	G	2	0.0173
609367	105-BH-134-4-S	G	4	0.00337
609367	105-BH-134-4-SD	G	4	0.00346
609367	105-BH-134-8-S	G	8	ND (0.00247)
609367	105-BH-135-0-S	G	0	**5.05**
609367	105-BH-135-2-S	G	2	0.019
609367	105-BH-135-4-S	G	4	0.00399
609367	105-BH-135-8-S	G	8	0.0031
609367	105-BH-136-0-S	G	0	**7.93**
609367	105-BH-136-2-S	G	2	0.0455
609367	105-BH-136-4-S	G	4	0.0515
Background Concentration (surface/subsurface)[c]				<0.25/<0.1

Refer to footnotes at end of table.

Table E-1 (Continued)
SWMU 105, Mercury Spill (Building 6536)
Limited Data Set for the Risk Assessment

Sample Attributes				Metals (EPA Method 7471A)[a] (mg/kg)
Record Number[b]	ER Sample ID	Sample Collection Area	Sample Depth (ft bgs)	Mercury
609367	105-BH-136-8-S	G	8	0.00864
609367	105-BH-137-0-S	G	0	**13.5**
609367	105-BH-137-2-S	G	2	**5.14**
609367	105-BH-137-4-S	G	4	**3.33**
609367	105-BH-137-8-S	G	8	0.00455 J
609368	105-BH-138-0-S	G	0	**6.05**
609368	105-BH-138-2-S	G	2	**16.3**
609368	105-BH-138-4-S	G	4	**4.28**
609368	105-BH-138-8-S	G	8	0.0177
609368	105-BH-139-0-S	G	0	**5.74**
609368	105-BH-139-2-S	G	2	0.078
609368	105-BH-139-4-S	G	4	**3.6**
609368	105-BH-139-8-S	G	8	0.00686 J
609368	105-BH-140-0-S	G	0	**12.6**
609368	105-BH-140-2-S	G	2	0.0201
609368	105-BH-140-2-SD	G	2	**2.66**
609368	105-BH-140-4-S	G	4	0.0205
609368	105-BH-140-8-S	G	8	**0.631**
609368	105-BH-141-0-S	G	0	**3.36**
609368	105-BH-141-2-S	G	2	**0.869**
609368	105-BH-141-4-S	G	4	0.006 J
609368	105-BH-141-8-S	G	8	0.0763
609369	105-BH-142-0-S	G	0	**26.4**
609369	105-BH-142-2-S	G	2	**0.459**
609369	105-BH-142-4-S	G	4	**0.102 J**
609369	105-BH-142-8-S	G	8	**0.124 J**
609369	105-BH-143-0-S	G	0	**0.316 J**
609369	105-BH-143-2-S	G	2	0.0112 J
609369	105-BH-143-4-S	G	4	0.0095
609369	105-BH-143-8-S	G	8	ND (0.00246) R
609369	105-BH-144-0-S	G	0	**9.16 J**
609369	105-BH-144-2-S	G	2	0.00387
609369	105-BH-144-4-S	G	4	**0.147 J**
609369	105-BH-144-8-S	G	8	**4.46 J**
609370	105-BH-145-0-S	G	0	**26.3 J**
609370	105-BH-145-2-S	G	2	**0.278 J**
609370	105-BH-145-4-S	G	4	0.0325 J
609370	105-BH-145-8-S	G	8	**0.113 J**
609370	105-BH-146-0-S	G	0	**7.79 J**
609370	105-BH-146-2-S	G	2	**0.807 J**
Background Concentration (surface/subsurface)[c]				<0.25/<0.1

Refer to footnotes at end of table.

Table E-1 (Concluded)
SWMU 105, Mercury Spill (Building 6536)
Limited Data Set for the Risk Assessment

Sample Attributes				Metals (EPA Method 7471A)[a] (mg/kg)
Record Number[b]	ER Sample ID	Sample Collection Area	Sample Depth (ft bgs)	Mercury
609370	105-BH-146-4-S	G	4	0.0264 J
609370	105-BH-146-8-S	G	8	0.0829 J
609370	105-BH-146-8-SD	G	8	**0.11 J**
609521	105-BH-147-0-S	G	0	**3.61**
609521	105-BH-147-2-S	G	2	0.0115
609521	105-BH-147-2-SD	G	2	0.0154
609521	105-BH-147-4-S	G	4	ND (0.119)
609521	105-BH-147-8-S	G	8	0.0697
609523	105-BH-148-0-S	B	3	**66.9 J**
609523	105-BH-148-2-S	B	5	**0.238 J**
609523	105-BH-148-4-S	B	7	ND (0.00241 J)
609523	105-BH-149-0-S	B	3	**1.47 J**
609523	105-BH-149-2-S	B	5	**0.255 J**
609523	105-BH-149-2-SD	B	5	**0.963 J**
609523	105-BH-149-4-S	B	7	**1.93 J**
609523	105-BH-150-0-S	B	3	**3.07 J**
609523	105-BH-150-2-S	B	5	**0.216 J**
609523	105-BH-150-4-S	B	7	**0.167 J**
Background Concentration (surface/subsurface)[c]				<0.25/<0.1

