ERRATA SHEET

The Following Corrections and Clarifications Apply to: Closure Report for Corrective Action Unit 356: Mud Pits and Disposal Sites, Nevada Test Site, Nevada

DOE Document Number: DOE/NV--835

Revision: 1

Original Document Issuance Date: November 2002

This errata sheet was issued under cover letter from DOE on: March 22, 2007

Appendix G, Use Restrictions;
Replace page G-1 with the Use Restriction for CAS 03-04-01; the new page G-1 contains correct GPS coordinates.
Replace page G-3 with the Use Restriction for CAS 03-09-04; the new page G-3 contains correct GPS coordinates for the site diagram that has been re-oriented so that north is shown on the diagram is towards the top of the page.
Replace G-4 with the site diagram for CAS 03-09-04; the site sketch has been oriented so that north is towards the top of the page.

CAU Use Restriction Information

CAU Number/Description: CAU 356, Mud Pits and Disposal Sites

Applicable CAS Numbers/Descriptions: CAS 03-04-01, Area 3 Change House Septic System

Contact (organization/project): NNSA/NSO Industrial Sites Project Manager

Surveyed Area (UTM, Zone 11, NAD 27, meters):
Northwest Corner: 585797.7 E, 4098951.5 N
Southwest Corner: 585796.3 E, 4098919.6 N
Northeast Corner: 585822.4 E, 4098951.1 N
Southeast Corner: 585821.3 E, 4098921.6 N

Survey Date: 05/16/01 **Survey Method (GPS, etc):** GPS

Site Monitoring Requirements: None

Required Frequency (quarterly, annually?): Not Applicable

If Monitoring Has Started, Indicate last Completion Date: Not applicable.

Use Restrictions

The future use of any land related to this Corrective Action Unit (CAU), as described by the above surveyed location, is restricted from any DOE or Air Force activity that may alter or modify the containment control as approved by the state and identified in the CAU Closure Report or other CAU documentation unless appropriate concurrence is obtained in advance.

Comments: The use restriction is for subsurface contamination associated with the leachfield. There are no monitoring or inspection requirements associated with this Use Restriction. See the Closure Report for additional information on the condition of the site. The restricted area is identified by fencing and postings.

Submitted By: /s/ Sabine T. Curtis **Date:** 3/21/07
Sabine T. Curtis

cc with copy of survey map (paper and digital (dgn) formats):
CAU Files (2 copies)

CAU Use Restriction Information

CAU Number/Description: CAU 356, Mud Pits and Disposal Sites

Applicable CAS Numbers/Descriptions: CAS 03-09-04, Mud Pit

Contact (organization/project): NNSA/NSO Industrial Sites Project Manager

Surveyed Area (UTM, Zone 11, NAD 27, meters):
North Corner: 587007.32 E, 4098589.06 N
South Corner: 586990.89 E, 4098561.94 N
East Corner: 587013.92 E, 4098581.09 N
West Corner: 586984.13 E, 4098569.99 N

Survey Date: 01/03/02 **Survey Method (GPS, etc):** GPS

Site Monitoring Requirements: None

Required Frequency (quarterly, annually?): Not Applicable

If Monitoring Has Started, Indicate last Completion Date: Not applicable.

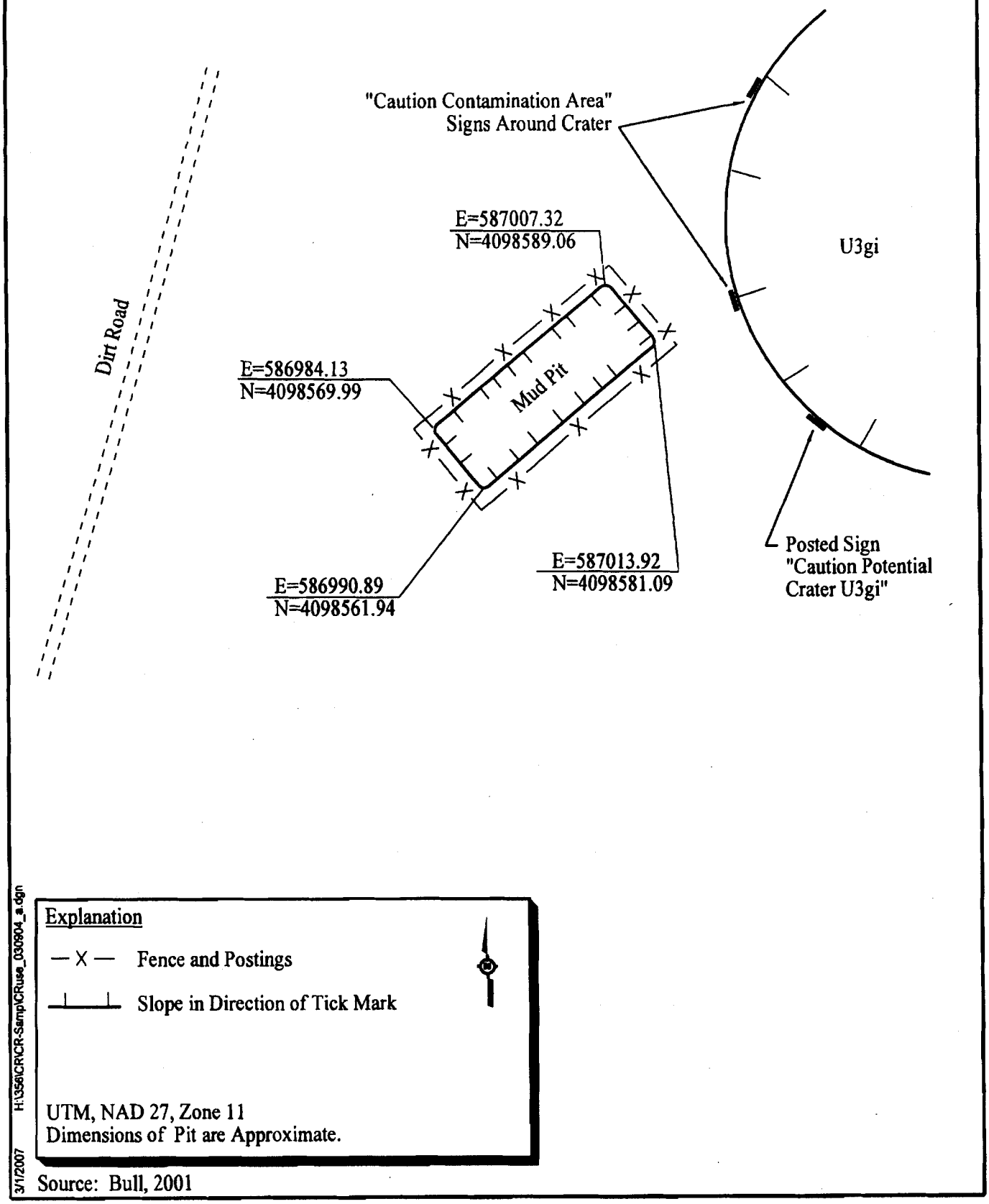
Use Restrictions

The future use of any land related to this Corrective Action Unit (CAU), as described by the above surveyed location, is restricted from any DOE or Air Force activity that may alter or modify the containment control as approved by the state and identified in the CAU Closure Report or other CAU documentation unless appropriate concurrence is obtained in advance.

Comments: The use restriction is for subsurface contamination associated with the mud pit. There are no monitoring or inspection requirements associated with this Use Restriction. See the Closure Report for additional information on the condition of the site. The restricted area is identified by fencing and postings.

Submitted By: /s/ Sabine T. Curtis **Date:** 3/21/07
Sabine T. Curtis

cc with copy of survey map (paper and digital (dgn) formats):
CAU Files (2 copies)



CAU 356 Mud Pits and Disposal Sites, CAS 03-09-04
Mud Pit Use Restriction

Nevada
Environmental
Restoration
Project

DOE/NV--835-REV. 1

National Nuclear Security Administration

Closure Report for Corrective Action Unit 356: Mud Pits and Disposal Sites, Nevada Test Site, Nevada

Controlled Copy No.: ___
Revision No.: 1

November 2002

Environmental Restoration
Division

U.S. Department of Energy
National Nuclear Security Administration
Nevada Operations Office

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CLOSURE REPORT FOR CORRECTIVE ACTION UNIT 356: MUD PITS AND DISPOSAL SITES, NEVADA TEST SITE, NEVADA

U.S. Department of Energy
National Nuclear Security Administration
Nevada Operations Office
Las Vegas, Nevada

Controlled Copy No.: ___

Revision No.: 1

November 2002

CLOSURE REPORT
FOR CORRECTIVE ACTION UNIT 356:
MUD PITS AND DISPOSAL SITES, NEVADA TEST SITE, NEVADA

Approved by: /s/ Janet Appenzeller-Wing Date: 11-12-02

Janet Appenzeller-Wing, Project Manager
Industrial Sites Project

Approved by: /s/ Runore C. Wycoff Date: 11-12-02

Runore C. Wycoff, Division Director
Environmental Restoration Division

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List of Acronyms and Abbreviations

bgs	Below ground surface
CAS	Corrective action site
CAU	Corrective action unit
CFR	*Code of Federal Regulations*
CLP	Contract Laboratory Program
COC	Contaminant of concern
COPC	Contaminant of potential concern
CR	Closure Report
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
DQI	Data Quality Indicator
DQO	Data Quality Objective
DRO	Diesel-range organics
EPA	U.S. Environmental Protection Agency
EPH	Extractable petroleum hydrocarbons
FADL	Field activity daily log
FD	Field duplicate
FFACO	*Federal Facility Agreement and Consent Order*
FI	Field instruction
FSL	Field-screening levels
FSR	Field-screening results
ft	Foot (feet)
GPS	Global Positioning System
GRO	Gasoline-range organics
HWAA	Hazardous Waste Accumulation Area
ICP	Inductively coupled plasma
IDL	Instrument detection limit

List of Acronyms and Abbreviations *(Continued)*

IDW	Investigation-derived waste
in.	Inch(es)
ITLV	IT Corporation, Las Vegas Office
LCS	Laboratory control sample
LCSD	Laboratory control sample duplicate
mi	Mile
mg/kg	Milligrams per kilogram
MRL	Minimum reporting limits
MS/MSD	Matrix spike/matrix spike duplicate
NAC	*Nevada Administrative Code*
ND	Normalized difference
NDEP	Nevada Division of Environmental Protection
NIST	National Institute of Standards and Technology
NNSA/NV	U.S. Department of Energy, National Nuclear Security Administration Nevada Operations Office
NTS	Nevada Test Site
PAL	Preliminary action level
PB	Preparation blanks
PCB	Polychlorinated biphenyl(s)
pCi/g	Picocuries per gram
pCi/L	Picocuries per liter
POC	Performance objective criteria
PPE	Personal protective equipment
ppm	Parts per million
PRG	Preliminary remediation goal
PVC	Polyvinyl chloride
QA	Quality assurance
QAPP	Quality Assurance Project Plan

List of Acronyms and Abbreviations *(Continued)*

QC	Quality control
RCRA	*Resource Conservation and Recovery Act*
RPD	Relative percent difference
SAA	Satellite Accumulation Area
SAFER	Streamlined Approach for Environmental Restoration
SDG	Sample delivery group
SQP	Standard Quality Practice
SSHASP	Site-specific health and safety plan
SVOC	Semivolatile organic compound
TCLP	Toxicity characteristic leaching procedure
TPH	Total petroleum hydrocarbons
VCP	Vitrified clay pipe
VOC	Volatile organic compound
VPH	Volatile petroleum hydrocarbons
µg/kg	Micrograms per kilogram
µg/L	Micrograms per liter
%R	Percent recovery

Executive Summary

This Closure Report presents information supporting closure of Corrective Action Unit (CAU) 356, Mud Pits and Disposal Sites, Nevada Test Site, Nevada. This complies with the requirements of the *Federal Facility Agreement and Consent Order* that was agreed to by the State of Nevada, the U.S. Department of Energy, and the U.S. Department of Defense. Corrective Action Unit 356, Corrective Action Sites (CASs), is located within Areas 3 and 20 of the Nevada Test Site and is comprised of the following CASs:

- 03-04-01, Area 3 Change House Septic System
- 03-09-01, Mud Pit Spill Over
- 03-09-03, Mud Pit
- 03-09-04, Mud Pit
- 03-09-05, Mud Pit
- 20-16-01, Landfill
- 20-22-21, Drums (2)

The purpose of this Closure Report is to provide documentation supporting recommendations of no further action and closure in place for CASs within CAU 356. To achieve this, the following actions were performed:

- Review the current site conditions, including the concentration and extent of contamination.
- Perform closure activities to address the presence of substances regulated by the *Nevada Administrative Code* 445A.2272 (NAC, 1996) and the presence of septic tanks that had not been closed in accordance with *Nevada Administrative Code* 444.818 (NAC, 1999).
- Document Notice of Completion and closure of CAU 356 issued by NDEP.

From November 20, 2001, through January 3, 2002, March 11 through March 14, 2002, and July 8 through August 13, 2002 closure activities were performed as set forth in the Streamlined Approach for Environmental Restoration Plan (DOE/NV, 2001). The purposes of the activities as defined during the data quality objective process were:

- Identify the nature and extent of contaminants of potential concern at the CASs.
- Provide sufficient information and data to complete appropriate corrective actions for the CASs.

Analytes detected during the closure activities were evaluated against preliminary action levels to determine contaminants of concern for the CASs within CAU 356. Assessment of the data generated from closure activities indicates that preliminary action levels were exceeded in the soil of CAU 356 for total petroleum hydrocarbons, americium-241, and plutonium-239/240. The concentrations of arsenic are considered representative of ambient at this site (NMBG, 1998; Moore, 1999). Therefore, no corrective action is necessary for the soil containing arsenic. Soil in CASs containing petroleum hydrocarbons or radionuclides have been closed in place. The septic tank at CAS 03-04-01 was found to contain hydrocarbon exceeding the action levels established by the *Nevada Administrative Code* 445A.2272 (NAC, 1996). This media was removed for proper disposal. In addition, the septic tank was closed in accordance with *Nevada Administrative Code* 444.818 (NAC, 1999).

The U.S. Department of Energy, National Nuclear Security Administration Nevada Operations Office, provides the following recommendations:

- No further corrective action is required at CASs 03-09-01, 03-09-03, 20-16-01, and 20-22-21.
- Closure in place is required at CASs 03-04-01, 03-09-04, and 03-09-05.
- No Corrective Action Plan is required.
- An use restriction is required at CAS 03-04-01 and CAS 03-09-04.
- A Notice of Completion to U.S. Department of Energy, National Nuclear Security Administration Nevada Operations Office, is requested from the Nevada Division of Environmental Protection for the closure of CAU 356.
- Corrective Action Unit 356 should be moved from Appendix III to Appendix IV of the *Federal Facility Agreement and Consent Order.*

1.0 Introduction

This Closure Report (CR) presents information supporting closure of Corrective Action Unit (CAU) 356, Mud Pits and Disposal Sites, Nevada Test Site (NTS), Nevada. This complies with the requirements of the *Federal Facility Agreement and Consent Order* (FFACO) that was agreed to by the State of Nevada, the U.S. Department of Energy (DOE), and the U.S. Department of Defense (FFACO, 1996). This CAU contains the Corrective Action Sites (CASs) located within Areas 3 and 20 of the NTS (Figure 1-1). The NTS is approximately 65 miles (mi) northwest of Las Vegas, Nevada. The seven CASs that comprise CAU 356 are as follows:

- 03-04-01, Area 3 Change House Septic System
- 03-09-01, Mud Pit Spill Over
- 03-09-03, Mud Pit
- 03-09-04, Mud Pit
- 03-09-05, Mud Pit
- 20-16-01, Landfill
- 20-22-21, Drums (2)

This CR provides justification for the closure of CAU 356. This justification is based on process knowledge and the results of the closure activities conducted in accordance with the SAFER Plan (DOE/NV, 2001). The recommended corrective actions at this CAU include closure in place and no further action. The CR provides or references the specific information necessary to support these recommendations.

1.1 Purpose

The purpose of the CAU 356 Closure Report is to:

- Provide documentation of the completed closure activities completed in accordance with the SAFER Plan (DOE/NV, 2001).
- Provide data confirming closure.

The CAU consists of five CASs in Area 3 and two CASs in Area 20. Four of the CASs (03-09-01, 03-09-03, 03-09-04, and 03-09-05) are mud pits located in the northern portions of Area 3. The mud pits were used during drilling activities conducted at NTS in support of the underground nuclear weapons testing. Corrective Action Site 03-04-01 is a septic system at the Area 3 Change House.

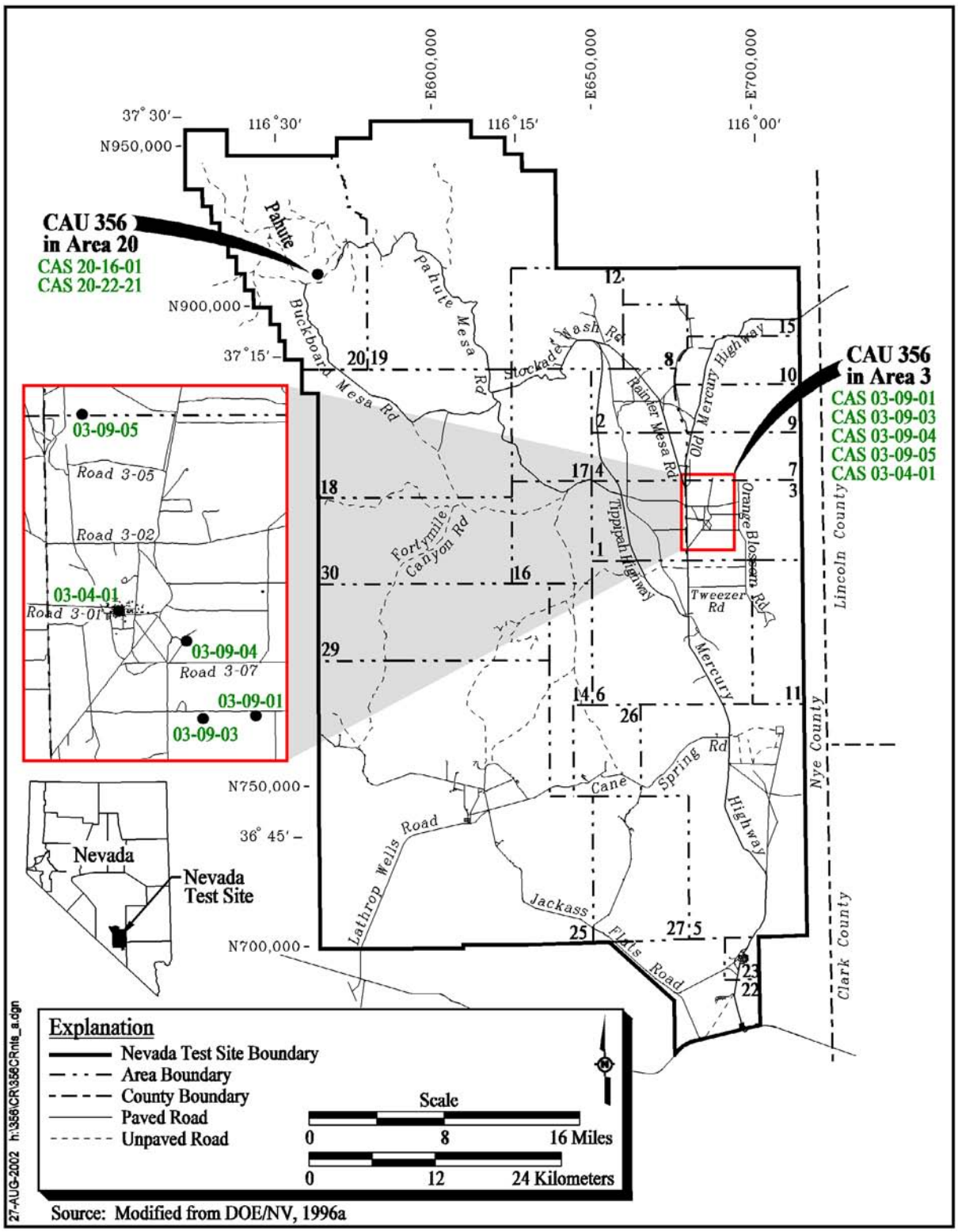

Figure 1-1
Nevada Test Site, Nye County, NV

The septic system was constructed in 1962 and received effluent from at least nine Area 3 Camp buildings and trailers until its abandonment in 1991. Two CASs are located in the central portion of Area 20. Corrective Action Site 20-16-01 is a landfill within the U20b crater and consists of disposed uncontaminated drilling mud from drilling activities conducted on Pahute Mesa in Area 20. Corrective Action Site 20-22-21 consists of two drums that are located at the bottom of the U20b crater within the boundary of CAS 20-16-01, Landfill. Additional information relating to the site history, planning, and scope of the closure is presented in the Streamlined Approach for Environmental Response (SAFER) Plan (DOE/NV, 2001).

1.1.1 CAS 03-04-01, Area 3 Change House Septic System

The entire septic system downstream of the septic tank was characterized by excavation and sampling. A portion of the system upstream of the septic tank was investigated with a video mole survey. Samples were submitted for laboratory analyses of contaminants of potential concern (COPCs). The contents of the septic tank were removed for disposal. The tank was rinsed and rinsate samples were collected to verify that the tank was clean. The tank was closed in place by pumping it full of concrete.

1.1.2 CAS 03-09-01, Mud Pit Spill Over

Two borings in the return pit and two borings in the suction pit were advanced with a Geoprobe® rig. Samples were field screened for volatiles and alpha and beta/gamma emitters, and submitted for laboratory analyses of COPCs.

1.1.3 CAS 03-09-03, Mud Pit

Two borings in the return pit and two borings in the suction pit were advanced manually with a hand auger. Samples were field screened for volatiles and alpha and beta/gamma emitters, and submitted for laboratory analyses of COPCs.

1.1.4 CAS 03-09-04, Mud Pit

Two soil borings were advanced using a hand auger. Samples were field screened for volatiles and alpha and beta/gamma emitters, and submitted for laboratory analyses of COPCs.

1.1.5 CAS 03-09-05, Mud Pit

Two soil borings were advanced using a Geoprobe® rig. An asphalt pile in the northwest corner of the pit was removed using a backhoe and scraper. Samples were field screened for volatiles and alpha and beta/gamma emitters, and submitted for laboratory analyses of COPCs.

1.1.6 CAS 20-16-01, Landfill

Three soil borings in the bottom of the crater were advanced with a hand auger. Surface samples were also collected in an area of dried mud and a suspected mud flow along the north flank of the crater, and alongside a homemade "septic system" (three drums connected with plumbing pipe). Samples were field screened for volatiles and alpha and beta/gamma emitters, and submitted for laboratory analyses of COPCs.

1.1.7 CAS 20-22-21, Drums (2)

The empty drums located on the bottom of the landfill crater were removed. A verification sample was collected from surface soils under each drum to check for residual contamination.

1.2 Scope

The scope of this CR is to summarize the closure strategy for CAU 356. To achieve this scope, the following actions were implemented:

- Review the current site conditions, including the concentration and extent of contamination.
- Perform closure activities to address the presence of substances regulated by the *Nevada Administrative Code* (NAC) 445A.2272 (NAC, 1996) and the presence of a septic tank that had not been closed in accordance with NAC 444.818 (NAC, 1999).
- Document Notice of Completion and closure of CAU 356.
- Clean-up criteria were PALs as specified in the SAFER Plan (DOE/NV, 2001).

1.3 Closure Report Contents

This CR is divided into the following sections:

Section 1.0 - Introduction: summarizes the purpose, scope, and contents of this CR.

Section 2.0 - Closure Activities: summarizes the closure field activities and any deviations to the scope of work.

Section 3.0 - Waste Disposition: summarizes the wastes generated and disposition of those wastes generated as a result of field activities.

Section 4.0 - Closure Verification Results: summarizes the verification activities and results, and assesses the data quality.

Section 5.0 - Conclusions and Recommendation: recommends closure in place and no further action at CAU 356.

Section 6.0 - References: provides a list of referenced documents.

Appendix A: *DQOs as developed in the SAFER Plan for CAU 356: Mud Pits and Disposal Sites, Nevada Test Site, Nevada*: summarizes the analytical results as they meet the requirements set forth during the data quality objectives (DQOs) process.

Appendix B: *Closure Certification for CAU 356: Mud Pits and Disposal Sites, Nevada Test Site, Nevada:* documents the specific closure activities completed for the CAU.

Appendix C: *As-Built Documentation for CAU 356: Mud Pits and Disposal Sites, Nevada Test Site, Nevada*: identifies the as-built drawings for each CAS.

Appendix D: *Confirmation Sampling Test Results for CAU 356: Mud Pits and Disposal Sites, Nevada Test Site, Nevada*: provides a description of the project objectives, field closure and sampling activities, and closure results.

Appendix E: *Waste Disposition Documentation for CAU 356: Mud Pits and Disposal Sites, Nevada Test Site, Nevada:* documents disposal of items removed during closure activities.

Appendix F: *Modifications to the Post Closure Plan for CAU 356: Mud Pits and Disposal Sites, Nevada Test Site, Nevada:* documents any modifications to the Post-Closure Plan.

Appendix G: Use Restriction for CAU 356: Mud Pits and Disposal Sites, Nevada Test Site, Nevada: Documents the use restriction for CAS 03-04-01.

Appendix H: Evaluation of Risk.

Appendix I: NDEP Comment Responses.

1.3.1 Supporting Documentation

Closure activities were performed in accordance with the following documents:

- *Streamlined Approach for Environmental Restoration Plan for Corrective Action Unit 356: Mud Pits and Disposal Sites, Nevada Test Site, Nevada* (DOE/NV, 2001)
- *Work Plan for Leachfield Corrective Action Units: Nevada Test Site and Tonopah Test Range, Nevada* (Leachfield Work Plan) (DOE/NV, 1998)
- *Industrial Sites Quality Assurance Project Plan* (QAPP) (DOE/NV, 1996b)
- *Federal Facility Agreement and Consent Order* 1996, as amended
- *Project Management Plan* (DOE/NV, 1994)

1.3.2 Data Quality Objectives

The DQOs as identified in the SAFER Plan are as follows:

- Determine if contaminants of concern (COCs) are present.
- If COCs are present, determine the nature and extent of the COCs.
- Based upon characterization results, recommend a closure strategy.
- Perform activities required to meet the recommended closure strategy.
- Properly manage, characterize, and dispose of investigation-derived waste (IDW).

The Data Quality Indicators (DQIs), discussed in Section 4.1 and Appendix B, were achieved. The DQOs, established in the SAFER Plan, were met.

2.0 Closure Activities

The following sections summarize the CAU 356 closure activities and any deviations from the original scope of work. Appendix A and Appendix C provide details and results of the closure activities.

2.1 Description of Corrective Action Activities

Field activities were performed as set forth in the CAU 356 SAFER Plan (DOE/NV, 2001) from November 20, 2001, through January 3, 2002, March 11 through March 14, 2002, and July 8 through August 13, 2002. The activities at all CASs included:

- Prefield activities, including debris removal, construction of decontamination pads and hazardous waste accumulation areas (HWAAs), and utility clearances
- Radiological walkover surveys
- Geophysical surveys
- Collecting waste management samples
- Collecting biased surface and subsurface soil samples, and subsequent laboratory analysis, to define lateral and vertical extent of COCs
- Field screening of select samples for characterization and health and safety purposes
- Collecting Global Positioning System (GPS) coordinates of sampling locations

The following sections summarize the activities at each CAS (see Appendix A for additional details).

2.1.1 CAS 03-04-01, Area 3 Change House Septic System

The entire septic system downstream of the septic tank was characterized by excavation and sampling. Exploratory trenching confirmed the configuration and dimensions of the septic tank, manhole, “previous” leachfield, and fenced leachfield. Integrity soil samples were collected near the septic tank, manhole, and skimmer box. Subsurface soil samples were collected beneath select distribution lines in both leachfields, near the leachrock/native soil interface. Surface soil samples were collected at low points in the fenced leachfield. Liquid samples were collected from both

chambers of the septic tank and a sludge sample was collected from a section of excavated distribution pipe in the fenced leachfield.

A portion of the system upstream of the septic tank was investigated with a video mole survey. The mole was introduced into four septic lines radiating from an upstream manhole; the lines were found to be intact and generally free of sediment.

Samples were submitted for laboratory analyses of COPCs. Also, the septic tank samples and the sludge sample from the fenced leachfield were analyzed on site for the presence of coliform bacteria (total and fecal). Select samples were field screened for volatiles using the headspace method, and for alpha and beta/gamma emitters using a handheld instrument.

The contents of the septic tank were removed for disposal. The tank was rinsed, confirmation samples were collected of the final rinse to verify that the tank was clean. The tank was closed in place by pumping it full of concrete.

2.1.2 CAS 03-09-01, Mud Pit Spill Over

Two borings in the return pit and two borings in the suction pit were advanced with a Geoprobe® rig. At each boring location, a surface sample was collected as well as a sample straddling the mud/native soil interface. The depth to the mud/native soil interface in the return pit ranged from 2.2 to 6.0 feet (ft) below ground surface (bgs). The interface was encountered in the suction pit at about 3.5 ft bgs. A surface sample was also collected from the middle of the channel between the two pits. The mud spillover was not sampled. Samples were field screened for volatiles and alpha and beta/gamma emitters, and submitted for laboratory analyses of COPCs.

2.1.3 CAS 03-09-03, Mud Pit

Two borings in the return pit and two borings in the suction pit were advanced manually with a hand auger. At each boring location, a surface sample was collected as well as a sample straddling the mud/native soil interface. The depth to the mud/native soil interface in the return pit ranged from 1.7 to 2.3 ft bgs. The interface was encountered in the suction pit from 1.3 to 1.9 ft bgs. A surface sample was also collected from the middle of the channel between the two pits. Samples were field

screened for volatiles and alpha and beta/gamma emitters, and submitted for laboratory analyses of COPCs.

2.1.4 CAS 03-09-04, Mud Pit

Two soil borings were advanced using a hand auger. At each boring location, a surface sample was collected as well as a sample straddling the mud/native soil interface. The depth to the mud/native soil interface was about 1.2 ft bgs. Samples were field screened for volatiles and alpha and beta/gamma emitters, and submitted for laboratory analyses of COPCs.

2.1.5 CAS 03-09-05, Mud Pit

Two soil borings were advanced using a Geoprobe® rig. Samples were collected from the mud/native soil interface, which ranged from 0.5 ft bgs to 0.75 ft bgs. An asphalt pile in the northwest corner of the pit was removed using a backhoe and scraper. Four surface soil samples were collected from the asphalt pile footprint to verify the complete removal of the asphalt at the 0- to 6-inch (in.) bgs interval. Samples were field screened for volatiles and alpha and beta/gamma emitters, and submitted for laboratory analyses of COPCs.

2.1.6 CAS 20-16-01, Landfill

Three soil borings in the bottom of the crater were advanced with a hand auger. Samples were collected from the mud/native soil interface, which ranged from 0.3 ft bgs toward the crater edges to 3.0 ft bgs in the center of the crater. Surface samples were also collected in an area of dried mud and a suspected mud flow along the north flank of the crater, and alongside a homemade “septic system” (three drums connected with plumbing pipe). Samples were field screened for volatiles and alpha and beta/gamma emitters, and submitted for laboratory analyses of COPCs.

2.1.7 CAS 20-22-21, Drums (2)

The empty drums located on the bottom of the landfill crater were removed. Drum removal was documented with before and after photographs and on a Sectored Housekeeping Site Closure Verification Form (Appendix C). A verification sample was collected from surface soils under each drum to check for residual contamination.

2.2 Deviations from SAFER Plan as Approved

Areas within the crater requiring housekeeping removal activities identified in the SAFER Plan for CAS 20-16-01 were not completed. A visual inspection of the items was conducted. No evidence of hazardous materials, odor or staining was observed. Therefore, removal of the nonhazardous debris was not completed.

2.3 Corrective Action Schedule as Completed

The closure activities were completed from November 20, 2001, through January 3, 2002, March 11 through March 14, 2002, and July 8 through August 13, 2002.

2.4 Site Plans/Survey Plat

Figures 2-1 through 2-6 are site plans of each CAS. Sampling locations are shown in figures in Appendix A.

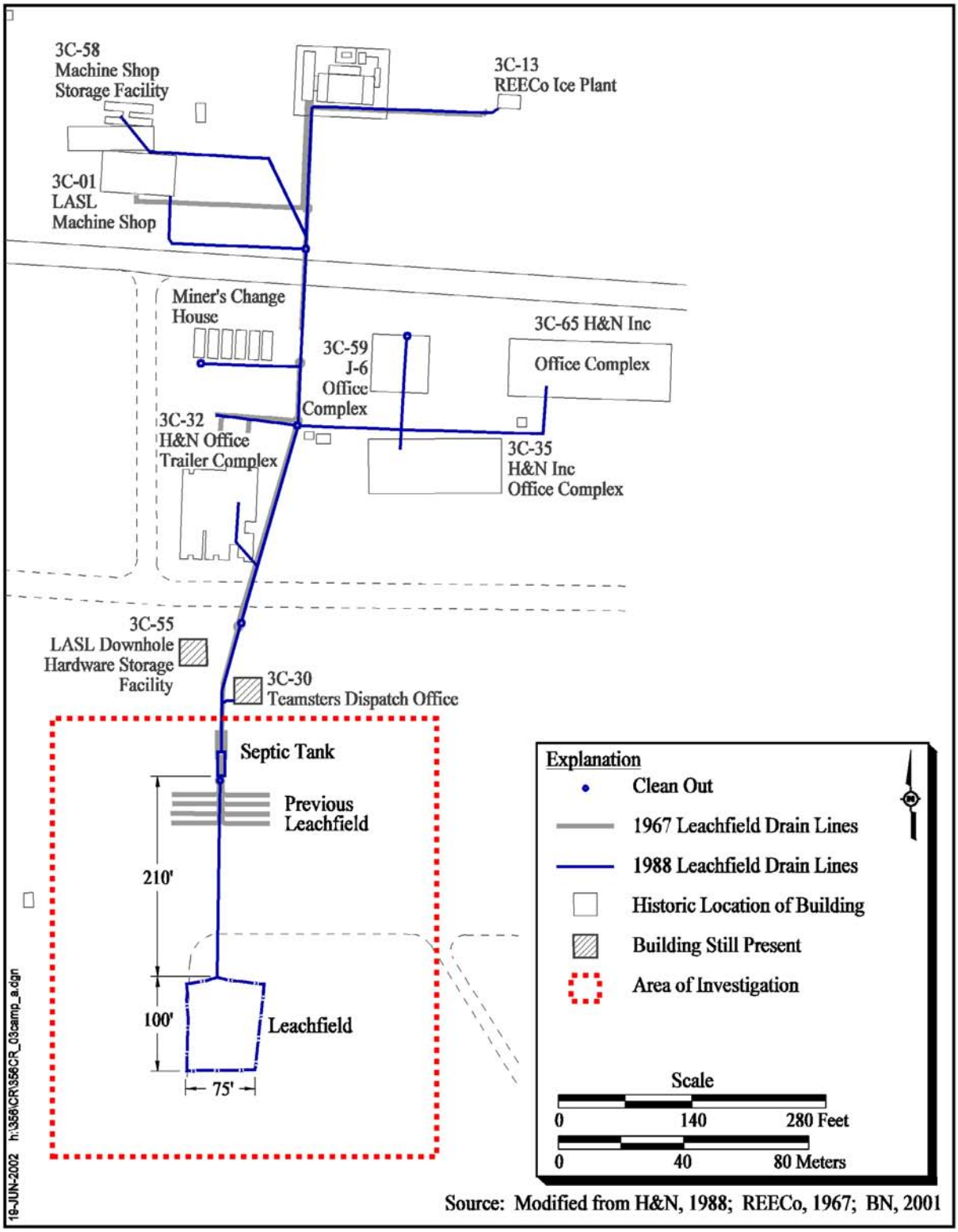

Figure 2-1
As-Completed Site Plan and Survey Plat
CAS 03-04-01, Area 3 Change House Septic System

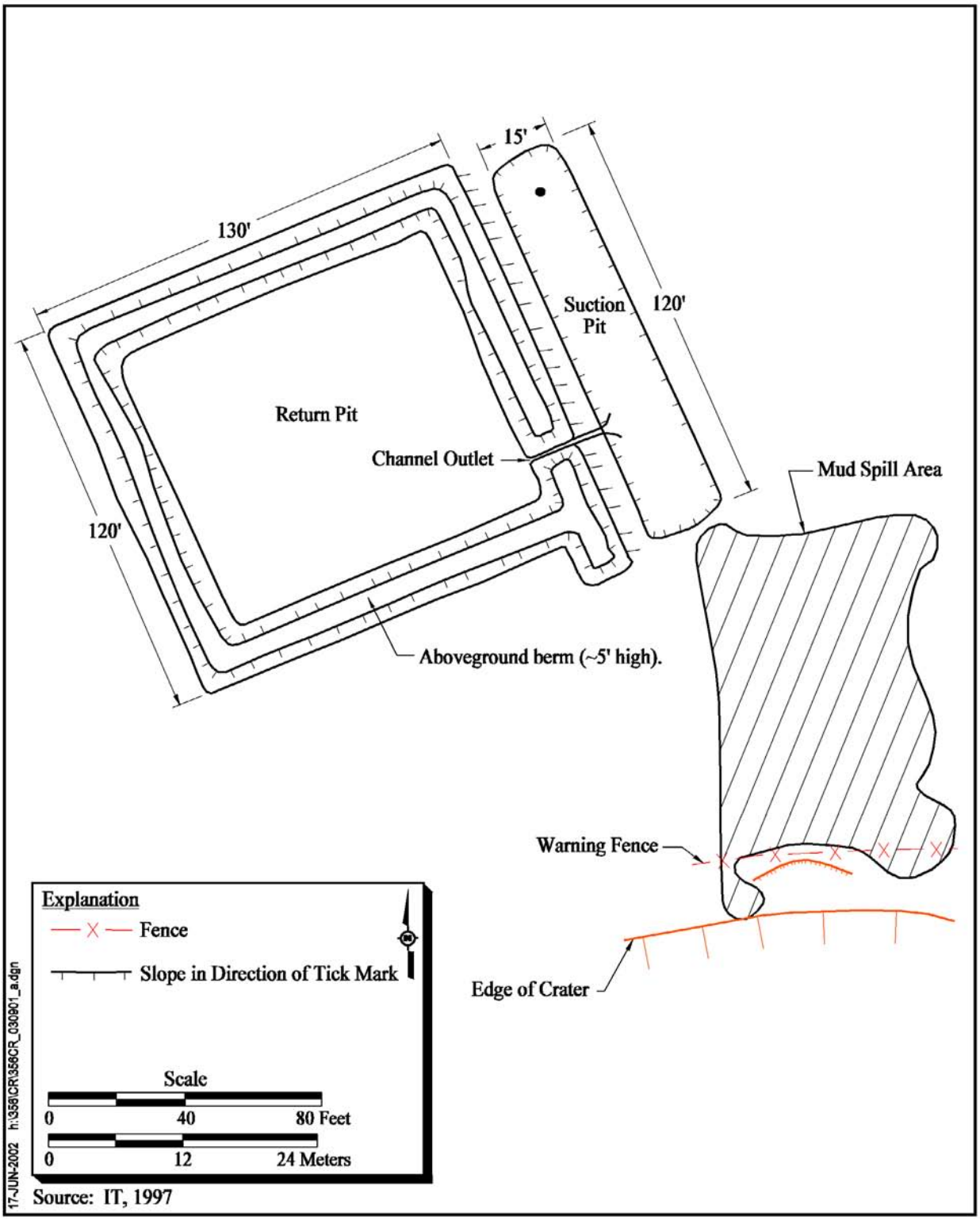

Figure 2-2
As-Completed Site Plan and Survey Plat
CAS 03-09-01, Mud Pit Spill Over

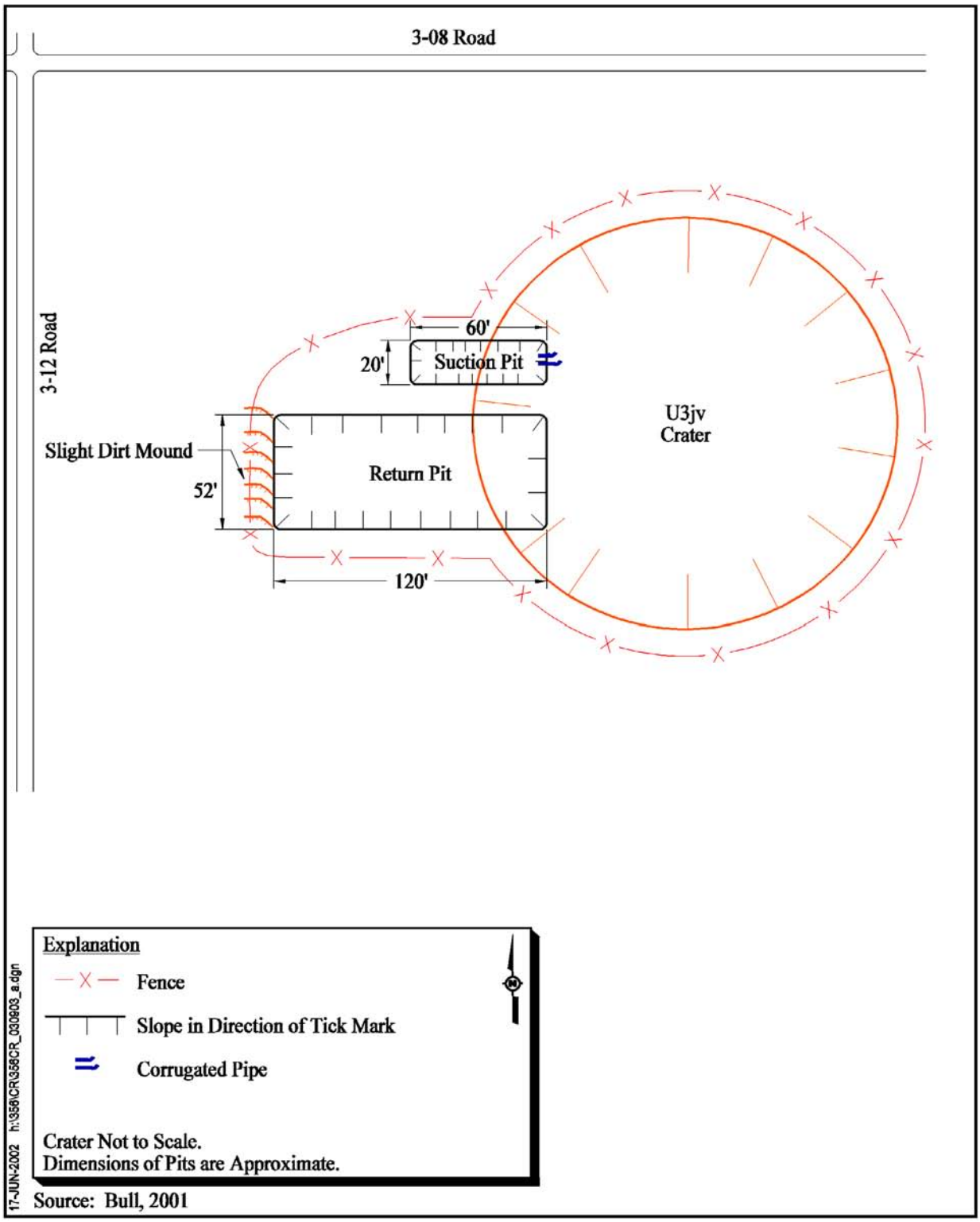

Figure 2-3
As-Completed Site Plan and Survey Plat
CAS 03-09-03, Mud Pit

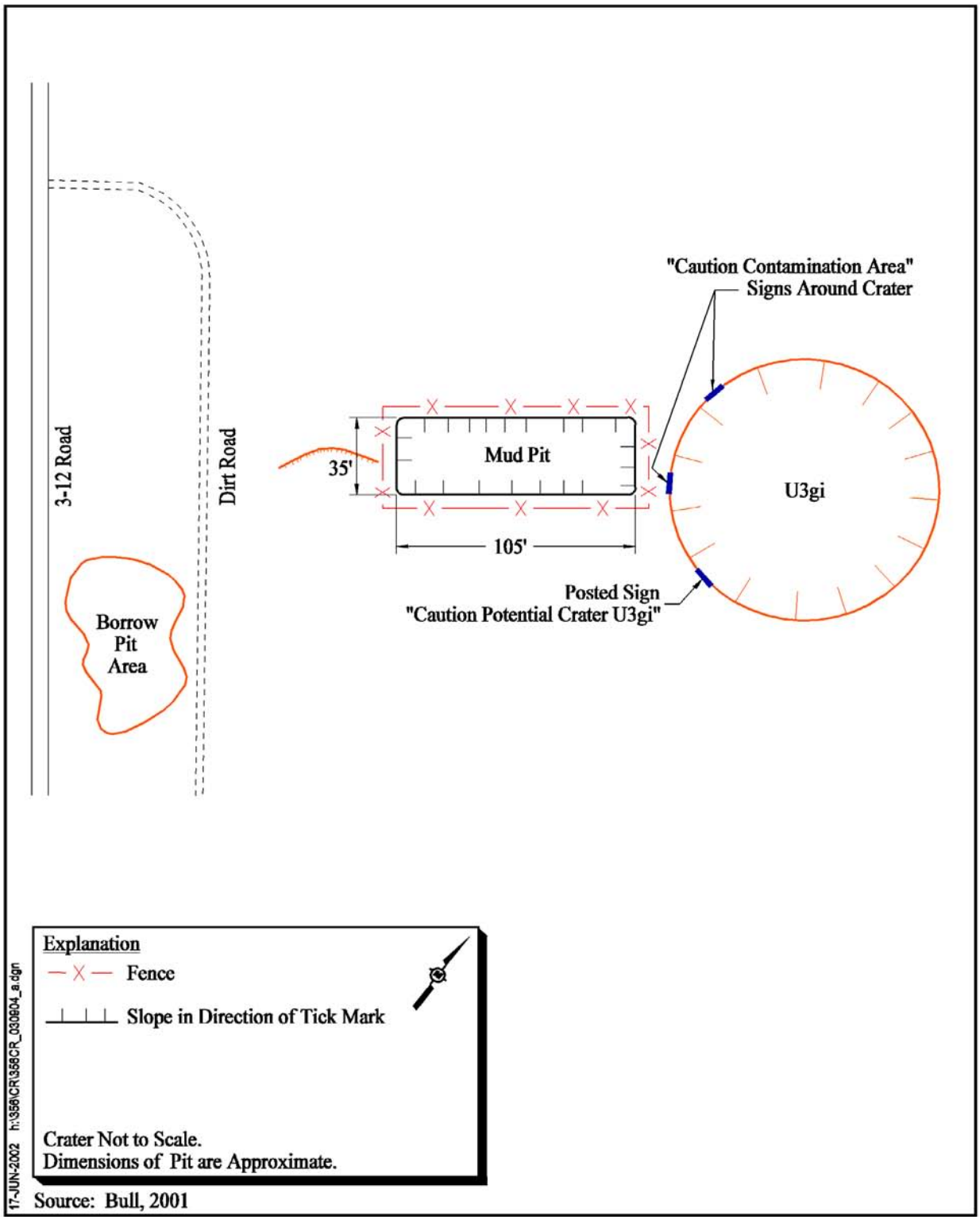

Figure 2-4
As-Completed Site Plan and Survey Plat
CAS 03-09-04, Mud Pit

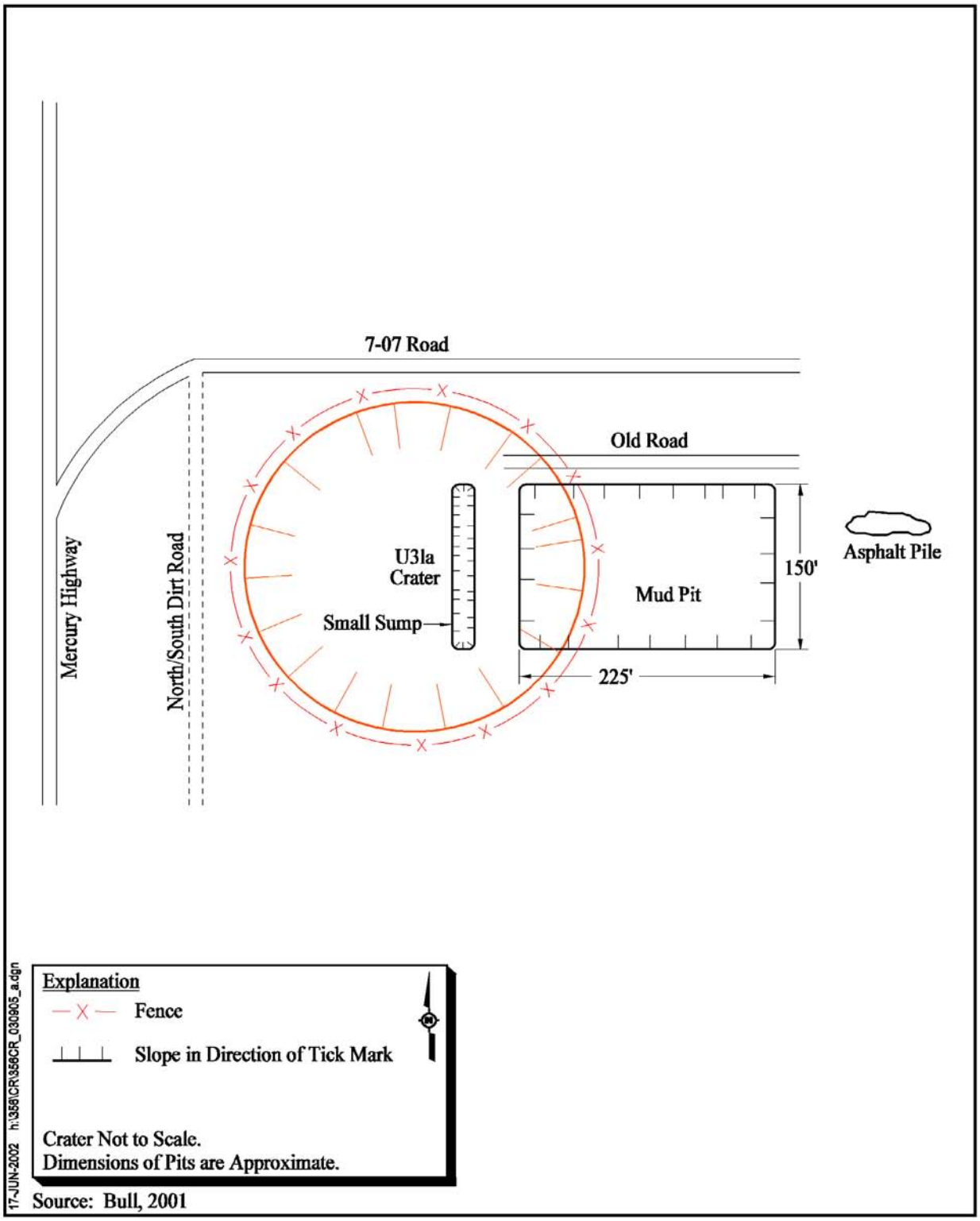

Figure 2-5
As-Completed Site Plan and Survey Plat
CAS 03-09-05, Mud Pit

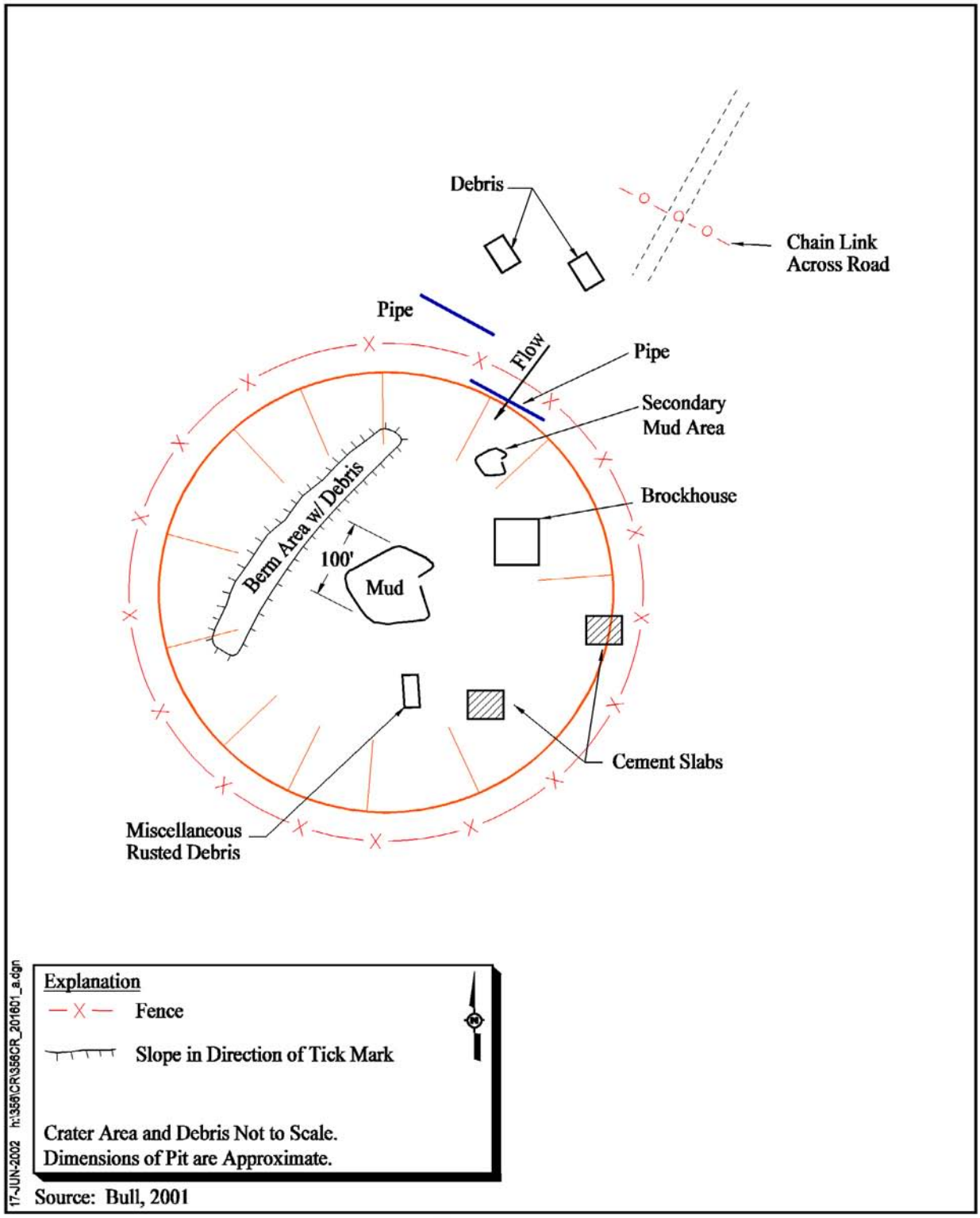

Figure 2-6
As-Completed Site Plan and Survey Plat
CAS 20-16-01, Landfill

3.0 Waste Disposition

Investigation-derived wastes were generated during the field activities at CAU 356. The waste streams included debris, decontamination rinsate water, personal protection equipment (PPE), field screening, and disposable sampling equipment. The types, amounts, and disposal of waste are detailed in the following subsections.

3.1 Waste Minimization

Corrective Action Unit 356 integrated waste minimization into the field activities. Investigation-derived waste was segregated to the greatest extent possible. Controls were in place to minimize the use of hazardous materials and unnecessary generation of hazardous and/or mixed waste. Decontamination activities were planned and executed to minimize the volume of rinsate generated.

3.2 Characterization

Analytical results for each drum of waste or associated samples were reviewed to federal regulations; state regulations; DOE directives/policies, guidance, waste disposal criteria; and IT Corporation, Las Vegas Office (ITLV), Standard Quality Practices (SQPs). Analytical data was reviewed through Tier I, II, and III validation.

The IDW generated by site characterization activities at CAU 356 is newly generated solid waste according to title 40 of the *Code of Federal Regulations* (CFR) Part 261.2. Federal regulations 40 CFR 261.3(a)(2)(iv), 261.4, and 261.6(a)(3) (CFR, 2000) were reviewed to determine if the waste was excluded from regulations as solid waste or hazardous waste. The waste is not excluded from regulations as solid or hazardous waste.

Analytical results and knowledge of the waste were used to determine if the waste met criteria as hazardous waste in Subpart C, “Characteristics of Hazardous Waste.” The RCRA-regulated constituents identified, as per 40 CFR 261.24, were evaluated to the regulations as potential “characteristic” not “listed.”

3.3 Waste Streams

Newly generated IDW was segregated into the following waste streams:

- PPE and disposable sampling equipment
- Debris including, but not limited to: plastic sheeting, glass/plastic sample jars, PPE, soil, wood, sampling scoops, aluminum foil, bowls.
- Decontamination rinsate
- Hydrocarbon spill cleanup soil/debris

3.4 Waste Sampling

Waste determinations were made using process knowledge, field observations, and the analytical data from the investigative samples. Direct sampling and analysis of the IDW was not performed for waste determination. All waste is traceable to associated media samples by written record in a waste management log.

3.5 Storage

Five HWAAs and two Satellite Accumulation Areas (SAAs) were established and managed at the closure areas. Potentially hazardous waste generated during the closure was packaged in 55-gallon U.S. Department of Transportation (DOT) specification steel drums, labeled as "Hazardous Waste - Pending Analysis." The amount, type, and source of waste placed into each drum are recorded in waste management logbooks at each location. Waste accumulation areas were inspected regularly as required by federal regulation and internal procedures (CFR, 2000).

3.6 Waste Disposal

A total of 13 drums of IDW were generated during the field activities:

- Three drums were characterized as hydrocarbon waste exceeding regulatory threshold established by State of Nevada regulations (NDEP, 1997). These drums were disposed of at the permitted NTS Hydrocarbon Landfill. Hydrocarbon waste was generated at CASs 03-04-01, 03-09-04, and 03-09-05.

- Ten drums were characterized as sanitary waste. These drums consist of three drums of PPE (solid) waste and seven drums of rinsate (liquid) waste. Sanitary solid waste was disposed of in a permitted Class II solid waste landfill. Rinsate was disposed of according to discharge criteria of the waste water system at NTS.

- Two batteries were found during the excavation activities at CAS 03-04-01. They were transferred to fleet and equipment for recycling.

3.7 Closure

The following additional waste was generated during closure activities at CAS 03-04-01:

- Liner for evaporative pond. This was disposed of in the TPH landfill. These activities are addressed in detail in Appendix B, Section B.1.2.

4.0 Closure Verification Results

Summary characterization data from the closure activities (Appendix A) are provided in Section 4.1. This information satisfies the information requirements identified by the DQOs and identifies those COPCs that exceeded preliminary action levels (PALs) (DOE/NV, 1998; DOE/NV, 2001). Section 4.1 summarizes the data quality assessment. Section 4.2 summarizes the land-use restrictions for each CAS.

Laboratory analyses for samples typically included total volatile organic compounds (VOCs), total semivolatile organic compounds (SVOCs), total *Resource Conservation and Recovery Act* (RCRA) metals, and total petroleum hydrocarbons (TPH) (diesel-range organics [DRO] and gasoline-range organics [GRO]). Additional analyses were performed on sediment, sludge, and liquid samples to support future waste determinations. As appropriate to the sample matrix, these analyses typically included Toxicity Characteristic Leaching Procedure (TCLP) VOCs, TCLP SVOCs, TCLP RCRA metals, polychlorinated biphenyls (PCBs), fecal coliform, tritium, gross alpha and beta, and gamma spectrometry. Other analyses performed on select soil samples from the mud pits, and on all soils from the septic system, include isotopic plutonium and isotopic uranium.

Arsenic was detected above the PAL of 2.7 milligrams per kilogram (mg/kg) in most soil samples analyzed at each of the CASs. Arsenic concentrations ranged from 1.7 to 17.9 mg/kg. The mean concentration of arsenic in silt from the Nellis Air Force Range is 7 to 8 mg/kg (NBMG, 1998; Moore, 1999). Arsenic concentrations in samples from CAU 356 are considered representative of ambient conditions at the site, therefore; arsenic, is not considered to be a COC for soil at this CAU.

4.1 Data Quality Assessment

An assessment of CAU 356 closure results was performed to determine whether the data collected met the DQOs and could support their intended use in the decision-making process. The assessment, provided in Appendix B, includes an evaluation of the DQIs to determine the degree of acceptability and usability of the reported data in the decision-making process. Additionally, a reconciliation of the data with the conceptual site model established for this project was conducted. Conclusions were

validated based on the results of the quality assurance (QA)/quality control (QC) measurements provided in Appendix B and discussed in Section D.9.0 of Appendix D.

Meeting DQI goals supports acceptance of the CAU 356 datasets for meeting the DQOs established for this project and the subsequent use of this data in the decision-making process.

The conceptual model presented in the CAU 356 SAFER Plan was the basis for the sample collection designs used for the closure. If information generated during the closure had required a significant change in the conceptual model, the sampling design may not have been adequate to meet the DQOs. The reconciliation of CAU 356 closure results to the established conceptual models supports the assumptions documented in the models and demonstrates representativeness. The sampling configuration generated sufficient information required to support the corrective action decision.

Chemical results for characterization sample concentrations exceeding PALs and radiological results for characterization sample concentrations greater than and distinguishable from background concentrations (DOE/NV, 1998; DOE/NV, 2001) are summarized below for each CAS.

4.1.1 CAS 03-04-01, Area 3 Change House Septic System

The SAFER Plan was implemented through the collection and analyses of 23 soil samples, 2 liquid samples, 1 sludge sample, and associated QC samples at CAS 03-04-01. Total petroleum hydrocarbon was detected above the PAL in one soil sample collected in the southeast corner of the fenced leachfield. Step-out samples were collected 4 ft to the north and south and immediately below the initial sample were below the TPH PAL.

Americium-241 was detected at concentrations above the PAL in four of the soil samples, the field duplicate, and two of the step-out locations, while plutonium-239/240 was detected in each of the three step-out locations at concentrations above the PAL. Concentrations greater than and distinguishable from background concentrations are considered to be greater than the PAL.

The DQOs established in the SAFER Plan and summarized in Section 1.3.2 were met.

4.1.2 CAS 03-09-01, Mud Pit Spill Over

The SAFER Plan was implemented through the collection and analyses of nine soil samples and associated QC samples at CAS 03-09-01. No COCs are present at the CAS.

The DQIs, as discussed in Appendix B, were achieved. The DQOs established in the SAFER Plan and summarized in Section 1.3.2 of this CR were met.

4.1.3 CAS 03-09-03, Mud Pit

The SAFER Plan was implemented through the collection and analyses of nine soil samples and associated QC samples at CAS 03-09-03. No COCs are present at the CAS.

The DQIs, as discussed in Appendix B, were achieved, except for the completeness goal for TPH. Based upon an evaluation of the valid TPH results (see Appendix A, Section A.1.1.3.1), the DQIs including completeness are sufficient to support the DQO decisions. The DQOs established in the SAFER Plan and summarized in Section 1.3.2 were met.

4.1.4 CAS 03-09-04, Mud Pit

The SAFER Plan was implemented through the collection and analyses of four soil samples and associated QC samples at CAS 03-09-04. Total petroleum hydrocarbon was detected above the PAL in two soil samples and the field duplicate.

The DQIs, as discussed in Appendix B, were achieved except for the completeness goal for TPH. Based upon an evaluation of the valid TPH results (see Appendix A, Section A.1.1.3.1), the DQIs including completeness are sufficient to support the DQO decisions. The DQOs established in the SAFER Plan and summarized in Section 1.3.2 were met.

4.1.5 CAS 03-09-05, Mud Pit

The SAFER Plan was implemented through the collection and analyses of six soil samples and associated QC samples at CAS 03-09-05. Total petroleum hydrocarbon was detected above the PAL in two soil samples associated with the adjacent asphalt pile. After removal of the asphalt and

additional soil, as a best management practice, the verification samples had results below the PAL for TPH.

Americium-241 was detected at concentrations greater than the PAL at one soil sample location both before (Phase I) and after (Phase II) the asphalt and additional soil were removed.

The DQIs, as discussed in Appendix B, were achieved. The DQOs established in the SAFER Plan and summarized in Section 1.3.2 of this CR were met.

4.1.6 CAS 20-16-01, Landfill

The SAFER Plan was implemented through the collection and analyses of six soil samples and associated QC samples at CAS 03-09-01. No COCs were present at the CAS.

The DQIs, as discussed in Appendix B, were achieved. The DQOs established in the SAFER Plan and summarized in Section 1.3.2 were met.

4.1.7 CAS 22-20-21, Drums (2)

The drums in CAS 20-22-21 were empty and located in CAS 20-16-01. No samples of drum contents were required; therefore, the drums were treated as debris. Verification soil sample results showed that no contamination remained after the drums were removed. The DQOs established in the SAFER Plan and summarized in Section 1.3.2 of this CR were met.

4.2 Use Restrictions

For CASs 03-09-01, 03-09-03, 20-16-01, and 20-22-21, analytes detected in soil during the closure were evaluated against PALs and it was determined that no COCs were present. Therefore, no further action is necessary for the soil at these CASs in CAU 356 and no use restrictions are required.

4.2.1 CAS 03-04-01, Area 3 Change House Septic System

The fenced leachfield has subsurface contamination associated with the leachlines that exceeds PALs for americium-241 and plutonium-239/240. Sufficient primary locations and step-out locations were sampled to conclude that the soil with americium-241 and plutonium-239/240 concentrations

exceeding the PALs is contained within the CAS. The highest concentrations were 2.23 picocuries per gram (pCi/g) americium-241 and 16.4 pCi/g plutonium-239/240. A use restriction for CAS 03-04-01 is in Appendix G.