Note: Values in **bold** exceed background concentration limit or have MDLs that exceed background concentration limit.
[a]EPA November 1986.
[b]Analysis request/chain-of-custody record.
[c]Dinwiddie September 1997.
BH = Borehole.
EPA = U.S. Environmental Protection Agency.
ER = Environmental Restoration.
ft = Foot (feet).
J = Estimated concentration.
J ( ) = The reported value is greater than or equal to the MDL but is less than the practical quantitation limit, shown in parentheses.
MDL = Method detection limit.
mg/kg = Milligram(s) per kilogram.
ND ( ) = Not detected above the MDL, shown in parentheses.
ND (J) = Not detected, uncertainty in the detection limit shown in parentheses, see Data Validation Report (Annex B).
R = Value is unusable, see Data Validation Report (Annex B).
S = Soil sample.
SD = Duplicate soil sample.
-- = Not applicable.

Table E-2
SWMU 105, Mercury Spill (Building 6536)
Data Set Excluded from the Limited Risk Assessment

Sample Attributes				Metals (EPA Method 7471A)[a] (mg/kg)
Record Number[b]	ER Sample ID	Sample Collection Area	Sample Depth (ft bgs)	Mercury
609353	105-BH-1-0-S	E	0	**0.412**
609353	105-BH-1-2-S	E	2	**4.7**
609353	105-BH-1-4-S	E	4	0.0477
609353	105-BH-2-0-S	E	0	0.132
609353	105-BH-2-2-S	E	2	**0.274**
609353	105-BH-2-4-S	E	4	0.00687
609353	105-BH-3-0-S	E	0	0.0157
609353	105-BH-3-2-S	E	2	0.00788
609353	105-BH-3-4-S	E	4	ND (0.00247)
609353	105-BH-3-4-SD	E	4	ND (0.0025)
609353	105-BH-4-0-S	E	0	0.0109
609353	105-BH-4-2-S	E	2	ND (0.00239)
609353	105-BH-4-4-S	E	4	ND (0.00243)
609353	105-BH-5-0-S	E	0	0.021
609353	105-BH-5-2-S	E	2	0.00609
609353	105-BH-5-4-S	E	4	0.0281
609353	105-BH-6-0-S	E	0	0.0166
609353	105-BH-6-2-S	E	2	0.00699
609353	105-BH-6-4-S	E	4	ND (0.00245)
609352	105-BH-7-0-S	E	0	0.012
609352	105-BH-7-2-S	E	2	0.00822
609352	105-BH-7-4-S	E	4	ND (0.00248)
609352	105-BH-8-0-S	E	0	0.0116
609352	105-BH-8-2-S	E	2	0.0295
609352	105-BH-8-4-S	E	4	0.00307
609352	105-BH-9-0-S	E	0	0.0104
609352	105-BH-9-2-S	E	2	0.0132
609352	105-BH-9-4-S	E	4	ND (0.00241)
609352	105-BH-9-4-SD	E	4	ND (0.00244)
609352	105-BH-10-0-S	E	0	0.0114
609352	105-BH-10-2-S	E	2	0.00876
609352	105-BH-10-4-S	E	4	0.00298
609352	105-BH-11-0-S	E	0	0.0117
609352	105-BH-11-2-S	E	2	0.00259
609352	105-BH-11-4-S	E	4	0.0028
609352	105-BH-12-0-S	E	0	0.0129
609352	105-BH-12-2-S	E	2	0.00807
609352	105-BH-12-4-S	E	4	0.00359
609354	105-BH-13-0-S	E	0	0.01
609354	105-BH-13-2-S	E	2	0.0141
Background Concentration (surface/subsurface)[c]				<0.25/<0.1

Refer to footnotes at end of table.

Table E-2 (Continued)
SWMU 105, Mercury Spill (Building 6536)
Data Set Excluded from the Limited Risk Assessment

Sample Attributes				Metals (EPA Method 7471A)[a] (mg/kg)
Record Number[b]	ER Sample ID	Sample Collection Area	Sample Depth (ft bgs)	Mercury
609354	105-BH-13-4-S	E	4	ND (0.00241)
609354	105-BH-14-0-S	E	0	0.007
609354	105-BH-14-2-S	E	2	0.0055
609354	105-BH-14-4-S	E	4	0.00341
609358	105-BH-16-0-S	F	0	0.0228
609358	105-BH-16-2-S	F	2	0.0216
609358	105-BH-16-4-S	F	4	0.00684
609358	105-BH-16-8-S	F	8	0.00296
609360	105-BH-18-0-S	F	0	0.0371
609360	105-BH-18-2-S	F	2	0.00527
609360	105-BH-18-4-S	F	4	0.00393
609360	105-BH-18-8-S	F	8	ND (0.00248)
609362	105-BH-19-0-S	F	0	0.0201
609362	105-BH-19-2-S	F	2	0.00333
609362	105-BH-19-4-S	F	4	ND (0.00246)
609362	105-BH-19-8-S	F	8	**0.173**
609365	105-BH-20-0-S	F	0	0.0161
609365	105-BH-20-2-S	F	2	0.00316
609365	105-BH-20-4-S	F	4	0.011
609365	105-BH-20-8-S	F	8	0.00299
609371	105-BH-21-0-S	F	0	0.125
609371	105-BH-21-2-S	F	2	ND (0.00235)
609371	105-BH-21-2-SD	F	2	0.0163
609371	105-BH-21-4-S	F	8	0.0039
609371	105-BH-21-8-S	F	8	0.00631
609373	105-BH-22-0-S	F	0	0.0119
609373	105-BH-22-2-S	F	2	0.0178
609373	105-BH-22-4-S	F	4	0.00341
609373	105-BH-22-8-S	F	8	0.00341
609351	105-BH-23-0-S	D	0	**6.87**
609351	105-BH-23-2-S	D	2	0.0172
609351	105-BH-23-4-S	D	4	0.029
609351	105-BH-23-6-S	D	6	0.0158
609351	105-BH-23-8-S	D	8	0.0163
609375	105-BH-24-0-S	F	0	0.0335
609375	105-BH-24-2-S	F	2	0.012 J
609375	105-BH-24-4-S	F	4	0.00371 J
609375	105-BH-24-8-S	F	8	0.00578 J
609377	105-BH-25-0-S	F	0	0.00636 J
609377	105-BH-25-2-S	F	2	ND (0.00245)
Background Concentration (surface/subsurface)[c]				<0.25/<0.1

Refer to footnotes at end of table.

Table E-2 (Continued)
SWMU 105, Mercury Spill (Building 6536)
Data Set Excluded from the Limited Risk Assessment

Sample Attributes				Metals (EPA Method 7471A)[a] (mg/kg)
Record Number[b]	ER Sample ID	Sample Collection Area	Sample Depth (ft bgs)	Mercury
609377	105-BH-25-4-S	F	4	0.00577 J
609377	105-BH-25-8-S	F	8	ND (0.00247)
609379	105-BH-26-0-S	F	0	0.00671
609379	105-BH-26-2-S	F	2	0.0134
609379	105-BH-26-4-S	F	4	ND (0.00242)
609379	105-BH-26-4-SD	F	4	ND (0.0024)
609379	105-BH-26-8-S	F	8	ND (0.00249)
609381	105-BH-27-0-S	F	0	0.0168
609381	105-BH-27-2-S	F	2	0.00601
609381	105-BH-27-4-S	F	4	ND (0.00247)
609381	105-BH-27-8-S	F	8	0.00318
609354	105-BH-28-0-S	E	0	0.0113
609354	105-BH-28-2-S	E	2	0.00642
609354	105-BH-28-4-S	E	4	0.00857
609358	105-BH-30-0-S	F	0	0.0232
609358	105-BH-30-2-S	F	2	0.0182
609358	105-BH-30-4-S	F	4	0.0142
609358	105-BH-30-4-SD	F	4	0.00552
609358	105-BH-30-8-S	F	8	ND (0.00234)
609360	105-BH-32-0-S	F	0	0.2
609360	105-BH-32-2-S	F	2	0.0196
609360	105-BH-32-4-S	F	4	0.0104
609360	105-BH-32-8-S	F	8	0.00721
609362	105-BH-33-0-S	F	0	0.0185
609362	105-BH-33-2-S	F	2	0.0104
609362	105-BH-33-4-S	F	4	ND (0.00244)
609362	105-BH-33-8-S	F	8	ND (0.00241)
609365	105-BH-34-0-S	F	0	0.128
609365	105-BH-34-2-S	F	2	0.0544
609365	105-BH-34-4-S	F	4	0.00307
609365	105-BH-34-4-SD	F	4	0.0116
609365	105-BH-34-8-S	F	8	0.00314
609371	105-BH-35-0-S	F	0	**1.09**
609371	105-BH-35-2-S	F	2	0.0115
609371	105-BH-35-4-S	F	4	0.00666
609371	105-BH-35-8-S	F	8	ND (0.00233)
609351	105-BH-36-0-S	D	0	**0.596**
609351	105-BH-36-2-S	D	2	0.0345
609351	105-BH-36-4-S	D	4	0.0194
609351	105-BH-36-6-S	D	6	0.0322
Background Concentration (surface/subsurface)[c]				<0.25/<0.1

Refer to footnotes at end of table.