The perimeter of the leachfield is approximately 100 by 75 ft. Orange snow fencing was installed around the perimeter. Use restriction signs were emplaced on a permanent post/pole and placed on each side of the leachfield. The warning signs read: "Warning, underground petroleum hydrocarbon contamination. Contact environmental Restoration (295-7946) before working in this area." "FFACO CAU 356."

4.2.2 CAS 03-09-04, Mud Pit

Total petroleum hydrocarbon was determined to be a COC. The concentration of TPH ranged from 160 to 200 mg/kg in two samples and the field duplicate exceeding the TPH PAL of 100 mg/kg. A use restriction for CAS 03-09-04 is in Appendix G.

The perimeter of the mud pit is approximately 35 by 105 ft. Three strand wire fencing approximately 4 ft high was emplaced around this perimeter. Use restriction signs were attached to the top strand of the wire fence on each side of the leachfield. The warning signs read: Warning, underground petroleum hydrocarbon contamination. Contact environmental Restoration (295-7946) before working in this area." "FFACO CAU 356."

4.2.3 CAS 03-09-05, Mud Pit

Total petroleum hydrocarbon and americium-241 were determined to be COCs. The maximum concentration of TPH was 3,300 mg/kg prior to removal of the asphalt. After removal of the asphalt and additional soil, the maximum TPH concentration was 34 mg/kg. The maximum concentration of americium-241 prior to asphalt removal was 1.02 pCi/g. The maximum concentration of americium-241 after removal of the asphalt and additional soil was 0.71 pCi/g. The low level of americium-241 concentrations does not pose a risk to future workers and no use restriction is required.

5.0 Conclusions and Recommendations

Based on the results of the closure activities discussed in Appendix A, no further cleanup activities or use restrictions are necessary for CAU 356. Results from the closure activities associated with the septic tank are presented in Appendix C. Therefore, the DOE, National Nuclear Security Administration Nevada Operations Office (NNSA/NV), provides the following recommendations:

- No further corrective action is required at CAU 356.
- No Corrective Action Plan is required.
- No use restrictions are necessary for CASs 03-09-01, 03-09-03, 20-16-01, 20-22-21, and 03-09-05.
- A Notice of Completion to NNSA/NV is requested from the Nevada Division of Environmental Protection (NDEP) for the closure of CAU 356.
- CAU 356 should be moved from Appendix III to Appendix IV of the FFACO.

5.1 Justification for No Further Action

For CASs 03-09-01, 03-09-03, 20-16-01, and 20-22-21, analytes detected in soil during the closure were evaluated against PALs and it was determined that no COCs were present. Therefore, no further action is necessary for the soil at these CASs in CAU 356.

5.2 Justification for Closure in Place

For CASs 03-04-01 and 03-09-05, analytes detected in soil during the closure were evaluated against PALs to determine if COCs were present. Contaminants of concern are TPH and radionuclides (americium-241 and/or plutonium-239/240). The nature, extent, and concentration of the TPH and radionuclide COCs were bounded by sampling and shown to be within the conceptual site model boundaries. Therefore, closure in place is the recommended closure for the soil at these CASs in CAU 356.

For CAS 03-09-04, concentrations of TPH was detected slightly above PALs in two samples and a duplicate sample. Justification for closure in place was based on risk assessment (Appendix H) and the implementation of use restriction (Appendix G).

The septic tank associated with CAS 03-04-01 was closed in accordance with applicable regulations.

The two drums in CAS 20-22-21 were removed as housekeeping waste.

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Appendix A

DQOs as Developed in the SAFER Plan for CAU 356: Mud Pits and Disposal Sites, Nevada Test Site, Nevada

A.1.0 Data Assessment

This appendix provides a summary of the assessment of CAU 356 data validation results for each DQI. In addition, a reconciliation of the data with the general conceptual site model established for this project is provided.

A.1.1 Statement of Acceptability and Usability

This section provides an evaluation of the DQIs in determining the degree of acceptability and usability of the reported data in the decision-making process.

Data were evaluated against specific criteria to verify the achievement of DQI goals established to meet the project DQOs as provided in the Industrial Sites QAPP (DOE/NV, 1996) and the CAU 356 SAFER Plan (DOE/NV, 2001). The DQIs for this project include precision, accuracy, completeness, representativeness, and comparability.

A.1.1.1 Precision

Precision is a measure of agreement among a replicate set of measurements of the same property under similar conditions. This agreement is expressed as the relative percent difference (RPD) between duplicate measurements (EPA, 1996). The RPD is determined by dividing the difference between the replicate measurement values by the average measurement value and multiplying the result by 100, or:

$$RPD = \{|a_1 - a_2|/[(a_1 + a_2)/ 2]\} \times 100, \text{ where}$$

a_1 = the sample value, and
a_2 = the duplicate sample value.

Determinations of precision can be made for field duplicates, laboratory duplicates, or both. For field duplicates, samples are collected simultaneously with a sample from the same source under similar conditions in separate containers. The duplicate sample is treated independently of the original sample in order to assess field impacts and laboratory performance on precision through a

comparison of results. Laboratory precision is evaluated as part of the required laboratory internal QC program to assess performance of analytical procedures. The laboratory sample duplicates are generated in a laboratory and are an aliquot or subset of the same field sample. Typically, other laboratory duplicate QC samples include the matrix spike duplicate and laboratory control sample duplicate (LCSD) samples for organic and inorganic analytes.

The variability in results from analyses of field duplicates is generally greater than the variability in the results of laboratory duplicates. This higher variability for field duplicates results from the increased potential to introduce factors influencing the analytical results during sampling, sample preparation, containerization, handling, packaging, preservation, and environmental conditions before the samples reach the laboratory. Laboratory QC samples assess only the variability of results introduced by sample handling and preparation in the laboratory and by the analytical procedure, which also impacts field duplicates. In addition, the variability in duplicate results is expected to be greater for soil samples than water samples, primarily due to the inherent nonhomogeneous nature of soil samples, despite sample preparation methods that include mixing to improve sample homogeneity.

A.1.1.1.1 Precision for Chemical Analysis

The RPD criteria used for assessment of laboratory sample duplicate precision associated with VOCs, TCLP VOCs, SVOCs, TCLP SVOCs, U.S. Environmental Protection Agency (EPA) 6010 metals, EPA 7470A/7471A (mercury), TCLP metals, and TCLP mercury analytical results of samples collected at CAU 356 are established in the Leachfield Work Plan (DOE/NV, 1998) and/or the *EPA Contract Laboratory Functional Guidelines for Inorganic Data Review* (EPA, 1994). The RPD criteria for TPH DRO, TPH GRO, and PCBs are established by the laboratory to evaluate precision for matrix spike/matrix spike duplicate (MS/MSD) and laboratory control sample (LCS)/LCSD analyses. The control limits are evaluated by the laboratory on a quarterly basis by monitoring the historical data and performance for each method. No review criteria for field duplicate RPD comparability have been established; therefore, the laboratory sample duplicate criteria were applied as guidelines to the review of field duplicates.

Precision values for organic and inorganic analyses that are within the established control criteria indicate that analytical results for associated samples are valid. The RPD values that are outside the

criteria for organic analyses do not necessarily result in the qualification of analytical data. It is only one factor to be considered in making an overall judgement about the quality of the reported analytical results. Inorganic laboratory sample duplicate RPD values outside the established control criteria do result in the qualification of associated analytical results as estimated. Out of control RPD values do not necessarily indicate that the data is not useful for the purpose intended; however, it is an indication that data precision should be considered for the overall assessment of the data quality and potential impact on data application in meeting the data quality objectives.

Precision for the measurement of target compounds or analytes collected at CAU 356 was determined for total VOCs, TCLP VOCs, total SVOCs, TCLP SVOCs, TPH DRO/GRO, PCBs, EPA 6010 metals, TCLP metals, EPA 7470A/7471A (mercury) and TCLP mercury. For the purpose of determining data precision of sample analyses for CAU 356, all water and soil samples including field QC samples (e.g., trip blanks, equipment rinsate samples, field blanks) were evaluated and incorporated into the precision calculation. Tables A.1-1 and A.1-2 present the total number of measurements analyzed, the number of measurements within the specified criteria, and the percentage of measurements that met the precision criteria. The percent of acceptable precision measurements was determined by taking the number of measurements within criteria, dividing by the total number of measurements analyzed, and multiplying by 100. Although SVOCs indicate lower precision values, data validation indicates sample results were not compromised.

Out of control RPD values do not necessarily indicate that the data is not useful for the purpose intended. It does indicate that precision should be considered in the overall assessment of the data quality and impact to the application of associated data to meeting the DQOs.

A.1.1.1.2 Precision for Radiological Analysis

The RPD control limit for radiological measurements has been set at 35 percent for soil and 20 percent for water. If the RPD is exceeded, samples are qualified. Field duplicates are evaluated, but samples are not qualified based on their results. The MSD results outside the control limit may not result in qualification of the data. An assessment of the entire analytical process including the sample matrix is conducted to determine if qualification is warranted. No MSD analyses were performed for CAU 356.

Table A.1-1
Chemical Precision Measurements for CAU 356

	Organics					Inorganics	
	VOCs	SVOCs	TPH-DRO	TPH-GRO	PCBs	*Metals	Mercury
Matrix Spike Duplicate (MSD) Precision							
Total Number of MSD Measurements	84	96	10	12	16	0	10
Total Number of RPDs within Criteria	84	76	8	11	16	0	10
% Acceptable MSD Measurements	100	79.2	80	91.7	100	NA	100
Laboratory Control Sample Duplicate (LCSD) Precision							
Total Number of LCSD Measurements	6	72	6	0	14	42	7
Total Number of RPDs within Criteria	6	54	6	0	14	42	7
% Acceptable LCSD Measurements	100	75	100	NA	100	100	100
Field Duplicate (FD) Precision							
Total Number of FD Measurements	378	455	8	7	49	49	7
Total Number of RPDs within Criteria	372	455	7	7	49	38	7
% Acceptable FD Measurements	98.4	100	87.5	100	100	77.6	100
Laboratory Sample Duplicate (Lab-Dup) Precision							
Total Number of Lab-Dup Measurements	NA	NA	NA	NA	NA	56	10
Total Number of RPDs within Criteria	NA	NA	NA	NA	NA	56	10
% Acceptable DUP Measurements	NA	NA	NA	NA	NA	100	100

* Arsenic, barium, cadmium, chromium, lead, selenium, and silver

NA = Not applicable

Table A.1-2
TCLP Chemical Precision Measurements for CAU 356

	Organics		Inorganics	
	TCLP VOCs	TCLP SVOCs	TCLP *Metals	TCLP Mercury
TCLP Matrix Spike Duplicate (MSD) Precision				
Total Number of MSD Measurements	10	0	0	1
Total Number of RPDs within Criteria	10	0	0	1
% Acceptable MSD Measurements	100	NA	NA	100
TCLP Laboratory Control Sample Duplicate (LCSD) Precision				
Total Number of LCSD Measurements	0	0	7	1
Total Number of RPDs within Criteria	0	0	7	1
% Acceptable LCSD Measurements	NA	NA	100	100
TCLP Field Duplicate (FD) Precision				
Total Number of FD Measurements	0	0	0	0
Total Number of RPDs within Criteria	0	0	0	0
% Acceptable FD Measurements	NA	NA	NA	NA
TCLP Laboratory Sample Duplicate (Lab-Dup) Precision				
Total Number of Lab-Dup Measurements	NA	NA	0	1
Total Number of RPDs within Criteria	NA	NA	0	1
% Acceptable DUP Measurements	NA	NA	NA	100

*Arsenic, barium, cadmium, chromium, lead, selenium, and silver

NA = Not applicable

The evaluation of precision based on duplicate RPD requires that both the sample and its duplicate have concentrations of the target radionuclide exceeding five times their minimum detectable concentration. This excludes many measurements because the samples contain nondetectable or low levels of the target radionuclide. However, there is another method used for evaluating duplicate data based on the measurement uncertainty, which is associated with every radiological result. This precision test, which is utilized when the RPD is not applicable, is the normalized difference. It is expressed by:

$$\text{Normalized Difference} = \frac{S - D}{\sqrt{(TPU_S)^2 + (TPU_D)^2}}$$

Where:

S	=	Sample Results
D	=	Duplicate Result
TPU	=	Total Propagated Uncertainty
TPUs	=	2σ TPU of the sample
TPU_D	=	2σ TPU of the duplicate
σ	=	Standard deviation

The control limit for the normalized difference is -1.96 to 1.96, which represents a confidence level of 95 percent.

Samples are qualified based on these duplicate tests for laboratory prepared duplicates, but not field duplicates. Depending on the sample concentration, only one duplicate evaluation needs to be performed.

A duplicate comparison that is outside control limits does not necessarily indicate that the data is not useful for the purpose intended; however, it is an indication that data precision should be considered for the overall assessment of the data quality and potential impact on data application in meeting project site characterization objectives.

For the purpose of determining data precision of sample analyses for CAU 356, all water and soil laboratory duplicates and field duplicates were evaluated and incorporated into Tables A.1-3 and A.1-4, respectively.

The isotopic gamma analysis provides results for 22 or 23 radionuclides. Only two or three of these radionuclides are usually present in sufficient concentrations to allow the determination of their RPDs. The duplicate data for the remaining radionuclides is compared using the normalized difference. MSD samples are not analyzed by the laboratory because of the difficulty in preparing homogeneous spiked duplicates and the radioactive waste produced.

The results of the precision tests for laboratory isotopic gamma measurements are included in Table A.1-3.

Thirteen duplicate pairs were measured with each containing 22 or 23 radionuclides. Ninety-four percent of the RPD comparisons were within limits and 97 percent of the normalized difference (ND) tests were acceptable.

The isotopic uranium analysis includes the measurement of three radionuclides, two of which often occur in concentrations sufficient for RPD evaluation. As shown by the laboratory uranium precision results in Table A.1-3, 93 percent of the RPD tests and 100 percent of the ND tests were within limits.

The isotopic plutonium analysis measures two radionuclides but usually their concentrations in samples is too low to permit the evaluation of the RPD. Table A.1-3 contains the precision results for the laboratory duplicates measured with the plutonium laboratory batches.

The isotopic americium, tritium, gross alpha and gross beta analyses provide one result. Only a few samples were analyzed by these measurements. All of the precision tests, which are included in Table A.1-3, performed with these measurements were within the established control limits.

A.1.1.1.3 Precision Summary

Overall, the precision for CAU 356 measurements was high. Of the 461 laboratory precision tests performed for chemical parameters, 420 (91.1 percent) were acceptable. Of the 358 laboratory precision tests performed for radiological parameters, 344 (96.1 percent) were acceptable. Of the

Table A.1-3
Radionuclide Laboratory Duplicate Precision Measurements for CAU 356

	Number within Criteria	Number Performed	% of Acceptable Measurements
Gamma Spectrometry Precision			
RPDs	15	16	94
Normalized Difference	270	277	97
Isotopic Uranium Precision			
RPDs	14	15	93
Normalized Difference	15	15	100
Isotopic Plutonium Precision			
RPDs	2	4	50
Normalized Difference	19	22	86
Isotopic Americium Precision			
RPDs	1	1	100
Normalized Difference	2	2	100
Tritium Precision			
RPDs	NA	NA	NA
Normalized Difference	2	2	100
Gross Alpha Precision			
RPDs	NA	NA	NA
Normalized Difference	2	2	100
Gross Beta Precision			
RPDs	NA	NA	NA
Normalized Difference	2	2	100

NA = Not applicable

Table A.1-4
Radionuclide Field Duplicate Precision Measurements for CAU 356

	Number within Criteria	Number Performed	% of Acceptable Measurements
Gamma Spectrometry			
RPDs	13	13	100
Normalized Difference	145	147	99
Isotopic Uranium			
RPDs	5	7	71
Normalized Difference	2	2	100
Isotopic Plutonium			
RPDs	1	1	100
Normalized Difference	7	7	100
Isotopic Americium			
RPDs	NA	NA	NA
Normalized Difference	1	1	100
Tritium			
RPDs	NA	NA	NA
Normalized Difference	1	1	100
Gross Alpha			
RPDs	NA	NA	NA
Normalized Difference	1	1	100
Gross Beta			
RPDs	1	1	100
Normalized Difference	NA	NA	NA

NA = Not applicable

953 field precision tests performed for chemical parameters, 935 (98.1 percent) were acceptable, while 177 of the 181 (98 percent) of the field precision tests performed for radiological parameters were acceptable. Therefore, the measurements for CAU 356 are considered valid in regard to precision.

A.1.1.2 Accuracy

Accuracy is a measure of the closeness of an individual measurement or the average of a number of measurements to the true value. Accuracy includes a combination of random error (precision) and systematic error (bias) components that result from sampling and analytical operations.

The accuracy of the LCS determination is expressed as a percent recovery (%R) by the following:

$$\%\ Recovery\ (\%R) = \frac{Amount\ of\ Analyte\ Measured}{Amount\ of\ Analyte\ Added} \times 100$$

The accuracy of the matrix spike determination is expressed as a percent recovery by the following:

$$\%\ Recovery\ (\%R) = \frac{MS\ Result - Sample\ Result}{Amount\ of\ Analyte\ Added} \times 100$$

If LCS results are outside acceptable control limits, qualifiers are not added to the field samples analyzed with the LCS. However, matrix spike results outside acceptable control limits may not result in qualification of the data. An assessment of the entire analytical process including the sample matrix is performed to determine if qualification is necessary.

A.1.1.2.1 Accuracy for Chemical Analysis

Accuracy for chemical analysis is determined by analyzing a reference material of known pollutant concentration or by reanalyzing a sample to which a material of known concentration or amount of pollutant has been added (spiked). Accuracy is expressed as %R for the purposes of evaluating the quality of data reported for CAU 356. For organic analyses, laboratory control limits are used to evaluate the accuracy of all analyses. The control limits are evaluated quarterly at the laboratory by

monitoring the historical data and performance for each method. The acceptable limits for inorganic analyses are established in the *EPA Contract Laboratory Functional Guidelines for Inorganic Data Review* (EPA,1994). Sample results within established control ranges for organic and inorganic analyses show when the analytical method is accurate and associated data are valid.

Matrix spike samples are prepared by adding a known concentration of a target analyte to a specified amount of matrix sample for which an independent estimate of the target analyte concentration is available. Spiked samples are one component used to determine the laboratory's accuracy by comparing the percent recovered to the known true value. Matrix spike recoveries within the specified criteria for organic and inorganic analyses indicate the laboratory is capable of performance within established controls and potential matrix affects producing valid, quality results. Matrix spike results outside the control limits for organic analyses may or may not result in qualification of the data. An assessment of the entire analytical process is performed to determine the quality of the data and whether qualification is necessary.

Laboratory control samples are generated to provide accuracy of analytical methods and laboratory performance. They are prepared, extracted (as required by method), analyzed, and reported once per SDG, per matrix. When the LCS recoveries are within established criteria, the laboratory's methods and preparation are said to be acceptable. Laboratory control sample recoveries that are not within established criteria may result in the qualification of data. An assessment of the entire analytical process is performed to determine the quality of the data and whether qualification is necessary.

Surrogates (System Monitoring Compounds) are used to assess the method performance for each sample analyzed by organic analyses. Control limits established by the laboratory are also used to evaluate the accuracy of the surrogate recoveries. Factors beyond the laboratory's control, such as sample matrix effects, can cause the measured values to be outside of the established criteria. When this occurs, the entire sampling and analytical process must be evaluated when determining the quality of the analytical data provided.

Tables A.1-5 and A.1-6 identify the number of matrix spike, laboratory control, and surrogate measurements performed for CAU 356. The tables present the total number of measurements analyzed, the number of measurements within the specified criteria, and the percentage of measurements that met the accuracy criteria. The percentage of acceptable measurements was

Table A.1-5
Laboratory Chemical Accuracy Measurements for CAU 356

	Organics					Inorganics	
	VOCs	SVOCs	TPH-DRO	TPH-GRO	PCBs	Metals*	Mercury
Matrix Spike (MS) Accuracy							
Total Number of MS Measurements	180	192	20	24	32	56	20
Total Number of MS Measurements within Criteria	175	182	16	20	28	52	20
% Acceptable MS Measurements	97.2	94.8	80	83.3	87.5	92.9	100
Laboratory Control Sample (LCS) Accuracy							
Total Number of LCS Measurements	102	216	18	10	40	84	14
Total Number of LCS Measurements within Criteria	102	207	18	9	40	84	14
% Acceptable LCS Measurements	100	95.8	100	90	100	100	100
Surrogate Accuracy							
Total Number of Measurements Analyzed	4,228	4225	78	65	455	455	65
Total Number of Measurements not affected by Out-of-Control Surrogates	4,225	3909	73	38	448	NA	NA
% Acceptable Surrogate Measurements	99.9	92.5	93.6	58.5	98.5	NA	NA

*Arsenic, barium, cadmium, chromium, lead, selenium, and silver

NA = Not applicable

determined by taking the number of measurements within criteria, dividing that by the total number of measurements analyzed, and multiplying by 100. For organic analyses, each sample had surrogates analyzed; therefore, the number of surrogates is significantly greater than the number of matrix spike and laboratory control samples.

Matrix spike accuracy results for organic analyses in Tables A.1-5 and A.1-6 include the total number of matrix spike measurements per analysis and the number of matrix spike measurements within criteria. All samples for organic analyses within the associated sample delivery group (SDG) are not

Table A.1-6
Laboratory Chemical Accuracy Measurements for CAU 356

	Organics		Inorganics	
	TCLP VOCs	TCLP SVOCs	TCLP Metals*	TCLP Mercury
TCLP Matrix Spike (MS) Accuracy				
Total Number of MS Measurements	20	0	0	2
Total Number of MS Measurements within Criteria	20	0	0	2
% Acceptable MS Measurements	100	NA	NA	100
TCLP Laboratory Control Sample (LCS) Accuracy				
Total Number of LCS Measurements	10	24	14	2
Total Number of LCS Measurements within Criteria	10	23	14	2
% Acceptable LCS Measurements	100	95.8	100	100
TCLP Surrogate Accuracy				
Total Number of Measurements Analyzed	10	12	7	1
Total Number of Measurements not Affected by Out-of-Control Surrogates	0	0	NA	NA
% Acceptable Surrogate Measurements	0	0	NA	NA

*Arsenic, barium, cadmium, chromium, lead, selenium, and silver

NA = Not applicable

qualified, only the native sample in which the spike was added. Overall, accuracy was high for matrix spikes in this CAU.

Tables A.1-5 and A.1-6 include the total number of LCS measurements per analysis and the number of LCS measurements within criteria. For organic analyses, an evaluation of the overall analytical process is performed to determine if data qualification is necessary. Inorganic LCS recoveries outside of established controls require data to be qualified for the individual analyte out of control. If the LCS criteria are not met, the laboratory performance and method accuracy are in question. Overall, accuracy was high for LCSs for this CAU.

Surrogates reported within established control criteria indicate quality, valid data. Tables A.1-5 and A.1-6 include the total number of sample measurements performed for each method and the total

number of sample measurements qualified for surrogate recoveries exceeding criteria. The lower number of acceptable surrogate recoveries found in the TPH GRO analyses were from low percent recoveries. These samples were all reanalyzed and it was found that matrix interferences were the likely cause. This is supported by the fact that all samples with low percent recoveries on the surrogate also had low percent recoveries on the matrix spike.

Accuracy for the measurement of target analytes collected at CAU 356 was determined for VOCs, TCLP VOCs, SVOCs, TCLP SVOCs, TPH DRO, TPH GRO, PCBs, EPA 6010 metals, TCLP metals, EPA 7470A/7471A (mercury) and TCLP mercury.

For the purpose of determining data accuracy of sample analysis for CAU 356, all water and soil samples including field QC samples (e.g., trip blanks, equipment rinsate samples, field blanks) were evaluated and incorporated into the accuracy calculation.

A.1.1.2.2 Accuracy for Radiological Analysis

Laboratory control samples and matrix spike samples are used to determine the accuracy of radiological measurements. The LCS is prepared by adding a known concentration of the radionuclide being measured to a sample that does not contain radioactivity (i.e., distilled water). This sample is analyzed with the field samples using the same sample preparation, reagents, and analytical methods employed for the samples. One LCS is prepared with each batch of samples for analysis by a specific measurement.

MS samples are prepared by adding a known concentration of a target analyte to a specified field sample with a measured concentration. The purpose of the MS is to determine the effect of interferences from the sample matrix. Isotopic uranium, americium, and plutonium utilize radioactive tracers to determine the chemical or processing yield. Stable strontium carrier is used to determine chemical yield for the Strontium-90 measurement. Since the addition of tracers or carriers is similar to a matrix spike, MS samples are not needed for these measurements. Normally a MS analysis is not performed for gamma measurements since this is a nondestructive analysis using large sample aliquots. This results in radioactive waste, and it is difficult to prepare homogeneous solid spike samples. No MS analyses were performed for CAU 356.

If the LCS results are outside acceptable control limits, qualifiers are added to the field samples analyzed with the LCS.

Table A.1-7 gives the number of laboratory control samples, including soil and water matrices, measured for each radiochemical measurement for CAU 356. The percent accuracy for the procedure is determined as the number of LCS measurements that are within the control limits divided by the total number LCS analyses, multiplied by 100.

Table A.1-7
Laboratory Radiological Accuracy Measurements for CAU 356

	Gamma	Isotopic Uranium	Isotopic Americium	Isotopic Plutonium	Gross Alpha	Gross Beta	Tritium
Total Number	12	27	3	13	2	2	2
Total Number within Criteria	12	25	3	13	2	2	2
% of Acceptable LCS Measurements	100	93	100	100	100	100	100

The LCS samples for gamma, isotopic plutonium, americium, gross alpha, gross beta and tritium use only one radionuclide. Three uranium radionuclides are added to the isotopic uranium LCS samples, but the U-235 concentration is usually too low to allow evaluation.

Laboratory control samples within the specified criteria for radiological analyses indicate the laboratory is producing valid data. If the LCS criteria are not met, the laboratory performance and method accuracy are in question. Radiological LCS recoveries outside of established controls require data to be qualified for the individual analyte out of control. The LCS recoveries were 100 percent for all analyses except for one U-234 and U-235. These two LCS recoveries resulted in the qualification of three uranium sample results.

A.1.1.2.3 Accuracy Summary

Overall, the accuracy for CAU 356 chemical and radiological measurements was high. The percent of the accuracy measurements for the TPH GRO surrogates that are within standard acceptable limits is 58.5 percent. This reduced accuracy for the surrogate might be attributable to the matrix effects

since the LCS accuracy for TPH GRO is within acceptable limits. Those samples with unacceptable surrogate recoveries also had unacceptable matrix spike recoveries.

The percent of the accuracy measurements for the TCLP SVOC and VOC laboratory control samples is 0 percent. Failed laboratory control samples indicates poor laboratory performance and the associated samples were appropriately qualified.

A.1.1.3 Completeness

Completeness is defined as sufficient data of the appropriate quality to satisfy DQO decision data requirements. A measure of completeness is the amount of data obtained that are judged to be valid. Percent completeness for sample analyses was determined by dividing the total number of samples analyzed (per method) by the total number of samples sent to the laboratory (per method) and multiplied by 100. Percent completeness for measurement usability (not rejected) was determined by dividing the total number of non-rejected measurements by the total number of measurements (per method), multiplied by 100. All measurements for completeness include all sample reanalyses. Tables A.1-8, A.1-9, and A.1-10 contain results of completeness per analytical method.

The specified sampling locations were used as planned and all samples were collected as specified in the SAFER Plan (DOE/NV, 2001). No analyses were compromised as a result of sample containers not reaching the laboratory intact.

The 478 measurements in VOC analyses were rejected for low calibration response factors. (All rejected data are discussed in the following subsection.) Response factors within required criteria are necessary for the proper determination of target analytes.

Of the 27 rejected results in the SVOC analyses, eight were due to low calibration response factors. The other 19 rejected results were from one sample, which was a reanalysis of the original which did produce usable data. The qualification of results for this reanalysis were due to grossly exceeded holding times.

Eight sample analyses for TPH DRO were rejected due to the laboratory's inability to properly quantitative results. The raw data was reviewed and it was determined by the analytical services data validation specialists that the data for these sample results should not be used.

Table A.1-8
Chemical Completeness for CAU 356

	Organics					Inorganics	
Completeness Parameters	VOCs	SVOCs	TPH-DRO	TPH-GRO	PCBs	Metals*	Mercury
Sample Analysis Completeness							
Total samples sent to lab	79	65	78	65	65	65	65
Total samples analyzed	79	65	78	65	65	65	65
Total samples not analyzed by the lab	0	0	0	0	0	0	0
Percent Completeness	100	100	100	100	100	100	100
Measurement Usability Completeness							
Total measurements **	4,228	4,225	78	65	455	455	65
Total measurements rejected - Field	0	0	0	0	0	0	0
Total measurements rejected - Lab/Matrix	478	27	8	0	7	0	0
Percent Completeness	88.7	99.4	89.7	100	98	100	100

*Arsenic, barium, cadmium, chromium, lead, selenium, and silver

**Measurements include reanalyses

In PCB analyses, the seven rejected results are from one sample whose matrix spike recovery was zero percent. The result for this sample should not be used.

The one rejected result in the TCLP SVOC analysis was from one sample whose LCS/LCSD failed criteria for the recovery of pyridine. Without accurate recovery for pyridine in the LCS and LCSD (no MS was performed), the lab failed to demonstrate proficiency.

Completeness performance criteria of 100 percent for critical analytes (chromium, TPH DRO, and PCBs) in or at the mud pits as indicated in Table 6-1 of the CAU 356 SAFER Plan for TPH DROs was not met in CAS 03-09-03 and CAS 03-09-04. This is further discussed in the CAS-specific portion of the following subsection.

Table A.1-9
TCLP Completeness for CAU 356

	Organics		Inorganics	
Completeness Parameters	VOCs	SVOCs	Metals*	Mercury
Sample Analysis Completeness				
Total samples sent to lab	1	1	1	1
Total samples analyzed	1	1	1	1
Total samples not analyzed by the lab	0	0	0	0
Percent Completeness	100	100	100	100
Measurement Usability Completeness				
Total measurements **	10	12	7	1
Total measurements rejected - Field	0	0	0	0
Total measurements rejected - Lab/Matrix	0	1	0	0
Percent Completeness	100	91.7	100	100

*Arsenic, barium, cadmium, chromium, lead, selenium, and silver

** Measurements include reanalyses

Completeness performance criteria of 100 percent for critical analytes (lead, PCBs, and solvents) in or at the septic systems as indicated in Table 6-1 of the CAU 356 SAFER Plan was not met for VOCs. The VOCs rejected are not solvents.

A.1.1.3.1 Rejected Data

Data identified as unusable and qualified as rejected "R" during Tier II data validation is presented in Table A.1-11. A discussion as to the reasons for the data rejection and the impacts on the DQOs follows.

Volatile Organic Compounds

The VOC analyses included 55 volatile compounds. Six of the 55 compounds were rejected on all of the samples. These six compounds: 1,4-dioxane; acetonitrile; acrolein; acroylonitrile; isobutanol; and propionitrile were rejected because the average and/or sample-specific response factor was below

Table A.1-10
Radiological Completeness Measurements for CAU 356

Completeness Parameters	Tritium	Gamma	Isotopic Americium	Isotopic plutonium	Gross Alpha/ Beta	Isotopic Uranium
Sample Analysis Completeness						
Total samples sent to lab	5	65	13	30	6	19
Total samples analyzed	5	65	13	30	6	19
Total samples not analyzed by the lab	0	0	0	0	0	0
Percent Completeness	100	100	100	100	100	100
Measurement Usability Completeness						
Total measurements **	5	1469	13	60	12	57
Total measurements rejected - Field	0	0	0	0	0	0
Total measurements rejected - Lab/Matrix	0	27	0	0	0	0
Percent Completeness	100	98.2	100	100	100	100

**Measurements include reanalyses

the required limits. A poor relative response factor for these compounds is a known potential occurrence and does not impact any other compounds. The 49 of 55 compounds, with acceptable data, yield a 89.1 percent analyte completeness and enables the project to make determinations as to whether VOC COCs are present in the soil. Therefore, the criteria for closure decisions were met.

Thorium-227

The gamma spectrometry analyses consists of the analyses of several gamma-emitting radionuclides. Lead-212 was detected in virtually all of the samples. The lead-212 spectra includes a peak at the same energy as the thorium-227 spectra. The presence of lead-212 and its interference on the calculation of thorium-227 was verified during the Tier II validation and resulted in the rejection of the thorium-227 results. This accounts for the 27 thorium-227 measurements rejected in Table A.1-10. A qualitative review of the gamma spectrometry results indicates that thorium-227 may be present in some of the samples at a concentration which should be below the PALs. Therefore, the criteria for closure decisions were met.

Table A.1-11
CAU 356 Rejected Data
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Sample Number	Lab Method	Parameter	Matrix
CAS 03-04-01			
356001	SW8260B	1,4-Dioxane	Soil
356002	SW8260B	1,4-Dioxane	Soil
356003	SW8260B	1,4-Dioxane	Soil
356004	SW8260B	1,4-Dioxane	Soil
356005	SW8260B	1,4-Dioxane	Soil
356006	SW8260B	1,4-Dioxane	Soil
356007	SW8260B	1,4-Dioxane	Liquid
356008	SW8260B	1,4-Dioxane	Soil
356009	SW8260B	1,4-Dioxane	Soil
356006	SW8260B	1,4-Dioxane	Soil
356010	SW8260B	1,4-Dioxane	Liquid
356013	SW8260B	1,4-Dioxane	Soil
356015	SW8260B	1,4-Dioxane	Soil
356016	SW8260B	1,4-Dioxane	Soil
356017	SW8260B	1,4-Dioxane	Soil
356019	SW8260B	1,4-Dioxane	Soil
356089	SW8260B	1,4-Dioxane	Liquid
356095	SW8260B	1,4-Dioxane	Soil
356001	SW8260B	Acetonitrile	Soil
356003	SW8260B	Acetonitrile	Soil
356004	SW8260B	Acetonitrile	Soil
356005	SW8260B	Acetonitrile	Soil
356006	SW8260B	Acetonitrile	Soil
356007	SW8260B	Acetonitrile	Liquid
356008	SW8260B	Acetonitrile	Soil
356009	SW8260B	Acetonitrile	Soil
356010	SW8260B	Acetonitrile	Liquid
356012	SW8260B	Acetonitrile	Soil
356013	SW8260B	Acetonitrile	Soil
356015	SW8260B	Acetonitrile	Soil
356016	SW8260B	Acetonitrile	Soil
356017	SW8260B	Acetonitrile	Soil

Table A.1-11
CAU 356 Rejected Data
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Sample Number	Lab Method	Parameter	Matrix
356019	SW8260B	Acetonitrile	Soil
356089	SW8260B	Acetonitrile	Liquid
356095	SW8260B	Acetonitrile	Soil
356002	SW8260B	Acetone	Soil
356012	SW8260B	Acetone	Soil
356013	SW8260B	Acetone	Soil
356001	SW8260B	Acrolein	Soil
356002	SW8260B	Acrolein	Soil
356003	SW8260B	Acrolein	Soil
356004	SW8260B	Acrolein	Soil
356005	SW8260B	Acrolein	Soil
356006	SW8260B	Acrolein	Soil
356007	SW8260B	Acrolein	Liquid
356008	SW8260B	Acrolein	Soil
356009	SW8260B	Acrolein	Soil
356010	SW8260B	Acrolein	Liquid
356012	SW8260B	Acrolein	Soil
356013	SW8260B	Acrolein	Soil
356015	SW8260B	Acrolein	Soil
356016	SW8260B	Acrolein	Soil
356017	SW8260B	Acrolein	Soil
356019	SW8260B	Acrolein	Soil
356089	SW8260B	Acrolein	Liquid
356095	SW8260B	Acrolein	Soil
356001	SW8260B	Acrylonitrile	Soil
356002	SW8260B	Acrylonitrile	Soil
356003	SW8260B	Acrylonitrile	Soil
356004	SW8260B	Acrylonitrile	Soil
356005	SW8260B	Acrylonitrile	Soil
356006	SW8260B	Acrylonitrile	Soil
356007	SW8260B	Acrylonitrile	Liquid
356008	SW8260B	Acrylonitrile	Soil
356009	SW8260B	Acrylonitrile	Soil

Table A.1-11
CAU 356 Rejected Data
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Sample Number	Lab Method	Parameter	Matrix
356010	SW8260B	Acrylonitrile	Liquid
356012	SW8260B	Acrylonitrile	Soil
356013	SW8260B	Acrylonitrile	Soil
356015	SW8260B	Acrylonitrile	Soil
356016	SW8260B	Acrylonitrile	Soil
356017	SW8260B	Acrylonitrile	Soil
356019	SW8260B	Acrylonitrile	Soil
356089	SW8260B	Acrylonitrile	Liquid
356095	SW8260B	Acrylonitrile	Soil
356007	SW8015B	GRO	Liquid
356010	SW8015B	GRO	Liquid
356089	SW8015B	GRO	Liquid
356001	SW8260B	Isobutanol	Soil
356002	SW8260B	Isobutanol	Soil
356003	SW8260B	Isobutanol	Soil
356004	SW8260B	Isobutanol	Soil
356005	SW8260B	Isobutanol	Soil
356006	SW8260B	Isobutanol	Soil
356007	SW8260B	Isobutanol	Liquid
356008	SW8260B	Isobutanol	Soil
356009	SW8260B	Isobutanol	Soil
356010	SW8260B	Isobutanol	Liquid
356012	SW8260B	Isobutanol	Soil
356013	SW8260B	Isobutanol	Soil
356015	SW8260B	Isobutanol	Soil
356016	SW8260B	Isobutanol	Soil
356017	SW8260B	Isobutanol	Soil
356019	SW8260B	Isobutanol	Soil
356089	SW8260B	Isobutanol	Liquid
356095	SW8260B	Isobutanol	Soil
356007	SW8015B, Modified	PCB, Aroclor 1016	Liquid
356007	SW8015B, Modified	PCB, Aroclor 1221	Liquid
356007	SW8015B, Modified	PCB, Aroclor 1232	Liquid

Table A.1-11
CAU 356 Rejected Data
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Sample Number	Lab Method	Parameter	Matrix
356007	SW8015B, Modified	PCB, Aroclor 1242	Liquid
356007	SW8015B, Modified	PCB, Aroclor 1248	Liquid
356007	SW8015B, Modified	PCB, Aroclor 1254	Liquid
356007	SW8015B, Modified	PCB, Aroclor 1260	Liquid
356001	SW8260B	Propionitrile	Soil
356002	SW8260B	Propionitrile	Soil
356003	SW8260B	Propionitrile	Soil
356004	SW8260B	Propionitrile	Soil
356005	SW8260B	Propionitrile	Soil
356006	SW8260B	Propionitrile	Soil
356007	SW8260B	Propionitrile	Liquid
356008	SW8260B	Propionitrile	Soil
356009	SW8260B	Propionitrile	Soil
356010	SW8260B	Propionitrile	Liquid
356012	SW8260B	Propionitrile	Soil
356013	SW8260B	Propionitrile	Soil
356015	SW8260B	Propionitrile	Soil
356016	SW8260B	Propionitrile	Soil
356017	SW8260B	Propionitrile	Soil
356019	SW8260B	Propionitrile	Soil
356089	SW8260B	Propionitrile	Liquid
356095	SW8260B	Propionitrile	Soil
356018	SW8270C	Pyridine	Sludge
356001	RICHRC5017	Th-227	Soil
356002	RICHRC5017	Th-227	Soil
356004	RICHRC5017	Th-227	Soil
356005	RICHRC5017	Th-227	Soil
356008	RICHRC5017	Th-227	Soil
356012	RICHRC5017	Th-227	Soil
356015	RICHRC5017	Th-227	Soil
356016	RICHRC5017	Th-227	Soil
356017	RICHRC5017	Th-227	Soil
356019	RICHRC5017	Th-227	Soil

Table A.1-11
CAU 356 Rejected Data
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Sample Number	Lab Method	Parameter	Matrix
CAS 03-09-01			
356020	SW8260B	1,4-Dioxane	Soil
356021	SW8260B	1,4-Dioxane	Soil
356022	SW8260B	1,4-Dioxane	Soil
356023	SW8260B	1,4-Dioxane	Soil
356024	SW8260B	1,4-Dioxane	Soil
356025	SW8260B	1,4-Dioxane	Soil
356026	SW8260B	1,4-Dioxane	Soil
356027	SW8260B	1,4-Dioxane	Soil
356028	SW8260B	1,4-Dioxane	Soil
356084	SW8260B	1,4-Dioxane	Soil
356020	SW8260B	Acetonitrile	Soil
356021	SW8260B	Acetonitrile	Soil
356022	SW8260B	Acetonitrile	Soil
356023	SW8260B	Acetonitrile	Soil
356024	SW8260B	Acetonitrile	Soil
356025	SW8260B	Acetonitrile	Soil
356026	SW8260B	Acetonitrile	Soil
356027	SW8260B	Acetonitrile	Soil
356028	SW8260B	Acetonitrile	Soil
356084	SW8260B	Acetonitrile	Soil
356020	SW8260B	Acetonitrile	Soil
356020	SW8260B	Acrolein	Soil
356021	SW8260B	Acrolein	Soil
356022	SW8260B	Acrolein	Soil
356023	SW8260B	Acrolein	Soil
356024	SW8260B	Acrolein	Soil
356025	SW8260B	Acrolein	Soil
356026	SW8260B	Acrolein	Soil
356027	SW8260B	Acrolein	Soil
356028	SW8260B	Acrolein	Soil
356084	SW8260B	Acrolein	Soil
356020	SW8260B	Acrylonitrile	Soil

Table A.1-11
CAU 356 Rejected Data
(Page 6 of 12)

Sample Number	Lab Method	Parameter	Matrix
356021	SW8260B	Acrylonitrile	Soil
356022	SW8260B	Acrylonitrile	Soil
356023	SW8260B	Acrylonitrile	Soil
356024	SW8260B	Acrylonitrile	Soil
356025	SW8260B	Acrylonitrile	Soil
356026	SW8260B	Acrylonitrile	Soil
356027	SW8260B	Acrylonitrile	Soil
356028	SW8260B	Acrylonitrile	Soil
356084	SW8260B	Acrylonitrile	Soil
356020	SW8260B	Isobutanol	Soil
356021	SW8260B	Isobutanol	Soil
356022	SW8260B	Isobutanol	Soil
356023	SW8260B	Isobutanol	Soil
356024	SW8260B	Isobutanol	Soil
356025	SW8260B	Isobutanol	Soil
356026	SW8260B	Isobutanol	Soil
356027	SW8260B	Isobutanol	Soil
356028	SW8260B	Isobutanol	Soil
356084	SW8260B	Isobutanol	Soil
356020	SW8260B	Propionitrile	Soil
356021	SW8260B	Propionitrile	Soil
356022	SW8260B	Propionitrile	Soil
356023	SW8260B	Propionitrile	Soil
356024	SW8260B	Propionitrile	Soil
356025	SW8260B	Propionitrile	Soil
356026	SW8260B	Propionitrile	Soil
356027	SW8260B	Propionitrile	Soil
356028	SW8260B	Propionitrile	Soil
356084	SW8260B	Propionitrile	Soil
356020	RICHRC5017	Th-227	Soil
356022	RICHRC5017	Th-227	Soil
356023	RICHRC5017	Th-227	Soil
356025	RICHRC5017	Th-227	Soil

Table A.1-11
CAU 356 Rejected Data
(Page 7 of 12)

Sample Number	Lab Method	Parameter	Matrix
356026	RICHRC5017	Th-227	Soil
356027	RICHRC5017	Th-227	Soil
356028	RICHRC5017	Th-227	Soil
CAS 03-09-03			
356038	SW8260B	1,4-Dioxane	Soil
356039	SW8260B	1,4-Dioxane	Soil
356040	SW8260B	1,4-Dioxane	Soil
356041	SW8260B	1,4-Dioxane	Soil
356042	SW8260B	1,4-Dioxane	Soil
356043	SW8260B	1,4-Dioxane	Soil
356044	SW8260B	1,4-Dioxane	Soil
356045	SW8260B	1,4-Dioxane	Soil
356046	SW8260B	1,4-Dioxane	Soil
356073	SW8260B	1,4-Dioxane	Soil
356038	SW8260B	Acetonitrile	Soil
356039	SW8260B	Acetonitrile	Soil
356040	SW8260B	Acetonitrile	Soil
356041	SW8260B	Acetonitrile	Soil
356042	SW8260B	Acetonitrile	Soil
356043	SW8260B	Acetonitrile	Soil
356044	SW8260B	Acetonitrile	Soil
356045	SW8260B	Acetonitrile	Soil
356046	SW8260B	Acetonitrile	Soil
356073	SW8260B	Acetonitrile	Soil
356038	SW8260B	Acrolein	Soil
356039	SW8260B	Acrolein	Soil
356040	SW8260B	Acrolein	Soil
356041	SW8260B	Acrolein	Soil
356042	SW8260B	Acrolein	Soil
356043	SW8260B	Acrolein	Soil
356044	SW8260B	Acrolein	Soil
356045	SW8260B	Acrolein	Soil
356046	SW8260B	Acrolein	Soil

Table A.1-11
CAU 356 Rejected Data
(Page 8 of 12)

Sample Number	Lab Method	Parameter	Matrix
356073	SW8260B	Acrolein	Soil
356038	SW8260B	Acrylonitrile	Soil
356039	SW8260B	Acrylonitrile	Soil
356040	SW8260B	Acrylonitrile	Soil
356041	SW8260B	Acrylonitrile	Soil
356042	SW8260B	Acrylonitrile	Soil
356043	SW8260B	Acrylonitrile	Soil
356044	SW8260B	Acrylonitrile	Soil
356045	SW8260B	Acrylonitrile	Soil
356046	SW8260B	Acrylonitrile	Soil
356073	SW8260B	Acrylonitrile	Soil
356042	SW8015B	GRO	Soil
356044	SW8015B	GRO	Soil
356073	SW8015B	GRO	Soil
356038	SW8260B	Isobutanol	Soil
356039	SW8260B	Isobutanol	Soil
356040	SW8260B	Isobutanol	Soil
356041	SW8260B	Isobutanol	Soil
356042	SW8260B	Isobutanol	Soil
356043	SW8260B	Isobutanol	Soil
356044	SW8260B	Isobutanol	Soil
356045	SW8260B	Isobutanol	Soil
356046	SW8260B	Isobutanol	Soil
356073	SW8260B	Isobutanol	Soil
356038	SW8260B	Propionitrile	Soil
356039	SW8260B	Propionitrile	Soil
356040	SW8260B	Propionitrile	Soil
356041	SW8260B	Propionitrile	Soil
356042	SW8260B	Propionitrile	Soil
356043	SW8260B	Propionitrile	Soil
356044	SW8260B	Propionitrile	Soil
356045	SW8260B	Propionitrile	Soil
356046	SW8260B	Propionitrile	Soil

Table A.1-11
CAU 356 Rejected Data
(Page 9 of 12)

Sample Number	Lab Method	Parameter	Matrix
356073	SW8260B	Propionitrile	Soil
356039	RICHRC5017	Th-227	Soil
356044	RICHRC5017	Th-227	Soil
356073	RICHRC5017	Th-227	Soil
CAS 03-09-04			
356047	SW8260B	1,4-Dioxane	Soil
356048	SW8260B	1,4-Dioxane	Soil
356049	SW8260B	1,4-Dioxane	Soil
356050	SW8260B	1,4-Dioxane	Soil
356051	SW8260B	1,4-Dioxane	Soil
356069	SW8260B	1,4-Dioxane	Soil
356047	SW8260B	Acetonitrile	Soil
356048	SW8260B	Acetonitrile	Soil
356049	SW8260B	Acetonitrile	Soil
356050	SW8260B	Acetonitrile	Soil
356051	SW8260B	Acetonitrile	Soil
356069	SW8260B	Acetonitrile	Soil
356047	SW8260B	Acrolein	Soil
356048	SW8260B	Acrolein	Soil
356049	SW8260B	Acrolein	Soil
356050	SW8260B	Acrolein	Soil
356051	SW8260B	Acrolein	Soil
356069	SW8260B	Acrolein	Soil
356047	SW8260B	Acrylonitrile	Soil
356048	SW8260B	Acrylonitrile	Soil
356049	SW8260B	Acrylonitrile	Soil
356050	SW8260B	Acrylonitrile	Soil
356051	SW8260B	Acrylonitrile	Soil
356069	SW8260B	Acrylonitrile	Soil
356047	SW8015B	GRO	Soil
356048	SW8015B	GRO	Soil
356047	SW8260B	Isobutanol	Soil
356048	SW8260B	Isobutanol	Soil

Table A.1-11
CAU 356 Rejected Data
(Page 10 of 12)

Sample Number	Lab Method	Parameter	Matrix
356049	SW8260B	Isobutanol	Soil
356050	SW8260B	Isobutanol	Soil
356051	SW8260B	Isobutanol	Soil
356069	SW8260B	Isobutanol	Soil
356047	SW8260B	Propionitrile	Soil
356048	SW8260B	Propionitrile	Soil
356049	SW8260B	Propionitrile	Soil
356050	SW8260B	Propionitrile	Soil
356051	SW8260B	Propionitrile	Soil
356069	SW8260B	Propionitrile	Soil
356047	RICHRC5017	Th-227	Soil
CAS 03-09-05			
356029	SW8260B	1,4-Dioxane	Soil
356030	SW8260B	1,4-Dioxane	Soil
356031	SW8260B	1,4-Dioxane	Soil
356031RE	SW8260B	1,4-Dioxane	Solid
356080	SW8260B	1,4-Dioxane	Soil
356029	SW8260B	Acetonitrile	Soil
356030	SW8260B	Acetonitrile	Soil
356031	SW8260B	Acetonitrile	Soil
356031RE	SW8260B	Acetonitrile	Solid
356080	SW8260B	Acetonitrile	Soil
356080	SW8260B	Acetone	Soil
356029	SW8260B	Acrolein	Soil
356030	SW8260B	Acrolein	Soil
356031	SW8260B	Acrolein	Soil
356031RE	SW8260B	Acrolein	Solid
356080	SW8260B	Acrolein	Soil
356029	SW8260B	Acrylonitrile	Soil
356030	SW8260B	Acrylonitrile	Soil
356031	SW8260B	Acrylonitrile	Soil
356031RE	SW8260B	Acrylonitrile	Solid
356080	SW8260B	Acrylonitrile	Soil

Table A.1-11
CAU 356 Rejected Data
(Page 11 of 12)

Sample Number	Lab Method	Parameter	Matrix
356029	SW8260B	Isobutanol	Soil
356030	SW8260B	Isobutanol	Soil
356031	SW8260B	Isobutanol	Soil
356031RE	SW8260B	Isobutanol	Solid
356080	SW8260B	Isobutanol	Soil
356029	SW8260B	Propionitrile	Soil
356030	SW8260B	Propionitrile	Soil
356031	SW8260B	Propionitrile	Soil
356031RE	SW8260B	Propionitrile	Solid
356080	SW8260B	Propionitrile	Soil
356029	RICHRC5017	Th-227	Soil
356031	RICHRC5017	Th-227	Soil
356080	RICHRC5017	Th-227	Soil
CAS 20-16-01			
356032	SW8260B	1,4-Dioxane	Soil
356033	SW8260B	1,4-Dioxane	Soil
356034	SW8260B	1,4-Dioxane	Soil
356035	SW8260B	1,4-Dioxane	Soil
356036	SW8260B	1,4-Dioxane	Soil
356037	SW8260B	1,4-Dioxane	Soil
356077	SW8260B	1,4-Dioxane	Soil
356036	SW8260B	Acetone	Soil
356032	SW8260B	Acetonitrile	Soil
356033	SW8260B	Acetonitrile	Soil
356034	SW8260B	Acetonitrile	Soil
356035	SW8260B	Acetonitrile	Soil
356036	SW8260B	Acetonitrile	Soil
356037	SW8260B	Acetonitrile	Soil
356077	SW8260B	Acetonitrile	Soil
356032	SW8260B	Acrolein	Soil
356033	SW8260B	Acrolein	Soil
356034	SW8260B	Acrolein	Soil
356035	SW8260B	Acrolein	Soil

Table A.1-11
CAU 356 Rejected Data
(Page 12 of 12)

Sample Number	Lab Method	Parameter	Matrix
356036	SW8260B	Acrolein	Soil
356037	SW8260B	Acrolein	Soil
356077	SW8260B	Acrolein	Soil
356032	SW8260B	Acrylonitrile	Soil
356033	SW8260B	Acrylonitrile	Soil
356034	SW8260B	Acrylonitrile	Soil
356035	SW8260B	Acrylonitrile	Soil
356036	SW8260B	Acrylonitrile	Soil
356037	SW8260B	Acrylonitrile	Soil
356077	SW8260B	Acrylonitrile	Soil
356032	SW8260B	Isobutanol	Soil
356033	SW8260B	Isobutanol	Soil
356034	SW8260B	Isobutanol	Soil
356035	SW8260B	Isobutanol	Soil
356036	SW8260B	Isobutanol	Soil
356037	SW8260B	Isobutanol	Soil
356077	SW8260B	Isobutanol	Soil
356032	SW8260B	Propionitrile	Soil
356033	SW8260B	Propionitrile	Soil
356034	SW8260B	Propionitrile	Soil
356035	SW8260B	Propionitrile	Soil
356036	SW8260B	Propionitrile	Soil
356037	SW8260B	Propionitrile	Soil
356077	SW8260B	Propionitrile	Soil
356034	RICHRC5017	Th-227	Soil
356037	RICHRC5017	Th-227	Soil
356077	RICHRC5017	Th-227	Soil

GRO = TPH Gasoline-Range Organics

CAS 03-04-01, Area 3 Change House Septic System

In addition to the six VOCs discussed above, acetone was rejected on samples 356002, 356012, and 356095 at CAS 03-04-01. Sample 356002 was collected in the immediate vicinity of sample 356001. Sample 356012 was collected near sample 356017. Sample 356095 was a field duplicate of 356003. None of the samples for CAS 03-04-01 had any VOCs detected above the MRLs. Therefore, the criteria for closure decisions were met.

The SVOC pyridine was rejected on sample 356018. This is the sludge sample and does not impact the determination of COPCs in the soil.

The PCB results for sample 356007 were rejected. This is a liquid sample from the septic tank and does not impact the determination of COPCs in the soil.

The TPH GRO results on samples 356007, 356010, and 356089 were rejected. These are liquid samples from the septic tank and do not impact the determination of COPCs in the soil.

CAS 03-09-01, Mud Pit Spill Over

The only results from CAS 03-09-01 rejected were the six VOCs and thorium-227. Therefore, the criteria for closure decisions were met.

CAS 03-09-03, Mud Pit

The TPH GRO results were rejected on samples 356042, 356044, and 356073 at CAS 03-09-03. Sample 356044 was collected in the immediate vicinity of sample 356043, which did not have a TPH GRO detection above the GRO. Sample 356073 is a field duplicate of sample 356042 which were both collected in the channel between the Suction Pit and Return Pit. (Refer to Figure D.5-1 in Appendix D.) Based upon the conceptual model, which has not been shown to be incorrect, the highest concentrations are expected to be found within the mud pits themselves. None of the samples at CAS 03-09-03 had TPH GRO concentrations above the MRL. Therefore, the criteria for closure decisions were met.

CAS 03-09-04, Mud Pit

The TPH GRO results were rejected on samples 356047 and 356048. The other two samples and the field duplicate at this CAS had TPH GRO above the PAL at concentrations ranging from 160 to 200 mg/kg. Based upon the mixing operations at mud pits, sample locations, and the TPH GRO results at the other mud pits, it is believed that the concentration at the rejected data sample locations would be similar to the TPH GRO valid data (160 to 200 mg/kg) at this CAS. Therefore, the criteria for closure decisions were met.

CAS 03-09-05, Mud Pit

In addition to the six VOCs discussed above, acetone was rejected on sample 356080 at CAS 03-09-05. Sample 356080 was a field duplicate of 356029. None of the samples for CAS 03-09-05 had any VOCs detected above the MRLs. Therefore, the criteria for closure decisions were met.

CAS 20-16-01, Landfill

In addition to the six VOCs discussed above, acetone was rejected on sample 356036 at CAS 03-09-05. The only VOC detection for any CAS 20-16-01 sample was for sample 356037 with an acetone concentration of 80 J µg/kg, which is well below the PAL of 6,200,000 µg/kg. (The "J" is the qualifier, indicating the result is an estimated value.) Therefore, the criteria for closure decisions were met.

A.1.1.3.2 Completeness Summary

Overall project completeness, as can be seen from the percent completeness presented in Tables A.1-8, A.1-9, and A.1-10, meets project requirements. Individual data points which were identified as incomplete or rejected were determined to not create decisional gaps in the project data. Therefore, the measurements performed for CAU 356 are considered valid in regard to completeness.

A.1.1.4 Representativeness

A seven-step DQO process was utilized to identify CAU 356 requirements. During the process, locations were selected which enabled the samples collected to be representative of the media being evaluated. Samples were collected as planned. Quality control blanks are used as a way of

measuring outside factors that could impact sample results. No data was rejected due to QC blanks. Therefore, the analytical data acquired during the CAU 356 investigation are representative of site characteristics.

A.1.1.5 Comparability

Field sampling activities were performed and documented in accordance with approved procedures that are comparable to standard industry practices. Approved standardized analytical methods and procedures were used to analyze, report, and validate the data. Therefore, datasets within this project are comparable to all other datasets generated using standardized quality procedures.

A.1.2 Reconciliation of DQOs and Conceptual Model(s)

This section provides a reconciliation of the data collected and analyzed during this investigation, with the preliminary conceptual site models established in the DQO process.

A.1.2.1 Initial Conceptual Model

A general conceptual model was developed for CAU 356 as presented in the SAFER (DOE/NV, 2001) based on historical information, previous septic tank sample analyses, and process knowledge. This data assessment reconciles the investigation results with the conceptual model.

The general conceptual model was applied at CAU 356. This model assumed that any contamination would be located in the surface soil and the soil immediately adjacent to the septic system. The extent of underlying soil impact was expected to be dependent upon the nature of COPCs and other factors.

The general conceptual model was applied to the CAU 356 mud pits and mud pit spillover. This model assumed that any contamination would be located in the mud and the soil immediately adjacent to the mud. The extent of underlying soil impact was expected to be dependent upon the nature of COPCs and other factors.

A.1.2.2 Investigation Design and Contaminant Identification

The conceptual site model was used as the basis for identifying appropriate sampling strategies and data collection methods.

To address the conceptual model, subsurface samples were collected for analyses designed to define the extent of the COPCs identified in the CAIP. A biased strategy was developed to focus the investigation on areas of potential contamination. The models assumed that the contamination would be limited to the boundaries of the site due to the minimal potential for migration based on the geological and historical information for the site.

Implementation of the investigation design has shown that contamination did not extend beyond the septic system components; therefore, it did not extend beyond the boundaries of the CAS as presented in Appendix A. This is reasonable because the models predict that the extent of impact of any contaminated effluent released to soil is limited (DOE/NV, 2001).

A.1.2.3 Contaminant Nature and Extent

The presence of contamination was identified in septic system components by sample results showing COPC concentrations exceeding regulatory thresholds for future disposal of affected media, thereby defining COCs at the CASs. Soil sample results demonstrated that COCs of TPH and radionuclides were identified in soil within the physical boundaries, and did not extend beyond the boundaries of the general subsurface model defined in the SAFER (DOE/NV, 2001). The CAS-specific investigation findings, analytical results, and descriptions of site conditions are presented in Appendix A.

A.1.3 Conclusions

The DQIs (precision, accuracy, completeness, representativeness, and comparability) were all evaluated for quality and impact to the data. All of the data, except data qualified as rejected, can be used in project decisions.

A.2.0 References

NAC, see *Nevada Administrative Code*.

Nevada Administrative Code. 1996. NAC 445A.2272, "Contamination of soil: Establishment of action levels." Carson City, NV.

U.S. Department of Energy, Nevada Operations Office. 1996. *Industrial Site Quality Assurance Project Plan, Nevada Test Site, Nevada*, Rev. 1, DOE/NV--372. Las Vegas, NV.

U.S. Department of Energy, Nevada Operations Office. 1998. *Work Plan for Leachfield Corrective Action Units: Nevada Test Site and Tonopah Test Range, Nevada,* Rev. 1, DOE/NV--514. Las Vegas, NV.

U.S. Department of Energy, Nevada Operations Office. 2001. *Streamlined Approach for Environmental Restoration (SAFER) Plan for Corrective Action Unit 356: Mud Pits and Disposal Sites, Nevada Test Site, Nevada,* DOE/NV--747. Las Vegas, NV.

U.S. Environmental Protection Agency. 1994. *Contracts Laboratory Program National Functional Guidelines for Inorganic Data Review,* EPA 540-R-94/013. Washington, DC.

U.S. Environmental Protection Agency. 1996. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846 CD ROM PB97-501928GEI, which contains updates for 1986, 1992, 1994, and 1996. Washington, DC.

Appendix B

Closure Certification for CAU 356: Mud Pits and Disposal Sites, Nevada Test Site, Nevada

B.1.0 Closure Certification

The following sections document closure activities completed for CAU 356.

B.1.1 CAS 20-22-21

The two drums were removed as housekeeping waste on August 13, 2002. A housekeeping closure verification form is attached for each drum. The drums were empty and were disposed of as sanitary waste in the Area 9 Landfill. The Landfill Access Register, Landfill Load Verification Form, and Solid Waste Report for this waste are in Appendix E.

Verification samples were collected from under each drum after removal. Verification sample analytical results showed that no residual contamination remained and are in this appendix.

Table B.1-1
Samples Collected from CAS 20-22-21, Drums (2)

Sample Number	Sample Location/Description	Depth (ft bgs)	Sample Matrix	Purpose	Analyses
356312	Inside crater, south side, below drum	0.0 - 0.5	Drilling Mud	Verification	Set 1
356313	Inside crater, east side	0.0 - 0.5	Drilling Mud	Verification	Set 1
356314	Inside crater, east side	0.0 - 0.5	Drilling Mud	Field Duplicate of #356313	Set 1
356315	N/A	N/A	Water	Trip Blank	VOC

Set 1 = Total VOCs; Total SVOCs, RCRA Metals, PCB, TPH-GRO, TPH, DRO, Gamma Spectrometry, and Gross Alpha Beta

ft bgs = Feet below ground surface

B.1.2 CAS 03-04-01

The septic tank at CAS 03-04-01 was closed in place. The septic tank contents were removed and placed in a temporary evaporative pond for volume reduction, the tank was triple rinsed, and samples of the final rinse were collected from each chamber of the septic tank. Analytical results for the rinsate samples showed that no contamination remained in the septic tank and are in this appendix.

Subsequently, the septic tank was closed in place, backfilling the tank with 24 cubic yards of concrete.

The water fraction of the waste was reduced in the shallow evaporative ponds until there was only a small volume of solid residue on the plastic sheeting. Samples were collected of the residue to determine the disposal path. Based on the analytical results, the plastic with residue was disposed of as hydrocarbon waste. The analytical results for the residue are in this appendix.

Table B.1-2
Samples Collected from CAS 03-04-01, Area 3 Change House Septic System

Sample Number	Sample Location/Description	Depth (ft bgs)	Sample Matrix	Purpose	Analyses
356301	Septic tank, north side, bottom of tank	N/A	Liquid	WM	Set 1, Total Mercury
356302	Septic tank, south side, bottom of tank	N/A	Liquid	WM	Set 1, Total Mercury
356303	Septic tank, north side, bottom of tank	N/A	Liquid	Field Duplicate of #356301	Set 1, Total Mercury
356304	Garden Hose used to collect samples from tank	N/A	Water	Source Blank	Set 1, Total Mercury
356310	N/A	N/A	Water	Trip Blank	VOC
356310*	Southwest corner of lagoon	0.0 - 0.5	Soil	WM	Set 1
356311	Southwest corner of lagoon	0.0 - 0.5	Soil	Field Duplicate of #356310	Set 1
356309	N/A	N/A	Water	Trip Blank	VOC

Set 1 = Total VOC, Total SVOC, RCRA Metals, TPH-GRO, TPH-DRO, TCLP RCRA Metals, Gamma Spectrometry, Isotopic Uranium, and Isotopic Plutonium

*Sample number was duplicated; however, sample type and analysis is different.
ft bgs = Below ground surface
N/A = Not applicable
WM - Waste management to verify clean rinsate conditions and waste disposal profile verification.

B.1.3 CAS 03-09-05

An asphalt pile in the northwest corner of the pit was removed using a backhoe and scraper. Three loads of waste were removed from the site on March 20, 2002. The Landfill Access Register, Landfill Load Verification Form, and the Solid Waste Report for this waste are in Appendix E. Four

surface soil samples were collected from the asphalt pile footprint to verify the complete removal of the asphalt at the 0- to 6-in. bgs interval. Samples were field screened for volatiles and alpha and beta/gamma emitters, and submitted for laboratory analyses of COPC. Samples 356031, 356049, 356212, and 356213 are discussed in Section D.7.0 of the closure report.

FFACO Corrective Action Site
Housekeeping Closure Verification Form

Closure Verification Date: August 13, 2002
CAS Number: 20-22-21
CAU Number: 356
General Location: U20b Crater
Elevation: Unknown
Latitude: 37.2546867000
Northing: 4123416
Longitude: -116.4370117000
Easting: 549707

Coordinate/Elevation Data Obtained from NORTH AMERICAN DATUM, 1927.