Table E-2 (Continued)
SWMU 105, Mercury Spill (Building 6536)
Data Set Excluded from the Limited Risk Assessment

Sample Attributes				Metals (EPA Method 7471A)[a] (mg/kg)
Record Number[b]	ER Sample ID	Sample Collection Area	Sample Depth (ft bgs)	Mercury
609351	105-BH-36-8-S	D	8	0.0264
609374	105-BH-37-0-S	F	0	**0.935**
609374	105-BH-37-2-S	F	2	0.015
609374	105-BH-37-4-S	F	4	0.00942
609374	105-BH-37-8-S	F	8	ND (0.00231)
609375	105-BH-38-0-S	F	0	0.0897
609375	105-BH-38-2-S	F	2	0.0115 J
609375	105-BH-38-4-S	F	4	0.0058 J
609375	105-BH-38-4-SD	F	4	0.0042 J
609375	105-BH-38-8-S	F	8	0.0117 J
609377	105-BH-39-0-S	F	0	0.00659 J
609377	105-BH-39-2-S	F	2	0.00289 J
609377	105-BH-39-4-S	F	4	ND (0.00243)
609377	105-BH-39-8-S	F	8	0.00367 J
609379	105-BH-40-0-S	F	0	0.00415 J
609379	105-BH-40-2-S	F	2	0.0107
609379	105-BH-40-4-S	F	4	0.00303
609379	105-BH-40-8-S	F	8	ND (0.00237)
609381	105-BH-41-0-S	F	0	0.028
609381	105-BH-41-2-S	F	2	0.00364
609381	105-BH-41-4-S	F	4	0.003
609381	105-BH-41-8-S	F	8	0.00305
609354	105-BH-42-0-S	E	0	0.0156
609354	105-BH-42-2-S	E	2	0.00589
609354	105-BH-42-4-S	E	4	ND (0.00236)
609358	105-BH-45-0-S	F	0	**0.767**
609358	105-BH-45-2-S	F	2	0.0239
609358	105-BH-45-4-S	F	4	0.00988
609358	105-BH-45-8-S	F	8	0.00575
609360	105-BH-47-0-S	F	0	**4.15**
609360	105-BH-47-2-S	F	2	0.0156
609360	105-BH-47-4-S	F	4	0.00493
609360	105-BH-47-8-S	F	8	0.00818
609362	105-BH-48-0-S	F	0	0.0488
609362	105-BH-48-2-S	F	2	0.0107
609362	105-BH-48-2-SD	F	2	0.0117
609362	105-BH-48-4-S	F	4	0.00724
609362	105-BH-48-8-S	F	8	ND (0.00241)
609365	105-BH-49-0-S	F	0	**0.36**
609365	105-BH-49-2-S	F	2	0.0151
Background Concentration (surface/subsurface)[c]				<0.25/<0.1

Refer to footnotes at end of table.

Table E-2 (Continued)
SWMU 105, Mercury Spill (Building 6536)
Data Set Excluded from the Limited Risk Assessment

Sample Attributes				Metals (EPA Method 7471A)[a] (mg/kg)
Record Number[b]	ER Sample ID	Sample Collection Area	Sample Depth (ft bgs)	Mercury
609365	105-BH-49-4-S	F	4	0.00607
609365	105-BH-49-8-S	F	8	ND (0.00238)
609371	105-BH-50-0-S	F	0	0.00894
609371	105-BH-50-2-S	F	2	0.0184
609371	105-BH-50-4-S	F	4	0.00436
609371	105-BH-50-8-S	F	8	0.00357
609351	105-BH-51-0-S	D	0	**3.95**
609351	105-BH-51-2-S	D	2	0.0824
609351	105-BH-51-4-S	D	4	0.0176
609351	105-BH-51-6-S	D	6	0.0183
609351	105-BH-51-8-S	D	8	0.0874
609374	105-BH-52-0-S	F	0	**0.85**
609374	105-BH-52-2-S	F	2	0.0124
609374	105-BH-52-4-S	F	4	0.0044
609374	105-BH-52-8-S	F	8	ND (0.00235)
609351	105-BH-53-0-S	D	0	0.0341
609351	105-BH-53-2-S	D	2	0.0166
609351	105-BH-53-4-S	D	4	0.0237
609351	105-BH-53-6-S	D	6	0.014
609351	105-BH-53-8-S	D	8	0.0155
609377	105-BH-54-0-S	F	0	0.00877 J
609377	105-BH-54-2-S	F	2	0.00746 J
609377	105-BH-54-4-S	F	4	0.00587 J
609377	105-BH-54-8-S	F	8	0.00252 J
609379	105-BH-55-0-S	F	0	0.00633
609379	105-BH-55-2-S	F	2	0.0136
609379	105-BH-55-4-S	F	4	ND (0.00242)
609379	105-BH-55-8-S	F	8	0.00498
609381	105-BH-56-0-S	F	0	0.0253
609381	105-BH-56-2-S	F	2	0.0196
609381	105-BH-56-4-S	F	4	ND (0.00241)
609381	105-BH-56-8-S	F	8	ND (0.0025)
609354	105-BH-57-0-S	E	0	0.0328
609354	105-BH-57-2-S	E	2	0.0106
609354	105-BH-57-4-S	E	4	0.0035
609358	105-BH-60-0-S	F	0	**0.401**
609358	105-BH-60-2-S	F	2	**0.156**
609358	105-BH-60-4-S	F	4	0.00535
609358	105-BH-60-8-S	F	8	ND (0.00242)
609360	105-BH-62-0-S	F	0	**3.62**
Background Concentration (surface/subsurface)[c]				<0.25/<0.1