Site Access Route: From Mercury Highway turn left (west) onto Tippapah Highway. In Area 1 turn left (west) onto Pahute Mesa Road. Follow Pahute Mesa Road to Area 20 and the end of the pavement (you will be facing south). Continue on the unpaved road approximately 1.5 mi. Turn right (west) onto another unpaved road and proceed approximately 0.4 mi to the site marker and U20b Crater.

Waste Item(s) Originally at Site	Apparent Waste Type*
Metal Drum	Scrap Metal

*** Ordinary, Scrap Metal, Asbestos, PCB, Salvageable, Hazardous, Radioactive, Mixed, Unknown, Other**

CAS Prior to Cleanup
Photograph date: 08/13/02

CAS After Cleanup
Photograph date: 08/13/02

Current Site Description/Observations: Drum was removed on August 13, 2002. Verification samples showed that no contamination is present.

✓ **No Further Action Required at Corrective Action Site**

R. Lynn Kidman (Industrial Sites Project Manager) — 12/12/02
Corrective Action Coordinator/Designee **(Signature)** **Date**

FFACO CORRECTIVE ACTION SITE
HOUSEKEEPING CLOSURE VERIFICATION FORM

Closure Verification Date: August 13, 2002

CAS Number: 20-22-21
CAU Number: 356
General Location: U20b Crater
Elevation: Unknown
Latitude: 37.2546867000
Northing: 4123416
Longitude: -116.4370117000
Easting: 549707

Coordinate/Elevation Data Obtained from NORTH AMERICAN DATUM, 1927.

Site Access Route: From Mercury Highway turn left (west) onto Tippapah Highway. In Area 1 turn left (west) onto Pahute Mesa Road. Follow Pahute Mesa Road to Area 20 and the end of the pavement (you will be facing south). Continue on the unpaved road approximately 1.5 mi. Turn right (west) onto another unpaved road and proceed approximately 0.4 mi to the site marker and U20b Crater.

Waste Item(s) Originally at Site	Apparent Waste Type*
Metal Drum	Scrap Metal

*** Ordinary, Scrap Metal, Asbestos, PCB, Salvageable, Hazardous, Radioactive, Mixed, Unknown, Other**

CAS Prior to Cleanup
Photograph date: 08/13/02

CAS After Cleanup
Photograph date: 08/13/02

Current Site Description/Observations: Drum was removed on August 13, 2002. Verification samples showed that no contamination is present.

✓ **No Further Action Required at Corrective Action Site**

R. Lynn Kidman (Industrial Sites Project Manager) — 12/12/02
Corrective Action Coordinator/Designee **(Signature)** **Date**

GC/MS Volatiles

Method SW8260

Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Lab ID: VL020814-2MB

Sample Matrix: SOIL
% Moisture: N/A
Date Collected: N/A
Date Extracted: 08/14/2002
Date Analyzed: 08/14/2002

Prep Batch: VL020814-2
QCBatchID: VL020814-2-1
Run ID: VL020814-2A
Cleanup: NONE
Basis: N/A

Sample Aliquot: 5 G
Final Volume: 5 ML
Result Units: UG/KG
Clean DF: 1
File Name: B17039

CASNO	Target Analyte	DF	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
75-71-8	DICHLORODIFLUOROMETHANE	1	10	10	1.3	U	
74-87-3	CHLOROMETHANE	1	10	10	2.2	U	
75-01-4	VINYL CHLORIDE	1	10	10	1.6	U	
74-83-9	BROMOMETHANE	1	10	10	2.7	U	
75-00-3	CHLOROETHANE	1	10	10	1.6	U	
75-69-4	TRICHLOROFLUOROMETHANE	1	5	5	1.6	U	
75-35-4	1,1-DICHLOROETHENE	1	5	5	0.86	U	
76-13-1	TRICHLOROTRIFLUOROETHANE	1	5	5	1.7	U	
67-64-1	ACETONE	1	20	20	7.6	U	
74-88-4	IODOMETHANE	1	5	5	1.4	U	
75-15-0	CARBON DISULFIDE	1	5	5	0.85	U	
75-09-2	METHYLENE CHLORIDE	1	5	5	2	U	
156-60-5	TRANS-1,2-DICHLOROETHENE	1	5	5	0.98	U	
1634-04-4	METHYL TERTIARY BUTYL ETHER	1	5	5	1.5	U	
75-34-3	1,1-DICHLOROETHANE	1	5	5	1	U	
108-05-4	VINYL ACETATE	1	20	20	2.6	U	
156-59-2	CIS-1,2-DICHLOROETHENE	1	5	5	0.91	U	
78-93-3	2-BUTANONE	1	20	20	6.3	U	
74-97-5	BROMOCHLOROMETHANE	1	5	5	1	U	
67-66-3	CHLOROFORM	1	5	5	0.72	U	
71-55-6	1,1,1-TRICHLOROETHANE	1	5	5	0.71	U	
594-20-7	2,2-DICHLOROPROPANE	1	5	5	1.2	U	
56-23-5	CARBON TETRACHLORIDE	1	5	5	1.1	U	
563-58-6	1,1-DICHLOROPROPENE	1	5	5	1.2	U	
107-06-2	1,2-DICHLOROETHANE	1	5	5	1.4	U	
71-43-2	BENZENE	1	5	5	0.75	U	
79-01-6	TRICHLOROETHENE	1	5	5	0.89	U	
78-87-5	1,2-DICHLOROPROPANE	1	5	5	0.98	U	

Data Package ID: *VL0208079-2*

GC/MS Volatiles

Method SW8260

Method Blank

Lab Name: Paragon Analytics, Inc.

Work Order Number: 0208079

Client Name: Shaw Environmental & Infrastructure, Inc.

ClientProject ID: CAU356 831845.02030010

Lab ID: VL020814-2MB

Sample Matrix: SOIL
% Moisture: N/A
Date Collected: N/A
Date Extracted: 08/14/2002
Date Analyzed: 08/14/2002

Prep Batch: VL020814-2
QCBatchID: VL020814-2-1
Run ID: VL020814-2A
Cleanup: NONE
Basis: N/A

Sample Aliquot: 5 G
Final Volume: 5 ML
Result Units: UG/KG
Clean DF: 1
File Name: B17039

74-95-3	DIBROMOMETHANE	1	5	5	1.6	U	
75-27-4	BROMODICHLOROMETHANE	1	5	5	0.88	U	
10061-01-5	CIS-1,3-DICHLOROPROPENE	1	5	5	0.73	U	
108-10-1	4-METHYL-2-PENTANONE	1	20	20	4.8	U	
108-88-3	TOLUENE	1	5	5	1.2	U	
10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	5	5	0.99	U	
79-00-5	1,1,2-TRICHLOROETHANE	1	5	5	1.4	U	
591-78-6	2-HEXANONE	1	20	20	4.9	U	
127-18-4	TETRACHLOROETHENE	1	5	5	1	U	
142-28-9	1,3-DICHLOROPROPANE	1	5	5	1.2	U	
124-48-1	DIBROMOCHLOROMETHANE	1	5	5	0.95	U	
106-93-4	1,2-DIBROMOETHANE	1	5	5	1.2	U	
544-10-5	1-CHLOROHEXANE	1	5	5	1.2	U	
108-90-7	CHLOROBENZENE	1	5	5	1	U	
630-20-6	1,1,1,2-TETRACHLOROETHANE	1	5	5	0.93	U	
100-41-4	ETHYLBENZENE	1	5	5	1.1	U	
136777-61-	M+P-XYLENE	1	5	5	1.3	U	
95-47-6	O-XYLENE	1	5	5	0.52	U	
100-42-5	STYRENE	1	5	5	0.89	U	
75-25-2	BROMOFORM	1	5	5	1.5	U	
98-82-8	ISOPROPYLBENZENE	1	5	5	0.84	U	
96-18-4	1,2,3-TRICHLOROPROPANE	1	5	5	1.7	U	
79-34-5	1,1,2,2-TETRACHLOROETHANE	1	5	5	1.9	U	
108-86-1	BROMOBENZENE	1	5	5	0.75	U	
103-65-1	N-PROPYLBENZENE	1	5	5	1	U	
95-49-8	2-CHLOROTOLUENE	1	5	5	0.72	U	
108-67-8	1,3,5-TRIMETHYLBENZENE	1	5	5	0.86	U	
106-43-4	4-CHLOROTOLUENE	1	5	5	0.76	U	
98-06-6	TERT-BUTYLBENZENE	1	5	5	0.89	U	
95-63-6	1,2,4-TRIMETHYLBENZENE	1	5	5	0.88	U	

Data Package ID: *VL0208079-2*

GC/MS Volatiles

Method SW8260

Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Lab ID: VL020814-2MB

Sample Matrix: SOIL
% Moisture: N/A
Date Collected: N/A
Date Extracted: 08/14/2002
Date Analyzed: 08/14/2002

Prep Batch: VL020814-2
QCBatchID: VL020814-2-1
Run ID: VL020814-2A
Cleanup: NONE
Basis: N/A

Sample Aliquot: 5 G
Final Volume: 5 ML
Result Units: UG/KG
Clean DF: 1
File Name: B17039

135-98-8	SEC-BUTYLBENZENE	1	5	5	0.89	U	
541-73-1	1,3-DICHLOROBENZENE	1	5	5	0.75	U	
99-87-6	P-ISOPROPYLTOLUENE	1	5	5	1	U	
106-46-7	1,4-DICHLOROBENZENE	1	5	5	0.72	U	
104-51-8	N-BUTYLBENZENE	1	5	5	0.98	U	
95-50-1	1,2-DICHLOROBENZENE	1	5	5	0.77	U	
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	1	10	10	2.5	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	5	5	0.88	U	
87-68-3	HEXACHLOROBUTADIENE	1	5	5	1.2	U	
91-20-3	NAPHTHALENE	1	5	5	1.9	U	
87-61-6	1,2,3-TRICHLOROBENZENE	1	5	5	0.93	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	52.1		50	104	52 - 151
1868-53-7	DIBROMOFLUOROMETHANE	51.7		50	103	61 - 134
2037-26-5	TOLUENE-D8	51.3		50	103	57 - 135

Data Package ID: *VL0208079-2*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Fraction: 356312
Lab ID: 0208079-1

Sample Matrix: SOIL
% Moisture: 2.3
Date Collected: 13-Aug-02
Date Extracted: 14-Aug-02
Date Analyzed: 14-Aug-02

Prep Batch: VL020814-2
QCBatchID: VL020814-2-1
Run ID: VL020814-2A
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 5 G
Final Volume: 5 ML
Result Units: UG/KG
Clean DF: 1
File Name: B17045

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
75-71-8	DICHLORODIFLUOROMETHANE	1	10	10	1.3	U	
74-87-3	CHLOROMETHANE	1	10	10	2.2	U	
75-01-4	VINYL CHLORIDE	1	10	10	1.7	U	
74-83-9	BROMOMETHANE	1	10	10	2.8	U	
75-00-3	CHLOROETHANE	1	10	10	1.7	U	
75-69-4	TRICHLOROFLUOROMETHANE	1	5.1	5.1	1.7	U	
75-35-4	1,1-DICHLOROETHENE	1	5.1	5.1	0.88	U	
76-13-1	TRICHLOROTRIFLUOROETHANE	1	5.1	5.1	1.7	U	
67-64-1	ACETONE	1	150	20	7.8		
74-88-4	IODOMETHANE	1	5.1	5.1	1.4	U	
75-15-0	CARBON DISULFIDE	1	5.1	5.1	0.87	U	
75-09-2	METHYLENE CHLORIDE	1	5.1	5.1	2.1	U	
156-60-5	TRANS-1,2-DICHLOROETHENE	1	5.1	5.1	1	U	
1634-04-4	METHYL TERTIARY BUTYL ETHER	1	5.1	5.1	1.6	U	
75-34-3	1,1-DICHLOROETHANE	1	5.1	5.1	1.1	U	
108-05-4	VINYL ACETATE	1	20	20	2.6	U	
156-59-2	CIS-1,2-DICHLOROETHENE	1	5.1	5.1	0.93	U	
78-93-3	2-BUTANONE	1	15	20	6.4	J	
74-97-5	BROMOCHLOROMETHANE	1	5.1	5.1	1	U	
67-66-3	CHLOROFORM	1	5.1	5.1	0.73	U	
71-55-6	1,1,1-TRICHLOROETHANE	1	5.1	5.1	0.73	U	
594-20-7	2,2-DICHLOROPROPANE	1	5.1	5.1	1.2	U	
56-23-5	CARBON TETRACHLORIDE	1	5.1	5.1	1.1	U	
563-58-6	1,1-DICHLOROPROPENE	1	5.1	5.1	1.2	U	
107-06-2	1,2-DICHLOROETHANE	1	5.1	5.1	1.5	U	
71-43-2	BENZENE	1	5.1	5.1	0.76	U	
79-01-6	TRICHLOROETHENE	1	5.1	5.1	0.91	U	
78-87-5	1,2-DICHLOROPROPANE	1	5.1	5.1	1	U	

Data Package ID: *VL0208079-2*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.

Work Order Number: 0208079

Client Name: Shaw Environmental & Infrastructure, Inc.

ClientProject ID: CAU356 831845.02030010

Field ID: 356312
Lab ID: 0208079-1

Sample Matrix: SOIL
% Moisture: 2.3
Date Collected: 13-Aug-02
Date Extracted: 14-Aug-02
Date Analyzed: 14-Aug-02

Prep Batch: VL020814-2
QCBatchID: VL020814-2-1
Run ID: VL020814-2A
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 5 G
Final Volume: 5 ML
Result Units: UG/KG
Clean DF: 1
File Name: B17045

74-95-3	DIBROMOMETHANE	1	5.1	5.1	1.7	U	
75-27-4	BROMODICHLOROMETHANE	1	5.1	5.1	0.9	U	
10061-01-5	CIS-1,3-DICHLOROPROPENE	1	5.1	5.1	0.75	U	
108-10-1	4-METHYL-2-PENTANONE	1	20	20	5	U	
108-88-3	TOLUENE	1	5.1	5.1	1.2	U	
10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	5.1	5.1	1	U	
79-00-5	1,1,2-TRICHLOROETHANE	1	5.1	5.1	1.5	U	
591-78-6	2-HEXANONE	1	20	20	5.1	U	
127-18-4	TETRACHLOROETHENE	1	5.1	5.1	1.1	U	
142-28-9	1,3-DICHLOROPROPANE	1	5.1	5.1	1.2	U	
124-48-1	DIBROMOCHLOROMETHANE	1	5.1	5.1	0.97	U	
106-93-4	1,2-DIBROMOETHANE	1	5.1	5.1	1.2	U	
544-10-5	1-CHLOROHEXANE	1	5.1	5.1	1.3	U	
108-90-7	CHLOROBENZENE	1	5.1	5.1	1.1	U	
630-20-6	1,1,1,2-TETRACHLOROETHANE	1	5.1	5.1	0.95	U	
100-41-4	ETHYLBENZENE	1	5.1	5.1	1.2	U	
136777-61-	M+P-XYLENE	1	5.1	5.1	1.3	U	
95-47-6	O-XYLENE	1	5.1	5.1	0.53	U	
100-42-5	STYRENE	1	5.1	5.1	0.92	U	
75-25-2	BROMOFORM	1	5.1	5.1	1.5	U	
98-82-8	ISOPROPYLBENZENE	1	5.1	5.1	0.86	U	
96-18-4	1,2,3-TRICHLOROPROPANE	1	5.1	5.1	1.8	U	
79-34-5	1,1,2,2-TETRACHLOROETHANE	1	5.1	5.1	1.9	U	
108-86-1	BROMOBENZENE	1	5.1	5.1	0.76	U	
103-65-1	N-PROPYLBENZENE	1	5.1	5.1	1.1	U	
95-49-8	2-CHLOROTOLUENE	1	5.1	5.1	0.73	U	
108-67-8	1,3,5-TRIMETHYLBENZENE	1	5.1	5.1	0.88	U	
106-43-4	4-CHLOROTOLUENE	1	5.1	5.1	0.78	U	
98-06-6	TERT-BUTYLBENZENE	1	5.1	5.1	0.91	U	
95-63-6	1,2,4-TRIMETHYLBENZENE	1	5.1	5.1	0.91	U	

Data Package ID: *VL0208079-2*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356312
Lab ID: 0208079-1

Sample Matrix: SOIL
% Moisture: 2.3
Date Collected: 13-Aug-02
Date Extracted: 14-Aug-02
Date Analyzed: 14-Aug-02

Prep Batch: VL020814-2
QCBatchID: VL020814-2-1
Run ID: VL020814-2A
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 5 G
Final Volume: 5 ML
Result Units: UG/KG
Clean DF: 1
File Name: B17045

135-98-8	SEC-BUTYLBENZENE	1	5.1	5.1	0.91	U	
541-73-1	1,3-DICHLOROBENZENE	1	5.1	5.1	0.77	U	
99-87-6	P-ISOPROPYLTOLUENE	1	5.1	5.1	1	U	
106-46-7	1,4-DICHLOROBENZENE	1	5.1	5.1	0.74	U	
104-51-8	N-BUTYLBENZENE	1	5.1	5.1	1	U	
95-50-1	1,2-DICHLOROBENZENE	1	5.1	5.1	0.79	U	
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	1	10	10	2.6	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	5.1	5.1	0.9	U	
87-68-3	HEXACHLOROBUTADIENE	1	5.1	5.1	1.2	U	
91-20-3	NAPHTHALENE	1	5.1	5.1	1.9	U	
87-61-6	1,2,3-TRICHLOROBENZENE	1	5.1	5.1	0.95	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	21.6	*	51.2	42	52 - 151
1868-53-7	DIBROMOFLUOROMETHANE	27	*	51.2	53	61 - 134
2037-26-5	TOLUENE-D8	25.4	*	51.2	50	57 - 135

Data Package ID: *VL0208079-2*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356313
Lab ID: 0208079-2

Sample Matrix: SOIL
% Moisture: 4.1
Date Collected: 13-Aug-02
Date Extracted: 14-Aug-02
Date Analyzed: 14-Aug-02

Prep Batch: VL020814-2
QCBatchID: VL020814-2-1
Run ID: VL020814-2A
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 5 G
Final Volume: 5 ML
Result Units: UG/KG
Clean DF: 1
File Name: B17046

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
75-71-8	DICHLORODIFLUOROMETHANE	1	10	10	1.3	U	
74-87-3	CHLOROMETHANE	1	10	10	2.3	U	
75-01-4	VINYL CHLORIDE	1	10	10	1.7	U	
74-83-9	BROMOMETHANE	1	10	10	2.8	U	
75-00-3	CHLOROETHANE	1	10	10	1.7	U	
75-69-4	TRICHLOROFLUOROMETHANE	1	5.2	5.2	1.7	U	
75-35-4	1,1-DICHLOROETHENE	1	5.2	5.2	0.89	U	
76-13-1	TRICHLOROTRIFLUOROETHANE	1	5.2	5.2	1.7	U	
67-64-1	ACETONE	1	21	21	8	U	
74-88-4	IODOMETHANE	1	5.2	5.2	1.5	U	
75-15-0	CARBON DISULFIDE	1	5.2	5.2	0.88	U	
75-09-2	METHYLENE CHLORIDE	1	5.2	5.2	2.1	U	
156-60-5	TRANS-1,2-DICHLOROETHENE	1	5.2	5.2	1	U	
1634-04-4	METHYL TERTIARY BUTYL ETHER	1	5.2	5.2	1.6	U	
75-34-3	1,1-DICHLOROETHANE	1	5.2	5.2	1.1	U	
108-05-4	VINYL ACETATE	1	21	21	2.7	U	
156-59-2	CIS-1,2-DICHLOROETHENE	1	5.2	5.2	0.95	U	
78-93-3	2-BUTANONE	1	21	21	6.6	U	
74-97-5	BROMOCHLOROMETHANE	1	5.2	5.2	1.1	U	
67-66-3	CHLOROFORM	1	5.2	5.2	0.75	U	
71-55-6	1,1,1-TRICHLOROETHANE	1	5.2	5.2	0.74	U	
594-20-7	2,2-DICHLOROPROPANE	1	5.2	5.2	1.2	U	
56-23-5	CARBON TETRACHLORIDE	1	5.2	5.2	1.1	U	
563-58-6	1,1-DICHLOROPROPENE	1	5.2	5.2	1.3	U	
107-06-2	1,2-DICHLOROETHANE	1	5.2	5.2	1.5	U	
71-43-2	BENZENE	1	5.2	5.2	0.78	U	
79-01-6	TRICHLOROETHENE	1	5.2	5.2	0.93	U	
78-87-5	1,2-DICHLOROPROPANE	1	5.2	5.2	1	U	

Data Package ID: *VL0208079-2*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.

Work Order Number: 0208079

Client Name: Shaw Environmental & Infrastructure, Inc.

ClientProject ID: CAU356 831845.02030010

Field ID: 356313
Lab ID: 0208079-2

Sample Matrix: SOIL
% Moisture: 4.1
Date Collected: 13-Aug-02
Date Extracted: 14-Aug-02
Date Analyzed: 14-Aug-02

Prep Batch: VL020814-2
QCBatchID: VL020814-2-1
Run ID: VL020814-2A
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 5 G
Final Volume: 5 ML
Result Units: UG/KG
Clean DF: 1
File Name: B17046

74-95-3	DIBROMOMETHANE	1	5.2	5.2	1.7	U	
75-27-4	BROMODICHLOROMETHANE	1	5.2	5.2	0.91	U	
10061-01-5	CIS-1,3-DICHLOROPROPENE	1	5.2	5.2	0.76	U	
108-10-1	4-METHYL-2-PENTANONE	1	21	21	5.1	U	
108-88-3	TOLUENE	1	5.2	5.2	1.3	U	
10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	5.2	5.2	1	U	
79-00-5	1,1,2-TRICHLOROETHANE	1	5.2	5.2	1.5	U	
591-78-6	2-HEXANONE	1	21	21	5.2	U	
127-18-4	TETRACHLOROETHENE	1	5.2	5.2	1.1	U	
142-28-9	1,3-DICHLOROPROPANE	1	5.2	5.2	1.3	U	
124-48-1	DIBROMOCHLOROMETHANE	1	5.2	5.2	0.99	U	
106-93-4	1,2-DIBROMOETHANE	1	5.2	5.2	1.2	U	
544-10-5	1-CHLOROHEXANE	1	5.2	5.2	1.3	U	
108-90-7	CHLOROBENZENE	1	5.2	5.2	1.1	U	
630-20-6	1,1,1,2-TETRACHLOROETHANE	1	5.2	5.2	0.97	U	
100-41-4	ETHYLBENZENE	1	5.2	5.2	1.2	U	
136777-61-	M+P-XYLENE	1	5.2	5.2	1.4	U	
95-47-6	O-XYLENE	1	5.2	5.2	0.54	U	
100-42-5	STYRENE	1	5.2	5.2	0.93	U	
75-25-2	BROMOFORM	1	5.2	5.2	1.6	U	
98-82-8	ISOPROPYLBENZENE	1	5.2	5.2	0.87	U	
96-18-4	1,2,3-TRICHLOROPROPANE	1	5.2	5.2	1.8	U	
79-34-5	1,1,2,2-TETRACHLOROETHANE	1	5.2	5.2	1.9	U	
108-86-1	BROMOBENZENE	1	5.2	5.2	0.78	U	
103-65-1	N-PROPYLBENZENE	1	5.2	5.2	1.1	U	
95-49-8	2-CHLOROTOLUENE	1	5.2	5.2	0.75	U	
108-67-8	1,3,5-TRIMETHYLBENZENE	1	5.2	5.2	0.9	U	
106-43-4	4-CHLOROTOLUENE	1	5.2	5.2	0.8	U	
98-06-6	TERT-BUTYLBENZENE	1	5.2	5.2	0.93	U	
95-63-6	1,2,4-TRIMETHYLBENZENE	1	5.2	5.2	0.92	U	

Data Package ID: *VL0208079-2*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356313
Lab ID: 0208079-2

Sample Matrix: SOIL
% Moisture: 4.1
Date Collected: 13-Aug-02
Date Extracted: 14-Aug-02
Date Analyzed: 14-Aug-02

Prep Batch: VL020814-2
QCBatchID: VL020814-2-1
Run ID: VL020814-2A
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 5 G
Final Volume: 5 ML
Result Units: UG/KG
Clean DF: 1
File Name: B17046

135-98-8	SEC-BUTYLBENZENE	1	5.2	5.2	0.93	U	
541-73-1	1,3-DICHLOROBENZENE	1	5.2	5.2	0.79	U	
99-87-6	P-ISOPROPYLTOLUENE	1	5.2	5.2	1	U	
106-46-7	1,4-DICHLOROBENZENE	1	5.2	5.2	0.75	U	
104-51-8	N-BUTYLBENZENE	1	5.2	5.2	1	U	
95-50-1	1,2-DICHLOROBENZENE	1	5.2	5.2	0.81	U	
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	1	10	10	2.6	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	5.2	5.2	0.91	U	
87-68-3	HEXACHLOROBUTADIENE	1	5.2	5.2	1.2	U	
91-20-3	NAPHTHALENE	1	5.2	5.2	1.9	U	
87-61-6	1,2,3-TRICHLOROBENZENE	1	5.2	5.2	0.96	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	45.4		52.1	87	52 - 151
1868-53-7	DIBROMOFLUOROMETHANE	49		52.1	94	61 - 134
2037-26-5	TOLUENE-D8	43.1		52.1	83	57 - 135

Data Package ID: *VL0208079-2*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356314
Lab ID: 0208079-3

Sample Matrix: SOIL
% Moisture: 3.3
Date Collected: 13-Aug-02
Date Extracted: 14-Aug-02
Date Analyzed: 14-Aug-02

Prep Batch: VL020814-2
QCBatchID: VL020814-2-1
Run ID: VL020814-2A
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 5 G
Final Volume: 5 ML
Result Units: UG/KG
Clean DF: 1
File Name: B17047

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
75-71-8	DICHLORODIFLUOROMETHANE	1	10	10	1.3	U	
74-87-3	CHLOROMETHANE	1	10	10	2.3	U	
75-01-4	VINYL CHLORIDE	1	10	10	1.7	U	
74-83-9	BROMOMETHANE	1	10	10	2.8	U	
75-00-3	CHLOROETHANE	1	10	10	1.7	U	
75-69-4	TRICHLOROFLUOROMETHANE	1	5.2	5.2	1.7	U	
75-35-4	1,1-DICHLOROETHENE	1	5.2	5.2	0.89	U	
76-13-1	TRICHLOROTRIFLUOROETHANE	1	5.2	5.2	1.7	U	
67-64-1	ACETONE	1	21	21	7.9	U	
74-88-4	IODOMETHANE	1	5.2	5.2	1.4	U	
75-15-0	CARBON DISULFIDE	1	5.2	5.2	0.88	U	
75-09-2	METHYLENE CHLORIDE	1	5.2	5.2	2.1	U	
156-60-5	TRANS-1,2-DICHLOROETHENE	1	5.2	5.2	1	U	
1634-04-4	METHYL TERTIARY BUTYL ETHER	1	5.2	5.2	1.6	U	
75-34-3	1,1-DICHLOROETHANE	1	5.2	5.2	1.1	U	
108-05-4	VINYL ACETATE	1	21	21	2.7	U	
156-59-2	CIS-1,2-DICHLOROETHENE	1	5.2	5.2	0.94	U	
78-93-3	2-BUTANONE	1	21	21	6.5	U	
74-97-5	BROMOCHLOROMETHANE	1	5.2	5.2	1	U	
67-66-3	CHLOROFORM	1	5.2	5.2	0.74	U	
71-55-6	1,1,1-TRICHLOROETHANE	1	5.2	5.2	0.74	U	
594-20-7	2,2-DICHLOROPROPANE	1	5.2	5.2	1.2	U	
56-23-5	CARBON TETRACHLORIDE	1	5.2	5.2	1.1	U	
563-58-6	1,1-DICHLOROPROPENE	1	5.2	5.2	1.3	U	
107-06-2	1,2-DICHLOROETHANE	1	5.2	5.2	1.5	U	
71-43-2	BENZENE	1	5.2	5.2	0.77	U	
79-01-6	TRICHLOROETHENE	1	5.2	5.2	0.92	U	
78-87-5	1,2-DICHLOROPROPANE	1	5.2	5.2	1	U	

Data Package ID: *VL0208079-2*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356314
Lab ID: 0208079-3

Sample Matrix: SOIL
% Moisture: 3.3
Date Collected: 13-Aug-02
Date Extracted: 14-Aug-02
Date Analyzed: 14-Aug-02

Prep Batch: VL020814-2
QCBatchID: VL020814-2-1
Run ID: VL020814-2A
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 5 G
Final Volume: 5 ML
Result Units: UG/KG
Clean DF: 1
File Name: B17047

74-95-3	DIBROMOMETHANE	1	5.2	5.2	1.7	U	
75-27-4	BROMODICHLOROMETHANE	1	5.2	5.2	0.9	U	
10061-01-5	CIS-1,3-DICHLOROPROPENE	1	5.2	5.2	0.75	U	
108-10-1	4-METHYL-2-PENTANONE	1	21	21	5	U	
108-88-3	TOLUENE	1	5.2	5.2	1.3	U	
10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	5.2	5.2	1	U	
79-00-5	1,1,2-TRICHLOROETHANE	1	5.2	5.2	1.5	U	
591-78-6	2-HEXANONE	1	21	21	5.1	U	
127-18-4	TETRACHLOROETHENE	1	5.2	5.2	1.1	U	
142-28-9	1,3-DICHLOROPROPANE	1	5.2	5.2	1.2	U	
124-48-1	DIBROMOCHLOROMETHANE	1	5.2	5.2	0.98	U	
106-93-4	1,2-DIBROMOETHANE	1	5.2	5.2	1.2	U	
544-10-5	1-CHLOROHEXANE	1	5.2	5.2	1.3	U	
108-90-7	CHLOROBENZENE	1	5.2	5.2	1.1	U	
630-20-6	1,1,1,2-TETRACHLOROETHANE	1	5.2	5.2	0.96	U	
100-41-4	ETHYLBENZENE	1	5.2	5.2	1.2	U	
136777-61-	M+P-XYLENE	1	5.2	5.2	1.4	U	
95-47-6	O-XYLENE	1	5.2	5.2	0.54	U	
100-42-5	STYRENE	1	5.2	5.2	0.93	U	
75-25-2	BROMOFORM	1	5.2	5.2	1.6	U	
98-82-8	ISOPROPYLBENZENE	1	5.2	5.2	0.87	U	
96-18-4	1,2,3-TRICHLOROPROPANE	1	5.2	5.2	1.8	U	
79-34-5	1,1,2,2-TETRACHLOROETHANE	1	5.2	5.2	1.9	U	
108-86-1	BROMOBENZENE	1	5.2	5.2	0.77	U	
103-65-1	N-PROPYLBENZENE	1	5.2	5.2	1.1	U	
95-49-8	2-CHLOROTOLUENE	1	5.2	5.2	0.74	U	
108-67-8	1,3,5-TRIMETHYLBENZENE	1	5.2	5.2	0.89	U	
106-43-4	4-CHLOROTOLUENE	1	5.2	5.2	0.79	U	
98-06-6	TERT-BUTYLBENZENE	1	5.2	5.2	0.92	U	
95-63-6	1,2,4-TRIMETHYLBENZENE	1	5.2	5.2	0.92	U	

Data Package ID: *VL0208079-2*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356314
Lab ID: 0208079-3

Sample Matrix: SOIL
% Moisture: 3.3
Date Collected: 13-Aug-02
Date Extracted: 14-Aug-02
Date Analyzed: 14-Aug-02

Prep Batch: VL020814-2
QCBatchID: VL020814-2-1
Run ID: VL020814-2A
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 5 G
Final Volume: 5 ML
Result Units: UG/KG
Clean DF: 1
File Name: B17047

135-98-8	SEC-BUTYLBENZENE	1	5.2	5.2	0.92	U	
541-73-1	1,3-DICHLOROBENZENE	1	5.2	5.2	0.78	U	
99-87-6	P-ISOPROPYLTOLUENE	1	5.2	5.2	1	U	
106-46-7	1,4-DICHLOROBENZENE	1	5.2	5.2	0.75	U	
104-51-8	N-BUTYLBENZENE	1	5.2	5.2	1	U	
95-50-1	1,2-DICHLOROBENZENE	1	5.2	5.2	0.8	U	
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	1	10	10	2.6	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	5.2	5.2	0.9	U	
87-68-3	HEXACHLOROBUTADIENE	1	5.2	5.2	1.2	U	
91-20-3	NAPHTHALENE	1	5.2	5.2	1.9	U	
87-61-6	1,2,3-TRICHLOROBENZENE	1	5.2	5.2	0.96	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	45.3		51.7	88	52 - 151
1868-53-7	DIBROMOFLUOROMETHANE	47.4		51.7	92	61 - 134
2037-26-5	TOLUENE-D8	44.5		51.7	86	57 - 135

Data Package ID: *VL0208079-2*

GC/MS Volatiles

Method SW8260

Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Lab ID: VL020814-3MB

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 08/14/2002
Date Analyzed: 08/14/2002

Prep Batch: VL020814-3
QCBatchID: VL020814-3-1
Run ID: VL020814-3A
Cleanup: NONE
Basis: N/A

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
Clean DF: 1
File Name: C13920

CASNO	Target Analyte	DF	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
75-71-8	DICHLORODIFLUOROMETHANE	1	10	10	1.3	U	
74-87-3	CHLOROMETHANE	1	10	10	1.1	U	
75-01-4	VINYL CHLORIDE	1	10	10	1.5	U	
74-83-9	BROMOMETHANE	1	10	10	2.2	U	
75-00-3	CHLOROETHANE	1	10	10	1.2	U	
75-69-4	TRICHLOROFLUOROMETHANE	1	5	5	1.3	U	
75-35-4	1,1-DICHLOROETHENE	1	5	5	1.6	U	
76-13-1	TRICHLOROTRIFLUOROETHANE	1	5	5	1.6	U	
67-64-1	ACETONE	1	20	20	8	U	
74-88-4	IODOMETHANE	1	5	5	1.9	U	
75-15-0	CARBON DISULFIDE	1	5	5	1.5	U	
75-09-2	METHYLENE CHLORIDE	1	5	5	1.4	U	
156-60-5	TRANS-1,2-DICHLOROETHENE	1	5	5	1.4	U	
1634-04-4	METHYL TERTIARY BUTYL ETHER	1	5	5	1.3	U	
75-34-3	1,1-DICHLOROETHANE	1	5	5	1.5	U	
108-05-4	VINYL ACETATE	1	20	20	1.2	U	
156-59-2	CIS-1,2-DICHLOROETHENE	1	5	5	1.2	U	
78-93-3	2-BUTANONE	1	20	20	5.5	U	
74-97-5	BROMOCHLOROMETHANE	1	5	5	1	U	
67-66-3	CHLOROFORM	1	5	5	1.1	U	
71-55-6	1,1,1-TRICHLOROETHANE	1	5	5	1.2	U	
594-20-7	2,2-DICHLOROPROPANE	1	5	5	1.5	U	
56-23-5	CARBON TETRACHLORIDE	1	5	5	1.4	U	
563-58-6	1,1-DICHLOROPROPENE	1	5	5	1.4	U	
107-06-2	1,2-DICHLOROETHANE	1	5	5	1.3	U	
71-43-2	BENZENE	1	5	5	0.89	U	
79-01-6	TRICHLOROETHENE	1	5	5	1.2	U	
78-87-5	1,2-DICHLOROPROPANE	1	5	5	0.88	U	

Data Package ID: *VL0208079-1*

GC/MS Volatiles

Method SW8260

Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Lab ID: VL020814-3MB

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 08/14/2002
Date Analyzed: 08/14/2002

Prep Batch: VL020814-3
QCBatchID: VL020814-3-1
Run ID: VL020814-3A
Cleanup: NONE
Basis: N/A

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
Clean DF: 1
File Name: C13920

74-95-3	DIBROMOMETHANE	1	5	5	1.7	U	
75-27-4	BROMODICHLOROMETHANE	1	5	5	0.55	U	
10061-01-5	CIS-1,3-DICHLOROPROPENE	1	5	5	0.99	U	
108-10-1	4-METHYL-2-PENTANONE	1	20	20	5.3	U	
108-88-3	TOLUENE	1	5	5	1.7	U	
10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	5	5	1	U	
79-00-5	1,1,2-TRICHLOROETHANE	1	5	5	1.2	U	
591-78-6	2-HEXANONE	1	20	20	5.8	U	
127-18-4	TETRACHLOROETHENE	1	5	5	1.5	U	
142-28-9	1,3-DICHLOROPROPANE	1	5	5	1	U	
124-48-1	DIBROMOCHLOROMETHANE	1	5	5	0.73	U	
106-93-4	1,2-DIBROMOETHANE	1	5	5	0.89	U	
544-10-5	1-CHLOROHEXANE	1	5	5	1.4	U	
108-90-7	CHLOROBENZENE	1	5	5	1.3	U	
630-20-6	1,1,1,2-TETRACHLOROETHANE	1	5	5	1.1	U	
100-41-4	ETHYLBENZENE	1	5	5	1.3	U	
136777-61-	M+P-XYLENE	1	5	5	2.7	U	
95-47-6	O-XYLENE	1	5	5	1.4	U	
100-42-5	STYRENE	1	5	5	1.3	U	
75-25-2	BROMOFORM	1	5	5	1.1	U	
98-82-8	ISOPROPYLBENZENE	1	5	5	1.1	U	
96-18-4	1,2,3-TRICHLOROPROPANE	1	5	5	1.3	U	
79-34-5	1,1,2,2-TETRACHLOROETHANE	1	5	5	1.1	U	
108-86-1	BROMOBENZENE	1	5	5	1.1	U	
103-65-1	N-PROPYLBENZENE	1	5	5	1.2	U	
95-49-8	2-CHLOROTOLUENE	1	5	5	0.95	U	
108-67-8	1,3,5-TRIMETHYLBENZENE	1	5	5	1.1	U	
106-43-4	4-CHLOROTOLUENE	1	5	5	1.1	U	
98-06-6	TERT-BUTYLBENZENE	1	5	5	1.3	U	
95-63-6	1,2,4-TRIMETHYLBENZENE	1	5	5	1.2	U	

Data Package ID: *VL0208079-1*

GC/MS Volatiles

Method SW8260

Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Lab ID: VL020814-3MB

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 08/14/2002
Date Analyzed: 08/14/2002

Prep Batch: VL020814-3
QCBatchID: VL020814-3-1
Run ID: VL020814-3A
Cleanup: NONE
Basis: N/A

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
Clean DF: 1
File Name: C13920

135-98-8	SEC-BUTYLBENZENE	1	5	5	1.1	U	
541-73-1	1,3-DICHLOROBENZENE	1	5	5	1.2	U	
99-87-6	P-ISOPROPYLTOLUENE	1	5	5	1.2	U	
106-46-7	1,4-DICHLOROBENZENE	1	5	5	1.1	U	
104-51-8	N-BUTYLBENZENE	1	5	5	1.3	U	
95-50-1	1,2-DICHLOROBENZENE	1	5	5	1.3	U	
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	1	10	10	1.4	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	5	5	1.5	U	
87-68-3	HEXACHLOROBUTADIENE	1	5	5	1.7	U	
91-20-3	NAPHTHALENE	1	5	5	1.3	U	
87-61-6	1,2,3-TRICHLOROBENZENE	1	5	5	1.5	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	47.6		50	95	74 - 123
1868-53-7	DIBROMOFLUOROMETHANE	54.4		50	109	79 - 120
2037-26-5	TOLUENE-D8	53.1		50	106	83 - 120

Data Package ID: *VL0208079-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356315
Lab ID: 0208079-4

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 13-Aug-02
Date Extracted: 14-Aug-02
Date Analyzed: 14-Aug-02

Prep Batch: VL020814-3
QCBatchID: VL020814-3-1
Run ID: VL020814-3A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
Clean DF: 1
File Name: C13921

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
75-71-8	DICHLORODIFLUOROMETHANE	1	10	10	1.3	U	
74-87-3	CHLOROMETHANE	1	10	10	1.1	U	
75-01-4	VINYL CHLORIDE	1	10	10	1.5	U	
74-83-9	BROMOMETHANE	1	10	10	2.2	U	
75-00-3	CHLOROETHANE	1	10	10	1.2	U	
75-69-4	TRICHLOROFLUOROMETHANE	1	5	5	1.3	U	
75-35-4	1,1-DICHLOROETHENE	1	5	5	1.6	U	
76-13-1	TRICHLOROTRIFLUOROETHANE	1	5	5	1.6	U	
67-64-1	ACETONE	1	20	20	8	U	
74-88-4	IODOMETHANE	1	5	5	1.9	U	
75-15-0	CARBON DISULFIDE	1	5	5	1.5	U	
75-09-2	METHYLENE CHLORIDE	1	5	5	1.4	U	
156-60-5	TRANS-1,2-DICHLOROETHENE	1	5	5	1.4	U	
1634-04-4	METHYL TERTIARY BUTYL ETHER	1	5	5	1.3	U	
75-34-3	1,1-DICHLOROETHANE	1	5	5	1.5	U	
108-05-4	VINYL ACETATE	1	20	20	1.2	U	
156-59-2	CIS-1,2-DICHLOROETHENE	1	5	5	1.2	U	
78-93-3	2-BUTANONE	1	20	20	5.5	U	
74-97-5	BROMOCHLOROMETHANE	1	5	5	1	U	
67-66-3	CHLOROFORM	1	5	5	1.1	U	
71-55-6	1,1,1-TRICHLOROETHANE	1	5	5	1.2	U	
594-20-7	2,2-DICHLOROPROPANE	1	5	5	1.5	U	
56-23-5	CARBON TETRACHLORIDE	1	5	5	1.4	U	
563-58-6	1,1-DICHLOROPROPENE	1	5	5	1.4	U	
107-06-2	1,2-DICHLOROETHANE	1	5	5	1.3	U	
71-43-2	BENZENE	1	5	5	0.89	U	
79-01-6	TRICHLOROETHENE	1	5	5	1.2	U	
78-87-5	1,2-DICHLOROPROPANE	1	5	5	0.88	U	

Data Package ID: *VL0208079-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID:	356315
Lab ID:	0208079-4

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 13-Aug-02
Date Extracted: 14-Aug-02
Date Analyzed: 14-Aug-02

Prep Batch: VL020814-3
QCBatchID: VL020814-3-1
Run ID: VL020814-3A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
Clean DF: 1
File Name: C13921

74-95-3	DIBROMOMETHANE	1	5	5	1.7	U	
75-27-4	BROMODICHLOROMETHANE	1	5	5	0.55	U	
10061-01-5	CIS-1,3-DICHLOROPROPENE	1	5	5	0.99	U	
108-10-1	4-METHYL-2-PENTANONE	1	20	20	5.3	U	
108-88-3	TOLUENE	1	5	5	1.7	U	
10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	5	5	1	U	
79-00-5	1,1,2-TRICHLOROETHANE	1	5	5	1.2	U	
591-78-6	2-HEXANONE	1	20	20	5.8	U	
127-18-4	TETRACHLOROETHENE	1	5	5	1.5	U	
142-28-9	1,3-DICHLOROPROPANE	1	5	5	1	U	
124-48-1	DIBROMOCHLOROMETHANE	1	5	5	0.73	U	
106-93-4	1,2-DIBROMOETHANE	1	5	5	0.89	U	
544-10-5	1-CHLOROHEXANE	1	5	5	1.4	U	
108-90-7	CHLOROBENZENE	1	5	5	1.3	U	
630-20-6	1,1,1,2-TETRACHLOROETHANE	1	5	5	1.1	U	
100-41-4	ETHYLBENZENE	1	5	5	1.3	U	
136777-61-	M+P-XYLENE	1	5	5	2.7	U	
95-47-6	O-XYLENE	1	5	5	1.4	U	
100-42-5	STYRENE	1	5	5	1.3	U	
75-25-2	BROMOFORM	1	5	5	1.1	U	
98-82-8	ISOPROPYLBENZENE	1	5	5	1.1	U	
96-18-4	1,2,3-TRICHLOROPROPANE	1	5	5	1.3	U	
79-34-5	1,1,2,2-TETRACHLOROETHANE	1	5	5	1.1	U	
108-86-1	BROMOBENZENE	1	5	5	1.1	U	
103-65-1	N-PROPYLBENZENE	1	5	5	1.2	U	
95-49-8	2-CHLOROTOLUENE	1	5	5	0.95	U	
108-67-8	1,3,5-TRIMETHYLBENZENE	1	5	5	1.1	U	
106-43-4	4-CHLOROTOLUENE	1	5	5	1.1	U	
98-06-6	TERT-BUTYLBENZENE	1	5	5	1.3	U	
95-63-6	1,2,4-TRIMETHYLBENZENE	1	5	5	1.2	U	

Data Package ID: *VL0208079-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356315
Lab ID: 0208079-4

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 13-Aug-02
Date Extracted: 14-Aug-02
Date Analyzed: 14-Aug-02

Prep Batch: VL020814-3
QCBatchID: VL020814-3-1
Run ID: VL020814-3A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
Clean DF: 1
File Name: C13921

135-98-8	SEC-BUTYLBENZENE	1	5	5	1.1	U	
541-73-1	1,3-DICHLOROBENZENE	1	5	5	1.2	U	
99-87-6	P-ISOPROPYLTOLUENE	1	5	5	1.2	U	
106-46-7	1,4-DICHLOROBENZENE	1	5	5	1.1	U	
104-51-8	N-BUTYLBENZENE	1	5	5	1.3	U	
95-50-1	1,2-DICHLOROBENZENE	1	5	5	1.3	U	
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	1	10	10	1.4	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	5	5	1.5	U	
87-68-3	HEXACHLOROBUTADIENE	1	5	5	1.7	U	
91-20-3	NAPHTHALENE	1	5	5	1.3	U	
87-61-6	1,2,3-TRICHLOROBENZENE	1	5	5	1.5	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	47.1		50	94	74 - 123
1868-53-7	DIBROMOFLUOROMETHANE	52.1		50	104	79 - 120
2037-26-5	TOLUENE-D8	52.7		50	105	83 - 120

Data Package ID: *VL0208079-1*

Gasoline Range Organics

Method SW8015

Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Lab ID: HCG020814-2MB

Sample Matrix: SOIL
% Moisture: N/A
Date Collected: N/A
Date Extracted: 08/14/2002
Date Analyzed: 08/14/2002

Prep Batch: HCG020814-2
QCBatchID: HCG020814-2-1
Run ID: HCG020814-2A
Cleanup: NONE
Basis: N/A

Sample Aliquot: 5 G
Final Volume: 5 ML
Result Units: MG/KG
Clean DF: 1
File Name: F2PF3970

CASNO	Target Analyte	DF	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
8006-61-9	GASOLINE RANGE ORGANICS	1	0.5	0.5	0.016	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
13-10-5	2,3,4-TRIFLUOROTOLUENE	0.0987		0.1	99	82 - 111

Data Package ID: *HCG0208079-1*

Gasoline Range Organics

Method SW8015

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356313
Lab ID: 0208079-2

Sample Matrix: SOIL
% Moisture: 4.1
Date Collected: 13-Aug-02
Date Extracted: 14-Aug-02
Date Analyzed: 14-Aug-02

Prep Batch: HCG020814-2
QCBatchID: HCG020814-2-1
Run ID: HCG020814-2A
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 5.03 G
Final Volume: 5 ML
Result Units: MG/KG
Clean DF: 1
File Name: F2PF3977

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
8006-61-9	GASOLINE RANGE ORGANICS	1	0.52	0.52	0.016	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
13-10-5	2,3,4-TRIFLUOROTOLUENE	0.102		0.104	98	82 - 111

Data Package ID: *HCG0208079-1*

Gasoline Range Organics

Method SW8015

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356314
Lab ID: 0208079-3

Sample Matrix: SOIL
% Moisture: 3.3
Date Collected: 13-Aug-02
Date Extracted: 14-Aug-02
Date Analyzed: 14-Aug-02

Prep Batch: HCG020814-2
QCBatchID: HCG020814-2-1
Run ID: HCG020814-2A
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 4.96 G
Final Volume: 5 ML
Result Units: MG/KG
Clean DF: 1
File Name: F2PF3978

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
8006-61-9	GASOLINE RANGE ORGANICS	1	0.52	0.52	0.016	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
13-10-5	2,3,4-TRIFLUOROTOLUENE	0.101		0.104	97	82 - 111

Data Package ID: *HCG0208079-1*

Gasoline Range Organics

Method SW8015

Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Lab ID: HCG020815-1MB

Sample Matrix: SOIL
% Moisture: N/A
Date Collected: N/A
Date Extracted: 08/15/2002
Date Analyzed: 08/15/2002

Prep Batch: HCG020815-1
QCBatchID: HCG020815-1-1
Run ID: HCG020815-1A
Cleanup: NONE
Basis: N/A

Sample Aliquot: 5 G
Final Volume: 5 ML
Result Units: MG/KG
Clean DF: 1
File Name: F1PF6123

CASNO	Target Analyte	DF	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
8006-61-9	GASOLINE RANGE ORGANICS	1	0.5	0.5	0.016	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
13-10-5	2,3,4-TRIFLUOROTOLUENE	0.0906		0.1	91	82 - 111

Data Package ID: *HCG0208079-2*

Gasoline Range Organics

Method SW8015

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356312
Lab ID: 0208079-1

Sample Matrix: SOIL
% Moisture: 2.3
Date Collected: 13-Aug-02
Date Extracted: 15-Aug-02
Date Analyzed: 15-Aug-02

Prep Batch: HCG020815-1
QCBatchID: HCG020815-1-1
Run ID: HCG020815-1A
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 4.95 G
Final Volume: 5 ML
Result Units: MG/KG
Clean DF: 1
File Name: F1PF6126

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
8006-61-9	GASOLINE RANGE ORGANICS	1	0.16	0.52	0.016	J	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
13-10-5	2,3,4-TRIFLUOROTOLUENE	0.076	*	0.103	74	82 - 111

Data Package ID: *HCG0208079-2*

GC/MS Semi-volatiles

Method SW8270

Method Blank

PRELIMINARY RESULTS

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Lab ID: EX020815-7MB

Sample Matrix: SOIL
% Moisture: N/A
Date Collected: N/A
Date Extracted: 08/15/2002
Date Analyzed: 08/16/2002

Prep Batch: EX020815-7
QCBatchID: EX020815-7-1
Run ID: SV020815-7
Cleanup: NONE
Basis: N/A

Sample Aliquot: 30 G
Final Volume: 1 ML
Result Units: UG/KG
Clean DF: 1
File Name: N7737

CASNO	Target Analyte	DF	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
110-86-1	PYRIDINE	1	330	330	62	U	
62-75-9	N-NITROSODIMETHYLAMINE	1	330	330	83	U	
62-53-3	ANILINE	1	830	830	75	U	
108-95-2	PHENOL	1	330	330	61	U	
111-44-4	BIS(2-CHLOROETHYL)ETHER	1	330	330	53	U	
95-57-8	2-CHLOROPHENOL	1	330	330	62	U	
541-73-1	1,3-DICHLOROBENZENE	1	330	330	56	U	
106-46-7	1,4-DICHLOROBENZENE	1	330	330	61	U	
95-50-1	1,2-DICHLOROBENZENE	1	330	330	58	U	
100-51-6	BENZYL ALCOHOL	1	330	330	100	U	
108-60-1	BIS(2-CHLOROISOPROPYL)ETHER	1	330	330	54	U	
95-48-7	2-METHYLPHENOL	1	330	330	130	U	
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1	330	330	76	U	
106-44-5	4-METHYLPHENOL	1	330	330	130	U	
67-72-1	HEXACHLOROETHANE	1	330	330	66	U	
98-95-3	NITROBENZENE	1	330	330	47	U	
78-59-1	ISOPHORONE	1	330	330	33	U	
88-75-5	2-NITROPHENOL	1	330	330	62	U	
105-67-9	2,4-DIMETHYLPHENOL	1	330	330	150	U	
111-91-1	BIS(2-CHLOROETHOXY)METHANE	1	330	330	41	U	
120-83-2	2,4-DICHLOROPHENOL	1	330	330	57	U	
65-85-0	BENZOIC ACID	1	1700	1700	140	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	330	330	50	U	
91-20-3	NAPHTHALENE	1	330	330	48	U	
106-47-8	4-CHLOROANILINE	1	830	830	51	U	
87-68-3	HEXACHLOROBUTADIENE	1	330	330	46	U	
59-50-7	4-CHLORO-3-METHYLPHENOL	1	330	330	53	U	
91-57-6	2-METHYLNAPHTHALENE	1	330	330	50	U	

Data Package ID: *SV0208079-1*

GC/MS Semi-volatiles

Method SW8270

Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

PRELIMINARY RESULTS

LabID: EX020815-7MB

Sample Matrix: SOIL
% Moisture: N/A
Date Collected: N/A
Date Extracted: 08/15/2002
Date Analyzed: 08/16/2002

Prep Batch: EX020815-7
QCBatchID: EX020815-7-1
Run ID: SV020815-7
Cleanup: NONE
Basis: N/A

Sample Aliquot: 30 G
Final Volume: 1 ML
Result Units: UG/KG
Clean DF: 1
File Name: N7737

77-47-4	HEXACHLOROCYCLOPENTADIENE	1	330	330	76	U	
88-06-2	2,4,6-TRICHLOROPHENOL	1	330	330	54	U	
95-95-4	2,4,5-TRICHLOROPHENOL	1	330	330	58	U	
91-58-7	2-CHLORONAPHTHALENE	1	330	330	45	U	
88-74-4	2-NITROANILINE	1	1700	1700	190	U	
131-11-3	DIMETHYL PHTHALATE	1	330	330	40	U	
606-20-2	2,6-DINITROTOLUENE	1	330	330	49	U	
208-96-8	ACENAPHTHYLENE	1	330	330	43	U	
99-09-2	3-NITROANILINE	1	1700	1700	260	U	
83-32-9	ACENAPHTHENE	1	330	330	39	U	
51-28-5	2,4-DINITROPHENOL	1	1700	1700	300	U	
100-02-7	4-NITROPHENOL	1	1700	1700	300	U	
132-64-9	DIBENZOFURAN	1	330	330	45	U	
121-14-2	2,4-DINITROTOLUENE	1	330	330	47	U	
84-66-2	DIETHYL PHTHALATE	1	330	330	42	U	
86-73-7	FLUORENE	1	330	330	42	U	
7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1	330	330	37	U	
100-01-6	4-NITROANILINE	1	1700	1700	440	U	
103-33-3	AZOBENZENE	1	330	330	39	U	
534-52-1	4,6-DINITRO-2-METHYLPHENOL	1	1700	1700	220	U	
86-30-6	N-NITROSODIPHENYLAMINE	1	330	330	50	U	
101-55-3	4-BROMOPHENYL PHENYL ETHER	1	330	330	35	U	
118-74-1	HEXACHLOROBENZENE	1	330	330	49	U	
58-90-2	2,3,4,6-TETRACHLOROPHENOL	1	1700	1700	200	U	
87-86-5	PENTACHLOROPHENOL	1	1700	1700	330	U	
85-01-8	PHENANTHRENE	1	330	330	45	U	
120-12-7	ANTHRACENE	1	330	330	43	U	
86-74-8	CARBAZOLE	1	330	330	65	U	
84-74-2	DI-N-BUTYL PHTHALATE	1	330	330	52	U	
206-44-0	FLUORANTHENE	1	330	330	66	U	

Data Package ID: *SV0208079-1*

GC/MS Semi-volatiles

Method SW8270

Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

PRELIMINARY RESULTS

Lab ID: EX020815-7MB

Sample Matrix: SOIL
% Moisture: N/A
Date Collected: N/A
Date Extracted: 08/15/2002
Date Analyzed: 08/16/2002

Prep Batch: EX020815-7
QCBatchID: EX020815-7-1
Run ID: SV020815-7
Cleanup: NONE
Basis: N/A

Sample Aliquot: 30 G
Final Volume: 1 ML
Result Units: UG/KG
Clean DF: 1
File Name: N7737

129-00-0	PYRENE	1	330	330	70	U	
85-68-7	BUTYL BENZYL PHTHALATE	1	330	330	57	U	
56-55-3	BENZO(A)ANTHRACENE	1	330	330	41	U	
91-94-1	3,3'-DICHLOROBENZIDINE	1	1700	1700	530	U	
218-01-9	CHRYSENE	1	330	330	41	U	
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1	330	330	150	U	
117-84-0	DI-N-OCTYL PHTHALATE	1	330	330	140	U	
205-99-2	BENZO(B)FLUORANTHENE	1	330	330	78	U	
207-08-9	BENZO(K)FLUORANTHENE	1	330	330	69	U	
50-32-8	BENZO(A)PYRENE	1	330	330	37	U	
193-39-5	INDENO(1,2,3-CD)PYRENE	1	330	330	80	U	
53-70-3	DIBENZO(A,H)ANTHRACENE	1	330	330	76	U	
191-24-2	BENZO(G,H,I)PERYLENE	1	330	330	83	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
118-79-6	2,4,6-TRIBROMOPHENOL	1670		2500	67	19 - 113
321-60-8	2-FLUOROBIPHENYL	1400		1670	84	30 - 105
367-12-4	2-FLUOROPHENOL	2070		2500	83	25 - 100
4165-60-0	NITROBENZENE-D5	1280		1670	77	31 - 106
4165-62-2	PHENOL-D5	1980		2500	79	24 - 104
1718-51-0	TERPHENYL-D14	1550		1670	93	18 - 112

Data Package ID: *SV0208079-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

PRELIMINARY RESULTS

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356312
Lab ID: 0208079-1

Sample Matrix: SOIL
% Moisture: 2.3
Date Collected: 13-Aug-02
Date Extracted: 15-Aug-02
Date Analyzed: 17-Aug-02

Prep Batch: EX020815-7
QCBatchID: EX020815-7-1
Run ID: SV020817-1
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 30 G
Final Volume: 1 ML
Result Units: UG/KG
Clean DF: 1
File Name: N7762

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
110-86-1	PYRIDINE	1	340	340	63	U	
62-75-9	N-NITROSODIMETHYLAMINE	1	340	340	85	U	
62-53-3	ANILINE	1	850	850	77	U	
108-95-2	PHENOL	1	340	340	62	U	
111-44-4	BIS(2-CHLOROETHYL)ETHER	1	340	340	54	U	
95-57-8	2-CHLOROPHENOL	1	340	340	64	U	
541-73-1	1,3-DICHLOROBENZENE	1	340	340	57	U	
106-46-7	1,4-DICHLOROBENZENE	1	340	340	62	U	
95-50-1	1,2-DICHLOROBENZENE	1	340	340	59	U	
100-51-6	BENZYL ALCOHOL	1	340	340	110	U	
108-60-1	BIS(2-CHLOROISOPROPYL)ETHER	1	340	340	55	U	
95-48-7	2-METHYLPHENOL	1	340	340	140	U	
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1	340	340	78	U	
106-44-5	4-METHYLPHENOL	1	340	340	130	U	
67-72-1	HEXACHLOROETHANE	1	340	340	67	U	
98-95-3	NITROBENZENE	1	340	340	49	U	
78-59-1	ISOPHORONE	1	340	340	34	U	
88-75-5	2-NITROPHENOL	1	340	340	63	U	
105-67-9	2,4-DIMETHYLPHENOL	1	340	340	160	U	
111-91-1	BIS(2-CHLOROETHOXY)METHANE	1	340	340	42	U	
120-83-2	2,4-DICHLOROPHENOL	1	340	340	59	U	
65-85-0	BENZOIC ACID	1	1700	1700	140	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	340	340	52	U	
91-20-3	NAPHTHALENE	1	340	340	49	U	
106-47-8	4-CHLOROANILINE	1	850	850	53	U	
87-68-3	HEXACHLOROBUTADIENE	1	340	340	47	U	
59-50-7	4-CHLORO-3-METHYLPHENOL	1	340	340	54	U	
91-57-6	2-METHYLNAPHTHALENE	1	340	340	52	U	

Data Package ID: *SV0208079-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

PRELIMINARY RESULTS

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356312
Lab ID: 0208079-1

Sample Matrix: SOIL
% Moisture: 2.3
Date Collected: 13-Aug-02
Date Extracted: 15-Aug-02
Date Analyzed: 17-Aug-02

Prep Batch: EX020815-7
QCBatchID: EX020815-7-1
Run ID: SV020817-1
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 30 G
Final Volume: 1 ML
Result Units: UG/KG
Clean DF: 1
File Name: N7762

77-47-4	HEXACHLOROCYCLOPENTADIENE	1	340	340	78	U	
88-06-2	2,4,6-TRICHLOROPHENOL	1	340	340	55	U	
95-95-4	2,4,5-TRICHLOROPHENOL	1	340	340	60	U	
91-58-7	2-CHLORONAPHTHALENE	1	340	340	46	U	
88-74-4	2-NITROANILINE	1	1700	1700	190	U	
131-11-3	DIMETHYL PHTHALATE	1	340	340	41	U	
606-20-2	2,6-DINITROTOLUENE	1	340	340	50	U	
208-96-8	ACENAPHTHYLENE	1	340	340	44	U	
99-09-2	3-NITROANILINE	1	1700	1700	270	U	
83-32-9	ACENAPHTHENE	1	340	340	39	U	
51-28-5	2,4-DINITROPHENOL	1	1700	1700	310	U	
100-02-7	4-NITROPHENOL	1	1700	1700	300	U	
132-64-9	DIBENZOFURAN	1	340	340	46	U	
121-14-2	2,4-DINITROTOLUENE	1	340	340	48	U	
84-66-2	DIETHYL PHTHALATE	1	340	340	43	U	
86-73-7	FLUORENE	1	340	340	43	U	
7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1	340	340	38	U	
100-01-6	4-NITROANILINE	1	1700	1700	450	U	
103-33-3	AZOBENZENE	1	340	340	40	U	
534-52-1	4,6-DINITRO-2-METHYLPHENOL	1	1700	1700	230	U	
86-30-6	N-NITROSODIPHENYLAMINE	1	340	340	51	U	
101-55-3	4-BROMOPHENYL PHENYL ETHER	1	340	340	35	U	
118-74-1	HEXACHLOROBENZENE	1	340	340	50	U	
58-90-2	2,3,4,6-TETRACHLOROPHENOL	1	1700	1700	200	U	
87-86-5	PENTACHLOROPHENOL	1	1700	1700	340	U	
85-01-8	PHENANTHRENE	1	340	340	46	U	
120-12-7	ANTHRACENE	1	340	340	44	U	
86-74-8	CARBAZOLE	1	340	340	66	U	
84-74-2	DI-N-BUTYL PHTHALATE	1	340	340	53	U	
206-44-0	FLUORANTHENE	1	340	340	67	U	

Data Package ID: *SV0208079-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

PRELIMINARY RESULTS

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356312
Lab ID: 0208079-1

Sample Matrix: SOIL
% Moisture: 2.3
Date Collected: 13-Aug-02
Date Extracted: 15-Aug-02
Date Analyzed: 17-Aug-02

Prep Batch: EX020815-7
QCBatchID: EX020815-7-1
Run ID: SV020817-1
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 30 G
Final Volume: 1 ML
Result Units: UG/KG
Clean DF: 1
File Name: N7762

129-00-0	PYRENE	1	340	340	72	U	
85-68-7	BUTYL BENZYL PHTHALATE	1	340	340	58	U	
56-55-3	BENZO(A)ANTHRACENE	1	340	340	42	U	
91-94-1	3,3'-DICHLOROBENZIDINE	1	1700	1700	540	U	
218-01-9	CHRYSENE	1	340	340	42	U	
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1	340	340	150	U	
117-84-0	DI-N-OCTYL PHTHALATE	1	340	340	140	U	
205-99-2	BENZO(B)FLUORANTHENE	1	340	340	79	U	
207-08-9	BENZO(K)FLUORANTHENE	1	340	340	70	U	
50-32-8	BENZO(A)PYRENE	1	340	340	38	U	
193-39-5	INDENO(1,2,3-CD)PYRENE	1	340	340	81	U	
53-70-3	DIBENZO(A,H)ANTHRACENE	1	340	340	78	U	
191-24-2	BENZO(G,H,I)PERYLENE	1	340	340	85	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
118-79-6	2,4,6-TRIBROMOPHENOL	2050		2560	80	19 - 113
321-60-8	2-FLUOROBIPHENYL	1320		1710	77	30 - 105
367-12-4	2-FLUOROPHENOL	1630		2560	64	25 - 100
4165-60-0	NITROBENZENE-D5	1110		1710	65	31 - 106
4165-62-2	PHENOL-D5	1700		2560	66	24 - 104
1718-51-0	TERPHENYL-D14	1440		1710	84	18 - 112

Data Package ID: *SV0208079-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

PRELIMINARY RESULTS

Field ID: 356313
Lab ID: 0208079-2

Sample Matrix: SOIL
% Moisture: 4.1
Date Collected: 13-Aug-02
Date Extracted: 15-Aug-02
Date Analyzed: 17-Aug-02

Prep Batch: EX020815-7
QCBatchID: EX020815-7-1
Run ID: SV020817-1
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 30 G
Final Volume: 1 ML
Result Units: UG/KG
Clean DF: 1
File Name: N7763

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
110-86-1	PYRIDINE	1	350	350	64	U	
62-75-9	N-NITROSODIMETHYLAMINE	1	350	350	86	U	
62-53-3	ANILINE	1	870	870	78	U	
108-95-2	PHENOL	1	350	350	63	U	
111-44-4	BIS(2-CHLOROETHYL)ETHER	1	350	350	55	U	
95-57-8	2-CHLOROPHENOL	1	350	350	65	U	
541-73-1	1,3-DICHLOROBENZENE	1	350	350	58	U	
106-46-7	1,4-DICHLOROBENZENE	1	350	350	63	U	
95-50-1	1,2-DICHLOROBENZENE	1	350	350	60	U	
100-51-6	BENZYL ALCOHOL	1	350	350	110	U	
108-60-1	BIS(2-CHLOROISOPROPYL)ETHER	1	350	350	56	U	
95-48-7	2-METHYLPHENOL	1	350	350	140	U	
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1	350	350	79	U	
106-44-5	4-METHYLPHENOL	1	350	350	130	U	
67-72-1	HEXACHLOROETHANE	1	350	350	68	U	
98-95-3	NITROBENZENE	1	350	350	49	U	
78-59-1	ISOPHORONE	1	350	350	35	U	
88-75-5	2-NITROPHENOL	1	350	350	64	U	
105-67-9	2,4-DIMETHYLPHENOL	1	350	350	160	U	
111-91-1	BIS(2-CHLOROETHOXY)METHANE	1	350	350	43	U	
120-83-2	2,4-DICHLOROPHENOL	1	350	350	60	U	
65-85-0	BENZOIC ACID	1	1700	1700	140	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	350	350	53	U	
91-20-3	NAPHTHALENE	1	350	350	50	U	
106-47-8	4-CHLOROANILINE	1	870	870	54	U	
87-68-3	HEXACHLOROBUTADIENE	1	350	350	48	U	
59-50-7	4-CHLORO-3-METHYLPHENOL	1	350	350	55	U	
91-57-6	2-METHYLNAPHTHALENE	1	350	350	53	U	

Data Package ID: *SV0208079-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

PRELIMINARY RESULTS

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

FileID: 356313
Lab ID: 0208079-2

Sample Matrix: SOIL
% Moisture: 4.1
Date Collected: 13-Aug-02
Date Extracted: 15-Aug-02
Date Analyzed: 17-Aug-02

Prep Batch: EX020815-7
QCBatchID: EX020815-7-1
Run ID: SV020817-1
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 30 G
Final Volume: 1 ML
Result Units: UG/KG
Clean DF: 1
File Name: N7763

77-47-4	HEXACHLOROCYCLOPENTADIENE	1	350	350	79	U	
88-06-2	2,4,6-TRICHLOROPHENOL	1	350	350	56	U	
95-95-4	2,4,5-TRICHLOROPHENOL	1	350	350	61	U	
91-58-7	2-CHLORONAPHTHALENE	1	350	350	47	U	
88-74-4	2-NITROANILINE	1	1700	1700	190	U	
131-11-3	DIMETHYL PHTHALATE	1	350	350	42	U	
606-20-2	2,6-DINITROTOLUENE	1	350	350	51	U	
208-96-8	ACENAPHTHYLENE	1	350	350	45	U	
99-09-2	3-NITROANILINE	1	1700	1700	280	U	
83-32-9	ACENAPHTHENE	1	350	350	40	U	
51-28-5	2,4-DINITROPHENOL	1	1700	1700	310	U	
100-02-7	4-NITROPHENOL	1	1700	1700	310	U	
132-64-9	DIBENZOFURAN	1	350	350	47	U	
121-14-2	2,4-DINITROTOLUENE	1	350	350	49	U	
84-66-2	DIETHYL PHTHALATE	1	350	350	44	U	
86-73-7	FLUORENE	1	350	350	44	U	
7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1	350	350	39	U	
100-01-6	4-NITROANILINE	1	1700	1700	460	U	
103-33-3	AZOBENZENE	1	350	350	41	U	
534-52-1	4,6-DINITRO-2-METHYLPHENOL	1	1700	1700	230	U	
86-30-6	N-NITROSODIPHENYLAMINE	1	350	350	52	U	
101-55-3	4-BROMOPHENYL PHENYL ETHER	1	350	350	36	U	
118-74-1	HEXACHLOROBENZENE	1	350	350	51	U	
58-90-2	2,3,4,6-TETRACHLOROPHENOL	1	1700	1700	200	U	
87-86-5	PENTACHLOROPHENOL	1	1700	1700	340	U	
85-01-8	PHENANTHRENE	1	350	350	47	U	
120-12-7	ANTHRACENE	1	350	350	45	U	
86-74-8	CARBAZOLE	1	350	350	67	U	
84-74-2	DI-N-BUTYL PHTHALATE	1	350	350	54	U	
206-44-0	FLUORANTHENE	1	350	350	69	U	

Data Package ID: *SV0208079-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

Lab Name: Paragon Analytics, Inc.