Refer to footnotes at end of table.

Table E-2 (Continued)
SWMU 105, Mercury Spill (Building 6536)
Data Set Excluded from the Limited Risk Assessment

Sample Attributes				Metals (EPA Method 7471A)[a] (mg/kg)
Record Number[b]	ER Sample ID	Sample Collection Area	Sample Depth (ft bgs)	Mercury
609360	105-BH-62-2-S	F	2	0.0128
609360	105-BH-62-4-S	F	4	0.00527
609360	105-BH-62-8-S	F	8	ND (0.00243)
609362	105-BH-63-0-S	F	0	0.0262
609362	105-BH-63-2-S	F	2	0.0129
609362	105-BH-63-4-S	F	4	0.00797
609362	105-BH-63-8-S	F	8	0.00458
609364	105-BH-64-0-S	F	0	**0.393**
609364	105-BH-64-2-S	F	2	0.0106
609364	105-BH-64-4-S	F	4	0.00884
609364	105-BH-64-4-SD	F	4	0.0168
609364	105-BH-64-8-S	F	8	0.00323
609371	105-BH-65-0-S	F	0	0.162
609371	105-BH-65-2-S	F	2	0.0114
609371	105-BH-65-4-S	F	4	ND (0.00242)
609371	105-BH-65-8-S	F	8	0.00434
609349	105-BH-66-0-S	D	0	0.144 J
609349	105-BH-66-2-S	D	2	0.0143 J
609349	105-BH-66-4-S	D	4	0.0487
609349	105-BH-66-4-SD	D	4	0.00464 J
609349	105-BH-66-6-S	D	6	ND (0.00237)
609349	105-BH-66-8-S	D	8	ND (0.00243)
609374	105-BH-67-0-S	F	0	0.0377
609374	105-BH-67-2-S	F	2	0.0135
609374	105-BH-67-4-S	F	4	0.00601
609374	105-BH-67-8-S	F	8	0.00383
609375	105-BH-68-0-S	F	0	0.0118 J
609375	105-BH-68-2-S	F	2	ND (0.00236)
609375	105-BH-68-4-S	F	4	0.0142
609375	105-BH-68-8-S	F	8	ND (0.00236)
609377	105-BH-69-0-S	F	0	0.0404 J
609377	105-BH-69-2-S	F	2	0.00879 J
609377	105-BH-69-2-SD	F	2	0.0241 J
609377	105-BH-69-4-S	F	4	0.00781
609377	105-BH-69-8-S	F	8	ND (0.00243)
609379	105-BH-70-0-S	F	0	0.0133
609379	105-BH-70-2-S	F	2	0.0137
609379	105-BH-70-4-S	F	4	ND (0.00238)
609379	105-BH-70-8-S	F	8	0.00259
609381	105-BH-71-0-S	F	0	0.0216
Background Concentration (surface/subsurface)[c]				<0.25/<0.1

Refer to footnotes at end of table.