Work Order Number: 0208079

Client Name: Shaw Environmental & Infrastructure, Inc.

ClientProject ID: CAU356 831845.02030010

Field ID: 356313
Lab ID: 0208079-2

Sample Matrix: SOIL
% Moisture: 4.1
Date Collected: 13-Aug-02
Date Extracted: 15-Aug-02
Date Analyzed: 17-Aug-02

Prep Batch: EX020815-7
QCBatchID: EX020815-7-1
Run ID: SV020817-1
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 30 G
Final Volume: 1 ML
Result Units: UG/KG
Clean DF: 1
File Name: N7763

129-00-0	PYRENE	1	350	350	73	U	
85-68-7	BUTYL BENZYL PHTHALATE	1	350	350	59	U	
56-55-3	BENZO(A)ANTHRACENE	1	350	350	42	U	
91-94-1	3,3'-DICHLOROBENZIDINE	1	1700	1700	550	U	
218-01-9	CHRYSENE	1	350	350	43	U	
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1	350	350	160	U	
117-84-0	DI-N-OCTYL PHTHALATE	1	350	350	150	U	
205-99-2	BENZO(B)FLUORANTHENE	1	350	350	81	U	
207-08-9	BENZO(K)FLUORANTHENE	1	350	350	72	U	
50-32-8	BENZO(A)PYRENE	1	350	350	39	U	
193-39-5	INDENO(1,2,3-CD)PYRENE	1	350	350	83	U	
53-70-3	DIBENZO(A,H)ANTHRACENE	1	350	350	80	U	
191-24-2	BENZO(G,H,I)PERYLENE	1	350	350	86	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
118-79-6	2,4,6-TRIBROMOPHENOL	2350		2610	90	19 - 113
321-60-8	2-FLUOROBIPHENYL	1420		1740	82	30 - 105
367-12-4	2-FLUOROPHENOL	1940		2610	75	25 - 100
4165-60-0	NITROBENZENE-D5	1190		1740	69	31 - 106
4165-62-2	PHENOL-D5	1870		2610	72	24 - 104
1718-51-0	TERPHENYL-D14	1500		1740	87	18 - 112

Data Package ID: *SV0208079-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

Lab Name: Paragon Analytics, Inc.

Work Order Number: 0208079

Client Name: Shaw Environmental & Infrastructure, Inc.

ClientProject ID: CAU356 831845.02030010

FieldID: 356314	**Sample Matrix:** SOIL	**Prep Batch:** EX020815-7	**Sample Aliquot:** 30 G
LabID: 0208079-3	**% Moisture:** 3.3	**QCBatchID:** EX020815-7-1	**Final Volume:** 1 ML
	Date Collected: 13-Aug-02	**Run ID:** SV020817-1	**Result Units:** UG/KG
	Date Extracted: 15-Aug-02	**Cleanup:** NONE	**Clean DF:** 1
	Date Analyzed: 17-Aug-02	**Basis:** Dry Weight	**File Name:** N7764

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
110-86-1	PYRIDINE	1	340	340	64	U	
62-75-9	N-NITROSODIMETHYLAMINE	1	340	340	86	U	
62-53-3	ANILINE	1	860	860	78	U	
108-95-2	PHENOL	1	340	340	63	U	
111-44-4	BIS(2-CHLOROETHYL)ETHER	1	340	340	54	U	
95-57-8	2-CHLOROPHENOL	1	340	340	64	U	
541-73-1	1,3-DICHLOROBENZENE	1	340	340	57	U	
106-46-7	1,4-DICHLOROBENZENE	1	340	340	63	U	
95-50-1	1,2-DICHLOROBENZENE	1	340	340	60	U	
100-51-6	BENZYL ALCOHOL	1	340	340	110	U	
108-60-1	BIS(2-CHLOROISOPROPYL)ETHER	1	340	340	56	U	
95-48-7	2-METHYLPHENOL	1	340	340	140	U	
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1	340	340	79	U	
106-44-5	4-METHYLPHENOL	1	340	340	130	U	
67-72-1	HEXACHLOROETHANE	1	340	340	68	U	
98-95-3	NITROBENZENE	1	340	340	49	U	
78-59-1	ISOPHORONE	1	340	340	35	U	
88-75-5	2-NITROPHENOL	1	340	340	64	U	
105-67-9	2,4-DIMETHYLPHENOL	1	340	340	160	U	
111-91-1	BIS(2-CHLOROETHOXY)METHANE	1	340	340	43	U	
120-83-2	2,4-DICHLOROPHENOL	1	340	340	59	U	
65-85-0	BENZOIC ACID	1	1700	1700	140	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	340	340	52	U	
91-20-3	NAPHTHALENE	1	340	340	50	U	
106-47-8	4-CHLOROANILINE	1	860	860	53	U	
87-68-3	HEXACHLOROBUTADIENE	1	340	340	48	U	
59-50-7	4-CHLORO-3-METHYLPHENOL	1	340	340	55	U	
91-57-6	2-METHYLNAPHTHALENE	1	340	340	52	U	

Data Package ID: *SV0208079-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

Lab Name: Paragon Analytics, Inc.

Work Order Number: 0208079

Client Name: Shaw Environmental & Infrastructure, Inc.

ClientProject ID: CAU356 831845.02030010

PRELIMINARY RESULTS

Field ID: 356314
Lab ID: 0208079-3

Sample Matrix: SOIL
% Moisture: 3.3
Date Collected: 13-Aug-02
Date Extracted: 15-Aug-02
Date Analyzed: 17-Aug-02

Prep Batch: EX020815-7
QCBatchID: EX020815-7-1
Run ID: SV020817-1
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 30 G
Final Volume: 1 ML
Result Units: UG/KG
Clean DF: 1
File Name: N7764

77-47-4	HEXACHLOROCYCLOPENTADIENE	1	340	340	79	U	
88-06-2	2,4,6-TRICHLOROPHENOL	1	340	340	56	U	
95-95-4	2,4,5-TRICHLOROPHENOL	1	340	340	60	U	
91-58-7	2-CHLORONAPHTHALENE	1	340	340	47	U	
88-74-4	2-NITROANILINE	1	1700	1700	190	U	
131-11-3	DIMETHYL PHTHALATE	1	340	340	42	U	
606-20-2	2,6-DINITROTOLUENE	1	340	340	51	U	
208-96-8	ACENAPHTHYLENE	1	340	340	44	U	
99-09-2	3-NITROANILINE	1	1700	1700	270	U	
83-32-9	ACENAPHTHENE	1	340	340	40	U	
51-28-5	2,4-DINITROPHENOL	1	1700	1700	310	U	
100-02-7	4-NITROPHENOL	1	1700	1700	310	U	
132-64-9	DIBENZOFURAN	1	340	340	46	U	
121-14-2	2,4-DINITROTOLUENE	1	340	340	48	U	
84-66-2	DIETHYL PHTHALATE	1	340	340	43	U	
86-73-7	FLUORENE	1	340	340	43	U	
7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1	340	340	38	U	
100-01-6	4-NITROANILINE	1	1700	1700	460	U	
103-33-3	AZOBENZENE	1	340	340	40	U	
534-52-1	4,6-DINITRO-2-METHYLPHENOL	1	1700	1700	230	U	
86-30-6	N-NITROSODIPHENYLAMINE	1	340	340	52	U	
101-55-3	4-BROMOPHENYL PHENYL ETHER	1	340	340	36	U	
118-74-1	HEXACHLOROBENZENE	1	340	340	51	U	
58-90-2	2,3,4,6-TETRACHLOROPHENOL	1	1700	1700	200	U	
87-86-5	PENTACHLOROPHENOL	1	1700	1700	340	U	
85-01-8	PHENANTHRENE	1	340	340	46	U	
120-12-7	ANTHRACENE	1	340	340	44	U	
86-74-8	CARBAZOLE	1	340	340	67	U	
84-74-2	DI-N-BUTYL PHTHALATE	1	340	340	54	U	
206-44-0	FLUORANTHENE	1	340	340	68	U	

Data Package ID: *SV0208079-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

PRELIMINARY RESULTS

Lab ID: 356314
Client ID: 0208079-3

Sample Matrix: SOIL
% Moisture: 3.3
Date Collected: 13-Aug-02
Date Extracted: 15-Aug-02
Date Analyzed: 17-Aug-02

Prep Batch: EX020815-7
QCBatchID: EX020815-7-1
Run ID: SV020817-1
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 30 G
Final Volume: 1 ML
Result Units: UG/KG
Clean DF: 1
File Name: N7764

129-00-0	PYRENE	1	340	340	73	U	
85-68-7	BUTYL BENZYL PHTHALATE	1	340	340	59	U	
56-55-3	BENZO(A)ANTHRACENE	1	340	340	42	U	
91-94-1	3,3'-DICHLOROBENZIDINE	1	1700	1700	550	U	
218-01-9	CHRYSENE	1	340	340	43	U	
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1	340	340	160	U	
117-84-0	DI-N-OCTYL PHTHALATE	1	340	340	150	U	
205-99-2	BENZO(B)FLUORANTHENE	1	340	340	80	U	
207-08-9	BENZO(K)FLUORANTHENE	1	340	340	71	U	
50-32-8	BENZO(A)PYRENE	1	340	340	39	U	
193-39-5	INDENO(1,2,3-CD)PYRENE	1	340	340	82	U	
53-70-3	DIBENZO(A,H)ANTHRACENE	1	340	340	79	U	
191-24-2	BENZO(G,H,I)PERYLENE	1	340	340	86	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
118-79-6	2,4,6-TRIBROMOPHENOL	2420		2590	94	19 - 113
321-60-8	2-FLUOROBIPHENYL	1410		1720	82	30 - 105
367-12-4	2-FLUOROPHENOL	1900		2590	74	25 - 100
4165-60-0	NITROBENZENE-D5	1230		1720	71	31 - 106
4165-62-2	PHENOL-D5	1880		2590	73	24 - 104
1718-51-0	TERPHENYL-D14	1520		1720	88	18 - 112

Data Package ID: *SV0208079-1*

Diesel Range Organics

Method SW8015M

Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Lab ID: EX020815-1MB

Sample Matrix: SOIL
% Moisture: N/A
Date Collected: N/A
Date Extracted: 08/15/2002
Date Analyzed: 08/16/2002

Prep Batch: EX020815-1
QCBatchID: EX020815-1-1
Run ID: HCD020816-1A
Cleanup: NONE
Basis: N/A

Sample Aliquot: 20 G
Final Volume: 5 ML
Result Units: MG/KG
Clean DF: 1
File Name: F3F07861

CASNO	Target Analyte	DF	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
68334-30-5	Diesel Range Organics	1	5	5	2.6	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
84-15-1	O-TERPHENYL	10.4		12.5	83	47 - 142

Data Package ID: *HCD0208079-1*

Diesel Range Organics

Method SW8015M

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356312
Lab ID: 0208079-1

Sample Matrix: SOIL
% Moisture: 2.3
Date Collected: 13-Aug-02
Date Extracted: 15-Aug-02
Date Analyzed: 16-Aug-02

Prep Batch: EX020815-1
QCBatchID: EX020815-1-1
Run ID: HCD020816-1A
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 20.01 G
Final Volume: 5 ML
Result Units: MG/KG
Clean DF: 1
File Name: F3F07865

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
68334-30-5	Diesel Range Organics	1	45	5.1	2.7	M	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
84-15-1	O-TERPHENYL	11.8		12.8	92	47 - 142

The chromatogram indicates the presence of hydrocarbons in the range of C14-C34.

Data Package ID: *HCD0208079-1*

Diesel Range Organics

Method SW8015M

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356313
Lab ID: 0208079-2

Sample Matrix: SOIL
% Moisture: 4.1
Date Collected: 13-Aug-02
Date Extracted: 15-Aug-02
Date Analyzed: 16-Aug-02

Prep Batch: EX020815-1
QCBatchID: EX020815-1-1
Run ID: HCD020816-1A
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 20.01 G
Final Volume: 5 ML
Result Units: MG/KG
Clean DF: 1
File Name: F3F07866

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
68334-30-5	Diesel Range Organics	1	5.2	5.2	2.7	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
84-15-1	O-TERPHENYL	10.5		13	81	47 - 142

Data Package ID: *HCD0208079-1*

Diesel Range Organics

Method SW8015M

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

FileID:	356314
Lab ID:	0208079-3

Sample Matrix: SOIL
% Moisture: 3.3
Date Collected: 13-Aug-02
Date Extracted: 15-Aug-02
Date Analyzed: 16-Aug-02

Prep Batch: EX020815-1
QCBatchID: EX020815-1-1
Run ID: HCD020816-1A
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 20 G
Final Volume: 5 ML
Result Units: MG/KG
Clean DF: 1
File Name: F3F07867

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
68334-30-5	Diesel Range Organics	1	5.2	5.2	2.7	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
84-15-1	O-TERPHENYL	10.5		12.9	82	47 - 142

Data Package ID: *HCD0208079-1*

PCBs

Method SW8082

Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Lab ID: EX020814-3MB

Sample Matrix: SOIL
% Moisture: N/A
Date Collected: N/A
Date Extracted: 08/14/2002
Date Analyzed: 08/15/2002

Prep Batch: EX020814-3
QCBatchID: EX020814-3-1
Run ID: PT020815-1
Cleanup: SW3665
Basis: N/A

Sample Aliquot: 30 G
Final Volume: 10 ML
Result Units: UG/KG
Clean DF: 1
File Name: EA008610

CASNO	Target Analyte	DF	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
12674-11-2	AROCLOR-1016	1	33	33	5.7	U	
11104-28-2	AROCLOR-1221	1	67	67	9.5	U	
11141-16-5	AROCLOR-1232	1	33	33	3.8	U	
53469-21-9	AROCLOR-1242	1	33	33	5.7	U	
12672-29-6	AROCLOR-1248	1	33	33	5.7	U	
11097-69-1	AROCLOR-1254	1	33	33	3.3	U	
11096-82-5	AROCLOR-1260	1	33	33	2.4	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL	16		16.7	96	33 - 143
877-09-8	TETRACHLORO-M-XYLENE	16.8		16.7	101	51 - 123

Data Package ID: *PT0208079-1*

PCBs

Method SW8082

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356312
Lab ID: 0208079-1

Sample Matrix: SOIL
% Moisture: 2.3
Date Collected: 13-Aug-02
Date Extracted: 14-Aug-02
Date Analyzed: 15-Aug-02

Prep Batch: EX020814-3
QCBatchID: EX020814-3-1
Run ID: PT020815-1
Cleanup: SW3665
Basis: Dry Weight

Sample Aliquot: 30.03 G
Final Volume: 10 ML
Result Units: UG/KG
Clean DF: 1
File Name: EA008613

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
12674-11-2	AROCLOR-1016	1	34	34	5.8	U	
11104-28-2	AROCLOR-1221	1	68	68	9.7	U	
11141-16-5	AROCLOR-1232	1	34	34	3.9	U	
53469-21-9	AROCLOR-1242	1	34	34	5.8	U	
12672-29-6	AROCLOR-1248	1	34	34	5.8	U	
11097-69-1	AROCLOR-1254	1	34	34	3.3	U	
11096-82-5	AROCLOR-1260	1	34	34	2.4	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL	14.1		17	83	33 - 143
877-09-8	TETRACHLORO-M-XYLENE	17.6		17	103	51 - 123

Data Package ID: *PT0208079-1*

PCBs

Method SW8082

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356313
Lab ID: 0208079-2

Sample Matrix: SOIL
% Moisture: 4.1
Date Collected: 13-Aug-02
Date Extracted: 14-Aug-02
Date Analyzed: 15-Aug-02

Prep Batch: EX020814-3
QCBatchID: EX020814-3-1
Run ID: PT020815-1
Cleanup: SW3665
Basis: Dry Weight

Sample Aliquot: 30 G
Final Volume: 10 ML
Result Units: UG/KG
Clean DF: 1
File Name: EA008614

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
12674-11-2	AROCLOR-1016	1	35	35	6	U	
11104-28-2	AROCLOR-1221	1	70	70	9.9	U	
11141-16-5	AROCLOR-1232	1	35	35	4	U	
53469-21-9	AROCLOR-1242	1	35	35	5.9	U	
12672-29-6	AROCLOR-1248	1	35	35	5.9	U	
11097-69-1	AROCLOR-1254	1	35	35	3.4	U	
11096-82-5	AROCLOR-1260	1	35	35	2.5	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL	15.7		17.4	90	33 - 143
877-09-8	TETRACHLORO-M-XYLENE	17.7		17.4	102	51 - 123

Data Package ID: *PT0208079-1*

PCBs

Method SW8082

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356314
Lab ID: 0208079-3

Sample Matrix: SOIL
% Moisture: 3.3
Date Collected: 13-Aug-02
Date Extracted: 14-Aug-02
Date Analyzed: 15-Aug-02

Prep Batch: EX020814-3
QCBatchID: EX020814-3-1
Run ID: PT020815-1
Cleanup: SW3665
Basis: Dry Weight

Sample Aliquot: 30 G
Final Volume: 10 ML
Result Units: UG/KG
Clean DF: 1
File Name: EA008615

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
12674-11-2	AROCLOR-1016	1	34	34	5.9	U	
11104-28-2	AROCLOR-1221	1	69	69	9.8	U	
11141-16-5	AROCLOR-1232	1	34	34	3.9	U	
53469-21-9	AROCLOR-1242	1	34	34	5.9	U	
12672-29-6	AROCLOR-1248	1	34	34	5.9	U	
11097-69-1	AROCLOR-1254	1	34	34	3.4	U	
11096-82-5	AROCLOR-1260	1	34	34	2.5	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL	15.7		17.2	91	33 - 143
877-09-8	TETRACHLORO-M-XYLENE	17.9		17.2	104	51 - 123

Data Package ID: *PT0208079-1*

Total ICP Metals

Method SW6010

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356313
Lab ID: 0208079-2

Sample Matrix: SOIL
% Moisture: 4.1
Date Collected: 13-Aug-02
Date Extracted: 15-Aug-02
Date Analyzed: 16-Aug-02

Prep Batch: IP020815-2
QCBatchID: IP020815-2-1
Run ID: IT020816-1A3
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 1 G
Final Volume: 100 ML
Result Units: MG/KG
Clean DF: 1
File Name: TS20816

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	IDL	Result Qualifier	EPA Qualifier
7440-38-2	ARSENIC	1	9	1	0.19		
7440-39-3	BARIUM	1	270	10	0.0044		
7440-43-9	CADMIUM	1	0.52	0.52	0.014	U	
7440-47-3	CHROMIUM	1	4.1	1	0.034		
7439-92-1	LEAD	1	18	0.31	0.16		
7782-49-2	SELENIUM	1	0.52	0.52	0.37	U	
7440-22-4	SILVER	1	1	1	0.044	U	

Data Package ID: *IT0208079-1*

Total ICP Metals

Method SW6010

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208079
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356314
Lab ID: 0208079-3

Sample Matrix: SOIL
% Moisture: 3.3
Date Collected: 13-Aug-02
Date Extracted: 15-Aug-02
Date Analyzed: 16-Aug-02

Prep Batch: IP020815-2
QCBatchID: IP020815-2-1
Run ID: IT020816-1A3
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 1 G
Final Volume: 100 ML
Result Units: MG/KG
Clean DF: 1
File Name: TS20816

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	IDL	Result Qualifier	EPA Qualifier
7440-38-2	ARSENIC	1	7.6	1	0.19		
7440-39-3	BARIUM	1	190	10	0.0044		
7440-43-9	CADMIUM	1	0.52	0.52	0.014	U	
7440-47-3	CHROMIUM	1	4.7	1	0.033		
7439-92-1	LEAD	1	22	0.31	0.16		
7782-49-2	SELENIUM	1	0.52	0.52	0.37	U	
7440-22-4	SILVER	1	1	1	0.043	U	

Data Package ID: *IT0208079-1*

Total MERCURY

Method SW7471

Sample Results

Lab Name: Paragon Analytics, Inc.
Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project ID: CAU356 831845.02030010
Work Order Number: 0208079
Reporting Basis: Dry Weight
Final Volume: 100 ML
Matrix: SOIL
Result Units: MG/KG

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	IDL	Flag	Sample Aliquot
356312	0208079-1	8/13/02	2/16/02	08/19/2002	2.3	1	0.1	0.1	0.0018	U	0.6 G
356313	0208079-2	8/13/02	2/16/02	08/19/2002	4.1	1	0.1	0.1	0.0019	U	0.6 G
356314	0208079-3	8/13/02	2/16/02	08/19/2002	3.3	1	0.1	0.1	0.0018	U	0.6 G

Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: *HG0208079-1*

Gamma Spectroscopy Results

Method PAI SOP 713R6

Sample Results

Reported on: Monday, August 19, 2002 12:50:51

Client Name: Shaw Environmental & Infrastructure, Inc.

Client Project Name: CAU356

Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.

PAI Work Order: 0208079

Field ID: 356312

Lab ID: 0208079-1

Sample Matrix: Soil
Date Prepared: 15-Aug-02
Prep SOP: PAI 739R5
Prep Batch: GS01650

Date Collected: 13-Aug-02
Date Analyzed: 15-Aug-02
Analytical SOP: PAI 713R6
Spectrum Code: 020732D01A

Final Aliquot: 63.00 g
Report Basis: Dry Weight
Count Time (min.): 30
Library: FANP.LIB

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
Ac-228	2.20 +/- 0.62	0.98	pCi/g	
Ag-110m	0.01 +/- 0.11	0.20	pCi/g	U
Al-26	-0.03 +/- 0.13	0.25	pCi/g	U
Am-241	-0.33 +/- 0.48	0.86	pCi/g	U
Be-7	0.92 +/- 0.88	1.4	pCi/g	U
Bi-212	3.1 +/- 2.1	3.1	pCi/g	TI
Bi-214	1.43 +/- 0.44	0.48	pCi/g	
Cd-109	4.4 +/- 3.0	4.7	pCi/g	U
Ce-139	-0.003 +/- 0.081	0.14	pCi/g	U
Ce-144	0.14 +/- 0.52	0.89	pCi/g	U
Co-56	0.07 +/- 0.27	0.47	pCi/g	U
Co-57	0.004 +/- 0.071	0.12	pCi/g	U
Co-58	0.09 +/- 0.10	0.17	pCi/g	U
Co-60	-0.02 +/- 0.12	0.22	pCi/g	U
Cr-51	0.01 +/- 0.81	1.4	pCi/g	U
Cs-134	-0.07 +/- 0.18	0.32	pCi/g	U
Cs-137	0.00 +/- 0.13	0.23	pCi/g	U
Eu-152	-0.41 +/- 0.72	1.4	pCi/g	U
Eu-154	-0.60 +/- 0.74	1.4	pCi/g	U
Eu-155	0.38 +/- 0.36	0.58	pCi/g	U
Fe-59	-0.12 +/- 0.28	0.52	pCi/g	U
I-131	0.08 +/- 0.12	0.19	pCi/g	U
K-40	24.6 +/- 5.3	3.1	pCi/g	
Mn-54	0.00 +/- 0.14	0.25	pCi/g	U
Na-22	-0.06 +/- 0.16	0.30	pCi/g	U
Nb-94	-0.03 +/- 0.13	0.23	pCi/g	U

Data Package ID: *GSS0208079-1*

Gamma Spectroscopy Results

Method PAI SOP 713R6

Sample Results

Reported on: Monday, August 19, 2002 12:50:52

Client Name: Shaw Environmental & Infrastructure, Inc.

Client Project Name: CAU356

Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.

PAI Work Order: 0208079

Field ID: 356312

Lab ID: 0208079-1

Sample Matrix: Soil
Date Prepared: 15-Aug-02
Prep SOP: PAI 739R5
Prep Batch: GS01650

Date Collected: 13-Aug-02
Date Analyzed: 15-Aug-02
Analytical SOP: PAI 713R6
Spectrum Code: 020732D01A

Final Aliquot: 63.00 g
Report Basis: Dry Weight
Count Time (min.): 30
Library: FANP.LIB

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
Nb-95	-0.03 +/- 0.14	0.24	pCi/g	U
Pa-234m	15 +/- 21	34	pCi/g	U
Pb-212	2.25 +/- 0.48	0.34	pCi/g	
Pb-214	1.20 +/- 0.34	0.42	pCi/g	
Ru-106	1.0 +/- 1.1	1.8	pCi/g	U
Sb-124	-0.10 +/- 0.14	0.25	pCi/g	U
Sb-125	0.30 +/- 0.28	0.47	pCi/g	U
Sc-46	0.03 +/- 0.12	0.21	pCi/g	U
Th-227	-0.91 +/- 0.91	1.7	pCi/g	U
Th-234	4.2 +/- 2.4	3.6	pCi/g	TI
Tl-208	0.79 +/- 0.23	0.23	pCi/g	
U-235	0.00 +/- 0.58	1.0	pCi/g	U
Zn-65	-0.41 +/- 0.36	0.68	pCi/g	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative

R - Nuclide has exceeded 8 halflives

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: *GSS0208079-1*

Gamma Spectroscopy Results

Method PAI SOP 713R6

Sample Results

Reported on: Monday, August 19, 2002 12:50:52

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0208079

Field ID: 356313
Lab ID: 0208079-2

Sample Matrix: Soil
Date Prepared: 15-Aug-02
Prep SOP: PAI 739R5
Prep Batch: GS01650

Date Collected: 13-Aug-02
Date Analyzed: 15-Aug-02
Analytical SOP: PAI 713R6
Spectrum Code: 020840D02A

Final Aliquot: 87.70 g
Report Basis: Dry Weight
Count Time (min.): 30
Library: FANP.LIB

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
Ac-228	2.36 +/- 0.65	0.79	pCi/g	
Ag-110m	0.03 +/- 0.11	0.20	pCi/g	U
Al-26	-0.024 +/- 0.089	0.21	pCi/g	U
Am-241	0.71 +/- 0.72	1.1	pCi/g	U
Be-7	0.45 +/- 0.76	1.3	pCi/g	U
Bi-212	2.4 +/- 1.9	2.7	pCi/g	U
Bi-214	0.95 +/- 0.35	0.36	pCi/g	
Cd-109	2.6 +/- 2.3	3.7	pCi/g	U
Ce-139	-0.018 +/- 0.062	0.12	pCi/g	U
Ce-144	0.06 +/- 0.44	0.77	pCi/g	U
Co-56	0.19 +/- 0.26	0.43	pCi/g	U
Co-57	-0.013 +/- 0.059	0.11	pCi/g	U
Co-58	0.00 +/- 0.12	0.22	pCi/g	U
Co-60	-0.01 +/- 0.12	0.25	pCi/g	U
Cr-51	0.52 +/- 0.70	1.1	pCi/g	U
Cs-134	-0.07 +/- 0.11	0.21	pCi/g	U
Cs-137	0.09 +/- 0.11	0.18	pCi/g	U
Eu-152	-0.11 +/- 0.46	1.0	pCi/g	U
Eu-154	0.27 +/- 0.64	1.1	pCi/g	U
Eu-155	-0.18 +/- 0.27	0.51	pCi/g	U
Fe-59	0.00 +/- 0.20	0.40	pCi/g	U
I-131	0.01 +/- 0.10	0.18	pCi/g	U
K-40	26.9 +/- 6.1	2.5	pCi/g	
Mn-54	0.17 +/- 0.13	0.20	pCi/g	U
Na-22	-0.06 +/- 0.14	0.28	pCi/g	U
Nb-94	0.062 +/- 0.098	0.17	pCi/g	U

Data Package ID: *GSS0208079-1*

Gamma Spectroscopy Results

Method PAI SOP 713R6

Sample Results

Reported on: Monday, August 19, 2002 12:50:52

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0208079

Field ID: 356313
Lab ID: 0208079-2

Sample Matrix: Soil
Date Prepared: 15-Aug-02
Prep SOP: PAI 739R5
Prep Batch: GS01650

Date Collected: 13-Aug-02
Date Analyzed: 15-Aug-02
Analytical SOP: PAI 713R6
Spectrum Code: 020840D02A

Final Aliquot: 87.70 g
Report Basis: Dry Weight
Count Time (min.): 30
Library: FANP.LIB

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
Nb-95	-0.03 +/- 0.11	0.22	pCi/g	U
Pa-234m	-7 +/- 18	38	pCi/g	U
Pb-212	2.18 +/- 0.47	0.28	pCi/g	
Pb-214	1.07 +/- 0.33	0.42	pCi/g	
Ru-106	-0.08 +/- 0.76	1.5	pCi/g	U
Sb-124	-0.01 +/- 0.11	0.20	pCi/g	U
Sb-125	-0.09 +/- 0.27	0.51	pCi/g	U
Sc-46	0.03 +/- 0.10	0.18	pCi/g	U
Th-227	-0.20 +/- 0.78	1.4	pCi/g	U
Th-234	3.8 +/- 2.6	4.1	pCi/g	U
Tl-208	0.58 +/- 0.19	0.17	pCi/g	
U-235	-0.20 +/- 0.47	0.87	pCi/g	U
Zn-65	-0.25 +/- 0.24	0.54	pCi/g	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed

Y2 - Chemical Yield outside default limits

LT - Result is less than Requested MDC, greater than sample specific MDC

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: *GSS0208079-1*

Gamma Spectroscopy Results

Method PAI SOP 713R6

Sample Results

Reported on: Monday, August 19, 2002 12:50:53

Client Name: Shaw Environmental & Infrastructure, Inc.

Client Project Name: CAU356

Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.

PAI Work Order: 0208079

Field ID: 356314

Lab ID: 0208079-3

Sample Matrix: Soil
Date Prepared: 15-Aug-02
Prep SOP: PAI 739R5
Prep Batch: GS01650

Date Collected: 13-Aug-02
Date Analyzed: 15-Aug-02
Analytical SOP: PAI 713R6
Spectrum Code: 020847D07A

Final Aliquot: 88.40 g
Report Basis: Dry Weight
Count Time (min.): 30
Library: FANP.LIB

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
Ac-228	1.83 +/- 0.60	0.90	pCi/g	
Ag-110m	-0.06 +/- 0.12	0.25	pCi/g	U
Al-26	0.09 +/- 0.14	0.24	pCi/g	U
Am-241	0.01 +/- 0.15	0.26	pCi/g	U
Be-7	0.21 +/- 0.79	1.4	pCi/g	U
Bi-212	2.1 +/- 2.1	3.2	pCi/g	U
Bi-214	0.97 +/- 0.44	0.52	pCi/g	
Cd-109	4.0 +/- 2.4	3.6	pCi/g	SI
Ce-139	0.034 +/- 0.063	0.11	pCi/g	U
Ce-144	0.13 +/- 0.48	0.83	pCi/g	U
Co-56	0.18 +/- 0.35	0.60	pCi/g	U
Co-57	0.018 +/- 0.051	0.089	pCi/g	U
Co-58	-0.01 +/- 0.11	0.23	pCi/g	U
Co-60	-0.06 +/- 0.13	0.30	pCi/g	U
Cr-51	0.18 +/- 0.79	1.4	pCi/g	U
Cs-134	0.11 +/- 0.15	0.24	pCi/g	U
Cs-137	0.12 +/- 0.16	0.26	pCi/g	U
Eu-152	-0.22 +/- 0.71	1.6	pCi/g	U
Eu-154	-0.19 +/- 0.59	1.3	pCi/g	U
Eu-155	0.15 +/- 0.22	0.37	pCi/g	U
Fe-59	0.10 +/- 0.20	0.36	pCi/g	U
I-131	0.11 +/- 0.13	0.20	pCi/g	U
K-40	28.2 +/- 7.0	3.3	pCi/g	
Mn-54	0.00 +/- 0.11	0.21	pCi/g	U
Na-22	-0.06 +/- 0.18	0.38	pCi/g	U
Nb-94	-0.05 +/- 0.15	0.29	pCi/g	U

Data Package ID: *GSS0208079-1*

Gamma Spectroscopy Results

Method PAI SOP 713R6

Sample Results

Reported on: Monday, August 19, 2002 12:50:53

Client Name: Shaw Environmental & Infrastructure, Inc.

Client Project Name: CAU356

Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.

PAI Work Order: 0208079

Field ID: 356314

Lab ID: 0208079-3

Sample Matrix: Soil
Date Prepared: 15-Aug-02
Prep SOP: PAI 739R5
Prep Batch: GS01650

Date Collected: 13-Aug-02
Date Analyzed: 15-Aug-02
Analytical SOP: PAI 713R6
Spectrum Code: 020847D07A

Final Aliquot: 88.40 g
Report Basis: Dry Weight
Count Time (min.): 30
Library: FANP.LIB

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
Nb-95	-0.12 +/- 0.16	0.32	pCi/g	U
Pa-234m	-3 +/- 21	43	pCi/g	U
Pb-212	1.91 +/- 0.47	0.37	pCi/g	
Pb-214	1.26 +/- 0.39	0.47	pCi/g	
Ru-106	-0.6 +/- 1.2	2.5	pCi/g	U
Sb-124	0.02 +/- 0.15	0.27	pCi/g	U
Sb-125	0.05 +/- 0.29	0.53	pCi/g	U
Sc-46	-0.03 +/- 0.12	0.25	pCi/g	U
Th-227	0.21 +/- 0.55	0.94	pCi/g	U
Th-234	1.1 +/- 1.5	2.5	pCi/g	U
Tl-208	0.64 +/- 0.24	0.24	pCi/g	
U-235	0.36 +/- 0.50	0.82	pCi/g	U
Zn-65	-0.41 +/- 0.38	0.83	pCi/g	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less then the associated TPU

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: *GSS0208079-1*

Gamma Spectroscopy Results

Method PAI SOP 713R6

Sample Duplicate Results

Reported on: Monday, August 19, 2002 12:50:52

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0208079

Field ID: 356313
Lab ID: 0208079-2-D1

Sample Matrix: Soil
Date Prepared: 15-Aug-02
Prep SOP: PAI 739R5
Prep Batch: GS01650

Date Collected: 13-Aug-02
Date Analyzed: 15-Aug-02
Analytical SOP: PAI 713R6
Spectrum Code: 020768D06A

Final Aliquot: 93.90
Aliquot Units: g
Report Basis: Dry Weight
Count Time (min.): 30

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
Ac-228	2.26 +/- 0.68	1.1	pCi/g	
Ag-110m	-0.03 +/- 0.10	0.20	pCi/g	U
Al-26	0.05 +/- 0.10	0.19	pCi/g	U
Am-241	-0.27 +/- 0.44	0.82	pCi/g	U
Be-7	-0.06 +/- 0.74	1.4	pCi/g	U
Bi-212	3.3 +/- 1.9	2.4	pCi/g	
Bi-214	1.20 +/- 0.41	0.42	pCi/g	
Cd-109	3.3 +/- 1.9	2.7	pCi/g	SI
Ce-139	-0.020 +/- 0.060	0.11	pCi/g	U
Ce-144	-0.44 +/- 0.48	0.90	pCi/g	U
Co-56	-0.05 +/- 0.29	0.55	pCi/g	U
Co-57	0.044 +/- 0.056	0.091	pCi/g	U
Co-58	0.01 +/- 0.14	0.25	pCi/g	U
Co-60	-0.05 +/- 0.15	0.30	pCi/g	U
Cr-51	0.25 +/- 0.69	1.2	pCi/g	U
Cs-134	-0.03 +/- 0.10	0.19	pCi/g	U
Cs-137	0.12 +/- 0.14	0.22	pCi/g	U
Eu-152	-0.72 +/- 0.73	1.6	pCi/g	U
Eu-154	-0.22 +/- 0.73	1.4	pCi/g	U
Eu-155	-0.21 +/- 0.25	0.48	pCi/g	U
Fe-59	-0.15 +/- 0.24	0.50	pCi/g	U
I-131	-0.01 +/- 0.11	0.21	pCi/g	U
K-40	26.1 +/- 6.2	3.5	pCi/g	
Mn-54	-0.06 +/- 0.12	0.23	pCi/g	U
Na-22	-0.04 +/- 0.16	0.32	pCi/g	U
Nb-94	-0.04 +/- 0.12	0.23	pCi/g	U
Nb-95	-0.04 +/- 0.15	0.27	pCi/g	U

Data Package ID: *GSS0208079-1*

Gamma Spectroscopy Results

Method PAI SOP 713R6

Sample Duplicate Results

Reported on: Monday, August 19, 2002 12:50:53

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0208079

Field ID: 356313
Lab ID: 0208079-2-D1

Sample Matrix: Soil
Date Prepared: 15-Aug-02
Prep SOP: PAI 739R5
Prep Batch: GS01650

Date Collected: 13-Aug-02
Date Analyzed: 15-Aug-02
Analytical SOP: PAI 713R6
Spectrum Code: 020768D06A

Final Aliquot: 93.90
Aliquot Units: g
Report Basis: Dry Weight
Count Time (min.): 30

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
Pa-234m	1 +/- 24	45	pCi/g	U
Pb-212	2.00 +/- 0.46	0.37	pCi/g	
Pb-214	1.03 +/- 0.32	0.40	pCi/g	
Ru-106	0.40 +/- 0.94	1.6	pCi/g	U
Sb-124	0.00 +/- 0.11	0.20	pCi/g	U
Sb-125	0.02 +/- 0.26	0.48	pCi/g	U
Sc-46	0.04 +/- 0.13	0.23	pCi/g	U
Th-227	-0.03 +/- 0.73	1.3	pCi/g	U
Th-234	2.4 +/- 1.7	2.7	pCi/g	U
Tl-208	0.64 +/- 0.21	0.20	pCi/g	
U-235	-0.05 +/- 0.49	0.87	pCi/g	U
Zn-65	-0.15 +/- 0.43	0.81	pCi/g	U

Data Package ID: *GSS0208079-1*

Gamma Spectroscopy Results

Method PAI SOP 713R6

Sample Duplicate Results

Reported on: Monday, August 19, 2002 12:50:53

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0208079

Field ID: 356313
Lab ID: 0208079-2-D1

Sample Matrix: Soil
Date Prepared: 15-Aug-02
Prep SOP: PAI 739R5
Prep Batch: GS01650

Date Collected: 13-Aug-02
Date Analyzed: 15-Aug-02
Analytical SOP: PAI 713R6
Spectrum Code: 020768D06A

Final Aliquot: 93.90
Aliquot Units: g
Report Basis: Dry Weight
Count Time (min.): 30

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

* - Duplicate DER not within control limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: *GSS0208079-1*

Sample Results Summary

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0208079

Page: 1 of 1
Reported on: Monday, August 19, 2002 14:15:10

Lab Sample ID	Client Sample ID	Test	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0208079-1	356312	RD_GAB	GrAlpha	11.7 +/- 2.9	1.9	pCi/g	Soil	AB00615	8/16/02	
0208079-1	356312	RD_GAB	GrBeta	10.1 +/- 2.1	2.0	pCi/g	Soil	AB00615	8/16/02	
0208079-2	356313	RD_GAB	GrAlpha	7.9 +/- 2.1	1.3	pCi/g	Soil	AB00615	8/16/02	
0208079-2	356313	RD_GAB	GrBeta	5.5 +/- 1.5	1.8	pCi/g	Soil	AB00615	8/16/02	
0208079-3	356314	RD_GAB	GrAlpha	7.2 +/- 2.0	1.4	pCi/g	Soil	AB00615	8/16/02	
0208079-3	356314	RD_GAB	GrBeta	5.9 +/- 1.6	1.8	pCi/g	Soil	AB00615	8/16/02	

Comments:

Data Package ID: *ABS0208079-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Gross Alpha/Beta Analysis

Method PAI SOP 724R7

Method Blank Results

Reported on: Monday, August 19, 2002 14:15:10

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0208079

Field ID:
Lab ID: AB00615BLK1

Sample Matrix: Soil
Date Prepared: 15-Aug-02
Prep SOP: PAI 702R15
Prep Batch: AB00615

Date Collected: 15-Aug-02
Date Analyzed: 16-Aug-02
Analytical SOP: PAI 724R7

Final Aliquot: 2.000
Aliquot Units: g
Report Basis: Dry Weight
Count Time (min.): 60

Target Nuclide	Result +/- 2s TPU	MDC	Reporting Units	Lab Qualifier
GrAlpha	0.08 +/- 0.17	0.30	pCi/g	U
GrBeta	0.05 +/- 0.23	0.41	pCi/g	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
LT - Result is less than Requested MDC, greater than sample specific MDC.
Y1 - Chemical Yield in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
B3 - Analyte concentration greater than MDC but less than Requested MDC.
B - Analyte concentration greater than MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: *ABS0208079-1*

Gross Alpha/Beta Analysis

Method PAI SOP 724R7

LCS Results

Reported on: Monday, August 19, 2002 14:15:10

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0208079

Field ID:
Lab ID: AB00615LCS1

Sample Matrix: Soil
Date Prepared: 15-Aug-02
Prep SOP: PAI 702R15
Prep Batch: AB00615

Date Collected: 15-Aug-02
Date Analyzed: 16-Aug-02
Analytical SOP: PAI 724R7

Final Aliquot: 2.000
Aliquot Units: g
Report Basis: Dry Weight
Count Time (min.): 60

Target Nuclide	LCS Results +/- 2s TPU	MDC	Spike Added	Reporting Units	LCS Recovery	Control Limits	Lab Qualifier
GrAlpha	18.8 +/- 2.9	0.35	17.9	pCi/g	105%	80-120%	P
GrBeta	14.8 +/- 2.2	0.76	14.1	pCi/g	105%	80-120%	P

Comments:

Data Package ID: *ABS0208079-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
LT - Result is less than Requested MDC, greater than sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
* - Duplicate DER not within control limits.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS Recovery within control limits.

Abbreviations:

TPU - Total Propegated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

Gross Alpha/Beta Analysis

Method PAI SOP 724R7

Duplicate Sample Results (DER)

Reported on: Monday, August 19, 2002 14:15:10

Client Name: Shaw Environmental & Infrastructure, Inc.

Client Project Name: CAU356

Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.

PAI Work Order: 0208079

Field ID:	Prep Date	Analysis Date	Prep Batch	Final Aliquot
Lab ID: 0208079-1	8/15/02	8/16/02	AB00615	0.5100
DUP ID: 0208079-1-D1	8/15/02	8/16/02	AB00615	0.5100

Sample Matrix: Soil
Date Collected: 13-Aug-02
Analytical SOP: PAI 724R7
Prep SOP: PAI 702R15
Aliquot Units: g
Report Basis: Dry Weight

Analyte	Sample Result +/- 2s TPU	Duplicate Result +/- 2s TPU	Units	DER	Warning Limit	Lab Qualifiers
GrAlpha	11.7 +/- 2.9	13.2 +/- 3.0	pCi/g	0.35	< 1.42	
GrBeta	10.1 +/- 2.1	9.8 +/- 2.1	pCi/g	0.11	< 1.42	

Comments:

Qualifiers/Flags:

W - DER is greater than Warning Limit of 1.42

H - DER is Higher han Control Limit of 2.13

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

DER - Duplicate Error Ratio

Data Package ID: *ABS0208079-1*

Gross Alpha/Beta Analysis

Method PAI SOP 724R7

Duplicate Sample Results (RPD)

Reported on: Monday, August 19, 2002 14:15:10

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0208079

		Prep Date	Analysis Date	Prep Batch	Final Aliquot
Field ID: 356312					
Lab ID: 0208079-1		8/15/02	8/16/02	AB00615	0.5100
DUP ID: 0208079-1-D1		8/15/02	8/16/02	AB00615	0.5100

Sample Matrix: Soil
Date Collected: 13-Aug-02
Analytical SOP: PAI 724R7
Prep SOP: PAI 702R15
Aliquot Units: g
Report Basis: Dry Weight

Analyte	Sample Result +/- 2-S TPU	Duplicate Result +/- 2s TPU	Units	RPD	Control Limit	Lab Qualifiers
GrAlpha	11.7 +/- 2.9	13.2 +/- 3.0	pCi/g	12.0%	< 35%	
GrBeta	10.1 +/- 2.1	9.8 +/- 2.1	pCi/g	NC	< 35%	

Comments:

Qualifiers/Flags:
Hi - RPD exceeds Control Limit
NC - Not Calculated for duplicate results less than 5 times MDC

Abbreviations:
TPU - Total Propagated Uncertainty (see PAI SOP 743)
RPD - Relative Percent Difference

Data Package ID: *ABS0208079-1*

Gross Alpha/Beta Analysis

Method PAI SOP 724R7

Matrix Spike Results

Page: 1 of 1
Reported on: Monday, August 19, 2002 14:15:10

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0208079

Field ID: 356314
Lab ID: 0208079-3-MS1

Sample Matrix: Soil
Date Prepared: 15-Aug-02
Prep SOP: PAI 702R15
Prep Batch: AB00615

Date Collected: 13-Aug-02
Date Analyzed: 16-Aug-02
Analytical SOP: PAI 724R7

Final Aliquot: 0.5100
Aliquot Units: g
Report Basis: Dry Weight

Target Nuclide	Matrix Spike	Sample Activity	MDC	Spike Added	Reporting Units	MS % Rec	Control Limits	Lab Qualifier
GrAlpha	26.3	7.2	1.6	17.6	pCi/g	108%	80-120%	
GrBeta	19.9	5.9	2.2	13.9	pCi/g	101%	80-120%	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

* - Duplicate DER not within control limits.

N - Matrix Spike Recovery outside control limits

Abbreviations:

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: *ABS0208079-1*

Gross Alpha/Beta Analysis

Method PAI SOP 724R7

Sample Results

Reported on: Monday, August 19, 2002 14:15:10

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0208079

Field ID: 356312
Lab ID: 0208079-1

Sample Matrix: Soil
Date Prepared: 15-Aug-02
Prep SOP: PAI 702R15
Prep Batch: AB00615

Date Collected: 13-Aug-02
Date Analyzed: 16-Aug-02
Analytical SOP: PAI 724R7

Final Aliquot: 0.5100 g
Report Basis: Dry Weight
Count Time (min.): 60

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
GrAlpha	11.7 +/- 2.9	1.9	pCi/g	
GrBeta	10.1 +/- 2.1	2.0	pCi/g	

Comments:

Qualifiers/Flags:
U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
LT - Result is less than Requested MDC, greater than sample specific MDC.

Abbreviations:
TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: *ABS0208079-1*

Gross Alpha/Beta Analysis

Method PAI SOP 724R7

Sample Results

Reported on: Monday, August 19, 2002 14:15:10

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0208079

Field ID: 356313
Lab ID: 0208079-2

Sample Matrix: Soil
Date Prepared: 15-Aug-02
Prep SOP: PAI 702R15
Prep Batch: AB00615

Date Collected: 13-Aug-02
Date Analyzed: 16-Aug-02
Analytical SOP: PAI 724R7

Final Aliquot: 0.5100 g
Report Basis: Dry Weight
Count Time (min.): 60

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
GrAlpha	7.9 +/- 2.1	1.3	pCi/g	
GrBeta	5.5 +/- 1.5	1.8	pCi/g	

Comments:

Qualifiers/Flags:
U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits
LT - Result is less than Requested MDC, greater than sample specific MDC.

Abbreviations:
TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: *ABS0208079-1*

Gross Alpha/Beta Analysis

Method PAI SOP 724R7

Sample Results

Reported on: Monday, August 19, 2002 14:15:10

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0208079

Field ID: 356314
Lab ID: 0208079-3

Sample Matrix: Soil
Date Prepared: 15-Aug-02
Prep SOP: PAI 702R15
Prep Batch: AB00615

Date Collected: 13-Aug-02
Date Analyzed: 16-Aug-02
Analytical SOP: PAI 724R7

Final Aliquot: 0.5100 g
Report Basis: Dry Weight
Count Time (min.): 60

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
GrAlpha	7.2 +/- 2.0	1.4	pCi/g	
GrBeta	5.9 +/- 1.6	1.8	pCi/g	

Comments:

Qualifiers/Flags:
U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
LT - Result is less than Requested MDC, greater than sample specific MDC.

Abbreviations:
TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: *ABS0208079-1*

Gross Alpha/Beta Analysis

Method PAI SOP 724R7

Sample Duplicate Results

Page: 1 of 1
Reported on: Monday, August 19, 2002 14:15:10

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0208079

Field ID: 356312
Lab ID: 0208079-1-D1

Sample Matrix: Soil
Date Prepared: 15-Aug-02
Prep SOP: PAI 702R15
Prep Batch: AB00615

Date Collected: 13-Aug-02
Date Analyzed: 16-Aug-02
Analytical SOP: PAI 724R7

Final Aliquot: 0.5100
Aliquot Units: g
Report Basis: Dry Weight
Count Time (min.): 60

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
GrAlpha	13.2 +/- 3.0	1.7	pCi/g	
GrBeta	9.8 +/- 2.1	2.0	pCi/g	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

* - Duplicate DER not within control limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: *ABS0208079-1*

GC/MS Volatiles

Method SW8260

Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Lab ID: VL020725-1MB

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 07/25/2002
Date Analyzed: 07/25/2002

Prep Batch: VL020725-1
QCBatchID: VL020725-1-1
Run ID: VL020725-1A
Cleanup: NONE
Basis: N/A

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
Clean DF: 1
File Name: A19068

CASNO	Target Analyte	DF	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
75-71-8	DICHLORODIFLUOROMETHANE	1	10	10	1.3	U	
74-87-3	CHLOROMETHANE	1	10	10	1.1	U	
75-01-4	VINYL CHLORIDE	1	10	10	1.5	U	
74-83-9	BROMOMETHANE	1	10	10	2.2	U	
75-00-3	CHLOROETHANE	1	10	10	1.2	U	
75-69-4	TRICHLOROFLUOROMETHANE	1	5	5	1.3	U	
75-35-4	1,1-DICHLOROETHENE	1	5	5	1.6	U	
76-13-1	TRICHLOROTRIFLUOROETHANE	1	5	5	1.6	U	
67-64-1	ACETONE	1	20	20	8	U	
74-88-4	IODOMETHANE	1	5	5	1.9	U	
75-15-0	CARBON DISULFIDE	1	5	5	1.5	U	
75-09-2	METHYLENE CHLORIDE	1	5	5	1.4	U	
156-60-5	TRANS-1,2-DICHLOROETHENE	1	5	5	1.4	U	
1634-04-4	METHYL TERTIARY BUTYL ETHER	1	5	5	1.3	U	
75-34-3	1,1-DICHLOROETHANE	1	5	5	1.5	U	
108-05-4	VINYL ACETATE	1	20	20	1.2	U	
156-59-2	CIS-1,2-DICHLOROETHENE	1	5	5	1.2	U	
78-93-3	2-BUTANONE	1	20	20	5.5	U	
74-97-5	BROMOCHLOROMETHANE	1	5	5	1	U	
67-66-3	CHLOROFORM	1	5	5	1.1	U	
71-55-6	1,1,1-TRICHLOROETHANE	1	5	5	1.2	U	
594-20-7	2,2-DICHLOROPROPANE	1	5	5	1.5	U	
56-23-5	CARBON TETRACHLORIDE	1	5	5	1.4	U	
563-58-6	1,1-DICHLOROPROPENE	1	5	5	1.4	U	
107-06-2	1,2-DICHLOROETHANE	1	5	5	1.3	U	
71-43-2	BENZENE	1	5	5	0.89	U	
79-01-6	TRICHLOROETHENE	1	5	5	1.2	U	
78-87-5	1,2-DICHLOROPROPANE	1	5	5	0.88	U	

Data Package ID: *VL0207158-1*

GC/MS Volatiles

Method SW8260

Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Lab ID: VL020725-1MB

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 07/25/2002
Date Analyzed: 07/25/2002

Prep Batch: VL020725-1
QCBatchID: VL020725-1-1
Run ID: VL020725-1A
Cleanup: NONE
Basis: N/A

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
Clean DF: 1
File Name: A19068

74-95-3	DIBROMOMETHANE	1	5	5	1.7	U	
75-27-4	BROMODICHLOROMETHANE	1	5	5	0.55	U	
10061-01-5	CIS-1,3-DICHLOROPROPENE	1	5	5	0.99	U	
108-10-1	4-METHYL-2-PENTANONE	1	20	20	5.3	U	
108-88-3	TOLUENE	1	5	5	1.7	U	
10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	5	5	1	U	
79-00-5	1,1,2-TRICHLOROETHANE	1	5	5	1.2	U	
591-78-6	2-HEXANONE	1	20	20	5.8	U	
127-18-4	TETRACHLOROETHENE	1	5	5	1.5	U	
142-28-9	1,3-DICHLOROPROPANE	1	5	5	1	U	
124-48-1	DIBROMOCHLOROMETHANE	1	5	5	0.73	U	
106-93-4	1,2-DIBROMOETHANE	1	5	5	0.89	U	
544-10-5	1-CHLOROHEXANE	1	5	5	1.4	U	
108-90-7	CHLOROBENZENE	1	5	5	1.3	U	
630-20-6	1,1,1,2-TETRACHLOROETHANE	1	5	5	1.1	U	
100-41-4	ETHYLBENZENE	1	5	5	1.3	U	
136777-61-	M+P-XYLENE	1	5	5	2.7	U	
95-47-6	O-XYLENE	1	5	5	1.4	U	
100-42-5	STYRENE	1	5	5	1.3	U	
75-25-2	BROMOFORM	1	5	5	1.1	U	
98-82-8	ISOPROPYLBENZENE	1	5	5	1.1	U	
96-18-4	1,2,3-TRICHLOROPROPANE	1	5	5	1.3	U	
79-34-5	1,1,2,2-TETRACHLOROETHANE	1	5	5	1.1	U	
108-86-1	BROMOBENZENE	1	5	5	1.1	U	
103-65-1	N-PROPYLBENZENE	1	5	5	1.2	U	
95-49-8	2-CHLOROTOLUENE	1	5	5	0.95	U	
108-67-8	1,3,5-TRIMETHYLBENZENE	1	5	5	1.1	U	
106-43-4	4-CHLOROTOLUENE	1	5	5	1.1	U	
98-06-6	TERT-BUTYLBENZENE	1	5	5	1.3	U	
95-63-6	1,2,4-TRIMETHYLBENZENE	1	5	5	1.2	U	

Data Package ID: *VL0207158-1*

GC/MS Volatiles

Method SW8260

Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Lab ID: VL020725-1MB

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 07/25/2002
Date Analyzed: 07/25/2002

Prep Batch: VL020725-1
QCBatchID: VL020725-1-1
Run ID: VL020725-1A
Cleanup: NONE
Basis: N/A

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
Clean DF: 1
File Name: A19068

135-98-8	SEC-BUTYLBENZENE	1	5	5	1.1	U	
541-73-1	1,3-DICHLOROBENZENE	1	5	5	1.2	U	
99-87-6	P-ISOPROPYLTOLUENE	1	5	5	1.2	U	
106-46-7	1,4-DICHLOROBENZENE	1	5	5	1.1	U	
104-51-8	N-BUTYLBENZENE	1	5	5	1.3	U	
95-50-1	1,2-DICHLOROBENZENE	1	5	5	1.3	U	
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	1	10	10	1.4	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	5	5	1.5	U	
87-68-3	HEXACHLOROBUTADIENE	1	5	5	1.7	U	
91-20-3	NAPHTHALENE	1	5	5	1.3	U	
87-61-6	1,2,3-TRICHLOROBENZENE	1	5	5	1.5	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	49.4		50	99	74 - 123
1868-53-7	DIBROMOFLUOROMETHANE	44.8		50	90	79 - 120
2037-26-5	TOLUENE-D8	46.6		50	93	83 - 120

Data Package ID: *VL0207158-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356310
Lab ID: 0207158-5

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 25-Jul-02
Date Analyzed: 25-Jul-02

Prep Batch: VL020725-1
QCBatchID: VL020725-1-1
Run ID: VL020725-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
Clean DF: 1
File Name: A19076

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
75-71-8	DICHLORODIFLUOROMETHANE	1	10	10	1.3	U	
74-87-3	CHLOROMETHANE	1	10	10	1.1	U	
75-01-4	VINYL CHLORIDE	1	10	10	1.5	U	
74-83-9	BROMOMETHANE	1	10	10	2.2	U	
75-00-3	CHLOROETHANE	1	10	10	1.2	U	
75-69-4	TRICHLOROFLUOROMETHANE	1	5	5	1.3	U	
75-35-4	1,1-DICHLOROETHENE	1	5	5	1.6	U	
76-13-1	TRICHLOROTRIFLUOROETHANE	1	5	5	1.6	U	
67-64-1	ACETONE	1	20	20	8	U	
74-88-4	IODOMETHANE	1	5	5	1.9	U	
75-15-0	CARBON DISULFIDE	1	5	5	1.5	U	
75-09-2	METHYLENE CHLORIDE	1	5	5	1.4	U	
156-60-5	TRANS-1,2-DICHLOROETHENE	1	5	5	1.4	U	
1634-04-4	METHYL TERTIARY BUTYL ETHER	1	5	5	1.3	U	
75-34-3	1,1-DICHLOROETHANE	1	5	5	1.5	U	
108-05-4	VINYL ACETATE	1	20	20	1.2	U	
156-59-2	CIS-1,2-DICHLOROETHENE	1	5	5	1.2	U	
78-93-3	2-BUTANONE	1	20	20	5.5	U	
74-97-5	BROMOCHLOROMETHANE	1	5	5	1	U	
67-66-3	CHLOROFORM	1	5	5	1.1	U	
71-55-6	1,1,1-TRICHLOROETHANE	1	5	5	1.2	U	
594-20-7	2,2-DICHLOROPROPANE	1	5	5	1.5	U	
56-23-5	CARBON TETRACHLORIDE	1	5	5	1.4	U	
563-58-6	1,1-DICHLOROPROPENE	1	5	5	1.4	U	
107-06-2	1,2-DICHLOROETHANE	1	5	5	1.3	U	
71-43-2	BENZENE	1	5	5	0.89	U	
79-01-6	TRICHLOROETHENE	1	5	5	1.2	U	
78-87-5	1,2-DICHLOROPROPANE	1	5	5	0.88	U	

Data Package ID: *VL0207158-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356310
Lab ID: 0207158-5

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 25-Jul-02
Date Analyzed: 25-Jul-02

Prep Batch: VL020725-1
QCBatchID: VL020725-1-1
Run ID: VL020725-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
Clean DF: 1
File Name: A19076

74-95-3	DIBROMOMETHANE	1	5	5	1.7	U	
75-27-4	BROMODICHLOROMETHANE	1	5	5	0.55	U	
10061-01-5	CIS-1,3-DICHLOROPROPENE	1	5	5	0.99	U	
108-10-1	4-METHYL-2-PENTANONE	1	20	20	5.3	U	
108-88-3	TOLUENE	1	5	5	1.7	U	
10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	5	5	1	U	
79-00-5	1,1,2-TRICHLOROETHANE	1	5	5	1.2	U	
591-78-6	2-HEXANONE	1	20	20	5.8	U	
127-18-4	TETRACHLOROETHENE	1	5	5	1.5	U	
142-28-9	1,3-DICHLOROPROPANE	1	5	5	1	U	
124-48-1	DIBROMOCHLOROMETHANE	1	5	5	0.73	U	
106-93-4	1,2-DIBROMOETHANE	1	5	5	0.89	U	
544-10-5	1-CHLOROHEXANE	1	5	5	1.4	U	
108-90-7	CHLOROBENZENE	1	5	5	1.3	U	
630-20-6	1,1,1,2-TETRACHLOROETHANE	1	5	5	1.1	U	
100-41-4	ETHYLBENZENE	1	5	5	1.3	U	
136777-61-	M+P-XYLENE	1	5	5	2.7	U	
95-47-6	O-XYLENE	1	5	5	1.4	U	
100-42-5	STYRENE	1	5	5	1.3	U	
75-25-2	BROMOFORM	1	5	5	1.1	U	
98-82-8	ISOPROPYLBENZENE	1	5	5	1.1	U	
96-18-4	1,2,3-TRICHLOROPROPANE	1	5	5	1.3	U	
79-34-5	1,1,2,2-TETRACHLOROETHANE	1	5	5	1.1	U	
108-86-1	BROMOBENZENE	1	5	5	1.1	U	
103-65-1	N-PROPYLBENZENE	1	5	5	1.2	U	
95-49-8	2-CHLOROTOLUENE	1	5	5	0.95	U	
108-67-8	1,3,5-TRIMETHYLBENZENE	1	5	5	1.1	U	
106-43-4	4-CHLOROTOLUENE	1	5	5	1.1	U	
98-06-6	TERT-BUTYLBENZENE	1	5	5	1.3	U	
95-63-6	1,2,4-TRIMETHYLBENZENE	1	5	5	1.2	U	

Data Package ID: *VL0207158-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356310
Lab ID: 0207158-5

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 25-Jul-02
Date Analyzed: 25-Jul-02

Prep Batch: VL020725-1
QCBatchID: VL020725-1-1
Run ID: VL020725-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
Clean DF: 1
File Name: A19076

135-98-8	SEC-BUTYLBENZENE	1	5	5	1.1	U	
541-73-1	1,3-DICHLOROBENZENE	1	5	5	1.2	U	
99-87-6	P-ISOPROPYLTOLUENE	1	5	5	1.2	U	
106-46-7	1,4-DICHLOROBENZENE	1	5	5	1.1	U	
104-51-8	N-BUTYLBENZENE	1	5	5	1.3	U	
95-50-1	1,2-DICHLOROBENZENE	1	5	5	1.3	U	
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	1	10	10	1.4	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	5	5	1.5	U	
87-68-3	HEXACHLOROBUTADIENE	1	5	5	1.7	U	
91-20-3	NAPHTHALENE	1	5	5	1.3	U	
87-61-6	1,2,3-TRICHLOROBENZENE	1	5	5	1.5	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	49.1		50	98	74 - 123
1868-53-7	DIBROMOFLUOROMETHANE	46		50	92	79 - 120
2037-26-5	TOLUENE-D8	47.5		50	95	83 - 120

Data Package ID: *VL0207158-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356304
Lab ID: 0207158-4

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 25-Jul-02
Date Analyzed: 25-Jul-02

Prep Batch: VL020725-1
QCBatchID: VL020725-1-1
Run ID: VL020725-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
Clean DF: 1
File Name: A19077

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
75-71-8	DICHLORODIFLUOROMETHANE	1	10	10	1.3	U	
74-87-3	CHLOROMETHANE	1	10	10	1.1	U	
75-01-4	VINYL CHLORIDE	1	10	10	1.5	U	
74-83-9	BROMOMETHANE	1	10	10	2.2	U	
75-00-3	CHLOROETHANE	1	10	10	1.2	U	
75-69-4	TRICHLOROFLUOROMETHANE	1	5	5	1.3	U	
75-35-4	1,1-DICHLOROETHENE	1	5	5	1.6	U	
76-13-1	TRICHLOROTRIFLUOROETHANE	1	5	5	1.6	U	
67-64-1	ACETONE	1	8.9	20	8	J	
74-88-4	IODOMETHANE	1	5	5	1.9	U	
75-15-0	CARBON DISULFIDE	1	5	5	1.5	U	
75-09-2	METHYLENE CHLORIDE	1	5	5	1.4	U	
156-60-5	TRANS-1,2-DICHLOROETHENE	1	5	5	1.4	U	
1634-04-4	METHYL TERTIARY BUTYL ETHER	1	5	5	1.3	U	
75-34-3	1,1-DICHLOROETHANE	1	5	5	1.5	U	
108-05-4	VINYL ACETATE	1	20	20	1.2	U	
156-59-2	CIS-1,2-DICHLOROETHENE	1	5	5	1.2	U	
78-93-3	2-BUTANONE	1	20	20	5.5	U	
74-97-5	BROMOCHLOROMETHANE	1	5	5	1	U	
67-66-3	CHLOROFORM	1	5	5	1.1	U	
71-55-6	1,1,1-TRICHLOROETHANE	1	5	5	1.2	U	
594-20-7	2,2-DICHLOROPROPANE	1	5	5	1.5	U	
56-23-5	CARBON TETRACHLORIDE	1	5	5	1.4	U	
563-58-6	1,1-DICHLOROPROPENE	1	5	5	1.4	U	
107-06-2	1,2-DICHLOROETHANE	1	5	5	1.3	U	
71-43-2	BENZENE	1	5	5	0.89	U	
79-01-6	TRICHLOROETHENE	1	5	5	1.2	U	
78-87-5	1,2-DICHLOROPROPANE	1	5	5	0.88	U	

Data Package ID: *VL0207158-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356304
Lab ID: 0207158-4

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 25-Jul-02
Date Analyzed: 25-Jul-02

Prep Batch: VL020725-1
QCBatchID: VL020725-1-1
Run ID: VL020725-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
Clean DF: 1
File Name: A19077

74-95-3	DIBROMOMETHANE	1	5	5	1.7	U	
75-27-4	BROMODICHLOROMETHANE	1	5	5	0.55	U	
10061-01-5	CIS-1,3-DICHLOROPROPENE	1	5	5	0.99	U	
108-10-1	4-METHYL-2-PENTANONE	1	20	20	5.3	U	
108-88-3	TOLUENE	1	5	5	1.7	U	
10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	5	5	1	U	
79-00-5	1,1,2-TRICHLOROETHANE	1	5	5	1.2	U	
591-78-6	2-HEXANONE	1	20	20	5.8	U	
127-18-4	TETRACHLOROETHENE	1	5	5	1.5	U	
142-28-9	1,3-DICHLOROPROPANE	1	5	5	1	U	
124-48-1	DIBROMOCHLOROMETHANE	1	5	5	0.73	U	
106-93-4	1,2-DIBROMOETHANE	1	5	5	0.89	U	
544-10-5	1-CHLOROHEXANE	1	5	5	1.4	U	
108-90-7	CHLOROBENZENE	1	5	5	1.3	U	
630-20-6	1,1,1,2-TETRACHLOROETHANE	1	5	5	1.1	U	
100-41-4	ETHYLBENZENE	1	5	5	1.3	U	
136777-61-	M+P-XYLENE	1	5	5	2.7	U	
95-47-6	O-XYLENE	1	5	5	1.4	U	
100-42-5	STYRENE	1	5	5	1.3	U	
75-25-2	BROMOFORM	1	5	5	1.1	U	
98-82-8	ISOPROPYLBENZENE	1	5	5	1.1	U	
96-18-4	1,2,3-TRICHLOROPROPANE	1	5	5	1.3	U	
79-34-5	1,1,2,2-TETRACHLOROETHANE	1	5	5	1.1	U	
108-86-1	BROMOBENZENE	1	5	5	1.1	U	
103-65-1	N-PROPYLBENZENE	1	5	5	1.2	U	
95-49-8	2-CHLOROTOLUENE	1	5	5	0.95	U	
108-67-8	1,3,5-TRIMETHYLBENZENE	1	5	5	1.1	U	
106-43-4	4-CHLOROTOLUENE	1	5	5	1.1	U	
98-06-6	TERT-BUTYLBENZENE	1	5	5	1.3	U	
95-63-6	1,2,4-TRIMETHYLBENZENE	1	2.1	5	1.2	J	

Data Package ID: *VL0207158-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356304
Lab ID: 0207158-4

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 25-Jul-02
Date Analyzed: 25-Jul-02

Prep Batch: VL020725-1
QCBatchID: VL020725-1-1
Run ID: VL020725-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
Clean DF: 1
File Name: A19077

135-98-8	SEC-BUTYLBENZENE	1	5	5	1.1	U	
541-73-1	1,3-DICHLOROBENZENE	1	5	5	1.2	U	
99-87-6	P-ISOPROPYLTOLUENE	1	5	5	1.2	U	
106-46-7	1,4-DICHLOROBENZENE	1	5	5	1.1	U	
104-51-8	N-BUTYLBENZENE	1	5	5	1.3	U	
95-50-1	1,2-DICHLOROBENZENE	1	5	5	1.3	U	
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	1	10	10	1.4	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	5	5	1.5	U	
87-68-3	HEXACHLOROBUTADIENE	1	5	5	1.7	U	
91-20-3	NAPHTHALENE	1	5	5	1.3	U	
87-61-6	1,2,3-TRICHLOROBENZENE	1	5	5	1.5	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	50.5		50	101	74 - 123
1868-53-7	DIBROMOFLUOROMETHANE	46.9		50	94	79 - 120
2037-26-5	TOLUENE-D8	47.6		50	95	83 - 120

Data Package ID: *VL0207158-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

FieldID: 356301
Lab ID: 0207158-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 25-Jul-02
Date Analyzed: 25-Jul-02

Prep Batch: VL020725-1
QCBatchID: VL020725-1-1
Run ID: VL020725-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
Clean DF: 1
File Name: A19078

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
75-71-8	DICHLORODIFLUOROMETHANE	1	10	10	1.3	U	
74-87-3	CHLOROMETHANE	1	10	10	1.1	U	
75-01-4	VINYL CHLORIDE	1	10	10	1.5	U	
74-83-9	BROMOMETHANE	1	10	10	2.2	U	
75-00-3	CHLOROETHANE	1	10	10	1.2	U	
75-69-4	TRICHLOROFLUOROMETHANE	1	5	5	1.3	U	
75-35-4	1,1-DICHLOROETHENE	1	5	5	1.6	U	
76-13-1	TRICHLOROTRIFLUOROETHANE	1	5	5	1.6	U	
67-64-1	ACETONE	1	15	20	8	J	
74-88-4	IODOMETHANE	1	5	5	1.9	U	
75-15-0	CARBON DISULFIDE	1	5	5	1.5	U	
75-09-2	METHYLENE CHLORIDE	1	5	5	1.4	U	
156-60-5	TRANS-1,2-DICHLOROETHENE	1	5	5	1.4	U	
1634-04-4	METHYL TERTIARY BUTYL ETHER	1	5	5	1.3	U	
75-34-3	1,1-DICHLOROETHANE	1	5	5	1.5	U	
108-05-4	VINYL ACETATE	1	20	20	1.2	U	
156-59-2	CIS-1,2-DICHLOROETHENE	1	5	5	1.2	U	
78-93-3	2-BUTANONE	1	20	20	5.5	U	
74-97-5	BROMOCHLOROMETHANE	1	5	5	1	U	
67-66-3	CHLOROFORM	1	5	5	1.1	U	
71-55-6	1,1,1-TRICHLOROETHANE	1	5	5	1.2	U	
594-20-7	2,2-DICHLOROPROPANE	1	5	5	1.5	U	
56-23-5	CARBON TETRACHLORIDE	1	5	5	1.4	U	
563-58-6	1,1-DICHLOROPROPENE	1	5	5	1.4	U	
107-06-2	1,2-DICHLOROETHANE	1	5	5	1.3	U	
71-43-2	BENZENE	1	5	5	0.89	U	
79-01-6	TRICHLOROETHENE	1	5	5	1.2	U	
78-87-5	1,2-DICHLOROPROPANE	1	5	5	0.88	U	

Data Package ID: *VL0207158-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356301
Lab ID: 0207158-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 25-Jul-02
Date Analyzed: 25-Jul-02

Prep Batch: VL020725-1
QCBatchID: VL020725-1-1
Run ID: VL020725-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
Clean DF: 1
File Name: A19078

74-95-3	DIBROMOMETHANE	1	5	5	1.7	U	
75-27-4	BROMODICHLOROMETHANE	1	5	5	0.55	U	
10061-01-5	CIS-1,3-DICHLOROPROPENE	1	5	5	0.99	U	
108-10-1	4-METHYL-2-PENTANONE	1	20	20	5.3	U	
108-88-3	TOLUENE	1	5	5	1.7	U	
10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	5	5	1	U	
79-00-5	1,1,2-TRICHLOROETHANE	1	5	5	1.2	U	
591-78-6	2-HEXANONE	1	20	20	5.8	U	
127-18-4	TETRACHLOROETHENE	1	5	5	1.5	U	
142-28-9	1,3-DICHLOROPROPANE	1	5	5	1	U	
124-48-1	DIBROMOCHLOROMETHANE	1	5	5	0.73	U	
106-93-4	1,2-DIBROMOETHANE	1	5	5	0.89	U	
544-10-5	1-CHLOROHEXANE	1	5	5	1.4	U	
108-90-7	CHLOROBENZENE	1	12	5	1.3		
630-20-6	1,1,1,2-TETRACHLOROETHANE	1	5	5	1.1	U	
100-41-4	ETHYLBENZENE	1	5	5	1.3	U	
136777-61-	M+P-XYLENE	1	5	5	2.7	U	
95-47-6	O-XYLENE	1	5	5	1.4	U	
100-42-5	STYRENE	1	5	5	1.3	U	
75-25-2	BROMOFORM	1	5	5	1.1	U	
98-82-8	ISOPROPYLBENZENE	1	5	5	1.1	U	
96-18-4	1,2,3-TRICHLOROPROPANE	1	5	5	1.3	U	
79-34-5	1,1,2,2-TETRACHLOROETHANE	1	5	5	1.1	U	
108-86-1	BROMOBENZENE	1	5	5	1.1	U	
103-65-1	N-PROPYLBENZENE	1	5	5	1.2	U	
95-49-8	2-CHLOROTOLUENE	1	5	5	0.95	U	
108-67-8	1,3,5-TRIMETHYLBENZENE	1	5	5	1.1	U	
106-43-4	4-CHLOROTOLUENE	1	5	5	1.1	U	
98-06-6	TERT-BUTYLBENZENE	1	5	5	1.3	U	
95-63-6	1,2,4-TRIMETHYLBENZENE	1	5	5	1.2	U	

Data Package ID: *VL0207158-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356301
Lab ID: 0207158-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 25-Jul-02
Date Analyzed: 25-Jul-02

Prep Batch: VL020725-1
QCBatchID: VL020725-1-1
Run ID: VL020725-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
Clean DF: 1
File Name: A19078

135-98-8	SEC-BUTYLBENZENE	1	5	5	1.1	U	
541-73-1	1,3-DICHLOROBENZENE	1	5	5	1.2	U	
99-87-6	P-ISOPROPYLTOLUENE	1	5	5	1.2	U	
106-46-7	1,4-DICHLOROBENZENE	1	43	5	1.1		
104-51-8	N-BUTYLBENZENE	1	5	5	1.3	U	
95-50-1	1,2-DICHLOROBENZENE	1	5	5	1.3	U	
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	1	10	10	1.4	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	5	5	1.5	U	
87-68-3	HEXACHLOROBUTADIENE	1	5	5	1.7	U	
91-20-3	NAPHTHALENE	1	5	5	1.3	U	
87-61-6	1,2,3-TRICHLOROBENZENE	1	5	5	1.5	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	47.2		50	94	74 - 123
1868-53-7	DIBROMOFLUOROMETHANE	44.5		50	89	79 - 120
2037-26-5	TOLUENE-D8	46.1		50	92	83 - 120

Data Package ID: *VL0207158-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356302
Lab ID: 0207158-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 25-Jul-02
Date Analyzed: 25-Jul-02

Prep Batch: VL020725-1
QCBatchID: VL020725-1-1
Run ID: VL020725-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
Clean DF: 1
File Name: A19079

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
75-71-8	DICHLORODIFLUOROMETHANE	1	10	10	1.3	U	
74-87-3	CHLOROMETHANE	1	10	10	1.1	U	
75-01-4	VINYL CHLORIDE	1	10	10	1.5	U	
74-83-9	BROMOMETHANE	1	10	10	2.2	U	
75-00-3	CHLOROETHANE	1	10	10	1.2	U	
75-69-4	TRICHLOROFLUOROMETHANE	1	5	5	1.3	U	
75-35-4	1,1-DICHLOROETHENE	1	5	5	1.6	U	
76-13-1	TRICHLOROTRIFLUOROETHANE	1	5	5	1.6	U	
67-64-1	ACETONE	1	20	20	8	U	
74-88-4	IODOMETHANE	1	5	5	1.9	U	
75-15-0	CARBON DISULFIDE	1	5	5	1.5	U	
75-09-2	METHYLENE CHLORIDE	1	5	5	1.4	U	
156-60-5	TRANS-1,2-DICHLOROETHENE	1	5	5	1.4	U	
1634-04-4	METHYL TERTIARY BUTYL ETHER	1	5	5	1.3	U	
75-34-3	1,1-DICHLOROETHANE	1	5	5	1.5	U	
108-05-4	VINYL ACETATE	1	20	20	1.2	U	
156-59-2	CIS-1,2-DICHLOROETHENE	1	5	5	1.2	U	
78-93-3	2-BUTANONE	1	20	20	5.5	U	
74-97-5	BROMOCHLOROMETHANE	1	5	5	1	U	
67-66-3	CHLOROFORM	1	5	5	1.1	U	
71-55-6	1,1,1-TRICHLOROETHANE	1	5	5	1.2	U	
594-20-7	2,2-DICHLOROPROPANE	1	5	5	1.5	U	
56-23-5	CARBON TETRACHLORIDE	1	5	5	1.4	U	
563-58-6	1,1-DICHLOROPROPENE	1	5	5	1.4	U	
107-06-2	1,2-DICHLOROETHANE	1	5	5	1.3	U	
71-43-2	BENZENE	1	5	5	0.89	U	
79-01-6	TRICHLOROETHENE	1	5	5	1.2	U	
78-87-5	1,2-DICHLOROPROPANE	1	5	5	0.88	U	

Data Package ID: *VL0207158-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356302
Lab ID: 0207158-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 25-Jul-02
Date Analyzed: 25-Jul-02

Prep Batch: VL020725-1
QCBatchID: VL020725-1-1
Run ID: VL020725-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
Clean DF: 1
File Name: A19079

74-95-3	DIBROMOMETHANE	1	5	5	1.7	U	
75-27-4	BROMODICHLOROMETHANE	1	5	5	0.55	U	
10061-01-5	CIS-1,3-DICHLOROPROPENE	1	5	5	0.99	U	
108-10-1	4-METHYL-2-PENTANONE	1	20	20	5.3	U	
108-88-3	TOLUENE	1	5	5	1.7	U	
10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	5	5	1	U	
79-00-5	1,1,2-TRICHLOROETHANE	1	5	5	1.2	U	
591-78-6	2-HEXANONE	1	20	20	5.8	U	
127-18-4	TETRACHLOROETHENE	1	5	5	1.5	U	
142-28-9	1,3-DICHLOROPROPANE	1	5	5	1	U	
124-48-1	DIBROMOCHLOROMETHANE	1	5	5	0.73	U	
106-93-4	1,2-DIBROMOETHANE	1	5	5	0.89	U	
544-10-5	1-CHLOROHEXANE	1	5	5	1.4	U	
108-90-7	CHLOROBENZENE	1	3.1	5	1.3	J	
630-20-6	1,1,1,2-TETRACHLOROETHANE	1	5	5	1.1	U	
100-41-4	ETHYLBENZENE	1	5	5	1.3	U	
136777-61-	M+P-XYLENE	1	5	5	2.7	U	
95-47-6	O-XYLENE	1	5	5	1.4	U	
100-42-5	STYRENE	1	5	5	1.3	U	
75-25-2	BROMOFORM	1	5	5	1.1	U	
98-82-8	ISOPROPYLBENZENE	1	5	5	1.1	U	
96-18-4	1,2,3-TRICHLOROPROPANE	1	5	5	1.3	U	
79-34-5	1,1,2,2-TETRACHLOROETHANE	1	5	5	1.1	U	
108-86-1	BROMOBENZENE	1	5	5	1.1	U	
103-65-1	N-PROPYLBENZENE	1	5	5	1.2	U	
95-49-8	2-CHLOROTOLUENE	1	5	5	0.95	U	
108-67-8	1,3,5-TRIMETHYLBENZENE	1	5	5	1.1	U	
106-43-4	4-CHLOROTOLUENE	1	5	5	1.1	U	
98-06-6	TERT-BUTYLBENZENE	1	5	5	1.3	U	
95-63-6	1,2,4-TRIMETHYLBENZENE	1	5	5	1.2	U	

Data Package ID: *VL0207158-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356302
Lab ID: 0207158-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 25-Jul-02
Date Analyzed: 25-Jul-02

Prep Batch: VL020725-1
QCBatchID: VL020725-1-1
Run ID: VL020725-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
Clean DF: 1
File Name: A19079

135-98-8	SEC-BUTYLBENZENE	1	5	5	1.1	U	
541-73-1	1,3-DICHLOROBENZENE	1	5	5	1.2	U	
99-87-6	P-ISOPROPYLTOLUENE	1	5	5	1.2	U	
106-46-7	1,4-DICHLOROBENZENE	1	6.5	5	1.1		
104-51-8	N-BUTYLBENZENE	1	5	5	1.3	U	
95-50-1	1,2-DICHLOROBENZENE	1	2.9	5	1.3	J	
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	1	10	10	1.4	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	5	5	1.5	U	
87-68-3	HEXACHLOROBUTADIENE	1	5	5	1.7	U	
91-20-3	NAPHTHALENE	1	5	5	1.3	U	
87-61-6	1,2,3-TRICHLOROBENZENE	1	5	5	1.5	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	49.9		50	100	74 - 123
1868-53-7	DIBROMOFLUOROMETHANE	46.8		50	94	79 - 120
2037-26-5	TOLUENE-D8	46.4		50	93	83 - 120

Data Package ID: *VL0207158-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356303
Lab ID: 0207158-3

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 25-Jul-02
Date Analyzed: 25-Jul-02

Prep Batch: VL020725-1
QCBatchID: VL020725-1-1
Run ID: VL020725-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
Clean DF: 1
File Name: A19080

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
75-71-8	DICHLORODIFLUOROMETHANE	1	10	10	1.3	U	
74-87-3	CHLOROMETHANE	1	10	10	1.1	U	
75-01-4	VINYL CHLORIDE	1	10	10	1.5	U	
74-83-9	BROMOMETHANE	1	10	10	2.2	U	
75-00-3	CHLOROETHANE	1	10	10	1.2	U	
75-69-4	TRICHLOROFLUOROMETHANE	1	5	5	1.3	U	
75-35-4	1,1-DICHLOROETHENE	1	5	5	1.6	U	
76-13-1	TRICHLOROTRIFLUOROETHANE	1	5	5	1.6	U	
67-64-1	ACETONE	1	15	20	8	J	
74-88-4	IODOMETHANE	1	5	5	1.9	U	
75-15-0	CARBON DISULFIDE	1	5	5	1.5	U	
75-09-2	METHYLENE CHLORIDE	1	5	5	1.4	U	
156-60-5	TRANS-1,2-DICHLOROETHENE	1	5	5	1.4	U	
1634-04-4	METHYL TERTIARY BUTYL ETHER	1	5	5	1.3	U	
75-34-3	1,1-DICHLOROETHANE	1	5	5	1.5	U	
108-05-4	VINYL ACETATE	1	20	20	1.2	U	
156-59-2	CIS-1,2-DICHLOROETHENE	1	5	5	1.2	U	
78-93-3	2-BUTANONE	1	20	20	5.5	U	
74-97-5	BROMOCHLOROMETHANE	1	5	5	1	U	
67-66-3	CHLOROFORM	1	5	5	1.1	U	
71-55-6	1,1,1-TRICHLOROETHANE	1	5	5	1.2	U	
594-20-7	2,2-DICHLOROPROPANE	1	5	5	1.5	U	
56-23-5	CARBON TETRACHLORIDE	1	5	5	1.4	U	
563-58-6	1,1-DICHLOROPROPENE	1	5	5	1.4	U	
107-06-2	1,2-DICHLOROETHANE	1	5	5	1.3	U	
71-43-2	BENZENE	1	5	5	0.89	U	
79-01-6	TRICHLOROETHENE	1	5	5	1.2	U	
78-87-5	1,2-DICHLOROPROPANE	1	5	5	0.88	U	

Data Package ID: *VL0207158-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356303
Lab ID: 0207158-3

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 25-Jul-02
Date Analyzed: 25-Jul-02

Prep Batch: VL020725-1
QCBatchID: VL020725-1-1
Run ID: VL020725-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
Clean DF: 1
File Name: A19080

74-95-3	DIBROMOMETHANE	1	5	5	1.7	U	
75-27-4	BROMODICHLOROMETHANE	1	5	5	0.55	U	
10061-01-5	CIS-1,3-DICHLOROPROPENE	1	5	5	0.99	U	
108-10-1	4-METHYL-2-PENTANONE	1	20	20	5.3	U	
108-88-3	TOLUENE	1	5	5	1.7	U	
10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	5	5	1	U	
79-00-5	1,1,2-TRICHLOROETHANE	1	5	5	1.2	U	
591-78-6	2-HEXANONE	1	20	20	5.8	U	
127-18-4	TETRACHLOROETHENE	1	5	5	1.5	U	
142-28-9	1,3-DICHLOROPROPANE	1	5	5	1	U	
124-48-1	DIBROMOCHLOROMETHANE	1	5	5	0.73	U	
106-93-4	1,2-DIBROMOETHANE	1	5	5	0.89	U	
544-10-5	1-CHLOROHEXANE	1	5	5	1.4	U	
108-90-7	CHLOROBENZENE	1	12	5	1.3		
630-20-6	1,1,1,2-TETRACHLOROETHANE	1	5	5	1.1	U	
100-41-4	ETHYLBENZENE	1	5	5	1.3	U	
136777-61-	M+P-XYLENE	1	5	5	2.7	U	
95-47-6	O-XYLENE	1	5	5	1.4	U	
100-42-5	STYRENE	1	5	5	1.3	U	
75-25-2	BROMOFORM	1	5	5	1.1	U	
98-82-8	ISOPROPYLBENZENE	1	5	5	1.1	U	
96-18-4	1,2,3-TRICHLOROPROPANE	1	5	5	1.3	U	
79-34-5	1,1,2,2-TETRACHLOROETHANE	1	5	5	1.1	U	
108-86-1	BROMOBENZENE	1	5	5	1.1	U	
103-65-1	N-PROPYLBENZENE	1	5	5	1.2	U	
95-49-8	2-CHLOROTOLUENE	1	5	5	0.95	U	
108-67-8	1,3,5-TRIMETHYLBENZENE	1	5	5	1.1	U	
106-43-4	4-CHLOROTOLUENE	1	5	5	1.1	U	
98-06-6	TERT-BUTYLBENZENE	1	5	5	1.3	U	
95-63-6	1,2,4-TRIMETHYLBENZENE	1	5	5	1.2	U	

Data Package ID: *VL0207158-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356303
Lab ID: 0207158-3

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 25-Jul-02
Date Analyzed: 25-Jul-02

Prep Batch: VL020725-1
QCBatchID: VL020725-1-1
Run ID: VL020725-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
Clean DF: 1
File Name: A19080

135-98-8	SEC-BUTYLBENZENE	1	5	5	1.1	U	
541-73-1	1,3-DICHLOROBENZENE	1	5	5	1.2	U	
99-87-6	P-ISOPROPYLTOLUENE	1	5	5	1.2	U	
106-46-7	1,4-DICHLOROBENZENE	1	44	5	1.1		
104-51-8	N-BUTYLBENZENE	1	5	5	1.3	U	
95-50-1	1,2-DICHLOROBENZENE	1	5	5	1.3	U	
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	1	10	10	1.4	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	5	5	1.5	U	
87-68-3	HEXACHLOROBUTADIENE	1	5	5	1.7	U	
91-20-3	NAPHTHALENE	1	5	5	1.3	U	
87-61-6	1,2,3-TRICHLOROBENZENE	1	5	5	1.5	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	48.6		50	97	74 - 123
1868-53-7	DIBROMOFLUOROMETHANE	46		50	92	79 - 120
2037-26-5	TOLUENE-D8	46.4		50	93	83 - 120

Data Package ID: *VL0207158-1*

Gasoline Range Organics

Method SW8015

Method Blank

Lab Name: Paragon Analytics, Inc.

Work Order Number: 0207158

Client Name: Shaw Environmental & Infrastructure, Inc.

ClientProject ID: CAU356 631845.02030010

Lab ID: HCG020725-2MB

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 07/25/2002
Date Analyzed: 07/25/2002

Prep Batch: HCG020725-2
QCBatchID: HCG020725-2-1
Run ID: HCG020725-2A
Cleanup: NONE
Basis: N/A

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: MG/L
Clean DF: 1
File Name: F2PF3774

CASNO	Target Analyte	DF	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
8006-61-9	GASOLINE RANGE ORGANICS	1	0.1	0.1	0.027	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
13-10-5	2,3,4-TRIFLUOROTOLUENE	0.1		0.1	100	79 - 115

Data Package ID: *HCG0207158-2*

Gasoline Range Organics

Method SW8015

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356301
Lab ID: 0207158-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 25-Jul-02
Date Analyzed: 25-Jul-02

Prep Batch: HCG020725-2
QCBatchID: HCG020725-2-1
Run ID: HCG020725-2A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: MG/L
Clean DF: 1
File Name: F2PF3782

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
8006-61-9	GASOLINE RANGE ORGANICS	1	0.044	0.1	0.027	J	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
13-10-5	2,3,4-TRIFLUOROTOLUENE	0.101		0.1	101	79 - 115

Data Package ID: *HCG0207158-2*

Gasoline Range Organics

Method SW8015

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356302
Lab ID: 0207158-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 25-Jul-02
Date Analyzed: 25-Jul-02

Prep Batch: HCG020725-2
QCBatchID: HCG020725-2-1
Run ID: HCG020725-2A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: MG/L
Clean DF: 1
File Name: F2PF3783

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
8006-61-9	GASOLINE RANGE ORGANICS	1	0.1	0.1	0.027	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
13-10-5	2,3,4-TRIFLUOROTOLUENE	0.0986		0.1	99	79 - 115

Data Package ID: *HCG0207158-2*

Gasoline Range Organics

Method SW8015

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356303
Lab ID: 0207158-3

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 25-Jul-02
Date Analyzed: 25-Jul-02

Prep Batch: HCG020725-2
QCBatchID: HCG020725-2-1
Run ID: HCG020725-2A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: MG/L
Clean DF: 1
File Name: F2PF3784

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
8006-61-9	GASOLINE RANGE ORGANICS	1	0.037	0.1	0.027	J	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
13-10-5	2,3,4-TRIFLUOROTOLUENE	0.102		0.1	102	79 - 115

Data Package ID: *HCG0207158-2*

GC/MS Semi-volatiles

Method SW8270

Method Blank

PRELIMINARY RESULTS

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Lab ID: EX020724-6MB

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 07/24/2002
Date Analyzed: 07/26/2002

Prep Batch: EX020724-6
QCBatchID: EX020724-6-1
Run ID: SV020726-2
Cleanup: NONE
Basis: N/A

Sample Aliquot: 1000 ML
Final Volume: 1 ML
Result Units: UG/L
Clean DF: 1
File Name: P8333

CASNO	Target Analyte	DF	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
110-86-1	PYRIDINE	1	10	10	1.5	U	
62-75-9	N-NITROSODIMETHYLAMINE	1	10	10	1.8	U	
62-53-3	ANILINE	1	25	25	1.6	U	
108-95-2	PHENOL	1	10	10	1.8	U	
111-44-4	BIS(2-CHLOROETHYL)ETHER	1	10	10	1.5	U	
95-57-8	2-CHLOROPHENOL	1	10	10	1.6	U	
541-73-1	1,3-DICHLOROBENZENE	1	10	10	1.8	U	
106-46-7	1,4-DICHLOROBENZENE	1	10	10	1.7	U	
95-50-1	1,2-DICHLOROBENZENE	1	10	10	1.6	U	
100-51-6	BENZYL ALCOHOL	1	10	10	1.6	U	
108-60-1	BIS(2-CHLOROISOPROPYL)ETHER	1	10	10	1.8	U	
95-48-7	2-METHYLPHENOL	1	10	10	1.8	U	
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1	10	10	1.7	U	
106-44-5	4-METHYLPHENOL	1	10	10	2	U	
67-72-1	HEXACHLOROETHANE	1	10	10	1.9	U	
98-95-3	NITROBENZENE	1	10	10	1.7	U	
78-59-1	ISOPHORONE	1	10	10	1.8	U	
88-75-5	2-NITROPHENOL	1	10	10	1.9	U	
105-67-9	2,4-DIMETHYLPHENOL	1	10	10	6.6	U	
111-91-1	BIS(2-CHLOROETHOXY)METHANE	1	10	10	1.6	U	
120-83-2	2,4-DICHLOROPHENOL	1	10	10	1.9	U	
65-85-0	BENZOIC ACID	1	50	50	17	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	10	10	1.4	U	
91-20-3	NAPHTHALENE	1	10	10	1.5	U	
106-47-8	4-CHLOROANILINE	1	25	25	1.3	U	
87-68-3	HEXACHLOROBUTADIENE	1	10	10	1.6	U	
59-50-7	4-CHLORO-3-METHYLPHENOL	1	10	10	1.9	U	
91-57-6	2-METHYLNAPHTHALENE	1	10	10	1.6	U	

Data Package ID: *SV0207158-1*

GC/MS Semi-volatiles

Method SW8270

Method Blank

PRELIMINARY RESULTS

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Lab ID: EX020724-6MB

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 07/24/2002
Date Analyzed: 07/26/2002

Prep Batch: EX020724-6
QCBatchID: EX020724-6-1
Run ID: SV020726-2
Cleanup: NONE
Basis: N/A

Sample Aliquot: 1000 ML
Final Volume: 1 ML
Result Units: UG/L
Clean DF: 1
File Name: P8333

77-47-4	HEXACHLOROCYCLOPENTADIENE	1	10	10	1.5	U	
88-06-2	2,4,6-TRICHLOROPHENOL	1	10	10	1.7	U	
95-95-4	2,4,5-TRICHLOROPHENOL	1	10	10	1.5	U	
91-58-7	2-CHLORONAPHTHALENE	1	10	10	1.4	U	
88-74-4	2-NITROANILINE	1	50	50	1.6	U	
131-11-3	DIMETHYL PHTHALATE	1	10	10	1.2	U	
606-20-2	2,6-DINITROTOLUENE	1	10	10	1.5	U	
208-96-8	ACENAPHTHYLENE	1	10	10	1.2	U	
99-09-2	3-NITROANILINE	1	50	50	1.9	U	
83-32-9	ACENAPHTHENE	1	10	10	1.2	U	
51-28-5	2,4-DINITROPHENOL	1	50	50	3	U	
100-02-7	4-NITROPHENOL	1	50	50	3.2	U	
132-64-9	DIBENZOFURAN	1	10	10	1.3	U	
121-14-2	2,4-DINITROTOLUENE	1	10	10	1.9	U	
84-66-2	DIETHYL PHTHALATE	1	10	10	1.6	U	
86-73-7	FLUORENE	1	10	10	1.4	U	
7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1	10	10	1.3	U	
100-01-6	4-NITROANILINE	1	50	50	2.3	U	
103-33-3	AZOBENZENE	1	10	10	1.2	U	
534-52-1	4,6-DINITRO-2-METHYLPHENOL	1	50	50	2.3	U	
86-30-6	N-NITROSODIPHENYLAMINE	1	10	10	1.8	U	
101-55-3	4-BROMOPHENYL PHENYL ETHER	1	10	10	1.9	U	
118-74-1	HEXACHLOROBENZENE	1	10	10	1.4	U	
58-90-2	2,3,4,6-TETRACHLOROPHENOL	1	50	50	1.9	U	
87-86-5	PENTACHLOROPHENOL	1	50	50	2.1	U	
85-01-8	PHENANTHRENE	1	10	10	1.3	U	
120-12-7	ANTHRACENE	1	10	10	1.2	U	
86-74-8	CARBAZOLE	1	10	10	2	U	
84-74-2	DI-N-BUTYL PHTHALATE	1	10	10	2.3	U	
206-44-0	FLUORANTHENE	1	10	10	2.3	U	

Data Package ID: *SV0207158-1*

GC/MS Semi-volatiles

Method SW8270

Method Blank

PRELIMINARY RESULTS

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Lab ID: EX020724-6MB

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 07/24/2002
Date Analyzed: 07/26/2002

Prep Batch: EX020724-6
QCBatchID: EX020724-6-1
Run ID: SV020726-2
Cleanup: NONE
Basis: N/A

Sample Aliquot: 1000 ML
Final Volume: 1 ML
Result Units: UG/L
Clean DF: 1
File Name: P8333

129-00-0	PYRENE	1	10	10	2.7	U	
85-68-7	BUTYL BENZYL PHTHALATE	1	10	10	1.7	U	
56-55-3	BENZO(A)ANTHRACENE	1	10	10	0.93	U	
91-94-1	3,3'-DICHLOROBENZIDINE	1	50	50	3.1	U	
218-01-9	CHRYSENE	1	10	10	1.2	U	
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1	10	10	2.2	U	
117-84-0	DI-N-OCTYL PHTHALATE	1	10	10	2	U	
205-99-2	BENZO(B)FLUORANTHENE	1	10	10	1.8	U	
207-08-9	BENZO(K)FLUORANTHENE	1	10	10	1.5	U	
50-32-8	BENZO(A)PYRENE	1	10	10	0.79	U	
193-39-5	INDENO(1,2,3-CD)PYRENE	1	10	10	1.6	U	
53-70-3	DIBENZO(A,H)ANTHRACENE	1	10	10	1.5	U	
191-24-2	BENZO(G,H,I)PERYLENE	1	10	10	1.8	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
118-79-6	2,4,6-TRIBROMOPHENOL	57.9		75	77	23 - 100
321-60-8	2-FLUOROBIPHENYL	43.9		50	88	21 - 106
367-12-4	2-FLUOROPHENOL	65.2		75	87	21 - 100
4165-60-0	NITROBENZENE-D5	42.4		50	85	34 - 111
4165-62-2	PHENOL-D5	63.7		75	85	15 - 104
1718-51-0	TERPHENYL-D14	48.9		50	98	33 - 111

Data Package ID: *SV0207158-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

PRELIMINARY RESULTS

Lab Name: Paragon Analytics, Inc.

Work Order Number: 0207158

Client Name: Shaw Environmental & Infrastructure, Inc.

ClientProject ID: CAU356 831845.020300010

Field ID: 356304
Lab ID: 0207158-4

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 24-Jul-02
Date Analyzed: 26-Jul-02

Prep Batch: EX020724-6
QCBatchID: EX020724-6-1
Run ID: SV020726-2
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1000 ML
Final Volume: 1 ML
Result Units: UG/L
Clean DF: 1
File Name: P8337

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
110-86-1	PYRIDINE	1	10	10	1.5	U	
62-75-9	N-NITROSODIMETHYLAMINE	1	10	10	1.8	U	
62-53-3	ANILINE	1	25	25	1.6	U	
108-95-2	PHENOL	1	290	10	1.8	E	
111-44-4	BIS(2-CHLOROETHYL)ETHER	1	10	10	1.5	U	
95-57-8	2-CHLOROPHENOL	1	10	10	1.6	U	
541-73-1	1,3-DICHLOROBENZENE	1	10	10	1.8	U	
106-46-7	1,4-DICHLOROBENZENE	1	10	10	1.7	U	
95-50-1	1,2-DICHLOROBENZENE	1	10	10	1.6	U	
100-51-6	BENZYL ALCOHOL	1	10	10	1.6	U	
108-60-1	BIS(2-CHLOROISOPROPYL)ETHER	1	10	10	1.8	U	
95-48-7	2-METHYLPHENOL	1	10	10	1.8	U	
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1	10	10	1.7	U	
106-44-5	4-METHYLPHENOL	1	10	10	2	U	
67-72-1	HEXACHLOROETHANE	1	10	10	1.9	U	
98-95-3	NITROBENZENE	1	10	10	1.7	U	
78-59-1	ISOPHORONE	1	10	10	1.8	U	
88-75-5	2-NITROPHENOL	1	10	10	1.9	U	
105-67-9	2,4-DIMETHYLPHENOL	1	10	10	6.6	U	
111-91-1	BIS(2-CHLOROETHOXY)METHANE	1	10	10	1.6	U	
120-83-2	2,4-DICHLOROPHENOL	1	10	10	1.9	U	
65-85-0	BENZOIC ACID	1	50	50	17	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	10	10	1.4	U	
91-20-3	NAPHTHALENE	1	10	10	1.5	U	
106-47-8	4-CHLOROANILINE	1	25	25	1.3	U	
87-68-3	HEXACHLOROBUTADIENE	1	10	10	1.6	U	
59-50-7	4-CHLORO-3-METHYLPHENOL	1	10	10	1.9	U	
91-57-6	2-METHYLNAPHTHALENE	1	10	10	1.6	U	

Data Package ID: *SV0207158-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

PRELIMINARY RESULTS

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356304
Lab ID: 0207158-4

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 24-Jul-02
Date Analyzed: 26-Jul-02

Prep Batch: EX020724-6
QCBatchID: EX020724-6-1
Run ID: SV020726-2
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1000 ML
Final Volume: 1 ML
Result Units: UG/L
Clean DF: 1
File Name: P8337

77-47-4	HEXACHLOROCYCLOPENTADIENE	1	10	10	1.5	U	
88-06-2	2,4,6-TRICHLOROPHENOL	1	10	10	1.7	U	
95-95-4	2,4,5-TRICHLOROPHENOL	1	10	10	1.5	U	
91-58-7	2-CHLORONAPHTHALENE	1	10	10	1.4	U	
88-74-4	2-NITROANILINE	1	50	50	1.6	U	
131-11-3	DIMETHYL PHTHALATE	1	10	10	1.2	U	
606-20-2	2,6-DINITROTOLUENE	1	10	10	1.5	U	
208-96-8	ACENAPHTHYLENE	1	10	10	1.2	U	
99-09-2	3-NITROANILINE	1	50	50	1.9	U	
83-32-9	ACENAPHTHENE	1	10	10	1.2	U	
51-28-5	2,4-DINITROPHENOL	1	50	50	3	U	
100-02-7	4-NITROPHENOL	1	50	50	3.2	U	
132-64-9	DIBENZOFURAN	1	10	10	1.3	U	
121-14-2	2,4-DINITROTOLUENE	1	10	10	1.9	U	
84-66-2	DIETHYL PHTHALATE	1	10	10	1.6	U	
86-73-7	FLUORENE	1	10	10	1.4	U	
7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1	10	10	1.3	U	
100-01-6	4-NITROANILINE	1	50	50	2.3	U	
103-33-3	AZOBENZENE	1	10	10	1.2	U	
534-52-1	4,6-DINITRO-2-METHYLPHENOL	1	50	50	2.3	U	
86-30-6	N-NITROSODIPHENYLAMINE	1	10	10	1.8	U	
101-55-3	4-BROMOPHENYL PHENYL ETHER	1	10	10	1.9	U	
118-74-1	HEXACHLOROBENZENE	1	10	10	1.4	U	
58-90-2	2,3,4,6-TETRACHLOROPHENOL	1	50	50	1.9	U	
87-86-5	PENTACHLOROPHENOL	1	50	50	2.1	U	
85-01-8	PHENANTHRENE	1	10	10	1.3	U	
120-12-7	ANTHRACENE	1	10	10	1.2	U	
86-74-8	CARBAZOLE	1	10	10	2	U	
84-74-2	DI-N-BUTYL PHTHALATE	1	10	10	2.3	U	
206-44-0	FLUORANTHENE	1	10	10	2.3	U	

Data Package ID: *SV0207158-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

Lab Name: Paragon Analytics, Inc.

Work Order Number: 0207158

Client Name: Shaw Environmental & Infrastructure, Inc.

ClientProject ID: CAU356 831845.02030010

PRELIMINARY RESULTS

Field ID: 356304
Lab ID: 0207158-4

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 24-Jul-02
Date Analyzed: 26-Jul-02

Prep Batch: EX020724-6
QCBatchID: EX020724-6-1
Run ID: SV020726-2
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1000 ML
Final Volume: 1 ML
Result Units: UG/L
Clean DF: 1
File Name: P8337

129-00-0	PYRENE	1	10	10	2.7	U	
85-68-7	BUTYL BENZYL PHTHALATE	1	10	10	1.7	U	
56-55-3	BENZO(A)ANTHRACENE	1	10	10	0.93	U	
91-94-1	3,3'-DICHLOROBENZIDINE	1	50	50	3.1	U	
218-01-9	CHRYSENE	1	10	10	1.2	U	
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1	180	10	2.2	E	
117-84-0	DI-N-OCTYL PHTHALATE	1	6.9	10	2	J	
205-99-2	BENZO(B)FLUORANTHENE	1	10	10	1.8	U	
207-08-9	BENZO(K)FLUORANTHENE	1	10	10	1.5	U	
50-32-8	BENZO(A)PYRENE	1	10	10	0.79	U	
193-39-5	INDENO(1,2,3-CD)PYRENE	1	10	10	1.6	U	
53-70-3	DIBENZO(A,H)ANTHRACENE	1	10	10	1.5	U	
191-24-2	BENZO(G,H,I)PERYLENE	1	10	10	1.8	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
118-79-6	2,4,6-TRIBROMOPHENOL	67.6		75	90	23 - 100
321-60-8	2-FLUOROBIPHENYL	38.6		50	77	21 - 106
367-12-4	2-FLUOROPHENOL	60.2		75	80	21 - 100
4165-60-0	NITROBENZENE-D5	38.4		50	77	34 - 111
4165-62-2	PHENOL-D5	62.9		75	84	15 - 104
1718-51-0	TERPHENYL-D14	55.6		50	111	33 - 111

Data Package ID: *SV0207158-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

PRELIMINARY RESULTS

Field ID: 356301
Lab ID: 0207158-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 24-Jul-02
Date Analyzed: 26-Jul-02

Prep Batch: EX020724-6
QCBatchID: EX020724-6-1
Run ID: SV020726-2
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1020 ML
Final Volume: 1 ML
Result Units: UG/L
Clean DF: 1
File Name: P8340

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
110-86-1	PYRIDINE	1	9.8	9.8	1.5	U	
62-75-9	N-NITROSODIMETHYLAMINE	1	9.8	9.8	1.8	U	
62-53-3	ANILINE	1	25	25	1.6	U	
108-95-2	PHENOL	1	9.8	9.8	1.7	U	
111-44-4	BIS(2-CHLOROETHYL)ETHER	1	9.8	9.8	1.5	U	
95-57-8	2-CHLOROPHENOL	1	9.8	9.8	1.6	U	
541-73-1	1,3-DICHLOROBENZENE	1	9.8	9.8	1.8	U	
106-46-7	1,4-DICHLOROBENZENE	1	22	9.8	1.7		
95-50-1	1,2-DICHLOROBENZENE	1	9.8	9.8	1.6	U	
100-51-6	BENZYL ALCOHOL	1	9.8	9.8	1.6	U	
108-60-1	BIS(2-CHLOROISOPROPYL)ETHER	1	9.8	9.8	1.8	U	
95-48-7	2-METHYLPHENOL	1	9.8	9.8	1.7	U	
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1	9.8	9.8	1.7	U	
106-44-5	4-METHYLPHENOL	1	9.8	9.8	2	U	
67-72-1	HEXACHLOROETHANE	1	9.8	9.8	1.9	U	
98-95-3	NITROBENZENE	1	9.8	9.8	1.7	U	
78-59-1	ISOPHORONE	1	9.8	9.8	1.7	U	
88-75-5	2-NITROPHENOL	1	9.8	9.8	1.8	U	
105-67-9	2,4-DIMETHYLPHENOL	1	9.8	9.8	6.5	U	
111-91-1	BIS(2-CHLOROETHOXY)METHANE	1	9.8	9.8	1.5	U	
120-83-2	2,4-DICHLOROPHENOL	1	9.8	9.8	1.9	U	
65-85-0	BENZOIC ACID	1	49	49	16	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	9.8	9.8	1.4	U	
91-20-3	NAPHTHALENE	1	9.8	9.8	1.5	U	
106-47-8	4-CHLOROANILINE	1	25	25	1.2	U	
87-68-3	HEXACHLOROBUTADIENE	1	9.8	9.8	1.6	U	
59-50-7	4-CHLORO-3-METHYLPHENOL	1	9.8	9.8	1.8	U	
91-57-6	2-METHYLNAPHTHALENE	1	9.8	9.8	1.5	U	

Data Package ID: *SV0207158-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

PRELIMINARY RESULTS

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356301
Lab ID: 0207158-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 24-Jul-02
Date Analyzed: 26-Jul-02

Prep Batch: EX020724-6
QCBatchID: EX020724-6-1
Run ID: SV020726-2
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1020 ML
Final Volume: 1 ML
Result Units: UG/L
Clean DF: 1
File Name: P8340

77-47-4	HEXACHLOROCYCLOPENTADIENE	1	9.8	9.8	1.5	U	
88-06-2	2,4,6-TRICHLOROPHENOL	1	9.8	9.8	1.7	U	
95-95-4	2,4,5-TRICHLOROPHENOL	1	9.8	9.8	1.5	U	
91-58-7	2-CHLORONAPHTHALENE	1	9.8	9.8	1.4	U	
88-74-4	2-NITROANILINE	1	49	49	1.5	U	
131-11-3	DIMETHYL PHTHALATE	1	9.8	9.8	1.2	U	
606-20-2	2,6-DINITROTOLUENE	1	9.8	9.8	1.4	U	
208-96-8	ACENAPHTHYLENE	1	9.8	9.8	1.2	U	
99-09-2	3-NITROANILINE	1	49	49	1.9	U	
83-32-9	ACENAPHTHENE	1	9.8	9.8	1.2	U	
51-28-5	2,4-DINITROPHENOL	1	49	49	2.9	U	
100-02-7	4-NITROPHENOL	1	49	49	3.2	U	
132-64-9	DIBENZOFURAN	1	9.8	9.8	1.3	U	
121-14-2	2,4-DINITROTOLUENE	1	9.8	9.8	1.9	U	
84-66-2	DIETHYL PHTHALATE	1	9.8	9.8	1.6	U	
86-73-7	FLUORENE	1	9.8	9.8	1.4	U	
7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1	9.8	9.8	1.2	U	
100-01-6	4-NITROANILINE	1	49	49	2.3	U	
103-33-3	AZOBENZENE	1	9.8	9.8	1.2	U	
534-52-1	4,6-DINITRO-2-METHYLPHENOL	1	49	49	2.3	U	
86-30-6	N-NITROSODIPHENYLAMINE	1	9.8	9.8	1.8	U	
101-55-3	4-BROMOPHENYL PHENYL ETHER	1	9.8	9.8	1.8	U	
118-74-1	HEXACHLOROBENZENE	1	9.8	9.8	1.4	U	
58-90-2	2,3,4,6-TETRACHLOROPHENOL	1	49	49	1.9	U	
87-86-5	PENTACHLOROPHENOL	1	49	49	2.1	U	
85-01-8	PHENANTHRENE	1	9.8	9.8	1.3	U	
120-12-7	ANTHRACENE	1	9.8	9.8	1.2	U	
86-74-8	CARBAZOLE	1	9.8	9.8	1.9	U	
84-74-2	DI-N-BUTYL PHTHALATE	1	9.8	9.8	2.3	U	
206-44-0	FLUORANTHENE	1	9.8	9.8	2.2	U	

Data Package ID: *SV0207158-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

PRELIMINARY RESULTS

Field ID: 356301
Lab ID: 0207158-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 24-Jul-02
Date Analyzed: 26-Jul-02

Prep Batch: EX020724-6
QCBatchID: EX020724-6-1
Run ID: SV020726-2
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1020 ML
Final Volume: 1 ML
Result Units: UG/L
Clean DF: 1
File Name: P8340

129-00-0	PYRENE	1	9.8	9.8	2.7	U	
85-68-7	BUTYL BENZYL PHTHALATE	1	9.8	9.8	1.6	U	
56-55-3	BENZO(A)ANTHRACENE	1	9.8	9.8	0.92	U	
91-94-1	3,3'-DICHLOROBENZIDINE	1	49	49	3	U	
218-01-9	CHRYSENE	1	9.8	9.8	1.2	U	
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1	9.8	9.8	2.2	U	
117-84-0	DI-N-OCTYL PHTHALATE	1	9.8	9.8	1.9	U	
205-99-2	BENZO(B)FLUORANTHENE	1	9.8	9.8	1.8	U	
207-08-9	BENZO(K)FLUORANTHENE	1	9.8	9.8	1.4	U	
50-32-8	BENZO(A)PYRENE	1	9.8	9.8	0.77	U	
193-39-5	INDENO(1,2,3-CD)PYRENE	1	9.8	9.8	1.6	U	
53-70-3	DIBENZO(A,H)ANTHRACENE	1	9.8	9.8	1.5	U	
191-24-2	BENZO(G,H,I)PERYLENE	1	9.8	9.8	1.8	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
118-79-6	2,4,6-TRIBROMOPHENOL	62.6		73.5	85	23 - 100
321-60-8	2-FLUOROBIPHENYL	29.9		49	61	21 - 106
367-12-4	2-FLUOROPHENOL	51		73.5	69	21 - 100
4165-60-0	NITROBENZENE-D5	34.2		49	70	34 - 111
4165-62-2	PHENOL-D5	54.3		73.5	74	15 - 104
1718-51-0	TERPHENYL-D14	20.3		49	41	33 - 111

Data Package ID: *SV0207158-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

PRELIMINARY RESULTS

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356302
Lab ID: 0207158-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 24-Jul-02
Date Analyzed: 26-Jul-02

Prep Batch: EX020724-6
QCBatchID: EX020724-6-1
Run ID: SV020726-2
Cleanup: NONE
Basis: As Received

Sample Aliquot: 940 ML
Final Volume: 1 ML
Result Units: UG/L
Clean DF: 1
File Name: P8338

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
110-86-1	PYRIDINE	1	11	11	1.6	U	
62-75-9	N-NITROSODIMETHYLAMINE	1	11	11	1.9	U	
62-53-3	ANILINE	1	27	27	1.7	U	
108-95-2	PHENOL	1	11	11	1.9	U	
111-44-4	BIS(2-CHLOROETHYL)ETHER	1	11	11	1.6	U	
95-57-8	2-CHLOROPHENOL	1	11	11	1.8	U	
541-73-1	1,3-DICHLOROBENZENE	1	11	11	1.9	U	
106-46-7	1,4-DICHLOROBENZENE	1	2.9	11	1.8	J	
95-50-1	1,2-DICHLOROBENZENE	1	11	11	1.7	U	
100-51-6	BENZYL ALCOHOL	1	11	11	1.7	U	
108-60-1	BIS(2-CHLOROISOPROPYL)ETHER	1	11	11	2	U	
95-48-7	2-METHYLPHENOL	1	11	11	1.9	U	
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1	11	11	1.9	U	
106-44-5	4-METHYLPHENOL	1	11	11	2.2	U	
67-72-1	HEXACHLOROETHANE	1	11	11	2	U	
98-95-3	NITROBENZENE	1	11	11	1.8	U	
78-59-1	ISOPHORONE	1	11	11	1.9	U	
88-75-5	2-NITROPHENOL	1	11	11	2	U	
105-67-9	2,4-DIMETHYLPHENOL	1	11	11	7	U	
111-91-1	BIS(2-CHLOROETHOXY)METHANE	1	11	11	1.7	U	
120-83-2	2,4-DICHLOROPHENOL	1	11	11	2.1	U	
65-85-0	BENZOIC ACID	1	53	53	18	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	11	11	1.5	U	
91-20-3	NAPHTHALENE	1	11	11	1.6	U	
106-47-8	4-CHLOROANILINE	1	27	27	1.3	U	
87-68-3	HEXACHLOROBUTADIENE	1	11	11	1.7	U	
59-50-7	4-CHLORO-3-METHYLPHENOL	1	11	11	2	U	
91-57-6	2-METHYLNAPHTHALENE	1	11	11	1.7	U	

Data Package ID: *SV0207158-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

PRELIMINARY RESULTS

FieldID: 356302
LabID: 0207158-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 24-Jul-02
Date Analyzed: 26-Jul-02

Prep Batch: EX020724-6
QCBatchID: EX020724-6-1
Run ID: SV020726-2
Cleanup: NONE
Basis: As Received

Sample Aliquot: 940 ML
Final Volume: 1 ML
Result Units: UG/L
Clean DF: 1
File Name: P8338

77-47-4	HEXACHLOROCYCLOPENTADIENE	1	11	11	1.6	U	
88-06-2	2,4,6-TRICHLOROPHENOL	1	11	11	1.8	U	
95-95-4	2,4,5-TRICHLOROPHENOL	1	11	11	1.6	U	
91-58-7	2-CHLORONAPHTHALENE	1	11	11	1.5	U	
88-74-4	2-NITROANILINE	1	53	53	1.7	U	
131-11-3	DIMETHYL PHTHALATE	1	11	11	1.3	U	
606-20-2	2,6-DINITROTOLUENE	1	11	11	1.6	U	
208-96-8	ACENAPHTHYLENE	1	11	11	1.3	U	
99-09-2	3-NITROANILINE	1	53	53	2.1	U	
83-32-9	ACENAPHTHENE	1	11	11	1.3	U	
51-28-5	2,4-DINITROPHENOL	1	53	53	3.2	U	
100-02-7	4-NITROPHENOL	1	53	53	3.4	U	
132-64-9	DIBENZOFURAN	1	11	11	1.4	U	
121-14-2	2,4-DINITROTOLUENE	1	11	11	2	U	
84-66-2	DIETHYL PHTHALATE	1	11	11	1.7	U	
86-73-7	FLUORENE	1	11	11	1.5	U	
7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1	11	11	1.3	U	
100-01-6	4-NITROANILINE	1	53	53	2.4	U	
103-33-3	AZOBENZENE	1	11	11	1.3	U	
534-52-1	4,6-DINITRO-2-METHYLPHENOL	1	53	53	2.5	U	
86-30-6	N-NITROSODIPHENYLAMINE	1	11	11	1.9	U	
101-55-3	4-BROMOPHENYL PHENYL ETHER	1	11	11	2	U	
118-74-1	HEXACHLOROBENZENE	1	11	11	1.5	U	
58-90-2	2,3,4,6-TETRACHLOROPHENOL	1	53	53	2	U	
87-86-5	PENTACHLOROPHENOL	1	53	53	2.2	U	
85-01-8	PHENANTHRENE	1	11	11	1.4	U	
120-12-7	ANTHRACENE	1	11	11	1.3	U	
86-74-8	CARBAZOLE	1	11	11	2.1	U	
84-74-2	DI-N-BUTYL PHTHALATE	1	11	11	2.5	U	
206-44-0	FLUORANTHENE	1	11	11	2.4	U	

Data Package ID: *SV0207158-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

PRELIMINARY RESULTS

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356302
Lab ID: 0207158-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 24-Jul-02
Date Analyzed: 26-Jul-02

Prep Batch: EX020724-6
QCBatchID: EX020724-6-1
Run ID: SV020726-2
Cleanup: NONE
Basis: As Received

Sample Aliquot: 940 ML
Final Volume: 1 ML
Result Units: UG/L
Clean DF: 1
File Name: P8338

129-00-0	PYRENE	1	11	11	2.9	U	
85-68-7	BUTYL BENZYL PHTHALATE	1	11	11	1.8	U	
56-55-3	BENZO(A)ANTHRACENE	1	11	11	0.99	U	
91-94-1	3,3'-DICHLOROBENZIDINE	1	53	53	3.3	U	
218-01-9	CHRYSENE	1	11	11	1.3	U	
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1	11	11	2.3	U	
117-84-0	DI-N-OCTYL PHTHALATE	1	11	11	2.1	U	
205-99-2	BENZO(B)FLUORANTHENE	1	11	11	1.9	U	
207-08-9	BENZO(K)FLUORANTHENE	1	11	11	1.5	U	
50-32-8	BENZO(A)PYRENE	1	11	11	0.84	U	
193-39-5	INDENO(1,2,3-CD)PYRENE	1	11	11	1.7	U	
53-70-3	DIBENZO(A,H)ANTHRACENE	1	11	11	1.6	U	
191-24-2	BENZO(G,H,I)PERYLENE	1	11	11	1.9	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
118-79-6	2,4,6-TRIBROMOPHENOL	77.4		79.8	97	23 - 100
321-60-8	2-FLUOROBIPHENYL	42.1		53.2	79	21 - 106
367-12-4	2-FLUOROPHENOL	68		79.8	85	21 - 100
4165-60-0	NITROBENZENE-D5	43.3		53.2	81	34 - 111
4165-62-2	PHENOL-D5	70.5		79.8	88	15 - 104
1718-51-0	TERPHENYL-D14	32.9		53.2	62	33 - 111

Data Package ID: *SV0207158-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

PRELIMINARY RESULTS

Field ID: 356303
LabID: 0207158-3

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 24-Jul-02
Date Analyzed: 26-Jul-02

Prep Batch: EX020724-6
QCBatchID: EX020724-6-1
Run ID: SV020726-2
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1000 ML
Final Volume: 1 ML
Result Units: UG/L
Clean DF: 1
File Name: P8339

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
110-86-1	PYRIDINE	1	10	10	1.5	U	
62-75-9	N-NITROSODIMETHYLAMINE	1	10	10	1.8	U	
62-53-3	ANILINE	1	25	25	1.6	U	
108-95-2	PHENOL	1	10	10	1.8	U	
111-44-4	BIS(2-CHLOROETHYL)ETHER	1	10	10	1.5	U	
95-57-8	2-CHLOROPHENOL	1	10	10	1.6	U	
541-73-1	1,3-DICHLOROBENZENE	1	10	10	1.8	U	
106-46-7	1,4-DICHLOROBENZENE	1	18	10	1.7		
95-50-1	1,2-DICHLOROBENZENE	1	10	10	1.6	U	
100-51-6	BENZYL ALCOHOL	1	10	10	1.6	U	
108-60-1	BIS(2-CHLOROISOPROPYL)ETHER	1	10	10	1.8	U	
95-48-7	2-METHYLPHENOL	1	10	10	1.8	U	
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1	10	10	1.7	U	
106-44-5	4-METHYLPHENOL	1	10	10	2	U	
67-72-1	HEXACHLOROETHANE	1	10	10	1.9	U	
98-95-3	NITROBENZENE	1	10	10	1.7	U	
78-59-1	ISOPHORONE	1	10	10	1.8	U	
88-75-5	2-NITROPHENOL	1	10	10	1.9	U	
105-67-9	2,4-DIMETHYLPHENOL	1	10	10	6.6	U	
111-91-1	BIS(2-CHLOROETHOXY)METHANE	1	10	10	1.6	U	
120-83-2	2,4-DICHLOROPHENOL	1	10	10	1.9	U	
65-85-0	BENZOIC ACID	1	50	50	17	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	10	10	1.4	U	
91-20-3	NAPHTHALENE	1	10	10	1.5	U	
106-47-8	4-CHLOROANILINE	1	25	25	1.3	U	
87-68-3	HEXACHLOROBUTADIENE	1	10	10	1.6	U	
59-50-7	4-CHLORO-3-METHYLPHENOL	1	10	10	1.9	U	
91-57-6	2-METHYLNAPHTHALENE	1	10	10	1.6	U	

Data Package ID: *SV0207158-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

PRELIMINARY RESULTS

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356303
Lab ID: 0207158-3

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 24-Jul-02
Date Analyzed: 26-Jul-02

Prep Batch: EX020724-6
QCBatchID: EX020724-6-1
Run ID: SV020726-2
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1000 ML
Final Volume: 1 ML
Result Units: UG/L
Clean DF: 1
File Name: P8339

77-47-4	HEXACHLOROCYCLOPENTADIENE	1	10	10	1.5	U	
88-06-2	2,4,6-TRICHLOROPHENOL	1	10	10	1.7	U	
95-95-4	2,4,5-TRICHLOROPHENOL	1	10	10	1.5	U	
91-58-7	2-CHLORONAPHTHALENE	1	10	10	1.4	U	
88-74-4	2-NITROANILINE	1	50	50	1.6	U	
131-11-3	DIMETHYL PHTHALATE	1	10	10	1.2	U	
606-20-2	2,6-DINITROTOLUENE	1	10	10	1.5	U	
208-96-8	ACENAPHTHYLENE	1	10	10	1.2	U	
99-09-2	3-NITROANILINE	1	50	50	1.9	U	
83-32-9	ACENAPHTHENE	1	10	10	1.2	U	
51-28-5	2,4-DINITROPHENOL	1	50	50	3	U	
100-02-7	4-NITROPHENOL	1	50	50	3.2	U	
132-64-9	DIBENZOFURAN	1	10	10	1.3	U	
121-14-2	2,4-DINITROTOLUENE	1	10	10	1.9	U	
84-66-2	DIETHYL PHTHALATE	1	10	10	1.6	U	
86-73-7	FLUORENE	1	10	10	1.4	U	
7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1	10	10	1.3	U	
100-01-6	4-NITROANILINE	1	50	50	2.3	U	
103-33-3	AZOBENZENE	1	10	10	1.2	U	
534-52-1	4,6-DINITRO-2-METHYLPHENOL	1	50	50	2.3	U	
86-30-6	N-NITROSODIPHENYLAMINE	1	10	10	1.8	U	
101-55-3	4-BROMOPHENYL PHENYL ETHER	1	10	10	1.9	U	
118-74-1	HEXACHLOROBENZENE	1	10	10	1.4	U	
58-90-2	2,3,4,6-TETRACHLOROPHENOL	1	50	50	1.9	U	
87-86-5	PENTACHLOROPHENOL	1	50	50	2.1	U	
85-01-8	PHENANTHRENE	1	10	10	1.3	U	
120-12-7	ANTHRACENE	1	10	10	1.2	U	
86-74-8	CARBAZOLE	1	10	10	2	U	
84-74-2	DI-N-BUTYL PHTHALATE	1	10	10	2.3	U	
206-44-0	FLUORANTHENE	1	10	10	2.3	U	

Data Package ID: *SV0207158-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

PRELIMINARY RESULTS

Field ID: 356303
Lab ID: 0207158-3

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 24-Jul-02
Date Analyzed: 26-Jul-02

Prep Batch: EX020724-6
QCBatchID: EX020724-6-1
Run ID: SV020726-2
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1000 ML
Final Volume: 1 ML
Result Units: UG/L
Clean DF: 1
File Name: P8339

129-00-0	PYRENE	1	10	10	2.7	U	
85-68-7	BUTYL BENZYL PHTHALATE	1	10	10	1.7	U	
56-55-3	BENZO(A)ANTHRACENE	1	10	10	0.93	U	
91-94-1	3,3'-DICHLOROBENZIDINE	1	50	50	3.1	U	
218-01-9	CHRYSENE	1	10	10	1.2	U	
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1	10	10	2.2	U	
117-84-0	DI-N-OCTYL PHTHALATE	1	10	10	2	U	
205-99-2	BENZO(B)FLUORANTHENE	1	10	10	1.8	U	
207-08-9	BENZO(K)FLUORANTHENE	1	10	10	1.5	U	
50-32-8	BENZO(A)PYRENE	1	10	10	0.79	U	
193-39-5	INDENO(1,2,3-CD)PYRENE	1	10	10	1.6	U	
53-70-3	DIBENZO(A,H)ANTHRACENE	1	10	10	1.5	U	
191-24-2	BENZO(G,H,I)PERYLENE	1	10	10	1.8	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
118-79-6	2,4,6-TRIBROMOPHENOL	69.4		75	93	23 - 100
321-60-8	2-FLUOROBIPHENYL	30.2		50	60	21 - 106
367-12-4	2-FLUOROPHENOL	57.3		75	76	21 - 100
4165-60-0	NITROBENZENE-D5	38.3		50	77	34 - 111
4165-62-2	PHENOL-D5	57.8		75	77	15 - 104
1718-51-0	TERPHENYL-D14	12.1	*	50	24	33 - 111

Data Package ID: *SV0207158-1*

Diesel Range Organics

Method SW8015M

Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Lab ID: EX020724-4MB

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 07/24/2002
Date Analyzed: 07/24/2002

Prep Batch: EX020724-4
QCBatchID: EX020724-4-1
Run ID: HCD020723-1A
Cleanup: NONE
Basis: N/A

Sample Aliquot: 160 ML
Final Volume: 4 ML
Result Units: MG/L
Clean DF: 1
File Name: F3F07397

CASNO	Target Analyte	DF	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
68334-30-5	Diesel Range Organics	1	0.5	0.5	0.061	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
84-15-1	O-TERPHENYL	0.954		1.25	76	57 - 132

Data Package ID: *HCD0207158-1*

Diesel Range Organics

Method SW8015M

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356301
Lab ID: 0207158-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 24-Jul-02
Date Analyzed: 24-Jul-02

Prep Batch: EX020724-4
QCBatchID: EX020724-4-1
Run ID: HCD020723-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 160 ML
Final Volume: 4 ML
Result Units: MG/L
Clean DF: 1
File Name: F3F07403

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
68334-30-5	Diesel Range Organics	1	0.5	0.5	0.061	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
84-15-1	O-TERPHENYL	0.961		1.25	77	57 - 132

Data Package ID: *HCD0207158-1*

Diesel Range Organics

Method SW8015M

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356303
Lab ID: 0207158-3

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 24-Jul-02
Date Analyzed: 24-Jul-02

Prep Batch: EX020724-4
QCBatchID: EX020724-4-1
Run ID: HCD020723-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 160 ML
Final Volume: 4 ML
Result Units: MG/L
Clean DF: 1
File Name: F3F07404

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
68334-30-5	Diesel Range Organics	1	0.5	0.5	0.061	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
84-15-1	O-TERPHENYL	0.97		1.25	78	57 - 132

Data Package ID: *HCD0207158-1*

Diesel Range Organics

Method SW8015M

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356302
Lab ID: 0207158-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 24-Jul-02
Date Analyzed: 25-Jul-02

Prep Batch: EX020724-4
QCBatchID: EX020724-4-1
Run ID: HCD020723-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 160 ML
Final Volume: 4 ML
Result Units: MG/L
Clean DF: 1
File Name: F3F07407

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
68334-30-5	Diesel Range Organics	1	0.5	0.5	0.061	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
84-15-1	O-TERPHENYL	0.962		1.25	77	57 - 132

Data Package ID: *HCD0207158-1*

PCBs

Method SW8082

Sample Results PRELIMINARY RESULTS

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356301
Lab ID: 0207158-1RX1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 29-Jul-02
Date Analyzed: 30-Jul-02

Prep Batch: EX020729-1
QCBatchID: EX020729-1-1
Run ID: PT020730-1
Cleanup: SW3665/SW3660
Basis: As Received

Sample Aliquot: 1000 ML
Final Volume: 10 ML
Result Units: UG/L
Clean DF: 1
File Name: EA008421

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
12674-11-2	AROCLOR-1016	1	1	1	0.17	U	
11104-28-2	AROCLOR-1221	1	2	2	0.19	U	
11141-16-5	AROCLOR-1232	1	1	1	0.12	U	
53469-21-9	AROCLOR-1242	1	1	1	0.13	U	
12672-29-6	AROCLOR-1248	1	1	1	0.074	U	
11097-69-1	AROCLOR-1254	1	1	1	0.13	U	
11096-82-5	AROCLOR-1260	1	1	1	0.18	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL	0.128	*	0.5	26	32 - 111
877-09-8	TETRACHLORO-M-XYLENE	0.191	*	0.5	38	63 - 116

Data Package ID: *PT0207158-2*

PCBs

Method SW8082

Sample Results

PRELIMINARY RESULTS

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356303
Lab ID: 0207158-3RX1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 29-Jul-02
Date Analyzed: 30-Jul-02

Prep Batch: EX020729-1
QCBatchID: EX020729-1-1
Run ID: PT020730-1
Cleanup: SW3665/SW3660
Basis: As Received

Sample Aliquot: 985 ML
Final Volume: 10 ML
Result Units: UG/L
Clean DF: 1
File Name: EA008422

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
12674-11-2	AROCLOR-1016	1	1	1	0.17	U	
11104-28-2	AROCLOR-1221	1	2	2	0.2	U	
11141-16-5	AROCLOR-1232	1	1	1	0.12	U	
53469-21-9	AROCLOR-1242	1	1	1	0.14	U	
12672-29-6	AROCLOR-1248	1	1	1	0.076	U	
11097-69-1	AROCLOR-1254	1	1	1	0.13	U	
11096-82-5	AROCLOR-1260	1	1	1	0.18	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL	0.0918	*	0.508	18	32 - 111
877-09-8	TETRACHLORO-M-XYLENE	0.138	*	0.508	27	63 - 116

Data Package ID: *PT0207158-2*

PCBs

Method SW8082

Sample Results

Lab Name: Paragon Analytics, Inc.