Table E-2 (Continued)
SWMU 105, Mercury Spill (Building 6536)
Data Set Excluded from the Limited Risk Assessment

Sample Attributes				Metals (EPA Method 7471A)[a] (mg/kg)
Record Number[b]	ER Sample ID	Sample Collection Area	Sample Depth (ft bgs)	Mercury
609381	105-BH-71-2-S	F	2	0.00265
609381	105-BH-71-4-S	F	4	0.00388
609381	105-BH-71-8-S	F	8	0.00322
609354	105-BH-72-0-S	E	0	0.0914
609354	105-BH-72-2-S	E	2	0.0284
609354	105-BH-72-2-SD	E	2	0.0122
609354	105-BH-72-4-S	E	4	0.00311
609359	105-BH-76-0-S	F	0	0.0102
609359	105-BH-76-2-S	F	2	ND (0.00237)
609359	105-BH-76-4-S	F	4	0.00887
609359	105-BH-76-8-S	F	8	0.00435
609361	105-BH-78-0-S	F	0	0.0234
609361	105-BH-78-2-S	F	2	0.0198
609361	105-BH-78-2-SD	F	2	0.0051
609361	105-BH-78-4-S	F	4	0.00459
609361	105-BH-78-8-S	F	8	0.0077
609363	105-BH-79-0-S	F	0	0.0129
609363	105-BH-79-2-S	F	2	0.014
609364	105-BH-80-0-S	F	0	0.0185
609364	105-BH-80-2-S	F	2	0.0168
609364	105-BH-80-4-S	F	4	0.00524
609364	105-BH-80-8-S	F	8	0.00528
609372	105-BH-81-0-S	F	0	0.00677
609372	105-BH-81-2-S	F	2	0.00951
609372	105-BH-81-4-S	F	4	0.00708
609372	105-BH-81-8-S	F	8	0.00338
609373	105-BH-82-0-S	F	0	0.013
609373	105-BH-82-2-S	F	2	0.0125
609373	105-BH-82-4-S	F	4	0.0116
609373	105-BH-82-8-S	F	8	0.00258
609374	105-BH-83-0-S	F	0	0.0159
609374	105-BH-83-2-S	F	2	0.0137
609374	105-BH-83-4-S	F	4	0.0128
609374	105-BH-83-4-SD	F	4	0.0164
609374	105-BH-83-8-S	F	8	ND (0.00241)
609376	105-BH-84-0-S	F	0	0.00714 J
609376	105-BH-84-2-S	F	2	0.0161
609376	105-BH-84-4-S	F	4	0.0132
609376	105-BH-84-8-S	F	8	ND (0.0025)
609378	105-BH-85-0-S	F	0	0.0102 J
Background Concentration (surface/subsurface)[c]				<0.25/<0.1

Refer to footnotes at end of table.

Table E-2 (Continued)
SWMU 105, Mercury Spill (Building 6536)
Data Set Excluded from the Limited Risk Assessment

Sample Attributes				Metals (EPA Method 7471A)[a] (mg/kg)
Record Number[b]	ER Sample ID	Sample Collection Area	Sample Depth (ft bgs)	Mercury
609378	105-BH-85-2-S	F	2	0.0242
609378	105-BH-85-4-S	F	4	0.00721 J
609378	105-BH-85-8-S	F	8	ND (0.00232)
609380	105-BH-86-0-S	F	0	0.00616
609380	105-BH-86-2-S	F	2	0.0153
609380	105-BH-86-2-SD	F	2	0.00725
609380	105-BH-86-4-S	F	4	0.00435
609380	105-BH-86-8-S	F	8	ND (0.00238)
609382	105-BH-87-0-S	F	0	0.00599
609382	105-BH-87-2-S	F	2	0.00571
609382	105-BH-87-4-S	F	4	ND (0.00234)
609382	105-BH-87-8-S	F	8	0.0234
609355	105-BH-88-0-S	E	0	0.126
609355	105-BH-88-2-S	E	2	0.0174
609355	105-BH-88-4-S	E	4	0.00485
609359	105-BH-91-0-S	F	0	0.013
609359	105-BH-91-2-S	F	2	0.00315
609359	105-BH-91-4-S	F	4	0.00312
609359	105-BH-91-8-S	F	8	ND (0.00244)
609361	105-BH-93-0-S	F	0	0.0276
609361	105-BH-93-2-S	F	2	0.0206
609361	105-BH-93-4-S	F	4	0.00616
609361	105-BH-93-8-S	F	8	0.00362
609363	105-BH-94-0-S	F	0	0.0144
609363	105-BH-94-2-S	F	2	0.0142
609363	105-BH-94-4-S	F	4	0.0132
609363	105-BH-94-8-S	F	8	ND (0.00247)
609364	105-BH-95-0-S	F	0	0.0396
609364	105-BH-95-2-S	F	2	0.00882
609364	105-BH-95-4-S	F	4	0.00283
609364	105-BH-95-8-S	F	8	ND (0.00241)
609372	105-BH-96-0-S	F	0	0.00883
609372	105-BH-96-2-S	F	2	0.0175
609372	105-BH-96-4-S	F	4	0.00436
609372	105-BH-96-8-S	F	8	0.00261
609373	105-BH-97-0-S	F	0	0.00954
609373	105-BH-97-2-S	F	2	0.0146
609373	105-BH-97-4-S	F	4	0.00451
609373	105-BH-97-8-S	F	8	ND (0.00248)
609374	105-BH-98-0-S	F	0	0.0644
Background Concentration (surface/subsurface)[c]				<0.25/<0.1

Refer to footnotes at end of table.