PRELIMINARY RESULTS

Work Order Number: 0207158

Client Name: Shaw Environmental & Infrastructure, Inc.

ClientProject ID: CAU356 831845.02030010

Field ID: 356301
Lab ID: 0207158-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 24-Jul-02
Date Analyzed: 30-Jul-02

Prep Batch: EX020724-5
QCBatchID: EX020724-5-1
Run ID: PT020730-1A
Cleanup: SW3665/SW3660
Basis: As Received

Sample Aliquot: 1010 ML
Final Volume: 10 ML
Result Units: UG/L
Clean DF: 1
File Name: EA008424

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
12674-11-2	AROCLOR-1016	1	0.99	0.99	0.16	U	
11104-28-2	AROCLOR-1221	1	2	2	0.19	U	
11141-16-5	AROCLOR-1232	1	0.99	0.99	0.12	U	
53469-21-9	AROCLOR-1242	1	0.99	0.99	0.13	U	
12672-29-6	AROCLOR-1248	1	0.99	0.99	0.074	U	
11097-69-1	AROCLOR-1254	1	0.99	0.99	0.12	U	
11096-82-5	AROCLOR-1260	1	0.99	0.99	0.17	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL	0.141	*	0.495	28	32 - 111
877-09-8	TETRACHLORO-M-XYLENE	0.201	*	0.495	41	63 - 116

Data Package ID: *PT0207158-1*

PCBs

Method SW8082

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

PRELIMINARY RESULTS

Field ID: 356302
Lab ID: 0207158-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 24-Jul-02
Date Analyzed: 26-Jul-02

Prep Batch: EX020724-5
QCBatchID: EX020724-5-1
Run ID: PT020726-1
Cleanup: SW3665/SW3660
Basis: As Received

Sample Aliquot: 990 ML
Final Volume: 10 ML
Result Units: UG/L
Clean DF: 1
File Name: EA008379

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
12674-11-2	AROCLOR-1016	1	1	1	0.17	U	
11104-28-2	AROCLOR-1221	1	2	2	0.2	U	
11141-16-5	AROCLOR-1232	1	1	1	0.12	U	
53469-21-9	AROCLOR-1242	1	1	1	0.13	U	
12672-29-6	AROCLOR-1248	1	1	1	0.075	U	
11097-69-1	AROCLOR-1254	1	1	1	0.13	U	
11096-82-5	AROCLOR-1260	1	1	1	0.18	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL	0.171		0.505	34	32 - 111
877-09-8	TETRACHLORO-M-XYLENE	0.404		0.505	80	63 - 116

Data Package ID: *PT0207158-1*

PCBs

Method SW8082

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

PRELIMINARY RESULTS

FieldID: 356303
LabID: 0207158-3

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 24-Jul-02
Date Analyzed: 30-Jul-02

Prep Batch: EX020724-5
QCBatchID: EX020724-5-1
Run ID: PT020730-1A
Cleanup: SW3665/SW3660
Basis: As Received

Sample Aliquot: 1020 ML
Final Volume: 10 ML
Result Units: UG/L
Clean DF: 1
File Name: EA008425

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
12674-11-2	AROCLOR-1016	1	0.98	0.98	0.16	U	
11104-28-2	AROCLOR-1221	1	2	2	0.19	U	
11141-16-5	AROCLOR-1232	1	0.98	0.98	0.11	U	
53469-21-9	AROCLOR-1242	1	0.98	0.98	0.13	U	
12672-29-6	AROCLOR-1248	1	0.98	0.98	0.073	U	
11097-69-1	AROCLOR-1254	1	0.98	0.98	0.12	U	
11096-82-5	AROCLOR-1260	1	0.98	0.98	0.17	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL	0.0998	*	0.49	20	32 - 111
877-09-8	TETRACHLORO-M-XYLENE	0.137	*	0.49	28	63 - 116

Data Package ID: *PT0207158-1*

Total Recoverable ICP Metals

Method SW6010

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

FieldID: 356301
LabID: 0207158-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 25-Jul-02
Date Analyzed: 29-Jul-02

Prep Batch: IP020725-1
QCBatchID: IP020725-1-2
Run ID: IT020729-1A3
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 G
Final Volume: 50 G
Result Units: MG/L
Clean DF: 1
File Name: TS20729

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	IDL	Result Qualifier	EPA Qualifier
7440-38-2	ARSENIC	1	0.012	0.01	0.0019		
7440-39-3	BARIUM	1	0.067	0.1	0.000042	B	
7440-43-9	CADMIUM	1	0.0032	0.005	0.00014	B	
7440-47-3	CHROMIUM	1	0.02	0.01	0.00032		
7439-92-1	LEAD	1	0.064	0.003	0.0015		
7782-49-2	SELENIUM	1	0.0054	0.005	0.0036		
7440-22-4	SILVER	1	0.0071	0.01	0.00042	B	

Data Package ID: *IT0207158-1*

Total Recoverable ICP Metals

Method SW6010

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356302
Lab ID: 0207158-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 25-Jul-02
Date Analyzed: 29-Jul-02

Prep Batch: IP020725-1
QCBatchID: IP020725-1-2
Run ID: IT020729-1A3
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 G
Final Volume: 50 G
Result Units: MG/L
Clean DF: 1
File Name: TS20729

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	IDL	Result Qualifier	EPA Qualifier
7440-38-2	ARSENIC	1	0.0089	0.01	0.0019	B	
7440-39-3	BARIUM	1	0.028	0.1	0.000042	B	
7440-43-9	CADMIUM	1	0.00076	0.005	0.00014	B	
7440-47-3	CHROMIUM	1	0.0015	0.01	0.00032	B	
7439-92-1	LEAD	1	0.003	0.003	0.0015	U	
7782-49-2	SELENIUM	1	0.005	0.005	0.0036	U	
7440-22-4	SILVER	1	0.01	0.01	0.00042	U	

Data Package ID: *IT0207158-1*

Total Recoverable ICP Metals

Method SW6010

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0207158
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356303
Lab ID: 0207158-3

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 22-Jul-02
Date Extracted: 25-Jul-02
Date Analyzed: 29-Jul-02

Prep Batch: IP020725-1
QCBatchID: IP020725-1-2
Run ID: IT020729-1A3
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 G
Final Volume: 50 G
Result Units: MG/L
Clean DF: 1
File Name: TS20729

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	IDL	Result Qualifier	EPA Qualifier
7440-38-2	ARSENIC	1	0.015	0.01	0.0019		
7440-39-3	BARIUM	1	0.068	0.1	0.000042	B	
7440-43-9	CADMIUM	1	0.0035	0.005	0.00014	B	
7440-47-3	CHROMIUM	1	0.02	0.01	0.00032		
7439-92-1	LEAD	1	0.066	0.003	0.0015		
7782-49-2	SELENIUM	1	0.014	0.005	0.0036		
7440-22-4	SILVER	1	0.0071	0.01	0.00042	B	

Data Package ID: *IT0207158-1*

Total MERCURY

Method SW7470

Sample Results

Lab Name: Paragon Analytics, Inc.
Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project ID: CAU356 831845.02030010
Work Order Number: 0207158
Reporting Basis: As Received
Final Volume: 20 G
Matrix: WATER
Result Units: MG/L

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	IDL	Flag	Sample Aliquot
356301	0207158-1	7/22/02	7/30/02	07/30/2002	N/A	1	0.000017	0.0002	0.000011	B	20 G
356302	0207158-2	7/22/02	7/30/02	07/30/2002	N/A	1	0.0002	0.0002	0.000011	U	20 G
356303	0207158-3	7/22/02	7/30/02	07/30/2002	N/A	1	0.0002	0.0002	0.000011	U	20 G

Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: *HG0207158-1*

Gamma Spectroscopy Results

Method PAI SOP 713R6

Sample Results

Reported on: Tuesday, July 30, 2002 11:49:44

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0207158

Field ID: 356301
Lab ID: 0207158-1

Sample Matrix: Water
Date Prepared: 25-Jul-02
Prep SOP: PAI 739R5
Prep Batch: GS01615

Date Collected: 22-Jul-02
Date Analyzed: 27-Jul-02
Analytical SOP: PAI 713R6
Spectrum Code: 020756D07A

Final Aliquot: 1.000 L
Report Basis: As Received
Count Time (min.): 400
Library: FANP.LIB

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
Ac-228	18 +/- 26	43	pCi/L	U
Ag-110m	0.3 +/- 3.9	6.8	pCi/L	U
Al-26	1.4 +/- 6.2	11	pCi/L	U
Am-241	-3.1 +/- 4.3	7.6	pCi/L	U
Be-7	-12 +/- 30	53	pCi/L	U
Bi-212	3 +/- 62	110	pCi/L	U
Bi-214	6 +/- 13	21	pCi/L	U
Cd-109	16 +/- 44	74	pCi/L	U
Ce-139	-1.4 +/- 2.2	3.9	pCi/L	U
Ce-144	-5 +/- 14	24	pCi/L	U
Co-56	-2.3 +/- 8.4	15	pCi/L	U
Co-57	0.3 +/- 1.8	3.1	pCi/L	U
Co-58	-4.9 +/- 4.2	7.9	pCi/L	U
Co-60	1.1 +/- 4.4	7.7	pCi/L	U
Cr-51	-1 +/- 27	47	pCi/L	U
Cs-134	-1.0 +/- 4.1	7.3	pCi/L	U
Cs-137	-0.7 +/- 4.2	7.3	pCi/L	U
Eu-152	-4 +/- 23	42	pCi/L	U
Eu-154	-7 +/- 24	43	pCi/L	U
Eu-155	-2.9 +/- 6.9	12	pCi/L	U
Fe-59	2.7 +/- 8.4	14	pCi/L	U
I-131	-1.3 +/- 5.6	9.7	pCi/L	U
K-40	-1 +/- 85	150	pCi/L	U
Mn-54	-1.8 +/- 4.3	7.6	pCi/L	U
Na-22	0.7 +/- 4.5	7.9	pCi/L	U
Nb-94	1.8 +/- 4.0	6.8	pCi/L	U

Data Package ID: *GSW0207158-1*

Gamma Spectroscopy Results

Method PAI SOP 713R6

Sample Results

Reported on: Tuesday, July 30, 2002 11:49:44

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0207158

Field ID: 356301
Lab ID: 0207158-1

Sample Matrix: Water
Date Prepared: 25-Jul-02
Prep SOP: PAI 739R5
Prep Batch: GS01615

Date Collected: 22-Jul-02
Date Analyzed: 27-Jul-02
Analytical SOP: PAI 713R6
Spectrum Code: 020756D07A

Final Aliquot: 1.000 L
Report Basis: As Received
Count Time (min.): 400
Library: FANP.LIB

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
Nb-95	-0.3 +/- 4.4	7.7	pCi/L	U
Pa-234m	160 +/- 730	1300	pCi/L	U
Pb-212	-0.2 +/- 6.5	11	pCi/L	U
Pb-214	7 +/- 12	19	pCi/L	U
Ru-106	-13 +/- 37	66	pCi/L	U
Sb-124	1.7 +/- 9.4	16	pCi/L	U
Sb-125	5.4 +/- 9.7	16	pCi/L	U
Sc-46	-2.4 +/- 4.1	7.5	pCi/L	U
Th-227	-5 +/- 18	32	pCi/L	U
Th-234	0 +/- 52	88	pCi/L	U
Tl-208	3.0 +/- 4.3	7.0	pCi/L	U
U-235	-19 +/- 24	42	pCi/L	U
Zn-65	1.6 +/- 9.3	16	pCi/L	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
LT - Result is less than Requested MDC, greater than sample specific MDC.
SQ - Spectral quality prevents accurate quantitation.
SI - Nuclide identification and/or quantitation is tentative.
TI - Nuclide identification is tentative.
R - Nuclide has exceeded 8 halflives.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: *GSW0207158-1*

Gamma Spectroscopy Results

Method PAI SOP 713R6

Sample Results

Reported on: Tuesday, July 30, 2002 11:49:45

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0207158

Field ID: 356302
Lab ID: 0207158-2

Sample Matrix: Water
Date Prepared: 25-Jul-02
Prep SOP: PAI 739R5
Prep Batch: GS01615

Date Collected: 22-Jul-02
Date Analyzed: 27-Jul-02
Analytical SOP: PAI 713R6
Spectrum Code: 020671D08A

Final Aliquot: 1.000 L
Report Basis: As Received
Count Time (min.): 400
Library: FANP.LIB

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
Ac-228	-2 +/- 24	41	pCi/L	U
Ag-110m	0.9 +/- 3.1	5.3	pCi/L	U
Al-26	-0.6 +/- 4.5	8.1	pCi/L	U
Am-241	5.6 +/- 4.4	6.9	pCi/L	U
Be-7	-5 +/- 25	43	pCi/L	U
Bi-212	18 +/- 53	89	pCi/L	U
Bi-214	6 +/- 14	23	pCi/L	U
Cd-109	2 +/- 40	67	pCi/L	U
Ce-139	-0.6 +/- 2.1	3.7	pCi/L	U
Ce-144	-4 +/- 14	25	pCi/L	U
Co-56	0.1 +/- 5.9	10	pCi/L	U
Co-57	0.1 +/- 1.7	2.8	pCi/L	U
Co-58	-0.3 +/- 3.5	6.1	pCi/L	U
Co-60	3.0 +/- 3.9	6.4	pCi/L	U
Cr-51	4 +/- 26	45	pCi/L	U
Cs-134	5.3 +/- 5.2	8.0	pCi/L	U
Cs-137	-1.1 +/- 3.4	5.9	pCi/L	U
Eu-152	1 +/- 18	31	pCi/L	U
Eu-154	5 +/- 21	37	pCi/L	U
Eu-155	3.2 +/- 6.6	11	pCi/L	U
Fe-59	-3.2 +/- 6.7	12	pCi/L	U
I-131	0.7 +/- 4.7	8.1	pCi/L	U
K-40	6 +/- 77	130	pCi/L	U
Mn-54	-1.6 +/- 3.3	6.0	pCi/L	U
Na-22	0.3 +/- 4.1	7.2	pCi/L	U
Nb-94	-2.6 +/- 3.8	6.7	pCi/L	U

Data Package ID: *GSW0207158-1*

Gamma Spectroscopy Results

Method PAI SOP 713R6

Sample Results

Reported on: Tuesday, July 30, 2002 11:49:45

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0207158

Field ID: 356302
Lab ID: 0207158-2

Sample Matrix: Water
Date Prepared: 25-Jul-02
Prep SOP: PAI 739R5
Prep Batch: GS01615

Date Collected: 22-Jul-02
Date Analyzed: 27-Jul-02
Analytical SOP: PAI 713R6
Spectrum Code: 020671D08A

Final Aliquot: 1.000 L
Report Basis: As Received
Count Time (min.): 400
Library: FANP.LIB

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
Nb-95	1.2 +/- 3.5	5.9	pCi/L	U
Pa-234m	260 +/- 650	1100	pCi/L	U
Pb-212	2.2 +/- 7.9	13	pCi/L	U
Pb-214	-0.2 +/- 8.8	15	pCi/L	U
Ru-106	2 +/- 32	55	pCi/L	U
Sb-124	0.1 +/- 3.8	6.5	pCi/L	U
Sb-125	2.1 +/- 6.8	13	pCi/L	U
Sc-46	0.3 +/- 3.4	5.9	pCi/L	U
Th-227	-13 +/- 22	38	pCi/L	U
Th-234	-28 +/- 52	88	pCi/L	U
Tl-208	-2.3 +/- 5.6	9.6	pCi/L	U
U-235	-11 +/- 19	32	pCi/L	U
Zn-65	-0.9 +/- 8.0	14	pCi/L	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
LT - Result is less than Requested MDC, greater than sample specific MDC.
SQ - Spectral quality prevents accurate quantitation.
SI - Nuclide identification and/or quantitation is tentative
TI - Nuclide identification is tentative.
R - Nuclide has exceeded 8 halflives.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: *GSW0207158-1*

Gamma Spectroscopy Results

Method PAI SOP 713R6

Sample Results

Reported on: Tuesday, July 30, 2002 11:49:46

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0207158

Field ID: 356303
Lab ID: 0207158-3

Sample Matrix: Water
Date Prepared: 25-Jul-02
Prep SOP: PAI 739R5
Prep Batch: GS01615

Date Collected: 22-Jul-02
Date Analyzed: 27-Jul-02
Analytical SOP: PAI 713R6
Spectrum Code: 020620D09A

Final Aliquot: 1.000 L
Report Basis: As Received
Count Time (min.): 400
Library: FANP.LIB

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
Ac-228	11 +/- 21	35	pCi/L	U
Ag-110m	0.3 +/- 4.4	7.6	pCi/L	U
Al-26	2.9 +/- 6.5	11	pCi/L	U
Am-241	21 +/- 42	68	pCi/L	U
Be-7	-27 +/- 36	65	pCi/L	U
Bi-212	46 +/- 67	110	pCi/L	U
Bi-214	6 +/- 18	30	pCi/L	U
Cd-109	20 +/- 100	170	pCi/L	U
Ce-139	-2.2 +/- 3.2	5.6	pCi/L	U
Ce-144	8 +/- 22	37	pCi/L	U
Co-56	-0.3 +/- 9.0	16	pCi/L	U
Co-57	1.4 +/- 3.0	5.0	pCi/L	U
Co-58	-1.1 +/- 4.5	8.0	pCi/L	U
Co-60	2.0 +/- 5.5	9.5	pCi/L	U
Cr-51	-14 +/- 36	63	pCi/L	U
Cs-134	-2.8 +/- 4.9	8.7	pCi/L	U
Cs-137	0.7 +/- 4.8	8.3	pCi/L	U
Eu-152	19 +/- 28	45	pCi/L	U
Eu-154	-46 +/- 30	56	pCi/L	U
Eu-155	-2 +/- 12	21	pCi/L	U
Fe-59	1 +/- 10	18	pCi/L	U
I-131	-7.9 +/- 6.5	12	pCi/L	U
K-40	-57 +/- 99	170	pCi/L	U
Mn-54	-0.7 +/- 5.1	8.9	pCi/L	U
Na-22	1.3 +/- 5.5	9.6	pCi/L	U
Nb-94	-0.2 +/- 5.3	9.2	pCi/L	U

Data Package ID: *GSW0207158-1*

Gamma Spectroscopy Results

Method PAI SOP 713R6

Sample Results

Reported on: Tuesday, July 30, 2002 11:49:46

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0207158

Field ID: 356303
Lab ID: 0207158-3

Sample Matrix: Water
Date Prepared: 25-Jul-02
Prep SOP: PAI 739R5
Prep Batch: GS01615

Date Collected: 22-Jul-02
Date Analyzed: 27-Jul-02
Analytical SOP: PAI 713R6
Spectrum Code: 020620D09A

Final Aliquot: 1.000 L
Report Basis: As Received
Count Time (min.): 400
Library: FANP.LIB

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
Nb-95	1.8 +/- 4.6	7.8	pCi/L	U
Pa-234m	590 +/- 860	1400	pCi/L	U
Pb-212	-2.0 +/- 9.4	16	pCi/L	U
Pb-214	-2 +/- 14	24	pCi/L	U
Ru-106	-12 +/- 44	77	pCi/L	U
Sb-124	-3.1 +/- 5.2	9.2	pCi/L	U
Sb-125	6 +/- 11	20	pCi/L	U
Sc-46	1.6 +/- 4.9	8.4	pCi/L	U
Th-227	27 +/- 33	52	pCi/L	U
Th-234	-20 +/- 110	190	pCi/L	U
Tl-208	4.8 +/- 4.9	7.9	pCi/L	U
U-235	12 +/- 33	55	pCi/L	U
Zn-65	2 +/- 11	20	pCi/L	U

Comments:

Qualifiers/Flags:
U - Result is less than the sample specific MDC or less than the associated TPU.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
LT - Result is less than Requested MDC, greater than sample specific MDC.
SQ - Spectral quality prevents accurate quantitation.
SI - Nuclide identification and/or quantitation is tentative.
TI - Nuclide identification is tentative.
R - Nuclide has exceeded 8 halflives

Abbreviations:
TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: *GSW0207158-1*

Gamma Spectroscopy Results

Method PAI SOP 713R6

Sample Duplicate Results

Reported on: Tuesday, July 30, 2002 11:49:45

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0207158

Field ID: 356301
Lab ID: 0207158-1-D1

Sample Matrix: Water
Date Prepared: 25-Jul-02
Prep SOP: PAI 739R5
Prep Batch: GS01615

Date Collected: 22-Jul-02
Date Analyzed: 29-Jul-02
Analytical SOP: PAI 713R6
Spectrum Code: 020676D08A

Final Aliquot: 1.000
Aliquot Units: L
Report Basis: As Received
Count Time (min.): 400

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
Ac-228	19 +/- 14	22	pCi/L	U
Ag-110m	-0.5 +/- 3.2	5.7	pCi/L	U
Al-26	-0.8 +/- 4.6	8.3	pCi/L	U
Am-241	1.5 +/- 4.3	7.2	pCi/L	U
Be-7	-4 +/- 24	42	pCi/L	U
Bi-212	5 +/- 51	88	pCi/L	U
Bi-214	5 +/- 10	17	pCi/L	U
Cd-109	13 +/- 38	63	pCi/L	U
Ce-139	-0.7 +/- 2.3	3.9	pCi/L	U
Ce-144	-4 +/- 14	25	pCi/L	U
Co-56	0.0 +/- 6.2	11	pCi/L	U
Co-57	0.3 +/- 1.7	2.8	pCi/L	U
Co-58	-1.5 +/- 3.7	6.6	pCi/L	U
Co-60	-2.9 +/- 3.9	7.3	pCi/L	U
Cr-51	-8 +/- 28	48	pCi/L	U
Cs-134	-1.4 +/- 3.5	6.1	pCi/L	U
Cs-137	1.4 +/- 3.5	5.9	pCi/L	U
Eu-152	-3 +/- 17	31	pCi/L	U
Eu-154	-13 +/- 19	35	pCi/L	U
Eu-155	2.7 +/- 6.5	11	pCi/L	U
Fe-59	-3.6 +/- 7.3	13	pCi/L	U
I-131	-0.9 +/- 5.4	9.3	pCi/L	U
K-40	51 +/- 74	120	pCi/L	U
Mn-54	-3.7 +/- 3.3	6.0	pCi/L	U
Na-22	2.9 +/- 4.1	6.8	pCi/L	U
Nb-94	2.0 +/- 3.6	6.0	pCi/L	U
Nb-95	1.2 +/- 3.6	6.2	pCi/L	U

Data Package ID: *GSW0207158-1*

Gamma Spectroscopy Results

Method PAI SOP 713R6

Sample Duplicate Results

Reported on: Tuesday, July 30, 2002 11:49:45

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0207158

Field ID: 356301
Lab ID: 0207158-1-D1

Sample Matrix: Water
Date Prepared: 25-Jul-02
Prep SOP: PAI 739R5
Prep Batch: GS01615

Date Collected: 22-Jul-02
Date Analyzed: 29-Jul-02
Analytical SOP: PAI 713R6
Spectrum Code: 020676D08A

Final Aliquot: 1.000
Aliquot Units: L
Report Basis: As Received
Count Time (min.): 400

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
Pa-234m	950 +/- 600	880	pCi/L	TI
Pb-212	-0.3 +/- 7.5	13	pCi/L	U
Pb-214	5.8 +/- 6.9	11	pCi/L	U
Ru-106	11 +/- 32	54	pCi/L	U
Sb-124	0.7 +/- 3.7	6.4	pCi/L	U
Sb-125	2.8 +/- 7.1	13	pCi/L	U
Sc-46	-1.8 +/- 3.3	6.1	pCi/L	U
Th-227	14 +/- 22	36	pCi/L	U
Th-234	-23 +/- 56	93	pCi/L	U
Tl-208	6.5 +/- 3.7	5.4	pCi/L	TI
U-235	10 +/- 15	25	pCi/L	U
Zn-65	-2.8 +/- 7.5	13	pCi/L	U

Data Package ID: *GSW0207158-1*

Sample Results Summary

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0207158

Page: 1 of 1
Reported on: Wednesday, July 31, 2002 10:00:39

Lab Sample ID	Client Sample ID	Test	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0207158-1	356301	U-ISO	U-234	7.49 +/- 0.97	0.046	pCi/L	Water	AS05701	7/29/02	
0207158-1	356301	U-ISO	U-235	0.69 +/- 0.13	0.031	pCi/L	Water	AS05701	7/29/02	
0207158-1	356301	U-ISO	U-238	2.12 +/- 0.31	0.027	pCi/L	Water	AS05701	7/29/02	
0207158-2	356302	U-ISO	U-234	6.07 +/- 0.80	0.050	pCi/L	Water	AS05701	7/29/02	
0207158-2	356302	U-ISO	U-235	0.192 +/- 0.055	0.022	pCi/L	Water	AS05701	7/29/02	
0207158-2	356302	U-ISO	U-238	1.71 +/- 0.26	0.027	pCi/L	Water	AS05701	7/29/02	
0207158-3	356303	U-ISO	U-234	7.7 +/- 1.0	0.032	pCi/L	Water	AS05701	7/30/02	
0207158-3	356303	U-ISO	U-235	0.341 +/- 0.084	0.036	pCi/L	Water	AS05701	7/30/02	
0207158-3	356303	U-ISO	U-238	2.05 +/- 0.31	0.012	pCi/L	Water	AS05701	7/30/02	

Comments:

Data Package ID: *UW0207158-1*

Qualifiers/Flags:
U - Result is less than the sample specific MDC.
LT - Result is less than Requested MDC, greater than sample specific MDC
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.

Abbreviations:
TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

Sample Results Summary

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0207158

Page: 1 of 1
Reported on: Monday, July 29, 2002 12:13:33

Lab Sample ID	Client Sample ID	Test	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0207158-1	356301	PU-ISO	Pu-238	0.008 +/- 0.013	0.021	pCi/L	Water	AS05701	7/26/02	U
0207158-1	356301	PU-ISO	Pu-239	0.022 +/- 0.019	0.026	pCi/L	Water	AS05701	7/26/02	U
0207158-2	356302	PU-ISO	Pu-238	0.001 +/- 0.022	0.051	pCi/L	Water	AS05701	7/26/02	U
0207158-2	356302	PU-ISO	Pu-239	-0.003 +/- 0.013	0.035	pCi/L	Water	AS05701	7/26/02	U
0207158-3	356303	PU-ISO	Pu-238	0.011 +/- 0.016	0.031	pCi/L	Water	AS05701	7/26/02	U
0207158-3	356303	PU-ISO	Pu-239	0.009 +/- 0.015	0.025	pCi/L	Water	AS05701	7/26/02	U

Comments:

Data Package ID: *PU0207158-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Sample Results Summary

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0207158

Page: 1 of 1
Reported on: Wednesday, July 31, 2002 14:46:53

Lab Sample ID	Client Sample ID	Test	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0207158-1	356301	RD_GAB	GrAlpha	19.9 +/- 3.7	2.6	pCi/L	Water	AB00600	7/31/02	
0207158-1	356301	RD_GAB	GrBeta	21.7 +/- 3.7	3.2	pCi/L	Water	AB00600	7/31/02	
0207158-2	356302	RD_GAB	GrAlpha	8.4 +/- 1.8	1.7	pCi/L	Water	AB00600	7/31/02	
0207158-2	356302	RD_GAB	GrBeta	12.3 +/- 2.0	1.5	pCi/L	Water	AB00600	7/31/02	
0207158-3	356303	RD_GAB	GrAlpha	11.8 +/- 2.2	1.5	pCi/L	Water	AB00600	7/31/02	
0207158-3	356303	RD_GAB	GrBeta	14.6 +/- 2.4	1.8	pCi/L	Water	AB00600	7/31/02	

Comments:

Data Package ID: *ABW0207158-1*

Qualifiers/Flags:
U - Result is less than the sample specific MDC.
LT - Result is less than Requested MDC, greater than sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.

Abbreviations:
TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

Sample Results Summary

Client Name: Shaw Environmental & Infrastructure, Inc
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0207158

Page: 1 of 1
Reported on: Tuesday, July 30, 2002 09:59:57

Lab Sample ID	Client Sample ID	Test	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0207158-1	356301	TRITIUM	H-3	-10 +/- 220	370	pCi/L	Water	LS01316	7/27/02	U
0207158-2	356302	TRITIUM	H-3	100 +/- 220	370	pCi/L	Water	LS01316	7/27/02	U
0207158-3	356303	TRITIUM	H-3	160 +/- 220	370	pCi/L	Water	LS01316	7/27/02	U

Comments:

Data Package ID: *H3L0207158-1*

Qualifiers/Flags:
U - Result is less than the sample specific MDC
LT - Result is less than Requested MDC, greater than sample specific MDC
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed
Y2 - Chemical Yield outside default limits

Abbreviations:
TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

GC/MS Volatiles

Method SW8260

Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208034
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Lab ID: VL020812-4MB

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 08/12/2002
Date Analyzed: 08/12/2002

Prep Batch: VL020812-4
QCBatchID: VL020812-4-1
Run ID: VL020812-4A
Cleanup: NONE
Basis: N/A

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
Clean DF: 1
File Name: A19333

CASNO	Target Analyte	DF	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
75-71-8	DICHLORODIFLUOROMETHANE	1	10	10	1.3	U	
74-87-3	CHLOROMETHANE	1	10	10	1.1	U	
75-01-4	VINYL CHLORIDE	1	10	10	1.5	U	
74-83-9	BROMOMETHANE	1	10	10	2.2	U	
75-00-3	CHLOROETHANE	1	10	10	1.2	U	
75-69-4	TRICHLOROFLUOROMETHANE	1	5	5	1.3	U	
75-35-4	1,1-DICHLOROETHENE	1	5	5	1.6	U	
76-13-1	TRICHLOROTRIFLUOROETHANE	1	5	5	1.6	U	
67-64-1	ACETONE	1	20	20	8	U	
74-88-4	IODOMETHANE	1	5	5	1.9	U	
75-15-0	CARBON DISULFIDE	1	5	5	1.5	U	
75-09-2	METHYLENE CHLORIDE	1	5	5	1.4	U	
156-60-5	TRANS-1,2-DICHLOROETHENE	1	5	5	1.4	U	
1634-04-4	METHYL TERTIARY BUTYL ETHER	1	5	5	1.3	U	
75-34-3	1,1-DICHLOROETHANE	1	5	5	1.5	U	
108-05-4	VINYL ACETATE	1	20	20	1.2	U	
156-59-2	CIS-1,2-DICHLOROETHENE	1	5	5	1.2	U	
78-93-3	2-BUTANONE	1	20	20	5.5	U	
74-97-5	BROMOCHLOROMETHANE	1	5	5	1	U	
67-66-3	CHLOROFORM	1	5	5	1.1	U	
71-55-6	1,1,1-TRICHLOROETHANE	1	5	5	1.2	U	
594-20-7	2,2-DICHLOROPROPANE	1	5	5	1.5	U	
56-23-5	CARBON TETRACHLORIDE	1	5	5	1.4	U	
563-58-6	1,1-DICHLOROPROPENE	1	5	5	1.4	U	
107-06-2	1,2-DICHLOROETHANE	1	5	5	1.3	U	
71-43-2	BENZENE	1	5	5	0.89	U	
79-01-6	TRICHLOROETHENE	1	5	5	1.2	U	
78-87-5	1,2-DICHLOROPROPANE	1	5	5	0.88	U	

Data Package ID: *VL0208034-1*

GC/MS Volatiles

Method SW8260

Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208034
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Lab ID: VL020812-4MB

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 08/12/2002
Date Analyzed: 08/12/2002

Prep Batch: VL020812-4
QCBatchID: VL020812-4-1
Run ID: VL020812-4A
Cleanup: NONE
Basis: N/A

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
Clean DF: 1
File Name: A19333

74-95-3	DIBROMOMETHANE	1	5	5	1.7	U
75-27-4	BROMODICHLOROMETHANE	1	5	5	0.55	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	1	5	5	0.99	U
108-10-1	4-METHYL-2-PENTANONE	1	20	20	5.3	U
108-88-3	TOLUENE	1	5	5	1.7	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	5	5	1	U
79-00-5	1,1,2-TRICHLOROETHANE	1	5	5	1.2	U
591-78-6	2-HEXANONE	1	20	20	5.8	U
127-18-4	TETRACHLOROETHENE	1	5	5	1.5	U
142-28-9	1,3-DICHLOROPROPANE	1	5	5	1	U
124-48-1	DIBROMOCHLOROMETHANE	1	5	5	0.73	U
106-93-4	1,2-DIBROMOETHANE	1	5	5	0.89	U
544-10-5	1-CHLOROHEXANE	1	5	5	1.4	U
108-90-7	CHLOROBENZENE	1	5	5	1.3	U
630-20-6	1,1,1,2-TETRACHLOROETHANE	1	5	5	1.1	U
100-41-4	ETHYLBENZENE	1	5	5	1.3	U
136777-61-	M+P-XYLENE	1	5	5	2.7	U
95-47-6	O-XYLENE	1	5	5	1.4	U
100-42-5	STYRENE	1	5	5	1.3	U
75-25-2	BROMOFORM	1	5	5	1.1	U
98-82-8	ISOPROPYLBENZENE	1	5	5	1.1	U
96-18-4	1,2,3-TRICHLOROPROPANE	1	5	5	1.3	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	1	5	5	1.1	U
108-86-1	BROMOBENZENE	1	5	5	1.1	U
103-65-1	N-PROPYLBENZENE	1	5	5	1.2	U
95-49-8	2-CHLOROTOLUENE	1	5	5	0.95	U
108-67-8	1,3,5-TRIMETHYLBENZENE	1	5	5	1.1	U
106-43-4	4-CHLOROTOLUENE	1	5	5	1.1	U
98-06-6	TERT-BUTYLBENZENE	1	5	5	1.3	U
95-63-6	1,2,4-TRIMETHYLBENZENE	1	5	5	1.2	U

Data Package ID: *VL0208034-1*

GC/MS Volatiles

Method SW8260

Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208034
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Lab ID: VL020812-4MB

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 08/12/2002
Date Analyzed: 08/12/2002

Prep Batch: VL020812-4
QCBatchID: VL020812-4-1
Run ID: VL020812-4A
Cleanup: NONE
Basis: N/A

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
Clean DF: 1
File Name: A19333

135-98-8	SEC-BUTYLBENZENE	1	5	5	1.1	U	
541-73-1	1,3-DICHLOROBENZENE	1	5	5	1.2	U	
99-87-6	P-ISOPROPYLTOLUENE	1	5	5	1.2	U	
106-46-7	1,4-DICHLOROBENZENE	1	5	5	1.1	U	
104-51-8	N-BUTYLBENZENE	1	5	5	1.3	U	
95-50-1	1,2-DICHLOROBENZENE	1	5	5	1.3	U	
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	1	10	10	1.4	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	5	5	1.5	U	
87-68-3	HEXACHLOROBUTADIENE	1	5	5	1.7	U	
91-20-3	NAPHTHALENE	1	5	5	1.3	U	
87-61-6	1,2,3-TRICHLOROBENZENE	1	5	5	1.5	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	47.8		50	96	74 - 123
1868-53-7	DIBROMOFLUOROMETHANE	43		50	86	79 - 120
2037-26-5	TOLUENE-D8	47		50	94	83 - 120

Data Package ID: *VL0208034-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208034
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356309
Lab ID: 0208034-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 06-Aug-02
Date Extracted: 12-Aug-02
Date Analyzed: 12-Aug-02

Prep Batch: VL020812-4
QCBatchID: VL020812-4-1
Run ID: VL020812-4A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
Clean DF: 1
File Name: A19335

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
75-71-8	DICHLORODIFLUOROMETHANE	1	10	10	1.3	U	
74-87-3	CHLOROMETHANE	1	10	10	1.1	U	
75-01-4	VINYL CHLORIDE	1	10	10	1.5	U	
74-83-9	BROMOMETHANE	1	10	10	2.2	U	
75-00-3	CHLOROETHANE	1	10	10	1.2	U	
75-69-4	TRICHLOROFLUOROMETHANE	1	5	5	1.3	U	
75-35-4	1,1-DICHLOROETHENE	1	5	5	1.6	U	
76-13-1	TRICHLOROTRIFLUOROETHANE	1	5	5	1.6	U	
67-64-1	ACETONE	1	20	20	8	U	
74-88-4	IODOMETHANE	1	5	5	1.9	U	
75-15-0	CARBON DISULFIDE	1	5	5	1.5	U	
75-09-2	METHYLENE CHLORIDE	1	5	5	1.4	U	
156-60-5	TRANS-1,2-DICHLOROETHENE	1	5	5	1.4	U	
1634-04-4	METHYL TERTIARY BUTYL ETHER	1	5	5	1.3	U	
75-34-3	1,1-DICHLOROETHANE	1	5	5	1.5	U	
108-05-4	VINYL ACETATE	1	20	20	1.2	U	
156-59-2	CIS-1,2-DICHLOROETHENE	1	5	5	1.2	U	
78-93-3	2-BUTANONE	1	20	20	5.5	U	
74-97-5	BROMOCHLOROMETHANE	1	5	5	1	U	
67-66-3	CHLOROFORM	1	5	5	1.1	U	
71-55-6	1,1,1-TRICHLOROETHANE	1	5	5	1.2	U	
594-20-7	2,2-DICHLOROPROPANE	1	5	5	1.5	U	
56-23-5	CARBON TETRACHLORIDE	1	5	5	1.4	U	
563-58-6	1,1-DICHLOROPROPENE	1	5	5	1.4	U	
107-06-2	1,2-DICHLOROETHANE	1	5	5	1.3	U	
71-43-2	BENZENE	1	5	5	0.89	U	
79-01-6	TRICHLOROETHENE	1	5	5	1.2	U	
78-87-5	1,2-DICHLOROPROPANE	1	5	5	0.88	U	

Data Package ID: *VL0208034-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208034
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356309
Lab ID: 0208034-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 06-Aug-02
Date Extracted: 12-Aug-02
Date Analyzed: 12-Aug-02

Prep Batch: VL020812-4
QCBatchID: VL020812-4-1
Run ID: VL020812-4A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
Clean DF: 1
File Name: A19335

74-95-3	DIBROMOMETHANE	1	5	5	1.7 U	
75-27-4	BROMODICHLOROMETHANE	1	5	5	0.55 U	
10061-01-5	CIS-1,3-DICHLOROPROPENE	1	5	5	0.99 U	
108-10-1	4-METHYL-2-PENTANONE	1	20	20	5.3 U	
108-88-3	TOLUENE	1	5	5	1.7 U	
10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	5	5	1 U	
79-00-5	1,1,2-TRICHLOROETHANE	1	5	5	1.2 U	
591-78-6	2-HEXANONE	1	20	20	5.8 U	
127-18-4	TETRACHLOROETHENE	1	5	5	1.5 U	
142-28-9	1,3-DICHLOROPROPANE	1	5	5	1 U	
124-48-1	DIBROMOCHLOROMETHANE	1	5	5	0.73 U	
106-93-4	1,2-DIBROMOETHANE	1	5	5	0.89 U	
544-10-5	1-CHLOROHEXANE	1	5	5	1.4 U	
108-90-7	CHLOROBENZENE	1	5	5	1.3 U	
630-20-6	1,1,1,2-TETRACHLOROETHANE	1	5	5	1.1 U	
100-41-4	ETHYLBENZENE	1	5	5	1.3 U	
136777-61-	M+P-XYLENE	1	5	5	2.7 U	
95-47-6	O-XYLENE	1	5	5	1.4 U	
100-42-5	STYRENE	1	5	5	1.3 U	
75-25-2	BROMOFORM	1	5	5	1.1 U	
98-82-8	ISOPROPYLBENZENE	1	5	5	1.1 U	
96-18-4	1,2,3-TRICHLOROPROPANE	1	5	5	1.3 U	
79-34-5	1,1,2,2-TETRACHLOROETHANE	1	5	5	1.1 U	
108-86-1	BROMOBENZENE	1	5	5	1.1 U	
103-65-1	N-PROPYLBENZENE	1	5	5	1.2 U	
95-49-8	2-CHLOROTOLUENE	1	5	5	0.95 U	
108-67-8	1,3,5-TRIMETHYLBENZENE	1	5	5	1.1 U	
106-43-4	4-CHLOROTOLUENE	1	5	5	1.1 U	
98-06-6	TERT-BUTYLBENZENE	1	5	5	1.3 U	
95-63-6	1,2,4-TRIMETHYLBENZENE	1	5	5	1.2 U	

Data Package ID: *VL0208034-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208034
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356309
Lab ID: 0208034-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 06-Aug-02
Date Extracted: 12-Aug-02
Date Analyzed: 12-Aug-02

Prep Batch: VL020812-4
QCBatchID: VL020812-4-1
Run ID: VL020812-4A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
Clean DF: 1
File Name: A19335

135-98-8	SEC-BUTYLBENZENE	1	5	5	1.1	U	
541-73-1	1,3-DICHLOROBENZENE	1	5	5	1.2	U	
99-87-6	P-ISOPROPYLTOLUENE	1	5	5	1.2	U	
106-46-7	1,4-DICHLOROBENZENE	1	5	5	1.1	U	
104-51-8	N-BUTYLBENZENE	1	5	5	1.3	U	
95-50-1	1,2-DICHLOROBENZENE	1	5	5	1.3	U	
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	1	10	10	1.4	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	5	5	1.5	U	
87-68-3	HEXACHLOROBUTADIENE	1	5	5	1.7	U	
91-20-3	NAPHTHALENE	1	5	5	1.3	U	
87-61-6	1,2,3-TRICHLOROBENZENE	1	5	5	1.5	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	47.4		50	95	74 - 123
1868-53-7	DIBROMOFLUOROMETHANE	44.2		50	88	79 - 120
2037-26-5	TOLUENE-D8	46.3		50	93	83 - 120

Data Package ID: *VL0208034-1*

GC/MS Volatiles

Method SW8260

Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208034
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Lab ID: VL020812-1MB

Sample Matrix: SOIL
% Moisture: N/A
Date Collected: N/A
Date Extracted: 08/12/2002
Date Analyzed: 08/12/2002

Prep Batch: VL020812-1
QCBatchID: VL020812-1-1
Run ID: VL020812-1A
Cleanup: NONE
Basis: N/A

Sample Aliquot: 5 G
Final Volume: 5 ML
Result Units: UG/KG
Clean DF: 1
File Name: A19326

CASNO	Target Analyte	DF	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
75-71-8	DICHLORODIFLUOROMETHANE	1	10	10	1.3	U	
74-87-3	CHLOROMETHANE	1	10	10	2.2	U	
75-01-4	VINYL CHLORIDE	1	10	10	1.6	U	
74-83-9	BROMOMETHANE	1	10	10	2.7	U	
75-00-3	CHLOROETHANE	1	10	10	1.6	U	
75-69-4	TRICHLOROFLUOROMETHANE	1	5	5	1.6	U	
75-35-4	1,1-DICHLOROETHENE	1	5	5	0.86	U	
76-13-1	TRICHLOROTRIFLUOROETHANE	1	5	5	1.7	U	
67-64-1	ACETONE	1	20	20	7.6	U	
74-88-4	IODOMETHANE	1	5	5	1.4	U	
75-15-0	CARBON DISULFIDE	1	5	5	0.85	U	
75-09-2	METHYLENE CHLORIDE	1	5	5	2	U	
156-60-5	TRANS-1,2-DICHLOROETHENE	1	5	5	0.98	U	
1634-04-4	METHYL TERTIARY BUTYL ETHER	1	5	5	1.5	U	
75-34-3	1,1-DICHLOROETHANE	1	5	5	1	U	
108-05-4	VINYL ACETATE	1	20	20	2.6	U	
156-59-2	CIS-1,2-DICHLOROETHENE	1	5	5	0.91	U	
78-93-3	2-BUTANONE	1	20	20	6.3	U	
74-97-5	BROMOCHLOROMETHANE	1	5	5	1	U	
67-66-3	CHLOROFORM	1	5	5	0.72	U	
71-55-6	1,1,1-TRICHLOROETHANE	1	5	5	0.71	U	
594-20-7	2,2-DICHLOROPROPANE	1	5	5	1.2	U	
56-23-5	CARBON TETRACHLORIDE	1	5	5	1.1	U	
563-58-6	1,1-DICHLOROPROPENE	1	5	5	1.2	U	
107-06-2	1,2-DICHLOROETHANE	1	5	5	1.4	U	
71-43-2	BENZENE	1	5	5	0.75	U	
79-01-6	TRICHLOROETHENE	1	5	5	0.89	U	
78-87-5	1,2-DICHLOROPROPANE	1	5	5	0.98	U	

Data Package ID: *VL0208034-2*

GC/MS Volatiles

Method SW8260

Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208034
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Lab ID: VL020812-1MB

Sample Matrix: SOIL
% Moisture: N/A
Date Collected: N/A
Date Extracted: 08/12/2002
Date Analyzed: 08/12/2002

Prep Batch: VL020812-1
QCBatchID: VL020812-1-1
Run ID: VL020812-1A
Cleanup: NONE
Basis: N/A

Sample Aliquot: 5 G
Final Volume: 5 ML
Result Units: UG/KG
Clean DF: 1
File Name: A19326

74-95-3	DIBROMOMETHANE	1	5	5	1.6	U	
75-27-4	BROMODICHLOROMETHANE	1	5	5	0.88	U	
10061-01-5	CIS-1,3-DICHLOROPROPENE	1	5	5	0.73	U	
108-10-1	4-METHYL-2-PENTANONE	1	20	20	4.8	U	
108-88-3	TOLUENE	1	5	5	1.2	U	
10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	5	5	0.99	U	
79-00-5	1,1,2-TRICHLOROETHANE	1	5	5	1.4	U	
591-78-6	2-HEXANONE	1	20	20	4.9	U	
127-18-4	TETRACHLOROETHENE	1	5	5	1	U	
142-28-9	1,3-DICHLOROPROPANE	1	5	5	1.2	U	
124-48-1	DIBROMOCHLOROMETHANE	1	5	5	0.95	U	
106-93-4	1,2-DIBROMOETHANE	1	5	5	1.2	U	
544-10-5	1-CHLOROHEXANE	1	5	5	1.2	U	
108-90-7	CHLOROBENZENE	1	5	5	1	U	
630-20-6	1,1,1,2-TETRACHLOROETHANE	1	5	5	0.93	U	
100-41-4	ETHYLBENZENE	1	5	5	1.1	U	
136777-61-	M+P-XYLENE	1	5	5	1.3	U	
95-47-6	O-XYLENE	1	5	5	0.52	U	
100-42-5	STYRENE	1	5	5	0.89	U	
75-25-2	BROMOFORM	1	5	5	1.5	U	
98-82-8	ISOPROPYLBENZENE	1	5	5	0.84	U	
96-18-4	1,2,3-TRICHLOROPROPANE	1	5	5	1.7	U	
79-34-5	1,1,2,2-TETRACHLOROETHANE	1	5	5	1.9	U	
108-86-1	BROMOBENZENE	1	5	5	0.75	U	
103-65-1	N-PROPYLBENZENE	1	5	5	1	U	
95-49-8	2-CHLOROTOLUENE	1	5	5	0.72	U	
108-67-8	1,3,5-TRIMETHYLBENZENE	1	5	5	0.86	U	
106-43-4	4-CHLOROTOLUENE	1	5	5	0.76	U	
98-06-6	TERT-BUTYLBENZENE	1	5	5	0.89	U	
95-63-6	1,2,4-TRIMETHYLBENZENE	1	5	5	0.88	U	

Data Package ID: *VL0208034-2*

GC/MS Volatiles

Method SW8260

Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208034
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Lab ID: VL020812-1MB

Sample Matrix: SOIL
% Moisture: N/A
Date Collected: N/A
Date Extracted: 08/12/2002
Date Analyzed: 08/12/2002

Prep Batch: VL020812-1
QCBatchID: VL020812-1-1
Run ID: VL020812-1A
Cleanup: NONE
Basis: N/A

Sample Aliquot: 5 G
Final Volume: 5 ML
Result Units: UG/KG
Clean DF: 1
File Name: A19326

135-98-8	SEC-BUTYLBENZENE	1	5	5	0.89	U	
541-73-1	1,3-DICHLOROBENZENE	1	5	5	0.75	U	
99-87-6	P-ISOPROPYLTOLUENE	1	5	5	1	U	
106-46-7	1,4-DICHLOROBENZENE	1	5	5	0.72	U	
104-51-8	N-BUTYLBENZENE	1	5	5	0.98	U	
95-50-1	1,2-DICHLOROBENZENE	1	5	5	0.77	U	
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	1	10	10	2.5	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	5	5	0.88	U	
87-68-3	HEXACHLOROBUTADIENE	1	5	5	1.2	U	
91-20-3	NAPHTHALENE	1	5	5	1.9	U	
87-61-6	1,2,3-TRICHLOROBENZENE	1	5	5	0.93	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	52.9		50	106	52 - 151
1868-53-7	DIBROMOFLUOROMETHANE	44.9		50	90	61 - 134
2037-26-5	TOLUENE-D8	49.8		50	100	57 - 135

Data Package ID: *VL0208034-2*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208034
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356310
Lab ID: 0208034-2

Sample Matrix: SOIL
% Moisture: 27.8
Date Collected: 06-Aug-02
Date Extracted: 12-Aug-02
Date Analyzed: 12-Aug-02

Prep Batch: VL020812-1
QCBatchID: VL020812-1-1
Run ID: VL020812-1A
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 5 G
Final Volume: 5 ML
Result Units: UG/KG
Clean DF: 1
File Name: A19328

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
75-71-8	DICHLORODIFLUOROMETHANE	1	14	14	1.8	U	
74-87-3	CHLOROMETHANE	1	14	14	3	U	
75-01-4	VINYL CHLORIDE	1	14	14	2.3	U	
74-83-9	BROMOMETHANE	1	14	14	3.7	U	
75-00-3	CHLOROETHANE	1	14	14	2.2	U	
75-69-4	TRICHLOROFLUOROMETHANE	1	6.9	6.9	2.2	U	
75-35-4	1,1-DICHLOROETHENE	1	6.9	6.9	1.2	U	
76-13-1	TRICHLOROTRIFLUOROETHANE	1	6.9	6.9	2.3	U	
67-64-1	ACETONE	1	22	28	11	J	
74-88-4	IODOMETHANE	1	6.9	6.9	1.9	U	
75-15-0	CARBON DISULFIDE	1	1.8	6.9	1.2	J	
75-09-2	METHYLENE CHLORIDE	1	6.9	6.9	2.8	U	
156-60-5	TRANS-1,2-DICHLOROETHENE	1	6.9	6.9	1.4	U	
1634-04-4	METHYL TERTIARY BUTYL ETHER	1	6.9	6.9	2.1	U	
75-34-3	1,1-DICHLOROETHANE	1	6.9	6.9	1.5	U	
108-05-4	VINYL ACETATE	1	28	28	3.6	U	
156-59-2	CIS-1,2-DICHLOROETHENE	1	6.9	6.9	1.3	U	
78-93-3	2-BUTANONE	1	28	28	8.7	U	
74-97-5	BROMOCHLOROMETHANE	1	6.9	6.9	1.4	U	
67-66-3	CHLOROFORM	1	6.9	6.9	0.99	U	
71-55-6	1,1,1-TRICHLOROETHANE	1	6.9	6.9	0.99	U	
594-20-7	2,2-DICHLOROPROPANE	1	6.9	6.9	1.6	U	
56-23-5	CARBON TETRACHLORIDE	1	6.9	6.9	1.5	U	
563-58-6	1,1-DICHLOROPROPENE	1	6.9	6.9	1.7	U	
107-06-2	1,2-DICHLOROETHANE	1	6.9	6.9	2	U	
71-43-2	BENZENE	1	6.9	6.9	1	U	
79-01-6	TRICHLOROETHENE	1	6.9	6.9	1.2	U	
78-87-5	1,2-DICHLOROPROPANE	1	6.9	6.9	1.4	U	

Data Package ID: *VL0208034-2*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208034
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356310
Lab ID: 0208034-2

Sample Matrix: SOIL
% Moisture: 27.8
Date Collected: 06-Aug-02
Date Extracted: 12-Aug-02
Date Analyzed: 12-Aug-02

Prep Batch: VL020812-1
QCBatchID: VL020812-1-1
Run ID: VL020812-1A
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 5 G
Final Volume: 5 ML
Result Units: UG/KG
Clean DF: 1
File Name: A19328

74-95-3	DIBROMOMETHANE	1	6.9	6.9	2.3	U	
75-27-4	BROMODICHLOROMETHANE	1	6.9	6.9	1.2	U	
10061-01-5	CIS-1,3-DICHLOROPROPENE	1	6.9	6.9	1	U	
108-10-1	4-METHYL-2-PENTANONE	1	28	28	6.7	U	
108-88-3	TOLUENE	1	6.9	6.9	1.7	U	
10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	6.9	6.9	1.4	U	
79-00-5	1,1,2-TRICHLOROETHANE	1	6.9	6.9	2	U	
591-78-6	2-HEXANONE	1	28	28	6.8	U	
127-18-4	TETRACHLOROETHENE	1	6.9	6.9	1.5	U	
142-28-9	1,3-DICHLOROPROPANE	1	6.9	6.9	1.7	U	
124-48-1	DIBROMOCHLOROMETHANE	1	6.9	6.9	1.3	U	
106-93-4	1,2-DIBROMOETHANE	1	6.9	6.9	1.6	U	
544-10-5	1-CHLOROHEXANE	1	6.9	6.9	1.7	U	
108-90-7	CHLOROBENZENE	1	6.9	6.9	1.4	U	
630-20-6	1,1,1,2-TETRACHLOROETHANE	1	6.9	6.9	1.3	U	
100-41-4	ETHYLBENZENE	1	6.9	6.9	1.6	U	
136777-61-	M+P-XYLENE	1	6.9	6.9	1.8	U	
95-47-6	O-XYLENE	1	6.9	6.9	0.72	U	
100-42-5	STYRENE	1	6.9	6.9	1.2	U	
75-25-2	BROMOFORM	1	6.9	6.9	2.1	U	
98-82-8	ISOPROPYLBENZENE	1	6.9	6.9	1.2	U	
96-18-4	1,2,3-TRICHLOROPROPANE	1	6.9	6.9	2.4	U	
79-34-5	1,1,2,2-TETRACHLOROETHANE	1	6.9	6.9	2.6	U	
108-86-1	BROMOBENZENE	1	6.9	6.9	1	U	
103-65-1	N-PROPYLBENZENE	1	6.9	6.9	1.5	U	
95-49-8	2-CHLOROTOLUENE	1	6.9	6.9	0.99	U	
108-67-8	1,3,5-TRIMETHYLBENZENE	1	6.9	6.9	1.2	U	
106-43-4	4-CHLOROTOLUENE	1	6.9	6.9	1.1	U	
98-06-6	TERT-BUTYLBENZENE	1	6.9	6.9	1.2	U	
95-63-6	1,2,4-TRIMETHYLBENZENE	1	6.9	6.9	1.2	U	

Data Package ID: *VL0208034-2*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208034
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356310
Lab ID: 0208034-2

Sample Matrix: SOIL
% Moisture: 27.8
Date Collected: 06-Aug-02
Date Extracted: 12-Aug-02
Date Analyzed: 12-Aug-02

Prep Batch: VL020812-1
QCBatchID: VL020812-1-1
Run ID: VL020812-1A
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 5 G
Final Volume: 5 ML
Result Units: UG/KG
Clean DF: 1
File Name: A19328

135-98-8	SEC-BUTYLBENZENE	1	6.9	6.9	1.2	U	
541-73-1	1,3-DICHLOROBENZENE	1	6.9	6.9	1	U	
99-87-6	P-ISOPROPYLTOLUENE	1	6.9	6.9	1.4	U	
106-46-7	1,4-DICHLOROBENZENE	1	2.8	6.9	1	J	
104-51-8	N-BUTYLBENZENE	1	6.9	6.9	1.4	U	
95-50-1	1,2-DICHLOROBENZENE	1	6.9	6.9	1.1	U	
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	1	14	14	3.5	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	6.9	6.9	1.2	U	
87-68-3	HEXACHLOROBUTADIENE	1	6.9	6.9	1.6	U	
91-20-3	NAPHTHALENE	1	6.9	6.9	2.6	U	
87-61-6	1,2,3-TRICHLOROBENZENE	1	6.9	6.9	1.3	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	103		69.3	149	52 - 151
1868-53-7	DIBROMOFLUOROMETHANE	85.1		69.3	123	61 - 134
2037-26-5	TOLUENE-D8	58.9		69.3	85	57 - 135

Data Package ID: *VL0208034-2*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208034
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356311
Lab ID: 0208034-3

Sample Matrix: SOIL
% Moisture: 30
Date Collected: 06-Aug-02
Date Extracted: 12-Aug-02
Date Analyzed: 12-Aug-02

Prep Batch: VL020812-1
QCBatchID: VL020812-1-1
Run ID: VL020812-1A
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 5 G
Final Volume: 5 ML
Result Units: UG/KG
Clean DF: 1
File Name: A19329

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
75-71-8	DICHLORODIFLUOROMETHANE	1	14	14	1.8	U	
74-87-3	CHLOROMETHANE	1	14	14	3.1	U	
75-01-4	VINYL CHLORIDE	1	14	14	2.3	U	
74-83-9	BROMOMETHANE	1	14	14	3.8	U	
75-00-3	CHLOROETHANE	1	14	14	2.3	U	
75-69-4	TRICHLOROFLUOROMETHANE	1	7.1	7.1	2.3	U	
75-35-4	1,1-DICHLOROETHENE	1	7.1	7.1	1.2	U	
76-13-1	TRICHLOROTRIFLUOROETHANE	1	7.1	7.1	2.4	U	
67-64-1	ACETONE	1	18	29	11	J	
74-88-4	IODOMETHANE	1	7.1	7.1	2	U	
75-15-0	CARBON DISULFIDE	1	7.1	7.1	1.2	U	
75-09-2	METHYLENE CHLORIDE	1	7.1	7.1	2.9	U	
156-60-5	TRANS-1,2-DICHLOROETHENE	1	7.1	7.1	1.4	U	
1634-04-4	METHYL TERTIARY BUTYL ETHER	1	7.1	7.1	2.2	U	
75-34-3	1,1-DICHLOROETHANE	1	7.1	7.1	1.5	U	
108-05-4	VINYL ACETATE	1	29	29	3.7	U	
156-59-2	CIS-1,2-DICHLOROETHENE	1	7.1	7.1	1.3	U	
78-93-3	2-BUTANONE	1	29	29	9	U	
74-97-5	BROMOCHLOROMETHANE	1	7.1	7.1	1.4	U	
67-66-3	CHLOROFORM	1	7.1	7.1	1	U	
71-55-6	1,1,1-TRICHLOROETHANE	1	7.1	7.1	1	U	
594-20-7	2,2-DICHLOROPROPANE	1	7.1	7.1	1.7	U	
56-23-5	CARBON TETRACHLORIDE	1	7.1	7.1	1.6	U	
563-58-6	1,1-DICHLOROPROPENE	1	7.1	7.1	1.7	U	
107-06-2	1,2-DICHLOROETHANE	1	7.1	7.1	2.1	U	
71-43-2	BENZENE	1	7.1	7.1	1.1	U	
79-01-6	TRICHLOROETHENE	1	7.1	7.1	1.3	U	
78-87-5	1,2-DICHLOROPROPANE	1	7.1	7.1	1.4	U	

Data Package ID: *VL0208034-2*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208034
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356311
Lab ID: 0208034-3

Sample Matrix: SOIL
% Moisture: 30
Date Collected: 06-Aug-02
Date Extracted: 12-Aug-02
Date Analyzed: 12-Aug-02

Prep Batch: VL020812-1
QCBatchID: VL020812-1-1
Run ID: VL020812-1A
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 5 G
Final Volume: 5 ML
Result Units: UG/KG
Clean DF: 1
File Name: A19329

74-95-3	DIBROMOMETHANE	1	7.1	7.1	2.3	U	
75-27-4	BROMODICHLOROMETHANE	1	7.1	7.1	1.3	U	
10061-01-5	CIS-1,3-DICHLOROPROPENE	1	7.1	7.1	1	U	
108-10-1	4-METHYL-2-PENTANONE	1	29	29	6.9	U	
108-88-3	TOLUENE	1	7.1	7.1	1.7	U	
10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	7.1	7.1	1.4	U	
79-00-5	1,1,2-TRICHLOROETHANE	1	7.1	7.1	2	U	
591-78-6	2-HEXANONE	1	29	29	7.1	U	
127-18-4	TETRACHLOROETHENE	1	7.1	7.1	1.5	U	
142-28-9	1,3-DICHLOROPROPANE	1	7.1	7.1	1.7	U	
124-48-1	DIBROMOCHLOROMETHANE	1	7.1	7.1	1.4	U	
106-93-4	1,2-DIBROMOETHANE	1	7.1	7.1	1.7	U	
544-10-5	1-CHLOROHEXANE	1	7.1	7.1	1.8	U	
108-90-7	CHLOROBENZENE	1	7.1	7.1	1.5	U	
630-20-6	1,1,1,2-TETRACHLOROETHANE	1	7.1	7.1	1.3	U	
100-41-4	ETHYLBENZENE	1	7.1	7.1	1.6	U	
136777-61-	M+P-XYLENE	1	7.1	7.1	1.9	U	
95-47-6	O-XYLENE	1	7.1	7.1	0.74	U	
100-42-5	STYRENE	1	7.1	7.1	1.3	U	
75-25-2	BROMOFORM	1	7.1	7.1	2.2	U	
98-82-8	ISOPROPYLBENZENE	1	7.1	7.1	1.2	U	
96-18-4	1,2,3-TRICHLOROPROPANE	1	7.1	7.1	2.5	U	
79-34-5	1,1,2,2-TETRACHLOROETHANE	1	7.1	7.1	2.7	U	
108-86-1	BROMOBENZENE	1	7.1	7.1	1.1	U	
103-65-1	N-PROPYLBENZENE	1	7.1	7.1	1.5	U	
95-49-8	2-CHLOROTOLUENE	1	7.1	7.1	1	U	
108-67-8	1,3,5-TRIMETHYLBENZENE	1	7.1	7.1	1.2	U	
106-43-4	4-CHLOROTOLUENE	1	7.1	7.1	1.1	U	
98-06-6	TERT-BUTYLBENZENE	1	7.1	7.1	1.3	U	
95-63-6	1,2,4-TRIMETHYLBENZENE	1	7.1	7.1	1.3	U	

Data Package ID: *VL0208034-2*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208034
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356311
Lab ID: 0208034-3

Sample Matrix: SOIL
% Moisture: 30
Date Collected: 06-Aug-02
Date Extracted: 12-Aug-02
Date Analyzed: 12-Aug-02

Prep Batch: VL020812-1
QCBatchID: VL020812-1-1
Run ID: VL020812-1A
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 5 G
Final Volume: 5 ML
Result Units: UG/KG
Clean DF: 1
File Name: A19329

135-98-8	SEC-BUTYLBENZENE	1	7.1	7.1	1.3	U	
541-73-1	1,3-DICHLOROBENZENE	1	7.1	7.1	1.1	U	
99-87-6	P-ISOPROPYLTOLUENE	1	7.1	7.1	1.4	U	
106-46-7	1,4-DICHLOROBENZENE	1	1.6	7.1	1	J	
104-51-8	N-BUTYLBENZENE	1	7.1	7.1	1.4	U	
95-50-1	1,2-DICHLOROBENZENE	1	7.1	7.1	1.1	U	
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	1	14	14	3.6	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	7.1	7.1	1.3	U	
87-68-3	HEXACHLOROBUTADIENE	1	7.1	7.1	1.7	U	
91-20-3	NAPHTHALENE	1	7.1	7.1	2.7	U	
87-61-6	1,2,3-TRICHLOROBENZENE	1	7.1	7.1	1.3	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	92.2		71.4	129	52 - 151
1868-53-7	DIBROMOFLUOROMETHANE	88.1		71.4	123	61 - 134
2037-26-5	TOLUENE-D8	58.5		71.4	82	57 - 135

Data Package ID: *VL0208034-2*

Gasoline Range Organics

Method SW8015

Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208034
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Lab ID: HCG020809-1MB

Sample Matrix: SOIL
% Moisture: N/A
Date Collected: N/A
Date Extracted: 08/09/2002
Date Analyzed: 08/09/2002

Prep Batch: HCG020809-1
QCBatchID: HCG020809-1-1
Run ID: HCG020809-1A
Cleanup: NONE
Basis: N/A

Sample Aliquot: 5 G
Final Volume: 5 ML
Result Units: MG/KG
Clean DF: 1
File Name: F1PF5971

CASNO	Target Analyte	DF	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
8006-61-9	GASOLINE RANGE ORGANICS	1	0.5	0.5	0.016	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
13-10-5	2,3,4-TRIFLUOROTOLUENE	0.0948		0.1	95	82 - 111

Data Package ID: *HCG0208034-1*

Gasoline Range Organics

Method SW8015

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208034
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356311
Lab ID: 0208034-3

Sample Matrix: SOIL
% Moisture: 30
Date Collected: 06-Aug-02
Date Extracted: 09-Aug-02
Date Analyzed: 09-Aug-02

Prep Batch: HCG020809-1
QCBatchID: HCG020809-1-1
Run ID: HCG020809-1A
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 5.03 G
Final Volume: 5 ML
Result Units: MG/KG
Clean DF: 1
File Name: F1PF5976

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
8006-61-9	GASOLINE RANGE ORGANICS	1	0.12	0.71	0.022	J	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
13-10-5	2,3,4-TRIFLUOROTOLUENE	0.111	*	0.142	78	82 - 111

Data Package ID: *HCG0208034-1*

Gasoline Range Organics

Method SW8015

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208034
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356310
Lab ID: 0208034-2

Sample Matrix: SOIL
% Moisture: 27.8
Date Collected: 06-Aug-02
Date Extracted: 09-Aug-02
Date Analyzed: 09-Aug-02

Prep Batch: HCG020809-1
QCBatchID: HCG020809-1-1
Run ID: HCG020809-1A
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 5.01 G
Final Volume: 5 ML
Result Units: MG/KG
Clean DF: 1
File Name: F1PF5989

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
8006-61-9	GASOLINE RANGE ORGANICS	1	0.11	0.69	0.021	J	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
13-10-5	2,3,4-TRIFLUOROTOLUENE	0.123		0.138	89	82 - 111

Data Package ID: *HCG0208034-1*

Diesel Range Organics

Method SW8015M

Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208034
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Lab ID: EX020810-3MB

Sample Matrix: SOIL
% Moisture: N/A
Date Collected: N/A
Date Extracted: 08/10/2002
Date Analyzed: 08/10/2002

Prep Batch: EX020810-3
QCBatchID: EX020810-3-1
Run ID: HCD020810-1A
Cleanup: NONE
Basis: N/A

Sample Aliquot: 20 G
Final Volume: 5 ML
Result Units: MG/KG
Clean DF: 1
File Name: F3F07698

CASNO	Target Analyte	DF	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
68334-30-5	Diesel Range Organics	1	5	5	2.6	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
84-15-1	O-TERPHENYL	9.92		12.5	79	47 - 142

Data Package ID: *HCD0208034-1*

Diesel Range Organics

Method SW8015M

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208034
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356310
Lab ID: 0208034-2

Sample Matrix: SOIL
% Moisture: 27.8
Date Collected: 06-Aug-02
Date Extracted: 10-Aug-02
Date Analyzed: 13-Aug-02

Prep Batch: EX020810-3
QCBatchID: EX020810-3-1
Run ID: HCD020810-2A
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 20 G
Final Volume: 5 ML
Result Units: MG/KG
Clean DF: 1
File Name: F3F07773

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
68334-30-5	Diesel Range Organics	1	710	6.9	3.6	Z	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
84-15-1	O-TERPHENYL	14.5		17.3	84	47 - 142

The chromatogram indicates the presence of hydrocarbons in the range of C10-C34.

Data Package ID: *HCD0208034-1*

Diesel Range Organics

Method SW8015M

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208034
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356311
Lab ID: 0208034-3

Sample Matrix: SOIL
% Moisture: 30
Date Collected: 06-Aug-02
Date Extracted: 10-Aug-02
Date Analyzed: 13-Aug-02

Prep Batch: EX020810-3
QCBatchID: EX020810-3-1
Run ID: HCD020810-2A
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 20 G
Final Volume: 5 ML
Result Units: MG/KG
Clean DF: 1
File Name: F3F07772

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
68334-30-5	Diesel Range Organics	2	1300	14	7.5	Z	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
84-15-1	O-TERPHENYL	14.7		17.9	83	47 - 142

The chromatogram indicates the presence of hydrocarbons in the range of C10-C34.

Data Package ID: *HCD0208034-1*

PCBs

Method SW8082

Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208034
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Lab ID: EX020807-5MB

Sample Matrix: SOIL
% Moisture: N/A
Date Collected: N/A
Date Extracted: 08/07/2002
Date Analyzed: 08/12/2002

Prep Batch: EX020807-5
QCBatchID: EX020807-5-1
Run ID: PT020812-1
Cleanup: SW3665, SW3660
Basis: N/A

Sample Aliquot: 30 G
Final Volume: 10 ML
Result Units: UG/KG
Clean DF: 1
File Name: EA008578

CASNO	Target Analyte	DF	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
12674-11-2	AROCLOR-1016	1	33	33	5.7	U	
11104-28-2	AROCLOR-1221	1	67	67	9.5	U	
11141-16-5	AROCLOR-1232	1	33	33	3.8	U	
53469-21-9	AROCLOR-1242	1	33	33	5.7	U	
12672-29-6	AROCLOR-1248	1	33	33	5.7	U	
11097-69-1	AROCLOR-1254	1	33	33	3.3	U	
11096-82-5	AROCLOR-1260	1	33	33	2.4	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL	15.3		16.7	92	33 - 143
877-09-8	TETRACHLORO-M-XYLENE	16.9		16.7	101	51 - 123

Data Package ID: *PT0208034-1*

PCBs

Method SW8082

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208034
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356310
Lab ID: 0208034-2

Sample Matrix: SOIL
% Moisture: 27.8
Date Collected: 06-Aug-02
Date Extracted: 07-Aug-02
Date Analyzed: 12-Aug-02

Prep Batch: EX020807-5
QCBatchID: EX020807-5-1
Run ID: PT020812-1
Cleanup: SW3665, SW3660
Basis: Dry Weight

Sample Aliquot: 30 G
Final Volume: 10 ML
Result Units: UG/KG
Clean DF: 1
File Name: EA008581

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
12674-11-2	AROCLOR-1016	1	46	46	7.9	U	
11104-28-2	AROCLOR-1221	1	92	92	13	U	
11141-16-5	AROCLOR-1232	1	46	46	5.2	U	
53469-21-9	AROCLOR-1242	1	46	46	7.9	U	
12672-29-6	AROCLOR-1248	1	46	46	7.9	U	
11097-69-1	AROCLOR-1254	1	160	46	4.5		
11096-82-5	AROCLOR-1260	1	46	46	3.3	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL	15.3		23.1	66	33 - 143
877-09-8	TETRACHLORO-M-XYLENE	19.1		23.1	83	51 - 123

Data Package ID: *PT0208034-1*

PCBs

Method SW8082

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208034
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356311
Lab ID: 0208034-3

Sample Matrix: SOIL
% Moisture: 30
Date Collected: 06-Aug-02
Date Extracted: 07-Aug-02
Date Analyzed: 12-Aug-02

Prep Batch: EX020807-5
QCBatchID: EX020807-5-1
Run ID: PT020812-1
Cleanup: SW3665, SW3660
Basis: Dry Weight

Sample Aliquot: 30 G
Final Volume: 10 ML
Result Units: UG/KG
Clean DF: 1
File Name: EA008584

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
12674-11-2	AROCLOR-1016	1	48	48	8.2	U	
11104-28-2	AROCLOR-1221	1	95	95	14	U	
11141-16-5	AROCLOR-1232	1	48	48	5.4	U	
53469-21-9	AROCLOR-1242	1	48	48	8.1	U	
12672-29-6	AROCLOR-1248	1	48	48	8.1	U	
11097-69-1	AROCLOR-1254	1	140	48	4.7		
11096-82-5	AROCLOR-1260	1	48	48	3.4	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL	16		23.8	67	33 - 143
877-09-8	TETRACHLORO-M-XYLENE	19.1		23.8	80	51 - 123

Data Package ID: *PT0208034-1*

Total ICP Metals

Method SW6010

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208034
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356310
Lab ID: 0208034-2

Sample Matrix: SOIL
% Moisture: 27.8
Date Collected: 06-Aug-02
Date Extracted: 09-Aug-02
Date Analyzed: 09-Aug-02

Prep Batch: IP020809-2
QCBatchID: IP020809-2-1
Run ID: IT020809-1A2
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 1 G
Final Volume: 100 ML
Result Units: MG/KG
Clean DF: 1
File Name: TS20809

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	IDL	Result Qualifier	EPA Qualifier
7440-38-2	ARSENIC	1	10	1.4	0.26		
7440-39-3	BARIUM	1	110	14	0.0059		
7440-43-9	CADMIUM	10	6.9	6.9	0.19	U	
7440-47-3	CHROMIUM	1	14	1.4	0.045		
7439-92-1	LEAD	10	33	4.2	2.1		
7782-49-2	SELENIUM	10	6.9	6.9	5	U	
7440-22-4	SILVER	1	4.1	1.4	0.058		

Data Package ID: *IT0208034-1*

Total ICP Metals

Method SW6010

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208034
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356311
Lab ID: 0208034-3

Sample Matrix: SOIL
% Moisture: 30
Date Collected: 06-Aug-02
Date Extracted: 09-Aug-02
Date Analyzed: 09-Aug-02

Prep Batch: IP020809-2
QCBatchID: IP020809-2-1
Run ID: IT020809-1A2
Cleanup: NONE
Basis: Dry Weight

Sample Aliquot: 1 G
Final Volume: 100 ML
Result Units: MG/KG
Clean DF: 1
File Name: TS20809

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	IDL	Result Qualifier	EPA Qualifier
7440-38-2	ARSENIC	1	12	1.4	0.27		
7440-39-3	BARIUM	1	130	14	0.006		
7440-43-9	CADMIUM	10	7.1	7.1	0.2	U	
7440-47-3	CHROMIUM	1	16	1.4	0.046		
7439-92-1	LEAD	10	43	4.3	2.2		
7782-49-2	SELENIUM	10	7.1	7.1	5.1	U	
7440-22-4	SILVER	1	5.9	1.4	0.06		

Data Package ID: *IT0208034-1*

Total MERCURY

Method SW7471

Sample Results

Lab Name: Paragon Analytics, Inc.
Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project ID: CAU356 831845.02030010
Work Order Number: 0208034
Reporting Basis: Dry Weight
Final Volume: 100 ML
Matrix: SOIL
Result Units: MG/KG

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	IDL	Flag	Sample Aliquot
356310	0208034-2	8/6/02	8/12/02	08/12/2002	27.8	1	0.33	0.14	0.0025		0.6 G
356311	0208034-3	8/6/02	8/12/02	08/12/2002	30	1	0.52	0.14	0.0025		0.6 G

Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: *HG0208034-2*

TCLP ICP Metals

Method SW6010--TCLP Leachate

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208034
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356310
Lab ID: 0208034-4
LEACH DATE: 8/7/02

Sample Matrix: LEACHATE
% Moisture: N/A
Date Collected: 06-Aug-02
Date Extracted: 08-Aug-02
Date Analyzed: 09-Aug-02

Prep Batch: IP020808-2
QCBatchID: IP020808-2-1
Run ID: IT020809-1A2
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 G
Final Volume: 50 G
Result Units: MG/L
Clean DF: 1
File Name: TS20809

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	IDL	Result Qualifier	EPA Qualifier
7440-38-2	ARSENIC	1	0.031	0.1	0.019	B	
7440-39-3	BARIUM	1	0.35	1	0.00042	B	
7440-43-9	CADMIUM	1	0.01	0.05	0.0014	B	
7440-47-3	CHROMIUM	1	0.1	0.1	0.0032	U	
7439-92-1	LEAD	1	0.03	0.03	0.015	U	
7782-49-2	SELENIUM	1	0.05	0.05	0.036	U	
7440-22-4	SILVER	1	0.1	0.1	0.0042	U	

Data Package ID: *IT0208034-1*

TCLP ICP Metals

Method SW6010--TCLP Leachate

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0208034
Client Name: Shaw Environmental & Infrastructure, Inc.
ClientProject ID: CAU356 831845.02030010

Field ID: 356311
Lab ID: 0208034-5

LEACH DATE: 8/7/02

Sample Matrix: LEACHATE
% Moisture: N/A
Date Collected: 06-Aug-02
Date Extracted: 08-Aug-02
Date Analyzed: 09-Aug-02

Prep Batch: IP020808-2
QCBatchID: IP020808-2-1
Run ID: IT020809-1A2
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 G
Final Volume: 50 G
Result Units: MG/L
Clean DF: 1
File Name: TS20809

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	IDL	Result Qualifier	EPA Qualifier
7440-38-2	ARSENIC	1	0.022	0.1	0.019	B	
7440-39-3	BARIUM	1	0.29	1	0.00042	B	
7440-43-9	CADMIUM	1	0.0064	0.05	0.0014	B	
7440-47-3	CHROMIUM	1	0.1	0.1	0.0032	U	
7439-92-1	LEAD	1	0.03	0.03	0.015	U	
7782-49-2	SELENIUM	1	0.05	0.05	0.036	U	
7440-22-4	SILVER	1	0.1	0.1	0.0042	U	

Data Package ID: *IT0208034-1*

TCLP MERCURY

Method SW7470

Sample Results

Lab Name: Paragon Analytics, Inc.
Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project ID: CAU356 831845.02030010
Work Order Number: 0208034
Reporting Basis: As Received
Final Volume: 20 ML
Matrix: LEACHATE
Result Units: MG/L

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	IDL	Flag	Sample Aliquot
356310	0208034-4	8/6/02	8/8/02	08/09/2002	N/A	1	0.0016	0.002	0.00011	B	2 ML
356311	0208034-5	8/6/02	8/8/02	08/09/2002	N/A	1	0.0016	0.002	0.00011	B	2 ML

Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: *HG0208034-1*

Gamma Spectroscopy Results

Method PAI SOP 713R6

Sample Results

Reported on: Monday, August 12, 2002 13:45:49

Client Name: Shaw Environmental & Infrastructure, Inc.

Client Project Name: CAU356

Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.

PAI Work Order: 0208034

Field ID: 356310

Lab ID: 0208034-2

Sample Matrix: Soil
Date Prepared: 09-Aug-02
Prep SOP: PAI 739R5
Prep Batch: GS01645

Date Collected: 06-Aug-02
Date Analyzed: 09-Aug-02
Analytical SOP: PAI 713R6
Spectrum Code: 020700D01A

Final Aliquot: 202.6 g
Report Basis: Dry Weight
Count Time (min.): 30
Library: FANP.LIB

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
Ac-228	1.00 +/- 0.33	0.57	pCi/g	
Ag-110m	0.024 +/- 0.070	0.12	pCi/g	U
Al-26	-0.022 +/- 0.053	0.11	pCi/g	U
Am-241	0.20 +/- 0.38	0.63	pCi/g	U
Be-7	0.31 +/- 0.68	1.2	pCi/g	U
Bi-212	1.8 +/- 1.2	1.8	pCi/g	TI
Bi-214	0.68 +/- 0.26	0.34	pCi/g	
Cd-109	1.4 +/- 2.3	3.8	pCi/g	U
Ce-139	0.018 +/- 0.060	0.10	pCi/g	U
Ce-144	0.07 +/- 0.39	0.68	pCi/g	U
Co-56	0.11 +/- 0.17	0.27	pCi/g	U
Co-57	0.028 +/- 0.055	0.092	pCi/g	U
Co-58	0.032 +/- 0.067	0.11	pCi/g	U
Co-60	0.055 +/- 0.076	0.13	pCi/g	U
Cr-51	-0.38 +/- 0.51	0.94	pCi/g	U
Cs-134	-0.02 +/- 0.12	0.21	pCi/g	U
Cs-137	-0.038 +/- 0.080	0.15	pCi/g	U
Eu-152	0.12 +/- 0.39	0.68	pCi/g	U
Eu-154	0.13 +/- 0.46	0.80	pCi/g	U
Eu-155	0.01 +/- 0.25	0.43	pCi/g	U
Fe-59	-0.01 +/- 0.16	0.29	pCi/g	U
I-131	0.007 +/- 0.087	0.15	pCi/g	U
K-40	23.5 +/- 4.5	1.9	pCi/g	
Mn-54	-0.041 +/- 0.085	0.16	pCi/g	U
Na-22	-0.046 +/- 0.093	0.17	pCi/g	U
Nb-94	-0.014 +/- 0.073	0.13	pCi/g	U

Data Package ID: *GSS0208034-1*

Gamma Spectroscopy Results

Method PAI SOP 713R6

Sample Results

Reported on: Monday, August 12, 2002 13:45:49

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0208034

Field ID: 356310
Lab ID: 0208034-2

Sample Matrix: Soil
Date Prepared: 09-Aug-02
Prep SOP: PAI 739R5
Prep Batch: GS01645

Date Collected: 06-Aug-02
Date Analyzed: 09-Aug-02
Analytical SOP: PAI 713R6
Spectrum Code: 020700D01A

Final Aliquot: 202.6 g
Report Basis: Dry Weight
Count Time (min.): 30
Library: FANP.LIB

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
Nb-95	-0.065 +/- 0.078	0.15	pCi/g	U
Pa-234m	8 +/- 15	25	pCi/g	U
Pb-212	1.09 +/- 0.27	0.24	pCi/g	
Pb-214	0.64 +/- 0.20	0.27	pCi/g	
Ru-106	0.03 +/- 0.69	1.2	pCi/g	U
Sb-124	-0.021 +/- 0.097	0.17	pCi/g	U
Sb-125	0.04 +/- 0.18	0.31	pCi/g	U
Sc-46	0.017 +/- 0.076	0.13	pCi/g	U
Th-227	-1 +/- 13	21	pCi/g	U
Th-234	1.7 +/- 1.5	2.4	pCi/g	U
Tl-208	0.33 +/- 0.12	0.15	pCi/g	
U-235	-0.40 +/- 0.43	0.78	pCi/g	U
Zn-65	-0.14 +/- 0.20	0.37	pCi/g	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: *GSS0208034-1*

Gamma Spectroscopy Results

Method PAI SOP 713R6

Sample Results

Reported on: Monday, August 12, 2002 13:45:51

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0208034

Field ID: 356311
Lab ID: 0208034-3

Sample Matrix: Soil
Date Prepared: 09-Aug-02
Prep SOP: PAI 739R5
Prep Batch: GS01645

Date Collected: 06-Aug-02
Date Analyzed: 09-Aug-02
Analytical SOP: PAI 713R6
Spectrum Code: 020380D04A

Final Aliquot: 216.1 g
Report Basis: Dry Weight
Count Time (min.): 30
Library: FANP.LIB

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
Ac-228	0.99 +/- 0.38	0.66	pCi/g	
Ag-110m	-0.051 +/- 0.076	0.16	pCi/g	U
Al-26	-0.015 +/- 0.097	0.21	pCi/g	U
Am-241	0.05 +/- 0.45	0.81	pCi/g	U
Be-7	0.43 +/- 0.63	1.0	pCi/g	U
Bi-212	0.9 +/- 1.3	2.2	pCi/g	U
Bi-214	0.74 +/- 0.28	0.29	pCi/g	
Cd-109	2.3 +/- 2.2	3.5	pCi/g	U
Ce-139	-0.025 +/- 0.047	0.091	pCi/g	U
Ce-144	-0.22 +/- 0.38	0.73	pCi/g	U
Co-56	0.00 +/- 0.19	0.36	pCi/g	U
Co-57	0.006 +/- 0.054	0.096	pCi/g	U
Co-58	-0.074 +/- 0.091	0.19	pCi/g	U
Co-60	-0.02 +/- 0.10	0.21	pCi/g	U
Cr-51	-0.43 +/- 0.54	1.1	pCi/g	U
Cs-134	-0.060 +/- 0.079	0.16	pCi/g	U
Cs-137	0.024 +/- 0.088	0.16	pCi/g	U
Eu-152	0.28 +/- 0.44	0.74	pCi/g	U
Eu-154	-0.39 +/- 0.54	1.1	pCi/g	U
Eu-155	0.24 +/- 0.25	0.39	pCi/g	U
Fe-59	0.11 +/- 0.21	0.35	pCi/g	U
I-131	0.020 +/- 0.084	0.15	pCi/g	U
K-40	22.6 +/- 5.0	1.5	pCi/g	
Mn-54	0.09 +/- 0.10	0.16	pCi/g	U
Na-22	-0.09 +/- 0.11	0.24	pCi/g	U
Nb-94	-0.004 +/- 0.079	0.15	pCi/g	U

Data Package ID: *GSS0208034-1*

Gamma Spectroscopy Results

Method PAI SOP 713R6

Sample Results

Reported on: Monday, August 12, 2002 13:45:51

Client Name: Shaw Environmental & Infrastructure, Inc.

Client Project Name: CAU356

Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.

PAI Work Order: 0208034

Field ID: 356311

Lab ID: 0208034-3

Sample Matrix: Soil
Date Prepared: 09-Aug-02
Prep SOP: PAI 739R5
Prep Batch: GS01645

Date Collected: 06-Aug-02
Date Analyzed: 09-Aug-02
Analytical SOP: PAI 713R6
Spectrum Code: 020380D04A

Final Aliquot: 216.1 g
Report Basis: Dry Weight
Count Time (min.): 30
Library: FANP.LIB

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
Nb-95	-0.09 +/- 0.10	0.21	pCi/g	U
Pa-234m	-4 +/- 16	32	pCi/g	U
Pb-212	1.15 +/- 0.31	0.30	pCi/g	
Pb-214	0.66 +/- 0.23	0.32	pCi/g	
Ru-106	0.00 +/- 0.74	1.4	pCi/g	U
Sb-124	0.007 +/- 0.081	0.15	pCi/g	U
Sb-125	0.06 +/- 0.18	0.32	pCi/g	U
Sc-46	-0.009 +/- 0.086	0.17	pCi/g	U
Th-227	-2.8 +/- 9.6	16	pCi/g	U
Th-234	1.5 +/- 1.6	2.6	pCi/g	U
Tl-208	0.35 +/- 0.15	0.17	pCi/g	
U-235	-0.14 +/- 0.39	0.73	pCi/g	U
Zn-65	-0.32 +/- 0.25	0.54	pCi/g	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yie d outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: *GSS0208034-1*

Gamma Spectroscopy Results

Method PAI SOP 713R6

Sample Duplicate Results

Reported on: Monday, August 12, 2002 13:45:50

Client Name: Shaw Environmental & Infrastructure, Inc.

Client Project Name: CAU356

Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.

PAI Work Order: 0208034

Field ID: 356310

Lab ID: 0208034-2-D1

Sample Matrix: Soil
Date Prepared: 09-Aug-02
Prep SOP: PAI 739R5
Prep Batch: GS01645

Date Collected: 06-Aug-02
Date Analyzed: 09-Aug-02
Analytical SOP: PAI 713R6
Spectrum Code: 020642D10A

Final Aliquot: 202.6
Aliquot Units: g
Report Basis: Dry Weight
Count Time (min.): 30

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
Ac-228	1.38 +/- 0.46	0.70	pCi/g	
Ag-110m	0.020 +/- 0.088	0.15	pCi/g	U
Al-26	-0.020 +/- 0.083	0.16	pCi/g	U
Am-241	-0.06 +/- 0.31	0.53	pCi/g	U
Be-7	0.92 +/- 0.75	1.2	pCi/g	U
Bi-212	2.0 +/- 1.4	2.1	pCi/g	U
Bi-214	0.61 +/- 0.28	0.40	pCi/g	
Cd-109	1.2 +/- 1.5	2.5	pCi/g	U
Ce-139	0.039 +/- 0.062	0.10	pCi/g	U
Ce-144	0.03 +/- 0.49	0.84	pCi/g	U
Co-56	0.09 +/- 0.20	0.33	pCi/g	U
Co-57	-0.008 +/- 0.067	0.12	pCi/g	U
Co-58	-0.027 +/- 0.084	0.15	pCi/g	U
Co-60	-0.037 +/- 0.100	0.19	pCi/g	U
Cr-51	0.77 +/- 0.74	1.2	pCi/g	U
Cs-134	0.03 +/- 0.14	0.23	pCi/g	U
Cs-137	0.027 +/- 0.095	0.16	pCi/g	U
Eu-152	0.07 +/- 0.48	0.84	pCi/g	U
Eu-154	0.17 +/- 0.52	0.89	pCi/g	U
Eu-155	0.12 +/- 0.23	0.39	pCi/g	U
Fe-59	0.06 +/- 0.19	0.32	pCi/g	U
I-131	0.00 +/- 0.11	0.19	pCi/g	U
K-40	27.9 +/- 5.3	2.2	pCi/g	
Mn-54	0.019 +/- 0.091	0.16	pCi/g	U
Na-22	0.10 +/- 0.11	0.18	pCi/g	U
Nb-94	-0.003 +/- 0.087	0.15	pCi/g	U
Nb-95	-0.007 +/- 0.086	0.15	pCi/g	U

Data Package ID: *GSS0208034-1*

Gamma Spectroscopy Results

Method PAI SOP 713R6

Sample Duplicate Results

Reported on: Monday, August 12, 2002 13:45:50

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0208034

Field ID: 356310
Lab ID: 0208034-2-D1

Sample Matrix: Soil
Date Prepared: 09-Aug-02
Prep SOP: PAI 739R5
Prep Batch: GS01645

Date Collected: 06-Aug-02
Date Analyzed: 09-Aug-02
Analytical SOP: PAI 713R6
Spectrum Code: 020642D10A

Final Aliquot: 202.6
Aliquot Units: g
Report Basis: Dry Weight
Count Time (min.): 30

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier
Pa-234m	1 +/- 16	29	pCi/g	U
Pb-212	1.53 +/- 0.33	0.24	pCi/g	
Pb-214	0.75 +/- 0.24	0.36	pCi/g	
Ru-106	-0.50 +/- 0.80	1.5	pCi/g	U
Sb-124	0.040 +/- 0.091	0.15	pCi/g	U
Sb-125	0.32 +/- 0.23	0.34	pCi/g	U
Sc-46	-0.083 +/- 0.095	0.18	pCi/g	U
Th-227	-1.73 +/- 0.85	1.6	pCi/g	U
Th-234	1.5 +/- 1.5	2.4	pCi/g	U
Tl-208	0.49 +/- 0.14	0.14	pCi/g	
U-235	0.14 +/- 0.51	0.86	pCi/g	U
Zn-65	-0.20 +/- 0.26	0.47	pCi/g	U

Data Package ID: *GSS0208034-1*

Gamma Spectroscopy Results

Method PAI SOP 713R6

Sample Duplicate Results

Reported on: Monday, August 12, 2002 13:45:50

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0208034

Field ID: 356310
Lab ID: 0208034-2-D1

Sample Matrix: Soil
Date Prepared: 09-Aug-02
Prep SOP: PAI 739R5
Prep Batch: GS01645

Date Collected: 06-Aug-02
Date Analyzed: 09-Aug-02
Analytical SOP: PAI 713R6
Spectrum Code: 020642D10A

Final Aliquot: 202.6
Aliquot Units: g
Report Basis: Dry Weight
Count Time (min.): 30

Target Nuclide	Result +/- 2 s TPU	MDC	Reporting Units	Lab Qualifier

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
* - Duplicate DER not within control limits.
LT - Result is less than Requested MDC, greater than sample specific MDC.
SQ - Spectral quality prevents accurate quantitation.
SI - Nuclide identification and/or quantitation is tentative.
TI - Nuclide identification is tentative.
R - Nuclide has exceeded 8 halflives.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: *GSS0208034-1*

Sample Results Summary

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0208034

Page: 1 of 1
Reported on: Wednesday, August 14, 2002 12:25:15

Lab Sample ID	Client Sample ID	Test	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0208034-2	356310	PU-ISO	Pu-238	0.023 +/- 0.013	0.011	pCi/g	Soil	AS05733	8/13/02	LT
0208034-2	356310	PU-ISO	Pu-239	0.230 +/- 0.048	0.0048	pCi/g	Soil	AS05733	8/13/02	
0208034-3	356311	PU-ISO	Pu-238	0.0082 +/- 0.0072	0.0049	pCi/g	Soil	AS05733	8/13/02	LT
0208034-3	356311	PU-ISO	Pu-239	0.129 +/- 0.033	0.0049	pCi/g	Soil	AS05733	8/13/02	

Comments:

Data Package ID: **MISSING DATA PACKAGE ID!!**

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Sample Results Summary

Client Name: Shaw Environmental & Infrastructure, Inc.
Client Project Name: CAU356
Client Project Number: 831845.02030010

Laboratory Name: Paragon Analytics, Inc.
PAI Work Order: 0208034

Page: 1 of 1
Reported on: Wednesday, August 14, 2002 12:25:15

Lab Sample ID	Client Sample ID	Test	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0208034-2	356310	U-ISO	U-234	2.90 +/- 0.42	0.030	pCi/g	Soil	AS05733	8/13/02	
0208034-2	356310	U-ISO	U-235	0.111 +/- 0.035	0.022	pCi/g	Soil	AS05733	8/13/02	
0208034-2	356310	U-ISO	U-238	1.32 +/- 0.20	0.022	pCi/g	Soil	AS05733	8/13/02	
0208034-3	356311	U-ISO	U-234	2.86 +/- 0.48	0.047	pCi/g	Soil	AS05733	8/13/02	Y2
0208034-3	356311	U-ISO	U-235	1.30 +/- 0.25	0.047	pCi/g	Soil	AS05733	8/13/02	Y2
0208034-3	356311	U-ISO	U-238	1.61 +/- 0.29	0.014	pCi/g	Soil	AS05733	8/13/02	Y2

Comments:

Data Package ID: **MISSING DATA PACKAGE ID!!**

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield is in control at 100 110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

Abbreviations

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Appendix C

As-Built Documentation for CAU 356: Mud Pits and Disposal Sites, Nevada Test Site, Nevada

C.1.0 As-Built Documentation

The as-built drawings are Figures 2-1 through 2-6 in Section 2.4.

Appendix D

Confirmation Sampling Test Results for CAU 356: Mud Pits and Disposal Sites, Nevada Test Site, Nevada

D.1.0 Introduction

This appendix details SAFER activities and analytical results for CAU 356. This CAU is located within Areas 3 and 20 of the NTS, and is comprised of seven potentially contaminated CASs (Figure 1-1):

- 03-04-01, Area 3 Change House Septic System
- 03-09-01, Mud Pit Spill Over
- 03-09-03, Mud Pit
- 03-09-04, Mud Pit
- 03-09-05, Mud Pit
- 20-16-01, Landfill
- 20-22-21, Drums (2)

The closure activities were conducted in accordance with the SAFER Plan for CAU 356 (DOE/NV, 2001) and the Leachfield Work Plan (DOE/NV, 1998), as developed under the FFACO (1996). Hereafter, any citations from the CAU 356 SAFER Plan or the Leachfield Work Plan in this appendix are associated with the aforementioned references listed in Section D.11.0.

The CAU consists of a septic system that was installed in 1962, and received sanitary sewage waste from approximately nine Area 3 Camp buildings and trailers until its abandonment in 1991. Corrective Action Site 03-04-01 was investigated because process knowledge indicated that contaminated effluent might have been discharged to the septic system. Additionally, industrial operations within other identified source buildings to the septic system may have contributed COCs in the form of lead cuttings, lead paint, cutting oils, degreasers/solvents, and liquid ammonia.

The CAU also consists of four mud pits used for preshot drilling activities and one landfill that was used for disposal of uncontaminated drilling mud. Corrective Action Sites 03-09-01, 03-09-03, 03-09-04, 03-09-05, and 20-16-01 were investigated because historical information and process knowledge identified sources of potential contamination for the mud pits and the mud disposal landfill. Additives such as polymers, chromium, and diesel were typically included in drilling fluid mixtures to enhance the performance of the drilling equipment. Discharges from vehicles near the mud pits may also have released fuels, motor oil, and hydraulic fluids into the pits.

Corrective Action Site 20-22-21, Drums (2), consists of two empty drums located on the bottom of the crater within the boundary of CAS 20-16-01, Landfill. Corrective Action Site 20-22-21 was transferred from CAU 352 to CAU 356 to expedite remediation while performing other housekeeping activities at CAS 20-16-01.

Additional information regarding the history of each site, planning, and the scope of the closure is presented in the SAFER Plan.

D.1.1 Objectives

The primary objectives of the closure were to:

- Determine if COPCs were present.
- Identify the nature and extent of COCs, if present.
- Provide sufficient information and data to develop appropriate corrective action and/or closure alternatives for CAU 356.

D.1.2 Report Content

This appendix contains information and data in sufficient detail to support the recommendations for closure in place and no further action in the CR. The contents of this appendix are as follows:

- Section D.1.0 introduces the closure background, objectives, and report contents.
- Section D.2.0 provides a closure overview.
- Section D.3.0 through Section D.8.0 provide CAS-specific information regarding field activities, sampling methods, and laboratory analyses results from the closure samples.
- Section D.9.0 discusses the QA and QC procedures that were followed, and the results of the QA/QC activities.
- Section D.10.0 is a summary of the closure results.
- Section D.11.0 lists the cited references.

The complete field documentation and laboratory data, including field activity daily logs (FADLs), sample collection logs, analysis request/chain-of-custody forms, soil sample descriptions, laboratory certificates of analyses, analytical results, and surveillance results are retained in project files.

D.2.0 Closure Overview

The SAFER field work was conducted from November 20, 2001, through January 3, 2002, March 11 through March 14, 2002, and July 8 through August 13, 2002. The closure was managed in accordance with the requirements set forth in the SAFER Plan. Field activities were performed in accordance with the approved Site-Specific Health and Safety Plan (SSHASP) (IT, 2001), which is consistent with the DOE Integrated Safety Management System. Samples were collected and documented following approved protocols and procedures indicated in the SAFER Plan. Quality control samples (e.g., field blanks, equipment rinsate blanks, trip blanks, and field duplicates) were collected as required by the Industrial Sites QAPP (DOE/NV, 1996) and approved procedures. During the SAFER field work, waste minimization practices were followed according to approved procedures, including segregation of waste by waste stream.

The septic system at CAS 03-04-01 was characterized by surface and subsurface soil samples collected by backhoe excavation, and by septic tank and distribution pipe content samples collected by hand tools. Aliquots of liquid from the septic tank and sludge from a distribution line in the leachfield were field-analyzed for fecal coliform. The remaining CASs (mud pits and landfill) were characterized by surface and subsurface mud and soil samples collected by hand auger and Geoprobe®. Soil samples were field screened for VOCs and alpha and beta/gamma-emitting radiation. The results were compared against field-screening levels (FSLs) to guide the closure. Select samples were shipped to off-site laboratories to be analyzed for appropriate chemical and radiological parameters.

The CAU 356 sampling locations were accessible and sampling activities at planned locations were not restricted by buildings, storage areas, active operations, or aboveground and underground utilities. Sampling stepout locations were accessible and remained within anticipated CAS boundaries.

Sections D.2.1 through D.2.6 provide the closure methodology, site geology and hydrology, and laboratory information. The CAS-specific closure details are provided in Sections D.3.0 through D.8.0.

D.2.1 Preliminary Conceptual Model

The site-specific conceptual models are provided in the SAFER Plan. Also, the conceptual model for CAS 03-04-01 is consistent with the generic conceptual model for leachfields provided in the Leachfield Work Plan. A detailed discussion of conceptual model reconciliation is in Appendix B, Section A.1.2.

D.2.2 Sample Locations

Closure locations selected for sampling were based on interpretation of engineering drawings, interviews with former and current site employees, site conditions, and process knowledge. The planned biased sample locations are shown in the SAFER Plan. Actual sample locations are shown in figures in Sections D.3.0 through D.8.0. Some locations were modified slightly from planned positions due to field conditions and observations. Sample locations were staked in the field, labeled appropriately, and surveyed with a GPS instrument.

Phase I samples were collected to define the nature (presence) of COCs. When COCs were determined to be present, Phase II was initiated to determine the extent of the contamination.

D.2.3 Field-Screening Methodology

Field screening for VOC and alpha and beta/gamma radiation were performed as specified in the SAFER Plan. The FSL for VOC headspace was established at 20 parts per million (ppm) or 2.5 times background, whichever was greater. The site-specific FSLs for alpha and beta/gamma radiation were defined as the mean background activity level plus two times the standard deviation of readings from 20 background locations. The radiation FSLs are instrument-specific and were established for each instrument prior to use. Field screening was conducted using a flame-ionization detector for VOCs and an NE Technologies Electra for alpha and beta/gamma radiation.

D.2.4 Geology

The geology of Areas 3 and 20 is provided in the SAFER Plan. No samples were required during the field activities to further identify the area geology.

D.2.5 Hydrology

The hydrology in Area 3, where the septic tank is located, is sufficiently known and identified in the SAFER Plan, and groundwater at the CASs is not expected to be impacted by COPC migration due to the depth of groundwater. Therefore, no field activities were required regarding the hydrology.

D.2.6 Laboratory Analytical Information

Chemical and radiological analyses were performed by Severn Trent Laboratories, Earth City, Missouri; Severn Trent Laboratories, Richland, Washington; and Paragon Analytics, Inc., Fort Collins, Colorado.

The analytical parameters and laboratory analytical methods used to analyze CAU 356 closure samples are listed in Table D.2-1. Organic and inorganic analytical results are compared to the minimum reporting limits (MRLs) established in the Leachfield Work Plan (DOE/NV, 1998), and the PALs established in the SAFER Plan. Radiochemical results are compared to the PALs established in the SAFER Plan.

The analytical results of samples collected from the CAU 356 closure have been compiled and evaluated to determine the presence and/or extent of contamination in Sections D.3.0 through D.8.0. The analytical results reported above the MRLs are summarized and those results exceeding PALs are identified. The complete laboratory data packages are available in the project files.

The analytical parameters were selected through the application of site process knowledge according to the EPA's *Guidance for the Data Quality Objects Process* (EPA, 1994a). The PALs for off-site laboratory analytical methods (EPA, 1999) were determined during the DQO process (EPA, 1994a) and are documented in the Leachfield Work Plan (DOE/NV, 1998) and SAFER Plan (DOE/NV, 2001). Sampling activities were conducted to confirm or disprove assumptions (i.e., conceptual models outlined in the SAFER Plan) made in the DQO process. Analytical results that are detected above PALs are termed COCs. If COCs are present, corrective action must be considered.

The analytical method TPH DRO, also referred to as extractable petroleum hydrocarbons (EPH), includes the carbon range C_{10} - C_{38}. The TPH GRO, also referred to as volatile petroleum

Table D.2-1
Laboratory Analytical Parameters and Methods, CAU 356 Closure Samples

Analytical Parameter	Analytical Method
Total volatile organic compounds	SW-846 8260B[a]
Total semivolatile organic compounds	SW-846 8270C[a]
Total petroleum hydrocarbons - gasoline-range organics	SW-846 8015B (modified)[a]
Total petroleum hydrocarbons - diesel-range organics	SW-846 8015B (modified)[a]
Polychlorinated biphenyls	SW-846 8082[a]
Total RCRA metals	Water - SW-846 6010B/7470A[a] Soil - SW-846 6010B /7471A[a]
TCLP volatile organic compounds	SW-846 1311/8260B[a]
TCLP semivolatile organic compounds	SW-846 1311/8270C[a]
TCLP RCRA metals	SW-846 1311/6010B/7470A[a]
Gamma spectrometry	Water and Soil RICH-RC-5017[b]
Isotopic uranium	Water and Soil RICH-RC-5079[c]
Gross alpha/beta	Water - RICH-RC-5014[d]
Tritium	Water - RICH-RC-5007[e]
Isotopic plutonium	RICH-RC-5010[f]

[a]EPA *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, 3rd Edition, Parts 1-4, SW-846 (EPA, 1996).
[b]Standard Operating Procedure RICH-RC-5017 is a variant of and incorporates all the intentions of EPA Procedure 901.1 and DOE/Environmental Measurements Laboratory, Procedure 4.5.2.3.
[c]Standard Operating Procedure RICH-RC-5079 is principally similar to DOE/Environmental Measurements Laboratory (DOE, 1997), Procedure 4.5.2.1, and meets Standard Method 7500-U-C.
[d]Standard Operating Procedure RICH-RC-5014 meets the requirements of EPA Procedure 900.0.
[e]Standard Operating Procedure RICH-RC-5007 provides the analysis portions of EPA Procedure 906.0.
[f] Standard Operating Procedure RICH-RC-5010 is similar to American Society for Testing and Materials procedures D3865-97 (water) and C1001-90 (soil).

hydrocarbons (VPH), includes the carbon range from C_6 - C_{10}. When TPH is used without further designation, it refers to TPH in general and may be used in conjunction with sampling or field-screening methodology.

D.3.0 CAS 03-04-01, Area 3 Change House Septic System

The Area 3 Change House Septic System consists of a dual-chambered, steel septic tank, a concrete manhole south of the septic tank, two leachfields (referred to as the "previous leachfield" and the "fenced leachfield"), a concrete skimmer box at the proximal end of the fenced leachfield, and associated piping both upstream and downstream of the septic tank.

The system was initially constructed in the 1960s and received effluent from at least nine Area 3 Camp buildings and trailers until its abandonment in 1991 (Flangas, 1990; H&N, 1988). In 1989, an unpermitted lagoon formed above the fenced leachfield as a consequence of excessive flow and saturated conditions. A new septic system was proposed but not implemented due to the impending relocation of the Area 3 Camp to Area 6. Temporary remediation of the existing system consisted of evacuating the septic tank of fluids to be treated at other NTS facilities until the camp was abandoned (Haworth, 1991). The temporary remediation efforts resulted in no additional percolation of effluent above ground surface (Haworth, 1990).

D.3.1 SAFER Investigation

Twenty-three soil samples, two liquid samples, one sludge sample, and associated QC samples were collected and analyzed during closure activities conducted at CAS 03-04-01 and are listed in Table D.3-1. The planned sample locations at CAS 03-04-01 are shown in Figure A.2.1 of the SAFER Plan. The actual sample locations are shown in Figure D.3-1.

D.3.1.1 Septic Tank and Manhole Integrity Sampling

Four integrity soil samples were collected around the septic tank. Two samples were collected below the bottom of the inlet and nearly flush with the side of the tank, at 5.0 and 5.5 ft bgs, respectively. The bottom of the inlet was found to be 4.5 ft bgs, so the first sample was collected about 6 in. below the bottom of the inlet. One sample was collected about 6 in. below the bottom of the outlet and nearly flush with the side of the tank at 5.5 ft bgs. One sample was collected about 8 in. below the body of the tank and nearly flush with the south side at 11.75 ft bgs.

Table D.3-1
Samples Collected from CAS 03-04-01, Area 3 Change House Septic System
(Page 1 of 2)

Sample Number	Sample Location/Description	Depth (ft bgs)	Sample Matrix	Purpose	Analyses
356001	Septic tank outlet; south end	5.5 - 6.0	Soil	SC	Set 1
356002	Below septic tank; south end	11.75 - 12.25	Soil	SC	Set 1
356003	Septic tank inlet; north end	5.0 - 5.5	Soil	SC, MS/MSD	Set 2
356095	Septic tank inlet, north end	5.0 - 5.5	Soil	Field Duplicate of #356003	Set 2
356201	Septic tank inlet; north end	5.5 - 6.5	Soil	SC	Set 5
356004	Manhole inlet; north side	6.0 - 6.5	Soil	SC	Set 1
356005	Manhole outlet (uncapped plastic pipe); south side	5.25 - 5.75	Soil	SC	Set 1
356202	Deeper depth of #356005	10.5 - 11.5	Soil	SC	Set 5
356203	Deeper depth of #356005	10.5 - 11.5	Soil	Field Duplicate of #356202	Set 5
356006	Manhole outlet (capped VCP); south side	6.0 - 6.5	Soil	SC	Set 1
356007	South chamber (outlet) of septic tank	NA	Liquid	SC, MS/MSD	Set 3
356008	Previous leachfield distal end of distribution pipe	7.0 - 7.5	Soil	SC	Set 1
356009	Previous leachfield proximal end of distribution pipe	7.0 - 7.5	Soil	SC	Set 1
356010	North chamber (inlet) of septic tank	NA	Liquid	SC	Set 3
356089	North chamber (inlet) of septic tank	NA	Liquid	Field Duplicate of #356010	Set 3
356012	SE corner of fenced leachfield at low point	0.0 - 0.5	Soil	SC	Set 1
356207	Step-out location; 4 ft north of #356012	0.0 - 0.5	Soil	SC	Set 5
356208	Deeper depth of #356012	0.5 - 1.0	Soil	SC	Set 5
356209	Step-out location; 4 ft south of #356012	0.0 - 0.5	Soil	SC	Set 5
356013	NW corner of fenced leachfield at low point	0.0 - 0.5	Soil	SC	Set 1
356206	Deeper depth of #356013	0.5 - 1.0	Soil	SC	Set 5
356204	Step-out location; 4 ft north of #356013	0.0 - 0.5	Soil	SC	Set 5
356205	Step-out location; 4 ft south of #356013	0.0 - 0.5	Soil	SC	Set 5

Table D.3-1
Samples Collected from CAS 03-04-01, Area 3 Change House Septic System
(Page 2 of 2)

Sample Number	Sample Location/Description	Depth (ft bgs)	Sample Matrix	Purpose	Analyses
356015	Previous leachfield distal lateral distribution pipe; western end	7.5 - 8.0	Soil	SC	Set 1
356016	Fenced leachfield skimmer box outlet; south side	4.0 - 4.5	Soil	SC	Set 1
356210	Deeper depth of #356016	7.2 - 8.2	Soil	SC	Set 5
356017	Fenced leachfield below distal distribution pipe (south side)	3.5 - 4.0	Soil	SC	Set 1
356018	Fenced leachfield inside distribution pipe, 5 ft downstream of skimmer box	2.0 - 2.5	Sludge	SC	Set 4
356019	Fenced leachfield below proximal distribution pipe (north side)	4.0 - 4.5	Soil	SC	Set 1
356086	NA	NA	Liquid	Trip Blank	VOC
356087	NA	NA	Liquid	Trip Blank	VOC
356088	NA	NA	Liquid	Trip Blank	VOC
356090	NA	NA	Liquid	Trip Blank	VOC
356091	NA	NA	Liquid	Trip Blank	VOC
356092	NA	NA	Liquid	Trip Blank	VOC
356094	NA	NA	Liquid	Field Blank	Set 3
356096	NA	NA	Liquid	Trip Blank	VOC
356097	NA	NA	Liquid	Trip Blank	VOC
356098	NA	NA	Liquid	Source Blank	Set 3
356099	NA	NA	Liquid	Trip Blank	VOC
356211	NA	NA	Liquid	Equipment Rinsate Blank	Set 5

ft bgs = Feet below ground surface
SC = Site characterization
MS/MSD = Matrix spike/matrix spike duplicate
NA = Not applicable

Set 1: VOC, SVOC, RCRA Metals, TPH (GRO and DRO); Gamma Spectrometry
Set 2: VOC, SVOC, RCRA Metals, TPH (GRO and DRO), Gamma Spectrometry, Isotopic Uranium, Isotopic Plutonium
Set 3: VOC, SVOC, RCRA Metals, TPH (GRO and DRO), Gamma Spectrometry, Isotopic Uranium, Isotopic Plutonium Gross Alpha/Beta, Tritium
Set 4: VOC, SVOC, RCRA Metals, TPH (GRO and DRO), Gamma Spectrometry, Isotopic Uranium, Isotopic Plutonium TCLP VOC, TCLP SVOC, TCLP RCRA Metals
Set 5: TPH (DRO), Isotopic Uranium, Isotopic Americium

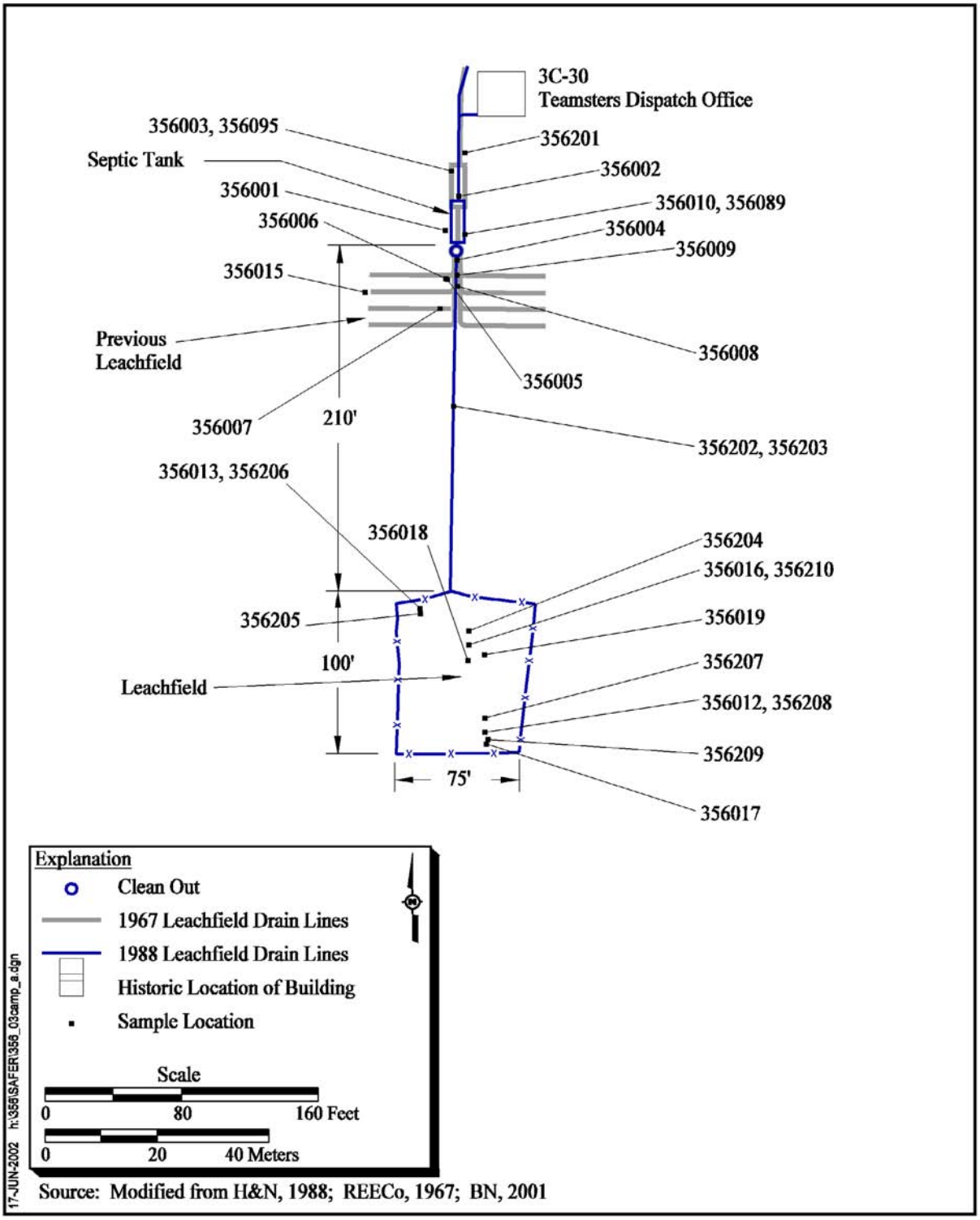

Figure D.3-1
CAS 03-04-01, Area 3 Change House Septic System Sampling Locations

Four integrity soil samples were collected around the manhole. One sample was collected about 4 in. below the bottom of the inlet and nearly flush with the side of the manhole at 6.0 ft bgs. One sample was collected about 6 in. below the bottom of the capped, vitrified clay pipe (VCP) and nearly flush with the side of the manhole at 6.0 ft bgs. Two samples were collected below the bottom of the uncapped plastic pipe nearly flush with the side of the manhole at 5.25 and 10.5 ft bgs, respectively. The bottom of the plastic pipe was measured at 5.25 ft bgs, so the first sample was collected directly beneath the pipe.

D.3.1.2 Inspection and Sampling of Collection System Components

The septic tank, manhole, skimmer box, and portions of the collection system piping were inspected. The septic tank was accessed by two riser pipes, one from each chamber. Both riser pipes were fitted with hinged steel lids. It was determined that the septic tank had an interior baffle between chambers. Each chamber was fitted with a removable section of elbowed pipe protruding from the riser, fitted with firehose-type couplings, presumably for pumping out the contents of the tank. In addition, each chamber was fitted with a stick float used to measure depth and thickness of the liquid contents.

The dual-chambered, cylindrical, steel septic tank was measured as 16 ft long and 8 ft in diameter, with a calculated capacity of 6,000 gallons. The top of the tank was 3.5 ft bgs. The tank contained slightly murky liquid with suspended solids and had a moderate septage odor. There was about half an inch of darker, watery sludge at the bottom of the tank. The height of the water column was measured and the liquid contents of the tank was calculated at 4,000 gallons, or approximately 66 percent full. A liquid sample was collected from each chamber. The watery sludge was not sampled as a discrete phase due to minimal volume, though some of it was incorporated in the upper liquid sample.

The concrete manhole was 28 in. in diameter and was 6 ft long; 3 in. protruded above surface grade. The manhole sat on a 3-in. concrete base, was fitted with a steel lid, and steel rungs extended to the bottom. There was a minimal amount of soil and gravel in the bottom of the manhole not believed to be associated with the system, so it was not collected. A single inlet of 8-in. diameter VCP at 5.0 ft bgs trended due north approximately 25 ft to the south end of the septic tank. Two outlets at 5.0 ft bgs trended generally south. The 8-in. diameter VCP trended 200 degrees for 33 ft to the previous leachfield. The distal end of this pipe was fitted with a steel plate. It was observed during excavation

that the proximal end of this pipe, 12.75 ft south of the manhole, was broken and missing. It is presumed that this break caused abandonment of the previous leachfield. The 6-in. diameter plastic pipe trends 170 degrees for 217 ft to the fenced leachfield.

During excavation to collect soil samples, various sections of the collection piping was breached and inspected. The sewer lines upstream and downstream from the septic tank are 8-in. diameter VCP. Two lateral distribution lines were found in the previous leachfield, both trending 270 degrees for 49 ft from the west side of the main line. Both lines were 4-in. slotted Orangeburg pipe; the proximal line was 13 ft south of the manhole, and the distal line was 33 ft south of the manhole.

The fenced leachfield is pitchfork-shaped with a 60-ft long, 4-in. diameter solid polyvinyl chloride (PVC) manifold at the proximal end. Upstream of the manifold is a bowl-shaped, open skimmer box. Off the manifold are ten, 4-in. diameter, slotted Orangeburg distribution pipes on 6-ft centers. The distribution lines are capped at their distal ends and are about 85 ft long. The lines sit in a 2.0- to 2.5-ft thick leachrock bed, most of it beneath the pipes. The lines are generally found from 2.0 to 2.5 ft bgs. Figure D.3-2 is a diagrammatic sketch of the fenced leachfield.

A video mole was introduced into a manhole located approximately 540 ft north and upstream of the septic tank. Pipes to the manhole from the north and south (the main sewer line), east, and west were observed. In general, the pipes were found to be free of sediment and of good integrity. Some portions of the pipes were water stained and discolored. No breaches were observed.

The north line is 6 to 8 in. in diameter, and the mole was advanced for 47 ft until a soil plug was encountered. The south line is 8- to 10-in. diameter VCP, and the mole was advanced for 103 ft until it quit moving. On this line, two vertical pipes were observed at 31 ft and 33 ft from the manhole, respectively. The east line has a 4-in. diameter, and the mole was advanced for 126 ft to a pipe coming in from the south at a 45-degree angle. Two other 45-degree lines were observed; one from the north at 120 ft from the manhole, and one from the south at 119 ft from the manhole. To the west, the mole was advanced 75 ft to a grout plug. Along this line, a perpendicular line coming in from the south was noted at 54 ft from the manhole, and another line coming in from the north at 74 ft from the manhole.

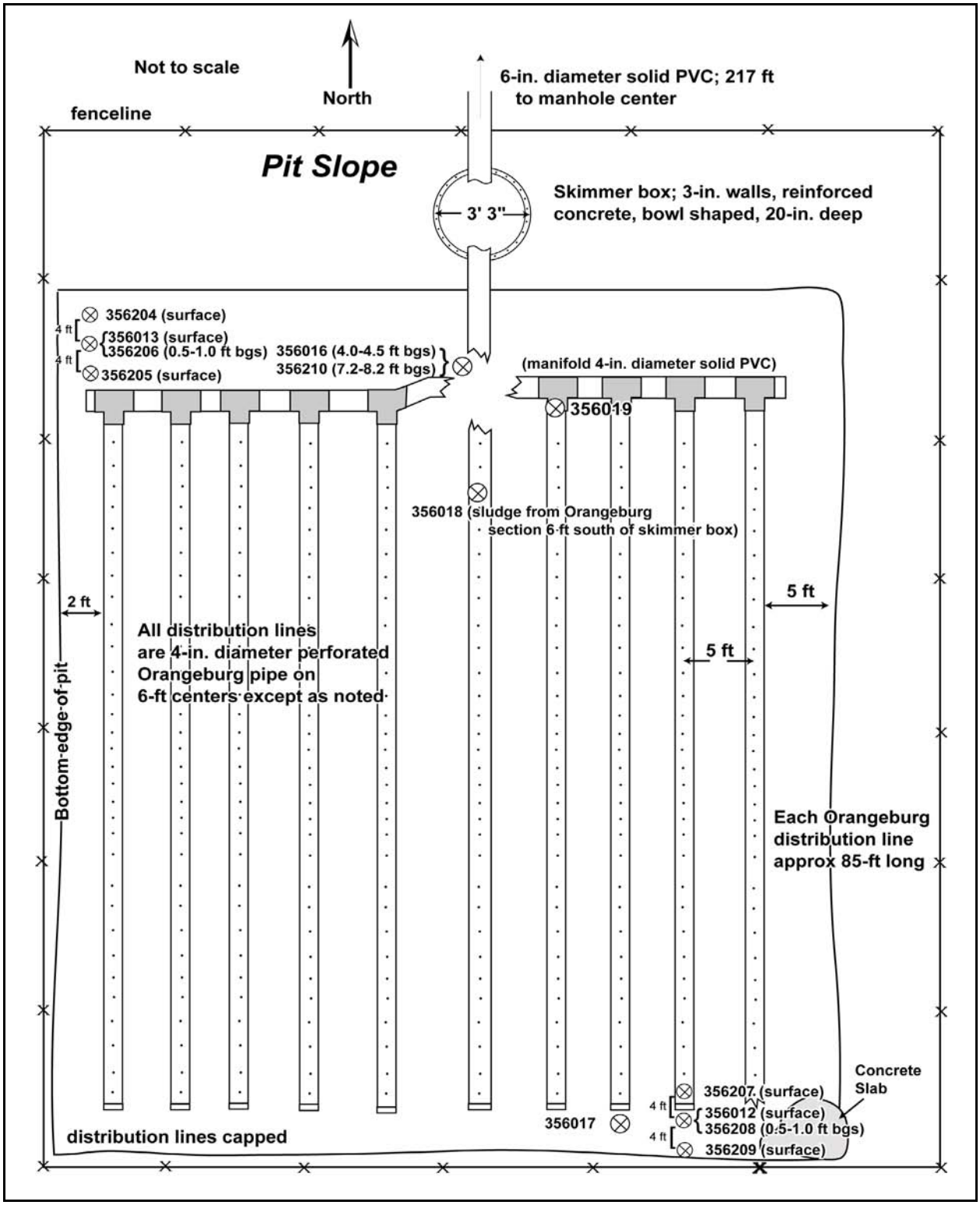

Figure D.3-2
Fenced Leachfield at CAS 03-04-01

D.3.1.3 Leachfield Sampling

Soil samples were collected from the previous leachfield and the fenced leachfield. Three samples were collected from the previous leachfield: one beneath the broken proximal end of the VCP main line at 13 ft south of the manhole, one below the distal end of the capped VCP main line at 33 ft south of the manhole, and one from beneath the end of the distal perforated Orangeburg distribution line. Samples were collected just below the leachrock/native soil interface.

Twelve soil samples and one sludge sample were collected from the fenced leachfield, as shown in Figure D.3-2. Three of the soil samples were collected from the surface at a low spot in the northwest corner of the leachfield. These sample locations are on a north-south trend with a 4-ft separation. In addition, a subsurface soil sample was collected from 0.5- to 1.0-ft bgs below the center location. This sampling scenario was repeated at a low spot in the southeast corner of the leachfield. Two soil samples were collected below the skimmer box outlet, one from 4.0 to 4.5 ft bgs just below the leachrock/native soil interface, and another at the same location from 7.2 to 8.2 ft bgs. One soil sample was collected below an Orangeburg distribution line near the skimmer box, just below the leachrock/native soil interface. One soil sample was collected below the distal end of one of the Orangeburg distribution lines at the south end of the leachfield, just below the leachrock/native soil interface. A sludge sample was collected from a section of excavated Orangeburg distribution pipe, which was dug up 6 ft south of the skimmer box.

D.3.1.4 SAFER Plan Implementation

The following field activities were conducted at CAS 03-04-01 to meet SAFER Plan requirements:

- Collected integrity soil samples from the influent and effluent ends of the septic tank and manhole.
- Inspected the collection system piping.
- Collected liquid content samples from both chambers of the septic tank.
- Conducted exploratory excavations to confirm the configuration of the leachfields, septic tank, manhole, and skimmer box.
- Collected biased soil samples from various locations at both leachfields.