Table E-2 (Continued)
SWMU 105, Mercury Spill (Building 6536)
Data Set Excluded from the Limited Risk Assessment

Sample Attributes				Metals (EPA Method 7471A)[a] (mg/kg)
Record Number[b]	ER Sample ID	Sample Collection Area	Sample Depth (ft bgs)	Mercury
609374	105-BH-98-2-S	F	2	0.00843
609374	105-BH-98-2-SD	F	2	0.0246
609374	105-BH-98-4-S	F	4	ND (0.0025)
609374	105-BH-98-8-S	F	8	ND (0.00246)
609376	105-BH-99-0-S	F	0	0.0219
609376	105-BH-99-2-S	F	2	0.00874 J
609376	105-BH-99-4-S	F	4	0.0123 J
609376	105-BH-99-8-S	F	8	ND (0.00234)
609378	105-BH-100-0-S	F	0	0.00646 J
609378	105-BH-100-2-S	F	2	0.00475 J
609378	105-BH-100-4-S	F	4	0.0393
609378	105-BH-100-4-SD	F	4	0.00624 J
609378	105-BH-100-8-S	F	8	ND (0.00243)
609380	105-BH-101-0-S	F	0	0.00429
609380	105-BH-101-2-S	F	2	ND (0.00242)
609380	105-BH-101-4-S	F	4	0.00654
609380	105-BH-101-8-S	F	8	0.00484
609382	105-BH-102-0-S	F	0	0.0128
609382	105-BH-102-2-S	F	2	0.00524
609382	105-BH-102-4-S	F	4	0.00829
609382	105-BH-102-8-S	F	8	0.0052
609355	105-BH-103-0-S	E	0	0.117
609355	105-BH-103-2-S	E	2	0.0133
609355	105-BH-103-4-S	E	4	0.00954
609355	105-BH-103-4-SD	E	4	0.006
609359	105-BH-106-0-S	F	0	0.04
609359	105-BH-106-2-S	F	2	**0.135**
609359	105-BH-106-4-S	F	4	0.00459
609359	105-BH-106-8-S	F	8	ND (0.00248)
609361	105-BH-108-0-S	F	0	0.0418
609361	105-BH-108-2-S	F	2	0.014
609361	105-BH-108-4-S	F	4	0.0105
609361	105-BH-108-8-S	F	8	ND (0.00236)
609363	105-BH-109-0-S	F	0	0.0584
609363	105-BH-109-2-S	F	2	ND (0.00244)
609363	105-BH-109-2-SD	F	2	ND (0.0025)
609363	105-BH-109-4-S	F	4	ND (0.00244)
609363	105-BH-109-8-S	F	8	ND (0.00246)
609364	105-BH-110-0-S	F	0	0.0552
609364	105-BH-110-2-S	F	2	0.0105
Background Concentration (surface/subsurface)[c]				<0.25/<0.1

Refer to footnotes at end of table.

Table E-2 (Continued)
SWMU 105, Mercury Spill (Building 6536)
Data Set Excluded from the Limited Risk Assessment

Sample Attributes				Metals (EPA Method 7471A)[a] (mg/kg)
Record Number[b]	ER Sample ID	Sample Collection Area	Sample Depth (ft bgs)	Mercury
609364	105-BH-110-4-S	F	4	0.00518
609364	105-BH-110-8-S	F	8	0.00639
609372	105-BH-111-0-S	F	0	0.00967
609372	105-BH-111-2-S	F	2	0.00887
609372	105-BH-111-4-S	F	4	0.0153
609372	105-BH-111-8-S	F	8	ND (0.00244)
609373	105-BH-112-0-S	F	0	0.0115
609373	105-BH-112-2-S	F	2	0.0105
609373	105-BH-112-4-S	F	4	0.00255
609373	105-BH-112-8-S	F	8	ND (0.00235)
609373	105-BH-113-0-S	F	0	0.024
609373	105-BH-113-2-S	F	2	0.0166
609373	105-BH-113-4-S	F	4	0.00479
609373	105-BH-113-8-S	F	8	ND (0.00245)
609376	105-BH-114-0-S	F	0	0.0433
609376	105-BH-114-2-S	F	2	ND (0.00232)
609376	105-BH-114-2-SD	F	2	0.00264 J
609376	105-BH-114-4-S	F	4	0.0108 J
609376	105-BH-114-8-S	F	8	0.00334 J
609378	105-BH-115-0-S	F	0	0.00249 J
609378	105-BH-115-2-S	F	2	0.00956 J
609378	105-BH-115-4-S	F	4	0.00716 J
609378	105-BH-115-8-S	F	8	ND (0.00245)
609380	105-BH-116-0-S	F	0	0.0496
609380	105-BH-116-2-S	F	2	0.0126
609380	105-BH-116-4-S	F	4	0.00463
609380	105-BH-116-8-S	F	8	ND (0.00243)
609382	105-BH-117-0-S	F	0	0.0091
609382	105-BH-117-2-S	F	2	0.0142
609382	105-BH-117-4-S	F	4	0.00788
609382	105-BH-117-8-S	F	8	0.00497
609355	105-BH-118-0-S	E	0	0.0615
609355	105-BH-118-2-S	E	2	0.0198
609355	105-BH-118-4-S	E	4	0.00574
609357	105-BH-120-0-S	E	0	**0.407**
609357	105-BH-120-2-S	E	2	**0.364**
609357	105-BH-120-2-SD	E	2	**8.6**
609357	105-BH-120-4-S	E	4	0.0111
609357	105-BH-121-0-S	E	0	0.155
609357	105-BH-121-2-S	E	2	0.00958
Background Concentration (surface/subsurface)[c]				<0.25/<0.1

Refer to footnotes at end of table.

Table E-2 (Continued)
SWMU 105, Mercury Spill (Building 6536)
Data Set Excluded from the Limited Risk Assessment

Sample Attributes				Metals (EPA Method 7471A)[a] (mg/kg)
Record Number[b]	ER Sample ID	Sample Collection Area	Sample Depth (ft bgs)	Mercury
609357	105-BH-121-4-S	E	4	0.00274
609355	105-BH-131-4-S	E	4	ND (0.00234)
609357	105-BH-122-0-S	E	0	0.0973
609357	105-BH-122-2-S	E	2	0.0089
609357	105-BH-122-4-S	E	4	0.00479
609356	105-BH-123-0-S	E	0	0.0575
609356	105-BH-123-2-S	E	2	0.00988
609356	105-BH-123-4-S	E	4	0.00826
609356	105-BH-124-0-S	E	0	0.0227
609356	105-BH-124-2-S	E	2	0.0101
609356	105-BH-124-4-S	E	4	0.00807
609356	105-BH-125-0-S	E	0	0.00296
609356	105-BH-125-2-S	E	2	0.00801
609356	105-BH-125-4-S	E	4	0.0252
609356	105-BH-126-0-S	E	0	**2.39**
609356	105-BH-126-2-S	E	2	0.0501
609356	105-BH-126-4-S	E	4	0.0114
609356	105-BH-127-0-S	E	0	**6.97**
609356	105-BH-127-2-S	E	2	**1.53**
609356	105-BH-127-4-S	E	4	0.0122
609356	105-BH-127-4-SD	E	4	**0.89**
609356	105-BH-128-0-S	E	0	**0.371**
609356	105-BH-128-2-S	E	2	**0.16**
609356	105-BH-128-4-S	E	4	0.026
609356	105-BH-129-0-S	E	0	0.0631
609356	105-BH-129-2-S	E	2	0.054
609356	105-BH-129-4-S	E	4	0.00481
609355	105-BH-130-0-S	E	0	0.138
609355	105-BH-130-2-S	E	2	**0.832**
609355	105-BH-130-4-S	E	4	0.00603
609355	105-BH-131-0-S	E	0	0.0843
609355	105-BH-131-2-S	E	2	0.0184
609355	105-BH-131-2-SD	E	2	0.00963
609355	105-BH-132-0-S	E	0	0.129
609355	105-BH-132-2-S	E	2	**1.77**
609355	105-BH-132-4-S	E	4	0.00738
Background Concentration (surface/subsurface)[c]				<0.25/<0.1

Note: Values in **bold** exceed background concentration limit or have MDLs that exceed background concentration limit.
[a]EPA November 1986.
[b]Analysis request/chain-of-custody record.
[c]Dinwiddie September 1997.

Table E-2 (Concluded)
SWMU 105, Mercury Spill (Building 6536)
Data Set Excluded from the Limited Risk Assessment

BH = Borehole.
EPA = U.S. Environmental Protection Agency.
ER = Environmental Restoration.
ft = Foot (feet).
J = Estimated concentration.
J ( ) = The reported value is greater than or equal to the MDL but is less than the practical quantitation limit, shown in parentheses.
MDL = Method detection limit.
mg/kg = Milligram(s) per kilogram.
ND ( ) = Not detected above the MDL, shown in parentheses.
S = Soil sample.
SD = Duplicate soil sample.
-- = Not applicable.