- Collected a sludge sample from inside a distribution pipe at the fenced leachfield.
- Field screened soil samples for VOCs and alpha and beta/gamma radiation.
- Analyzed select samples for total and fecal coliform.
- Submitted select samples for off-site laboratory analysis.

D.3.1.5 Deviations

There were no significant deviations to the SAFER Plan requirements.

D.3.2 Closure Results

The following subsections provide CAS-specific field screening and sample analysis results.

D.3.2.1 Field-Screening Results

Samples were field screened for volatiles and alpha and beta/gamma emitters. None of the samples exceeded established FSLs.

D.3.2.2 Sample Analyses

Select closure samples were analyzed for CAS-specified COPCs which included total VOCs, total SVOCs, total RCRA metals, TPH (DRO and GRO), TCLP RCRA metals, PCBs (not required in the SAFER Plan), and radionuclides.

The analytical parameters and laboratory analytical methods used to analyze the closure samples are listed in Table D.2-1. Table D.3-1 lists the sample-specific analytical parameters.

D.3.2.3 Analytes Detected Above Minimum Reporting Limits

Samples with results greater than MRLs or PALs are presented in Tables D.3-2 through D.3-8.

D.3.2.3.1 Total Volatile Organic Compound Analytical Results for Soil Samples

No total VOC analytical results for soil samples exceeded the MRLs or PALs established in the Leachfield Work Plan and SAFER Plan.

D.3.2.3.2 Total Semivolatile Organic Compound Analytical Results for Soil Samples

Table D.3-2 lists the soil samples that have total SVOC concentrations above the MRLs established in the Leachfield Work Plan and SAFER Plan. No samples had results that exceeded PALs.

Table D.3-2
Soil Sample Results for Total SVOCs
Detected Above Minimum Reporting Limits

Sample Number	Depth (ft bgs)	Contaminants of Potential Concern (µg/kg)						
		Butyl benzyl phthalate	Benzo(b)fluoranthene	Chrysene	Di-n-butyl phthalate	Fluoranthene	Phenanthrene	Pyrene
Preliminary Action Levels[a]		**100,000,000**	**2,900**	**290,000**	**88,000,000**	**30,000,000**	**NI [b]**	**54,000,000**
356003	5 - 5.5	850	--	--	--	--	--	--
356012	0.0 - 0.5	--	850	930	2,800	2,300	2,000	1,500
356013	0.0 - 0.5	--	--	--	960	--	--	--

[a]Based on U.S. Environmental Protection Agency, *Region 9 Preliminary Remediation Goals (PRGs)* (EPA, 2000).
[b]Phenanthrene does not have a preliminary remediation goal (PRG). Phenanthrene is an isomer of anthrecene, which has a PRG (PAL) of 100,000,000 µg/kg.

ft bgs = Feet below ground surface
-- = Not detected above minimum reporting limits
NI = Not identified
µg/kg = Micrograms per kilogram

D.3.2.3.3 Total Petroleum Hydrocarbon Analytical Results for Soil Samples

Table D.3-3 lists the soil samples that have TPH (DRO and GRO) concentrations above the MRLs established in the Leachfield Work Plan and SAFER Plan. Sample 356012 has a result that exceeds the PAL of 100 mg/kg. Samples 356207 and 356209 were collected 4 ft to the north and south of sample 356012, respectively. Both samples had TPH results above the MRL and below the PAL. Sample 356208 was collected immediately below sample 356012 and did not have TPH results above the MRL or PAL.

Table D.3-3
Soil Sample Results for TPH-DRO
Detected Above Minimum Reporting Limits

Sample Number	Depth (ft bgs)	Contaminants of Potential Concern (mg/kg)
		Diesel-Range Organics, also reported as Extractable Petroleum Hydrocarbon (EPH)
Preliminary Action Levels[a]		**100**
356012	0.0 - 0.5	400 (J)
356016	4.0 - 4.5	75
356207	0.0 - 0.5	50 (M)
356209	0.0 - 0.5	75 (M,Z)

[a]Based on U.S. Environmental Protection Agency, *Region 9 Preliminary Remediation Goals (PRGs)* (EPA, 2000).

ft bgs = Feet below ground surface
mg/kg = Milligrams per kilogram
M = Motor oil
Z = The reported result did not resemble the patterns of the following petroleum hydrocarbon products: gasoline, JP-4, JP-8, diesel, mineral spirits, Stoddard solvent and Bunker C.
J = Estimated value. Qualifier added to laboratory data; record accepted. Surrogates diluted out.

D.3.2.3.4 Total RCRA Metals Analytical Results for Soil Samples

The total RCRA metals detected in soil samples at concentrations exceeding MRLs are listed in Table D.3-4 and discussed below. Only arsenic exceeded the PALs for RCRA metals established in the Leachfield Work Plan and SAFER Plan.

Arsenic was detected above the PAL of 2.7 mg/kg in all soil samples analyzed. The mean concentration of arsenic in silt from the Nellis Air Force Range is 7 to 8 mg/kg (NBMG, 1998; Moore, 1999). Arsenic concentrations presented in Table D.3-4 exceed the PAL, but are considered representative of ambient conditions at the site.

D.3.2.3.5 Polychlorinated Biphenyl Results for Soil Samples

No PCB analytical results for soil exceeded the MRLs or PALs established in the Leachfield Work Plan.

Table D.3-4
Soil Sample Results for Total RCRA Metals
Detected Above Minimum Reporting Limits

Sample Number	Depth (ft bgs)	Contaminants of Potential Concern (mg/kg)					
		Arsenic	Barium	Chromium	Lead	Mercury	Selenium
Preliminary Action Levels[a]		**2.7**	**100,000**	**450**	**750**	**610**	**10,000**
356001	5.5 - 6.0	5.2	157	7.0	10.9	--	--
356002	11.75 - 12.25	3.7	187	5.1	9.2	--	--
356003	5.0 - 5.5	4.3	163	6.7	9.4	--	--
356004	6.0 - 6.5	6.4	174	11.1	12.8	--	0.83
356005	5.25 - 5.75	4.1	219	7.8	10.2	--	0.64
356006	6.0 - 6.5	4.6	189	10.0	10.8	--	0.55
356008	7.0 - 7.5	3.0	186	5.6	8.4	--	--
356009	7.0 - 7.5	4.0	100	6.0	8.3	--	0.55
356012	0.0 - 0.5	5.0	339	10.8	44.0	--	0.78
356013	0.0 - 0.5	4.4	201	9.1	35.8	0.051	0.68
356015	7.5 - 8.0	3.9	167	6.0	7.6	--	--
356016	4.0 - 4.5	5.1	162	6.9	14.6	--	0.67
356017	3.5 - 4.0	3.7	172	6.0	8.2	--	--
356019	4.0 - 4.5	3.8	146	5.0	8.4	--	--
356095	5.0 - 5.5	4.4	144	5.8	8.7	--	--

[a]Based on U.S. Environmental Protection Agency, *Region 9 Preliminary Remediation Goals (PRGs)* (EPA, 2000).

ft bgs = Feet below ground surface
-- = Not detected above minimum reporting limits
mg/kg = Milligrams per kilogram

D.3.2.3.6 Gamma Spectrometry Results for Soil Samples

Gamma spectrometry was used to analyze select soil samples in support of waste management determinations only. The results did not indicate the presence of man-made radionuclides at concentrations greater than and distinguishable from background concentrations (US Ecology and Atlan-Tech, 1992; McArthur and Miller, 1989), except for americium-241 in samples 356003, 356005, 356013, 356016, 356095, 356207, and 356209. The remaining samples and step-out locations are sufficient to conclude that the soil with americium-241 concentrations exceeding the PALs is contained within the CAS. Gamma spectrometry results are presented in Table D.3-5.

Table D.3-5
Soil Sample Results for Gamma Spectrometry Detected Above Minimum Detectable Concentrations
(Page 1 of 2)

Sample Number	Depth (ft bgs)	Contaminants of Potential Concern (pCi/g)								
		Actinium-228[a]	Americium-241[b]	Cesium-137[b]	Europium-152[b]	Lead-212[a]	Lead-214[b]	Potassium-40[a]	Thallium-208[a]	Thorium-232[b]
Preliminary Action Levels		**3.64**	**0.05**	**7.033**	**0.5**	**3.64**	**3.47**	**97.7**	**3.38**	**3.64**
356001	5.5 - 6.0	2.24 ± 0.65	--	0.471 ± 0.15 (J)[c]	--	2.26 ± 0.44	1.38 ± 0.35	33.1 ± 5.4	0.774 ± 0.19	--
356002	11.75 - 12.25	2.61 ± 0.73	--	--	--	1.76 ± 0.4	1.32 ± 0.35	29 ± 5	0.654 ± 0.20	--
356003	5.0 - 5.5	2.2 ± 0.55	0.639 ± 0.20	--	--	1.47 ± 0.29	1.13 ± 0.3	34.8 ± 5.3	0.694 ± 0.15	--
356004	6.0 - 6.5	2.72 ± 0.86	--	--	--	1.72 ± 0.41	1.67 ± 0.5	32.9 ± 5.7	0.681 ± 0.19	--
356005	5.25 - 5.75	2.04 ± 0.61	2.44 ± 0.38	1.13 ± 0.27	1.61 ± 0.45	2.4 ± 0.45	1.22 ± 0.37	31 ± 5	0.867 ± 0.23	--
356006	6.0 - 6.5	--	--	1.24 ± 0.29	--	1.99 ± 0.41	1.04 ± 0.42	31.8 ± 5.6	0.674 ± 0.21	--
356008	7.0 - 7.5	--	--	--	--	1.98 ± 0.33	1.01 ± 0.37	30.6 ± 5.2	0.586 ± 0.17	--
356009	7.0 - 7.5	1.93 ± 0.67	--	--	--	1.93 ± 0.33	1.17 ± 0.31	31.7 ± 5.2	0.607 ± 0.18	--
356012	0.0 - 0.5	--	--	0.543 ± 0.22	--	2.23 ± 0.49 (J)[e]	1.06 ± 0.47	30.3 ± 5.6	0.631 ± 0.24	3.16 ± 1.3
356013	0.0 - 0.5	1.91 ± 0.8	1.76 ± 0.41 (J)[d]	1.21 ± 0.24	--	1.98 ± 0.35 (J)[e]	1.34 ± 0.38	37.7 ± 6.1	0.704 ± 0.22	--
356015	7.5 - 8.0	1.8 ± 0.56	--	--	--	1.98 ± 0.32 (J)[e]	1.16 ± 0.28	32.9 ± 5.1	0.743 ± 0.16	2.04 ± 0.74
356016	4.0 - 4.5	2.58 ± 0.77	4.08 ± 0.53 (J)[d]	--	--	2.08 ± 0.37 (J)[e]	1.42 ± 0.31	33.4 ± 5.4	0.723 ± 0.18	2.75 ± 0.91
356017	3.5 - 4.0	--	--	--	--	1.9 ± 0.43 (J)[e]	0.975 ± 0.37	27.5 ± 4.8	0.568 ± 0.2	--
356019	4.0 - 4.5	2.18 ± 0.73	--	--	--	1.99 ± 0.34 (J)[e]	1.13 ± 0.4	26.8 ± 4.9	0.84 ± 0.2	2.86 ± 1.1
356095	5.0 - 5.5	2.39 ± 0.73	3.64 ± 1.8	--	--	1.59 ± 0.43	1.08 ± 0.34	33.1 ± 5.4	0.682 ± 0.2	--
356205	0.0 - 0.5	--	0.053 ± 0.027	--	--	--	--	--	--	--

Table D.3-5
Soil Sample Results for Gamma Spectrometry Detected Above Minimum Detectable Concentrations
(Page 2 of 2)

Sample Number	Depth (ft bgs)	Contaminants of Potential Concern (pCi/g)								
		Actinium-228[a]	**Americium-241[b]**	**Cesium-137[b]**	**Europium-152[b]**	**Lead-212[a]**	**Lead-214[b]**	**Potassium-40[a]**	**Thallium-208[a]**	**Thorium-232[b]**
Preliminary Action Levels		**3.64**	**0.05**	**7.033**	**0.5**	**3.64**	**3.47**	**97.7**	**3.38**	**3.64**
356207	0.0 - 0.5	--	0.173 ± 0.052	--	--	--	--	--	--	--
356209	0.0 - 0.5	--	2.23 ± 0.34	--	--	--	--	--	--	--

[a]Background concentration listed in *Environmental Monitoring Report for the Proposed Ward Valley, California, Low-Level Radioactive Waste (LLRW) Facility* (US Ecology and Atlan-Tech, 1992).
[b]Background concentration listed or derived in *Off-Site Radiation Exposure Review Project, Phase II Soil Program* (McArthur and Miller, 1989).
[c]Qualifier added to laboratory data; record accepted. Nuclide not identified by software.
[d]Qualifier added to laboratory data; record accepted. Duplicate normalized difference outside control limits.
[e]Qualifier added to laboratory data; record accepted. Duplicate relative percent difference over the control limits.

ft bgs = Feet below ground surface
-- = Not detected above minimum reporting limits
J = Estimated value
pCi/g = Picocuries per gram

D.3.2.3.7 Isotopic Results for Soil Samples

Isotopic analyses were used to analyze select soil samples in support of waste management determinations only. The results did not indicate the presence of man-made radionuclides at concentrations greater than and distinguishable from background concentrations (US Ecology and Atlan-Tech, 1992; McArthur and Miller, 1989), except for plutonium-239/240 in samples 356205, 356207, and 356209. The remaining samples and step-out locations are sufficient to conclude that the soil with plutonium-239/240 concentrations exceeding the PALs is contained within the CAS. Isotopic results are presented in Table D.3-6.

Table D.3-6
Soil Sample Results for Isotopes Detected Above Minimum Reporting Limits

Sample Number	Depth (ft bgs)	Contaminants of Potential Concern (pCi/g)				
		Uranium-234[a]	Uranium-235[a]	Uranium-238[b]	Plutonium-238[b]	Plutonium-239/240[b]
Preliminary Action Levels		**1.56**	**0.07**	**3.2**	**0.05**	**0.106**
356003	5.0 - 5.5	1.28 ± 0.26 (J)[c]	0.0631 ± 0.027	1.2 ± 0.24	--	0.485 ± 0.14 (J)[d]
356095	5.0 - 5.5	1.09 ± 0.24 (J)[c]	--	1.1 ± 0.24	--	0.435 ± 0.12 (J)[e]
356204	0.0 - 0.5	--	--	--	0.049 ± 0.026	0.211 ± 0.058
356205	0.0 - 0.5	--	--	--	--	0.226 ± 0.058
356207	0.0 - 0.5	--	--	--	0.117 ± 0.042	1.38 ± 0.23
356209	0.0 - 0.5	--	--	--	0.469 ± 0.094	16.5 ± 2.3

[a]Background concentration listed in *Environmental Monitoring Report for the Proposed Ward Valley, California, Low-Level Radioactive Waste (LLRW) Facility* (US Ecology and Atlan-Tech, 1992).
[b]Background concentration listed or derived in *Off-Site Radiation Exposure Review Project, Phase II Soil Program* (McArthur and Miller, 1989).
[c]Qualifier added to laboratory data; record accepted. Laboratory control sample/laboratory control sample duplicate recovery was below the control limits.
[d]Qualifier added to laboratory data; record accepted. Chemical yield below control limits.
[e]Qualifier added to laboratory data; record accepted. Duplicate relative percent difference over the control limits.

ft bgs = Feet below ground surface
pCi/g = Picocuries per gram
J = Estimated value
-- = Not detected above minimum reporting limits

D.3.2.3.8 Manhole and Pipe Content Sample Results

Insufficient material was present to collect samples from the manhole. The pipe content sample is discussed in Section D.3.2.3.10.

D.3.2.3.9 Septic Tank Liquid Results

Results were compared to regulatory levels based on disposal options. If the waste has no hazardous component, the regulatory level is based on NTS disposal options and lagoons (BN, 1995; CFR, 2000 a and b; NDEP, 1997 a, b, and c). If the waste is hazardous, the release criteria is based on interpretation of the guidelines presented in the performance objective criteria (POC) (BN, 1995; Alderson, 1999). For waste destined for off-site disposal, the POC radiological levels must be met to certify that the waste has no added radioactivity.

Liquid sample 356007 was collected from the South Chamber, and 356010 and 356089 are duplicate liquid samples collected from the North Chamber of the septic tank. There was not a discrete sludge layer in the septic tank contents; therefore, only liquid samples were obtained. The liquid samples from the tank were analyzed for VOCs, SVOCs, RCRA metals, TPH DRO and GRO, gamma spectrometry, isotopic plutonium, gross alpha/beta, and tritium. The results for the septic tank liquid above the MRLs are listed in Table D.3-7. The results from the extractable petroleum hydrocarbon (TPH GRO) and PCBs were rejected during Tier II data validation (see Appendix B).

The fecal coliform screening from the septic tanks liquids were negative.

D.3.2.3.10 Sludge Sample Results

One sludge sample was collected from piping 5 ft downstream from the skimmer box. Results greater than MRLs are presented in Table D.3-8.

D.3.2.4 Contaminants of Concern

Sample 356012 exceeded the TPH PAL of 100 mg/kg. Step-out samples were collected surrounding this sample location. The results of the step-out location samples were all below the PAL.

Table D.3-7
Septic Tank Liquid Results

Sample Number	Parameter	Result	Units	Limits	Reference
356007	Selenium	32.7 (J)	µg/L	1,000	CFR, 2000a
356007	Gross Beta	58.5 ± 8.8	pCi/L	NA	NDEP, 1997b
356007	Plutonium-239/40	0.066 ± 0.035	pCi/L	10 *	NDEP, 1997b
356007	Uranium-234	1.53 ± 0.39 (J)	pCi/L	100 *	NDEP, 1997b
356007	Uranium-238	0.537 ± 0.18	pCi/L	100 *	NDEP, 1997b
356010	Lead	17.0	µg/L	5,000	CFR, 2000a
356010	Gross Beta	48.6 ± 7.1	pCi/L	NA	NDEP, 1997b
356010	Uranium-234	1.27 ± 0.32 (J)	pCi/L	100 *	NDEP, 1997b
356010	Uranium-238	0.447 ± 0.15	pCi/L	100 *	NDEP, 1997b
356089	Arsenic	11.2	µg/L	5,000	CFR, 2000a
356089	Lead	55.2	µg/L	5,000	CFR, 2000a
356089	Selenium	22.4	µg/L	1,000	CFR, 2000a
356089	Gross Beta	54.9 ± 8.2	pCi/L	NA	NDEP, 1997b
356089	Plutonium-239/40	0.194 ± 0.11 (J)	pCi/L	10 *	NDEP, 1997b
356089	Uranium-234	2.53 ± 0.56 (J)	pCi/L	100 *	NDEP, 1997b
356089	Uranium-238	0.886 ± 0.24	pCi/L	100 *	NDEP, 1997b

* = Regulatory limits based on solidification for landfill.
J = Concentration is an estimate.
NA = Not applicable
µg/L = Micrograms per liter
pCi/L = Picocuries per liter

Americium-241 and plutonium-239/240 concentrations greater than and distinguishable from background were detected in several samples.

D.3.3 Nature and Extent of Contamination in Soils

Samples were collected from step-out locations in the vicinity of sample 356012 that exceeded PAL for TPH. Step-out location samples 356207 and 356209 were collected 4 ft to the north and south of sample 356012, respectively. Both samples had TPH results above the MRL and below the PAL. Step-out location sample 356208 was collected immediately below sample 356012 and did not have TPH results above the MRL or PAL. The highest TPH concentration was 400 mg/kg.

Sufficient primary locations and step-out locations were sampled to conclude that the soil with americium-241 and plutonium-239/240 concentrations exceeding the PALs is contained within the

Table D.3-8
Sludge Sample (356018) Results
Detected Above Minimum Reporting Limits

Parameter	Result	Units	Regulatory Limits	Regulatory Reference
Extractable Petroleum Hydrocarbon	4,100 (J)[a]	mg/kg	100	NAC, 1996b
Arsenic	74.0	mg/kg	NA	CFR, 2000a
Barium	243	mg/kg	NA	CFR, 2000a
Chromium	52.3	mg/kg	NA	CFR, 2000a
Lead	72.5	mg/kg	NA	CFR, 2000a
Selenium	16.0	mg/kg	NA	CFR, 2000a
Silver	9.9	mg/kg	NA	CFR, 2000a
Mercury	2.6	mg/kg	NA	CFR, 2000a
Acenaphthene	9,800 (J)[a]	µg/kg	NA	CFR, 2000a
Anthracene	18,000 (J)[a]	µg/kg	NA	CFR, 2000a
Benzo(a)anthracene	46,000 (J)[a]	µg/kg	NA	CFR, 2000a
Benzo(a)pyrene	36,000 (J)[a]	µg/kg	NA	CFR, 2000a
Benzo(b)fluoranthene	27,000 (J)[a]	µg/kg	NA	CFR, 2000a
Benzo(ghi)perylene	15,000 (J)[a]	µg/kg	NA	CFR, 2000a
Benzo(k)fluoranthene	28,000 (J)[a]	µg/kg	NA	CFR, 2000a
Carbazole	9,000 (J)[a]	µg/kg	NA	CFR, 2000a
Chrysene	49,000 (J)[a]	µg/kg	NA	CFR, 2000a
Dibenzo(a,h)anthracene	7,400 (J)[a]	µg/kg	NA	CFR, 2000a
Fluoranthene	85,000 (J)[a]	µg/kg	NA	CFR, 2000a
Indeno(1,2,3-cd)pyrene	19,000 (J)[a]	µg/kg	NA	CFR, 2000a
Phenanthrene	51,000 (J)[a]	µg/kg	NA	CFR, 2000a
Pyrene	81,000 (J)[a]	µg/kg	NA	CFR, 2000a
Americium-241	3.07 ± 0.71 (J)[b]	pCi/g	NA	CFR, 2000a
Potassium-40	27.5 ± 5.3	pCi/g	100	NDEP, 1997b
Lead-212	1.8 ± 0.34 (J)[c]	pCi/g	NA	NDEP, 1997b
Lead-214	1.32 ± 0.38	pCi/g	NA	NDEP, 1997b
Thallium-208	0.619 ± 0.23	pCi/g	NA	NDEP, 1997b
Uranium-234	38.2 ± 7	pCi/g	100	NDEP, 1997b
Uranium-235	0.48 ± 0.11	pCi/g	100	NDEP, 1997b
Uranium-238	11.6 ± 2.1	pCi/g	100	NDEP, 1997b
Plutonium-238	1.03 ± 0.22 (J)[c]	pCi/g	10	NDEP, 1997b
Plutonium239/240	66.2 ± 11 (J)[c]	pCi/g	10	NDEP, 1997b

[a]Qualifier added to laboratory data; record accepted. Surrogates diluted out.
[b]Qualifier added to laboratory data; record accepted. Duplicate normalized difference outside control limits.
[c]Qualifier added to laboratory data; record accepted. Duplicate relative percent difference over the control limits.

mg/kg = Milligrams per kilogram
µg/kg = Micrograms per kilogram
pCi/g = Picocuries per gram
J = Estimated value

CAS. The highest concentrations were 2.23 pCi/g americium-241 and 16.4 pCi/g plutonium-239/240.

D.3.4 Revised Conceptual Model

No variations to the conceptual model were identified.

D.4.0 CAS 03-09-01 (Mud Pit Spill Over)

Corrective Action Site 03-09-01, Mud Pit Spill Over, is located south of the U3ly emplacement hole in Area 3, and consists of two mud pits (a larger return pit and a smaller suction pit), and a mud spill. Drilling for the U3ly emplacement hole began in September 1984 and ceased in October 1984 (RSN, 1991); however, tests were never performed at this hole. It can be assumed that the mud pits were created around that time. An as-built drawing dated September 1984 shows plans for the two mud pits associated with the U3ly emplacement hole (H&N, 1984).

The return pit is approximately 130 by 120 ft surrounded by a berm measuring 5 to 6 ft above ground surface. Mud levels vary from recharge area (highest) to the channel (lowest) resulting in a distinct slope. The return pit connects to the suction pit by a channel, which previously contained a weir box to control flow. The suction pit is approximately 125 by 15 ft. Obvious low points were noticed in both the return and suction pits.

The mud spill is located at the southern end of the suction pit, and is apparently the result of an overflow of the small pit or a weir box failure. The spill area measures approximately 100 by 70 ft.

D.4.1 SAFER Investigation

Nine closure soil samples and associated QC samples were collected during the field activities conducted at CAS 03-09-01 and are listed in Table D.4-1. The planned sample locations at CAS 03-09-01 are shown in Figure A.2-2 of the SAFER Plan. The actual characterization sample locations are shown in Figure D.4-1.

Biased surface and subsurface soil samples were collected from low points in both the suction and return pit, near the channel mouth in the return pit, from a point of maximum mud accumulation in the suction pit, and from the channel between the pits (surface sample only). Surface samples were collected by hand, using the scoop and trowel method. Subsurface samples were collected using Geoprobe® direct-push technology. The Geoprobe® equipment was mounted on the back of a four-wheel drive Ford Pathfinder.

Table D.4-1
Samples Collected from CAS 03-09-01, Mud Pit Spill Over

Sample Number	Sample Location	Depth (ft bgs)	Sample Matrix	Purpose	Analyses
356020	Return pit low point	1.7 - 2.7	Soil	SC	Set 1
356021	Channel mouth in return pit	5.5 - 6.5	Soil	SC	Set 1
356022	Surface at return pit low point	0.0 - 0.5	Soil	SC	Set 2
356084	Surface at return pit low point	0.0 - 0.5	Soil	Field Duplicate of #356022	Set 2
356023	Surface at channel mouth in return pit	0.0 - 0.5	Soil	SC, MS/MSD	Set 2
356024	Middle of channel between pits	0.0 - 0.5	Soil	SC	Set 1
356025	Suction pit low point	3.0 - 4.0	Soil	SC	Set 1
356026	Suction pit point of maximum accumulation	3.25 - 4.25	Soil	SC	Set 1
356027	Surface at suction pit low point	0.0 - 0.5	Soil	SC	Set 1
356028	Surface at suction pit point of maximum accumulation	0.0 - 0.5	Soil	SC	Set 1
356083	NA	NA	Water	Field Blank	Set 2
356085	NA	NA	Water	Trip Blank	VOC

ft bgs = Feet below ground surface
SC = Site characterization
MS/MSD = Matrix spike/matrix spike duplicate
NA = Not applicable

Set 1: VOC, SVOC, RCRA Metals, TPH (GRO and DRO); Gamma Spectrometry
Set 2: VOC, SVOC, RCRA Metals, TPH (GRO and DRO), Gamma Spectrometry, Isotopic Uranium, Isotopic Plutonium

Soil cores were collected in lexan liners and brought to the sampling table. The site geologist visually inspected the core and selected the sampling interval based on lithology, normally one foot distributed evenly across the mud/native soil interface. The lexan liner was cut open and the selected

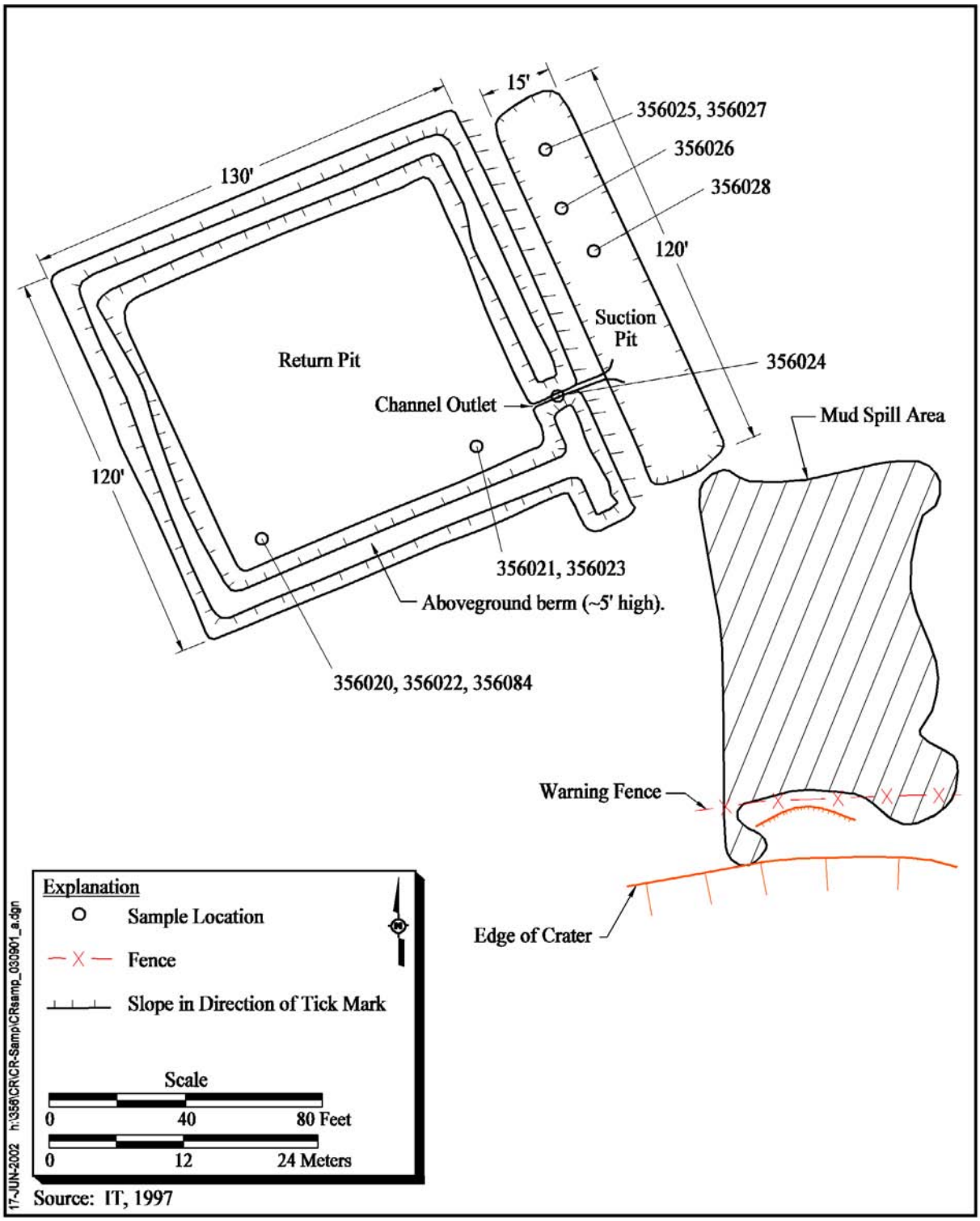

Figure D.4-1
CAS 03-09-01, Mud Pit Spill Over Sample Locations

sample interval was placed in a decontaminated stainless-steel bowl and field screened. Sample aliquots were collected and containerized per the Field Instruction (FI) and applicable SQPs.

D.4.1.1 SAFER Plan Implementation

The following field activities were conducted at CAS 03-09-1 to meet SAFER Plan requirements:

- Collected surface and subsurface mud/soil samples at biased locations in both pits and the channel between the pits.
- Field screened soil samples for VOCs and alpha and beta/gamma radiation.
- Submitted samples for off-site laboratory analysis.

D.4.1.2 Deviations

There were no deviations from the proposed field activities listed in the SAFER Plan.

D.4.2 Investigation Results

The following subsections provide CAS-specific field screening and sample analysis results.

D.4.2.1 Field-Screening Results

Soil samples were field screened for VOCs and alpha and beta/gamma radiation. The field-screening results (FSRs) were compared to FSLs to guide sampling decisions. The FSRs did not exceed FSLs in any of the samples.

D.4.2.2 Sample Analyses

Closure soil samples were analyzed for the SAFER Plan-specified COPCs which included total VOCs, total SVOCs, total RCRA metals, TPH (DRO and GRO), PCBs (not required by SAFER Plan), isotopic uranium, isotopic plutonium, and gamma-emitting radionuclides.

The analytical parameters and laboratory analytical methods used to analyze the closure samples are listed in Table D.2-1. Table D.4-1 lists the sample-specific analytical parameters.

D.4.2.3 Analytes Detected Above Minimum Reporting Limits

Samples with results greater than the MRLs are presented in Tables D.4-2 to D.4-6. No analytes were detected above the PALs established in the SAFER Plan.

D.4.2.3.1 Total Volatile Organic Compound Analytical Results for Soil Samples

Table D.4-2 lists the sample that had a total VOC concentration above the MRLs established in the SAFER Plan. No samples had concentrations that exceed PALs.

Table D.4-2
Soil Sample Results for Total VOCs
Detected Above Minimum Reporting Limits

Sample Number	Depth (ft bgs)	Contaminants of Potential Concern (µg/kg)
		Acetone
Preliminary Action Levels[a]		6,200,000
356021	5.5 - 6.5	72 (J)

[a]Based on U.S. Environmental Protection Agency, *Region 9 Preliminary Remediation Goals (PRGs)* (EPA, 2000).

ft bgs = Feet below ground surface
µg/kg = Micrograms per kilogram
J = Estimated value. Qualifier added to laboratory data. Relative response factor <0.05. Percent relative standard deviation exceeded 30%.

D.4.2.3.2 Total Semivolatile Organic Compound Analytical Results for Soil Samples

No total SVOC analytical results for soil exceeded the MRLs or PALs established in the SAFER Plan.

D.4.2.3.3 Total Petroleum Hydrocarbon Analytical Results for Soil Samples

No TPH (DRO and GRO) analytical results for soil exceeded the MRLs or PALs established in the SAFER Plan.

D.4.2.3.4 Total RCRA Metals Results in Soil Samples

The total RCRA metals detected in soil samples at concentrations exceeding PALs are listed in Table D.4-3 and discussed below. Only arsenic exceeded the PALs for RCRA metals established in the SAFER Plan.

Table D.4-3
Soil Sample Results for Total RCRA Metals
Detected Above Minimum Reporting Limits

Sample Number	Depth (ft bgs)	Contaminants of Potential Concern (mg/kg)			
		Arsenic	Barium	Chromium	Lead
Preliminary Action Levels[a]		**2.7**	**100,000**	**450**	**750**
356020	1.7 - 2.7	5.4	178	7.7	10.1
356021	5.5 - 6.5	5.7	142	7.5	9.2
356022	0.0 - 0.5	2.9	84.7	--	6.4
356023	0.0 - 0.5	1.7	163	--	10.1
356024	0.0 - 0.5	4.4	154	6.7	8.8
356025	3.0 - 4.0	5.2	166	7.3	9.5
356026	3.25 - 4.25	5.7	199	8.1	10.9
356027	0.0 - 0.5	2.4	245	1.5	8.4
356028	0.0 - 0.5	3.3	220	1.5	8.0
356084	0.0 - 0.5	2.9	75.5	--	6.1

[a]Based on U.S. Environmental Protection Agency, *Region 9 Preliminary Remediation Goals (PRGs)* (EPA, 2000).

ft bgs = Feet below ground surface
-- = Not detected above minimum reporting limits
mg/kg = Milligrams per kilogram

Arsenic was detected above the PAL of 2.7 mg/kg in most of the soil samples analyzed. The mean concentration of arsenic in silt from the Nellis Air Force Range is 7 to 8 mg/kg (NBMG, 1998; Moore, 1999). Most arsenic concentrations presented in Table D.4-3 exceed the PAL, but are considered representative of ambient conditions at the site.

D.4.2.3.5 Polychlorinated Biphenyl Results for Soil Samples

Table D.4-4 lists the samples that had PCB concentrations above the MRLs established in the SAFER Plan. No samples had concentrations that exceed PALs.

Table D.4-4
Soil Sample Results for PCBs Detected
Above Minimum Reporting Limits

Sample Number	Depth (ft bgs)	Contaminants of Potential Concern (µg/kg)	
		Aroclor 1248	Aroclor 1254
Preliminary Action Levels[a]		**1,000**	**1,000**
356027	0.0 - 0.5	--	410
356028	0.0 - 0.5	89	--

[a]Based on U.S. Environmental Protection Agency, *Region 9 Preliminary Remediation Goals (PRGs)* (EPA, 2000).

ft bgs = Feet below ground surface
µg/kg = Micrograms per kilogram
-- = Not detected above minimum, reporting limit

D.4.2.3.6 Gamma Spectrometry Results in Soil Samples

Gamma spectrometry was used to analyze select soil samples in support of waste management determinations only (Table D.4-5). The results did not indicate the presence of man-made radionuclides at concentrations greater than and distinguishable from background concentrations (US Ecology and Atlan-Tech, 1992; McArthur and Miller, 1989).

D.4.2.3.7 Isotopic Results for Soil Samples

Isotopic analyses were used to analyze select soil samples in support of waste management determinations only (Table D.4-6). The results did not indicate the presence of man-made radionuclides at concentrations greater than and distinguishable from background concentrations (US Ecology and Atlan-Tech, 1992; McArthur and Miller, 1989).

D.4.2.4 Contaminants of Concern

Based on the aforementioned analytical results, no COCs are present in the mud or the soil under the mud pit.

D.4.3 Nature and Extent of Contamination

No COCs are present.

Table D.4-5
Soil Sample Results for Gamma Spectrometry
Detected Above Minimum Reporting Limits

Sample Number	Depth (ft bgs)	Contaminants of Potential Concern (pCi/g)						
		Actinium-228[a]	Bismuth-214[b]	Lead-212[a]	Lead-214[b]	Potassium-40[a]	Thallium-208[a]	Thorium-232[b]
Preliminary Action Levels		**3.64**	**3.47**	**3.64**	**3.47**	**97.7**	**3.38**	**3.64**
356020	1.7 - 2.7	--	--	2.16 ± 0.45	1.45 ± 0.49	33.7 ± 7	0.763 ± 0.21	--
356021	5.5 - 6.5	1.99 ± 0.86	--	2.22 ± 0.49	1.9 ± 0.45	28.8 ± 5.7	--	--
356022	0.0 - 0.5	2.74 ± 0.94	2.67 ± 1.8	3.07 ± 0.63	1.65 ± 0.55	32.2 ± 6.1	0.917 ± 0.27	--
356023	0.0 - 0.5	2.53 ± 0.74	--	2.36 ± 0.41	1.12 ± 0.38	28.4 ± 5.1	0.677 ± 0.21	3.31 ± 0.85
356024	0.0 - 0.5	2.32 ± 0.63	--	1.96 ± 0.34	1.37 ± 0.41	30 ± 5.3	--	--
356025	3.0 - 4.0	--	--	1.73 ± 0.6	2.22 ± 0.6	29.6 ± 6.2	--	--
356026	3.25 - 4.25	--	--	2.08 ± 0.49	1.36 ± 0.42	29.1 ± 5.6	0.537 ± 0.23	--
356027	0.0 - 0.5	--	--	2.33 ± 0.51	1.41 ± 0.56	24.8 ± 5.8	0.893 ± 0.32	--
356028	0.0 - 0.5	3.59 ± 1.1	--	1.86 ± 0.5	1.44 ± 0.54	28.2 ± 6.1	0.781 ± 0.22	--
356084	0.0 - 0.5	3.2 ± 1.1	--	2.59 ± 0.51	1.75 ± 0.5	33.7 ± 6.5	1.03 ± 0.27	--

[a]Background concentration listed in *Environmental Monitoring Report for the Proposed Ward Valley, California, Low-Level Radioactive Waste (LLRW) Facility* (U.S. Ecology and Atlan-Tech, 1992).
[b]Background concentration listed or derived in *Off-Site Radiation Exposure Review Project, Phase II Soil Program* (McArthur and Miller, 1989).

ft bgs = Feet below ground surface
-- = Not detected above minimum reporting limits
pCi/g = Picocuries per gram

D.4.4 Revised Conceptual Model

No variations to the conceptual model were identified.

Table D.4-6
Soil Sample Results for Isotopes Detected Above Minimum Reporting Limits

Sample Number	Depth (ft bgs)	Contaminants of Potential Concern (pCi/g)		
		Uranium-234[a]	Uranium-235[a]	Uranium-238[b]
Preliminary Action Levels		**1.56**	**0.07**	**3.2**
356022	0.0 - 0.5	1.15 ± 0.22	0.049 ± 0.018 (J)	1.24 ± 0.24
356023	0.0 - 0.5	1.12 ± 0.23	0.0481 ± 0.23 (J)	1.17 ± 0.24
356084	0.0 - 0.5	1.16 ± 0.22	0.0493 ± 0.02 (J)	1.23 ± 0.24

[a]Background concentration listed in *Environmental Monitoring Report for the Proposed Ward Valley, California, Low-Level Radioactive Waste (LLRW) Facility* (US Ecology and Atlan-Tech, 1992).
[b]Background concentration listed or derived in *Off-Site Radiation Exposure Review Project, Phase II Soil Program* (McArthur and Miller, 1989).

ft bgs = Feet below ground surface
pCi/g = Picocuries per gram
J = Estimated value

D.5.0 CAS 03-09-03, Mud Pit

Corrective Action Site 03-09-03, Mud Pit, is located west of the U3jv crater in Area 3 and consists of two mud pits - a larger return pit and a smaller suction pit. These mud pits are located adjacent to the U3jv crater, and are assumed to be associated with the nuclear weapons test that formed this crater. The emplacement hole for the nuclear weapons test that created the U3jv crater was drilled in August 1976. The mud pits would have been utilized at this time.

The return pit is rectangular in shape, approximately 120 by 52 ft. The return pit is surrounded by a small berm. The return pit connects to the suction pit by a channel, which previously contained a weir box to control flow. The suction pit is approximately 60 by 20 ft, and is located north of the return pit. The suction pit is surrounded by a berm with thick vegetation. Obvious low points were noted in the return pit, but not in the suction pit.

D.5.1 SAFER Investigation

Nine closure surface and subsurface soil samples and associated QC samples were collected during the field activities conducted at CAS 03-09-03 and are listed in Table D.5-1. The planned sample locations at CAS 03-09-03 are shown in Figure A.2-2 of the SAFER Plan. The actual characterization sample locations are shown in Figure D.5-1.

Biased surface and subsurface soil samples were collected from the low point in the return pit, near the channel mouth in the return pit, from the channel between the pits (surface sample only), from a point of maximum mud accumulation in the suction pit, and from the center of the suction pit. Surface samples were collected by hand using the scoop and trowel method. Subsurface samples were collected using a stainless-steel hand-auger, fitted with a 3-in. diameter, decontaminated, open-ended auger bit.

Generally, a pilot hole was augered near the selected sampling location to determine the depth of the mud/native soil interface. The site geologist inspected the lithology of the cuttings to make the determination. Also, differences in ease of augering and the sound of the cutting auger assisted in making the depth determination. Once the sampling interval was established, the auger was advanced to the desired sampling depth. At that point, a decontaminated bit was placed on the auger rod, and

Table D.5-1
Samples Collected from CAS 03-09-03, Mud Pit

Sample Number	Sample Location	Depth (ft bgs)	Sample Matrix	Purpose	Analyses
356038	Return pit low point	2.0 - 2.5	Soil	SC	Set 1
356039	Surface at return pit low point	0.0 - 0.5	Soil	SC, MS/MSD	Set 1
356040	Mouth of channel in return pit	1.4 - 1.9	Soil	SC	Set 1
356041	Surface at mouth of channel in return pit	0.0 - 0.5	Soil	SC	Set 1
356042	Surface from middle of channel between pits	0.0 - 0.5	Soil	SC	Set 1
356073	Surface from middle of channel between pits	0.0 - 0.5	Soil	Field Duplicate of #356042	Set 1
356043	Suction pit at point of maximum accumulation	1.7 - 2.2	Soil	SC	Set 1
356044	Surface at suction pit point of maximum accumulation	0.0 - 0.5	Soil	SC	Set 1
356045	Center of suction pit	1.1 - 1.6	Soil	SC	Set 1
356046	Surface at center of suction pit	0.0 - 0.5	Soil	SC	Set 1
356072	NA	NA	Water	Equipment Rinsate Blank	Set 2
356074	NA	NA	Water	Field Blank	Set 1
356075	NA	NA	Water	Trip Blank	VOC

ft bgs = Feet below ground surface
SC = Site characterization
MS/MSD = Matrix spike/matrix spike duplicate
NA = Not applicable

Set 1: VOC, SVOC, RCRA Metals, TPH (GRO and DRO); Gamma Spectrometry
Set 2: VOC, SVOC, RCRA Metals, TPH (GRO and DRO), Gamma Spectrometry, Isotopic Uranium, Isotopic Plutonium

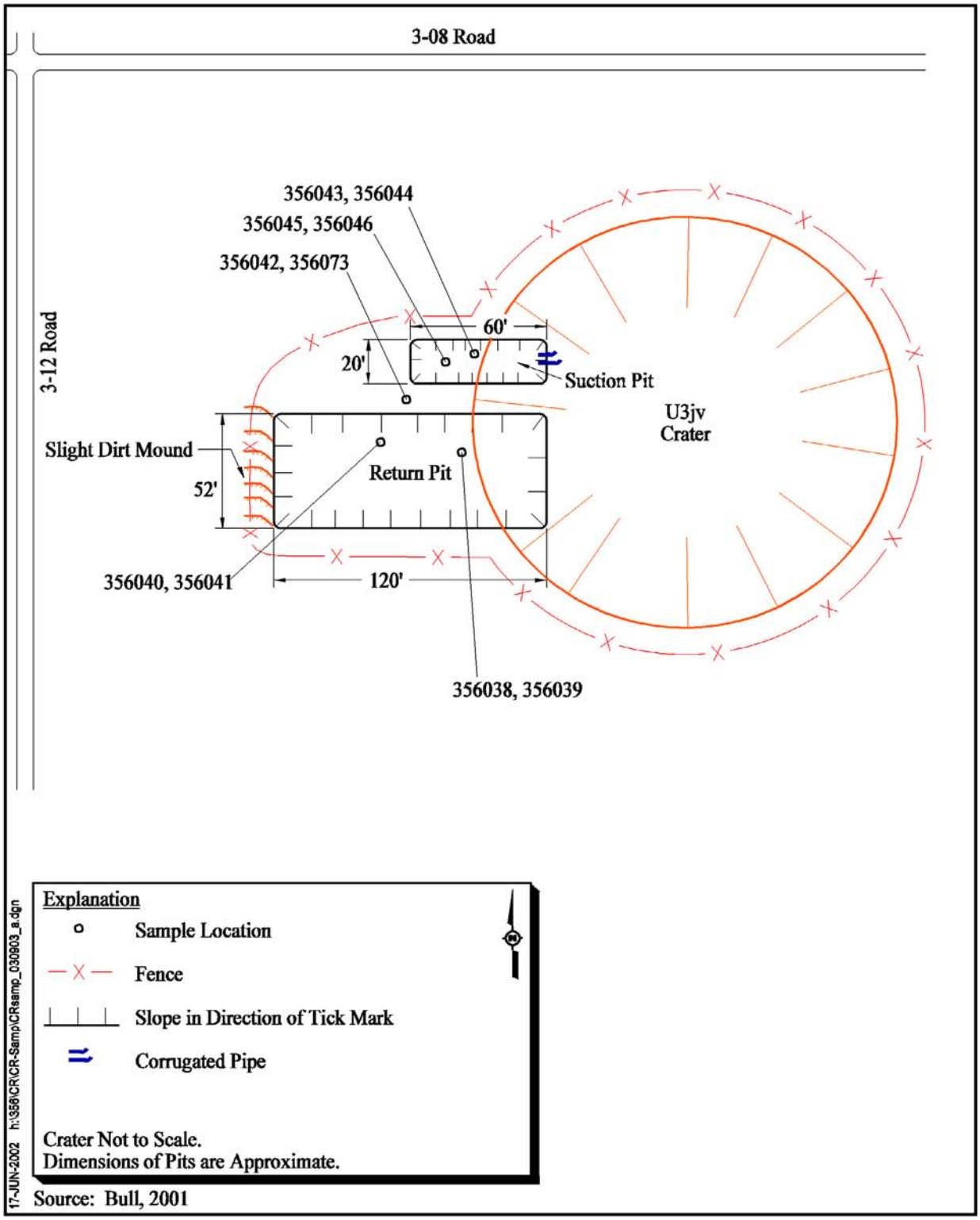

Figure D.5-1
CAS 03-09-03, Mud Pit Sample Locations

the bit advanced through the desired interval. When the bit was full of sample material, it was carefully retrieved from the hole and the contents pushed out into a stainless-steel sampling bowl. Any slough that may have fallen into the sample was discarded. The sample material was field screened, and sample aliquots were collected and containerized per the FI and applicable SQPs.

D.5.1.1 SAFER Plan Implementation

The following field activities were conducted at CAS 03-09-03 to meet SAFER Plan requirements:

- Collected mud/soil samples at biased locations in both pits and in the channel between the pits.
- Field screened soil samples for VOCs and alpha and beta/gamma radiation.
- Submitted samples for off-site laboratory analysis.

D.5.1.2 Deviations

There were no deviations from the proposed field activities listed in the SAFER Plan.

D.5.2 Investigation Results

The following subsections provide CAS-specific field screening and sample analysis results.

D.5.2.1 Field-Screening Results

Soil samples were field screened for VOCs and alpha and beta/gamma radiation. The FSRs were compared to FSLs to guide sampling decisions. The FSRs did not exceed FSLs in any of the samples.

D.5.2.2 Sample Analyses

Closure samples were analyzed for the SAFER Plan-specified COPCs, which included total VOCs, total SVOCs, total RCRA metals, TPH (DRO and GRO), PCBs (not required by the SAFER Plan), isotopic uranium, isotopic plutonium, and gamma-emitting radionuclides.

The analytical parameters and laboratory analytical methods used to analyze the closure samples are listed in Table D.2-1. Table D.5-1 lists the sample-specific analytical parameters.

D.5.2.3 Analytes Detected Above Minimum Reporting Limits

Samples with results greater than the MRLs are presented in the following tables. No analytes were detected above the PALs established in the SAFER Plan.

D.5.2.3.1 Total Volatile Organic Compound Analytical Results for Soil Samples

Table D.5-2 lists the sample result that had a total VOC concentration above the MRLs established in the SAFER Plan. No samples had concentrations that exceed PALs.

Table D.5-2
Soil Sample Results for Total VOCs
Detected Above Minimum Reporting Limits

Sample Number	Depth (ft bgs)	Contaminants of Potential Concern (µg/kg)	
		Acetone	Methylene Chloride
Preliminary Action Levels[a]		**6,200,000**	**21,000**
356038	2.0 - 2.5	220 (J)	9.0

[a]Based on U.S. Environmental Protection Agency, *Region 9 Preliminary Remediation Goals (PRGs)* (EPA, 2000).

ft bgs = Feet below ground surface
µg/kg = Micrograms per kilogram
J = Estimated value. Qualifier added to laboratory data; record accepted. Relative response factor <0.05. Percent relative standard deviation exceeded 30%.

D.5.2.3.2 Total Semivolatile Organic Compound Analytical Results for Soil Samples

No total SVOCs analytical results for soil exceeded the MRLs or PALs established in the SAFER Plan.

D.5.2.3.3 Total Petroleum Hydrocarbon Analytical Results for Soil Samples

No PCB analytical results for soil exceeded the MRLs or PALs established in the SAFER Plan.

D.5.2.3.4 Total RCRA Metals Results in Soil Samples

The total RCRA metals detected in soil samples at concentrations exceeding PALs are listed in Table D.5-4 and discussed below. Only arsenic exceeded the PALs for RCRA metals established in the SAFER Plan.

Arsenic was detected above the PAL of 2.7 mg/kg in most of the soil samples analyzed. The mean concentration of arsenic in silt from the Nellis Air Force Range is 7 to 8 mg/kg (NBMG, 1998; Moore, 1999). Most arsenic concentrations presented in Table D.5-3 exceed the PAL, but are considered representative of ambient conditions at the site.

Table D.5-3
Soil Sample Results for Total RCRA Metals
Detected Above Minimum Reporting Limits

Sample Number	Depth (ft bgs)	Contaminants of Potential Concern (mg/kg)				
		Arsenic	Barium	Chromium	Lead	Mercury
Preliminary Action Levels[a]		**2.7**	**100,000**	**450**	**750**	**610**
356038	2.0 - 2.5	5.1	276 (J)[b]	5.6	16.1 (J)[c]	0.066
356039	0.0 - 0.5	10.6	209 (J)[b]	10.3	13.9 (J)[c]	--
356040	1.4 - 1.9	11.0	188 (J)[b]	10.5	15.8 (J)[c]	--
356041	0.0 - 0.5	6.9	164 (J)[b]	5.9	8.4 (J)[c]	--
356042	0.0 - 0.5	6.4	149 (J)[b]	7.2	10.5 (J)[c]	--
356043	1.7 - 2.2	4.9	150 (J)[b]	6.8	9.3 (J)[c]	--
356044	0.0 - 0.5	5.6	193 (J)[b]	9.5	15.5 (J)[c]	--
356045	1.1 - 1.6	4.0	198 (J)[b]	5.8	10.8 (J)[c]	--
356046	0.0 - 0.5	6.9	171 (J)[b]	9.9	11.1 (J)[c]	--
356073	0.0 - 0.5	5.6	165 (J)[b]	5.3	13.0 (J)[c]	--

[a]Based on U.S. Environmental Protection Agency, *Region 9 Preliminary Remediation Goals (PRGs)* (EPA, 2000).
[b]Qualifier added to laboratory data; record accepted. Spike recovery was outside control limits.
[c]Qualifier added to laboratory data; record accepted. Inductively coupled plasma serial dilution recovery was not met. Matrix effects may exist.

ft bgs = Feet below ground surface
-- = Not detected above minimum reporting limits
mg/kg = Milligrams per kilogram
J = Estimated value

D.5.2.3.5 Polychlorinated Biphenyl Results for Soil Samples

No PCB analytical results for soil exceeded the PALs established in the SAFER Plan.

D.5.2.3.6 Gamma Spectrometry Results in Soil Samples

Gamma spectrometry was used to analyze select soil samples in support only of waste management determinations (Table D.5-4). The results did not indicate the presence of man-made radionuclides at concentrations greater than and distinguishable from background concentrations (US Ecology and Atlan-Tech, 1992; McArthur and Miller, 1989).

Table D.5-4
Soil Sample Results for Gamma Spectrometry
Detected Above Minimum Reporting Limits

Sample Number	Depth (ft bgs)	Contaminants of Potential Concern (pCi/g)						
		Actinium-228[a]	Lead-212[a]	Lead-214[b]	Potassium-40[a]	Radium-226[b]	Thallium-208[a]	Thorium-232[b]
Preliminary Action Levels		**3.64**	**3.64**	**3.47**	**97.7**	**3.47**	**3.38**	**3.64**
356038	2.0 - 2.5	2.58 ± 0.66	1.87 ± 0.32	1.17 ± 0.31	29.4 ± 4.8	--	0.712 ± 0.17	--
356039	0.0 - 0.5	2.68 ± 0.92	2.03 ± 0.45	1.14 ± 0.33	24.7 ± 4.6	--	--	--
356040	1.4 - 1.9	--	2 ± 0.52	1.2 ± 0.44	22.7 ± 4.5	--	--	3.58 ± 1.2
356041	0.0 - 0.5	--	2.32 ± 0.39	1.24 ± 0.37	28.1 ± 5.5	--	0.798 ± 0.22	--
356042	0.0 - 0.5	1.85 ± 0.55	1.89 ± 0.33	0.864 ± 0.36	37.2 ± 5.9	1.02 ± 0.28	0.579 ± 0.24	1.81 ± 0.77
356043	1.7 - 2.2	2.31 ± 0.71	1.9 ± 0.34	1.38 ± 0.34	32.5 ± 5.4	--	0.397 ± 0.17	--
356044	0.0 - 0.5	3.11 ± 0.97	2.43 ± 0.41	1.29 ± 0.43	35.7 ± 6.2	--	0.858 ± 0.22	2.11 ± 0.98
356045	1.1 - 1.6	2.1 ± 0.69	1.91 ± 0.33	1.11 ± 0.32	31.1 ± 5.4	--	0.688 ± 0.17	--
356046	0.0 - 0.5	2.22 ± 0.7	2.24 ± 0.46	1.32 ± 0.45	34.8 ± 6.2	--	0.618 ± 0.25	2.65 ± 1
356073	0.0 - 0.5	2.25 ± 0.71	2.37 ± 0.45	1.56 ± 0.39	35 ± 6	--	0.663 ± 0.19	--

[a]Background concentration listed in *Environmental Monitoring Report for the Proposed Ward Valley, California, Low-Level Radioactive Waste (LLRW) Facility* (US Ecology and Atlan-Tech, 1992).
[b]Background concentration listed or derived in *Off-Site Radiation Exposure Review Project, Phase II Soil Program* (McArthur and Miller, 1989).

ft bgs = Feet below ground surface
-- = Not detected above minimum reporting limits
pCi/g = Picocuries per gram

D.5.2.3.7 Isotopic Results for Soil Samples

No isotopic analytical results for soil exceeded the MRLs or PALs established in the SAFER Plan. The results did not indicate the presence of man-made radionuclides at concentrations greater than

and distinguishable from background concentrations (US Ecology and Atlan-Tech, 1992; McArthur and Miller, 1989).

D.5.2.4 Contaminants of Concern

Based on the aforementioned analytical results, no COCs are present in the mud or the soil under the mud pit.

D.5.3 Nature and Extent of Contamination

No COCs are present.

D.5.4 Revised Conceptual Model

No variations to the conceptual model were identified.

D.6.0 CAS 03-09-04, Mud Pit

Corrective Action Site 03-09-04, Mud Pit, consists of a single pit located west of the potential crater area of U3gi in Area 3. The exploratory drill hole for U3gi is located between this mud pit and the U3gi emplacement hole. The U3gi emplacement hole was drilled in August 1972, an exploratory hole was drilled in November 1972, and the nuclear weapons test associated with the U3gi crater was conducted in December 1972. The mud pit is believed to be the preshot and/or exploratory drill hole mud pit.

The mud pit measures approximately 105 by 35 ft with bermed sides. A piece of wood debris is present on the northeast side of the pit. Soil originally excavated during construction of the mud pit forms a dirt mound on the southwest margin of the mud pit.

D.6.1 SAFER Investigation

Four closure soil samples and associated QC samples were collected during the field activities conducted at CAS 03-09-04 and are listed in Table D.6-1. The planned sample locations at CAS 03-09-04 are shown in Figure A.2-2 of the SAFER Plan. The actual characterization sample locations are shown in Figure D.6-1.

Biased surface and subsurface soil samples were collected from the low point and the point of maximum mud accumulation in the mud pit. Surface samples were collected by hand using the scoop and trowel method. Subsurface samples were collected using a stainless-steel hand-auger, fitted with a 3-in. diameter, decontaminated, open-ended auger bit.

A pilot hole was augered near the selected sampling location to determine the depth of the mud/native soil interface. The site geologist inspected the lithology of the cuttings to make the determination. Also, differences in ease of augering and the sound of the cutting auger assisted in making the depth determination. Once the sampling interval was established, the auger was advanced to the desired sampling depth. At that point, a decontaminated bit was placed on the auger rod, and the bit advanced through the desired interval. When the bit was full of sample material, it was carefully retrieved from the hole and the contents pushed out into a stainless-steel sampling bowl. Any slough that may have

Table D.6-1
Samples Collected from CAS 03-09-04, Mud Pit

Sample Number	Sample Location	Depth (ft bgs)	Sample Matrix	Purpose	Analyses
356047	Mud pit low point	0.8 - 1.3	Soil	SC	Set 2
356048	Surface at mud pit low point	0.0 - 0.5	Soil	SC, MS/MSD	Set 1
356050	Point of maximum accumulation	0.9 - 1.4	Soil	SC	Set 1
356051	Surface at point of maximum accumulation	0.0 - 0.5	Soil	SC	Set 1
356069	Surface at point of maximum accumulation	0.0 - 0.5	Soil	Field Duplicate of #356051	Set 1
356070	NA	NA	Water	Trip Blank	VOC
356071	NA	NA	Water	Field Blank	Set 2

ft bgs = Feet below ground surface
SC = Site characterization
MS/MSD = Matrix spike/matrix spike duplicate
NA = Not applicable

Set 1: VOC, SVOC, RCRA Metals, TPH (GRO and DRO); Gamma Spectrometry
Set 2: VOC, SVOC, RCRA Metals, TPH (GRO and DRO), Gamma Spectrometry, Isotopic Uranium, Isotopic Plutonium

fallen into the sample was discarded. The sample material was field screened, and sample aliquots were collected and containerized per the FI and applicable SQPs.

D.6.1.1 SAFER Plan Implementation

The following field activities were conducted at CAS 03-09-04 to meet SAFER Plan requirements:

- Collected mud/soil samples at biased locations in the pit.
- Field screened soil samples for VOCs and alpha and beta/gamma radiation.
- Submitted samples for off-site laboratory analysis.

D.6.1.2 Deviations

There were no deviations from the proposed field activities listed in the SAFER Plan.

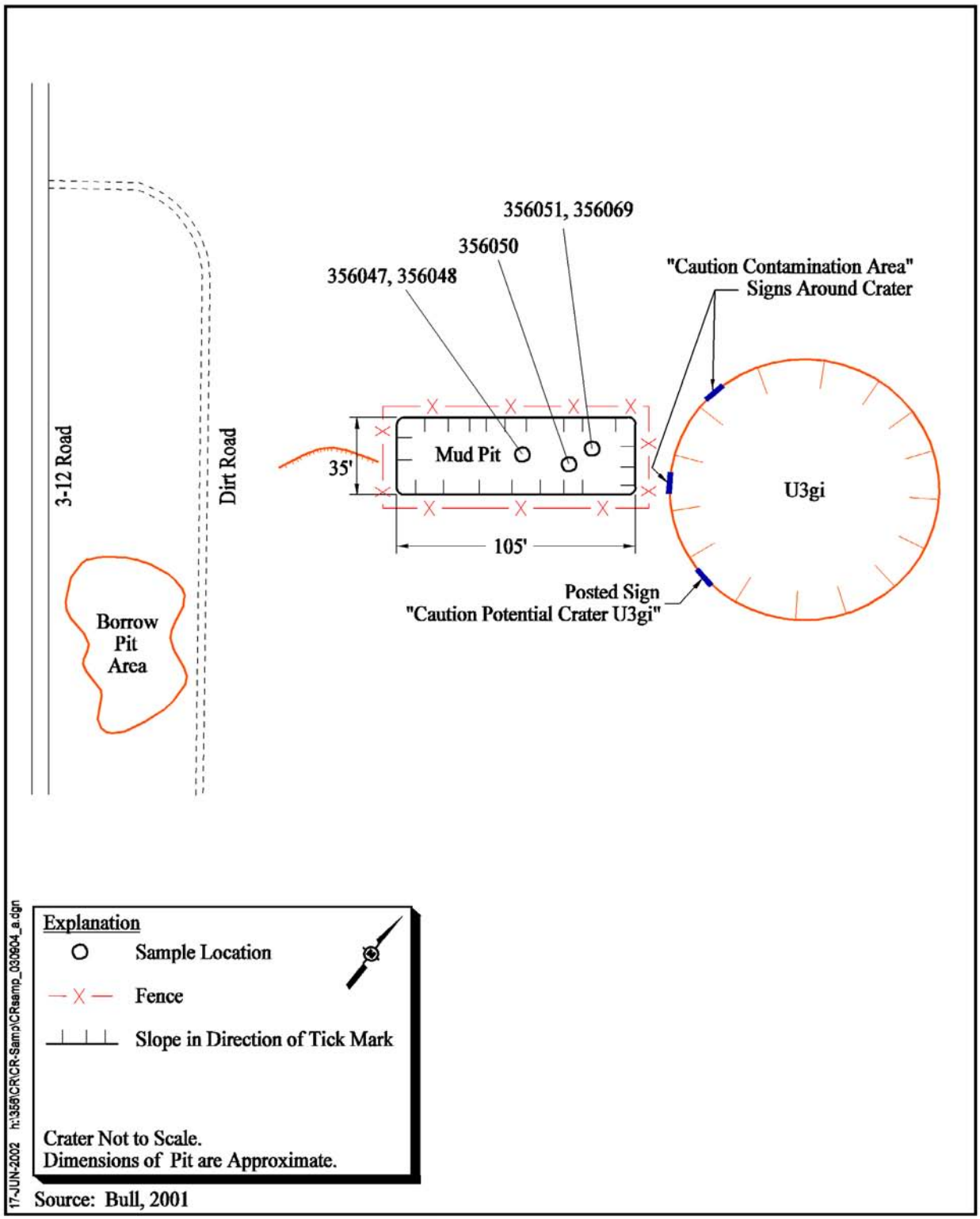

Figure D.6-1
CAS 03-09-04, Mud Pit Sample Locations

D.6.2 Investigation Results

The following subsections provide CAS-specific field screening and sample analysis results.

D.6.2.1 Field-Screening Results

Soil samples were field screened for VOCs and alpha and beta/gamma radiation. The FSRs were compared to FSLs to guide sampling decisions. The FSLs were not exceeded in any of the samples.

D.6.2.2 Sample Analyses

Select closure samples were analyzed for the SAFER Plan-specified COPCs which included total VOCs, total SVOCs, total RCRA metals, TPH (DRO and GRO), PCBs (not required by the SAFER Plan), isotopic uranium, isotopic plutonium, and gamma-emitting radionuclides.

The analytical parameters and laboratory analytical methods used to analyze the closure samples are listed in Table D.2-1. Table D.6-1 lists the sample-specific analytical parameters.

D.6.2.3 Analytes Detected Above Minimum Reporting Limits

Samples with results greater than the MRLs or PALs are presented in the following tables.

D.6.2.3.1 Total Volatile Organic Compound Analytical Results for Soil Samples

Table D.6-2 lists the sample that had a total VOC concentration above the MRLs established in the SAFER Plan. No samples had concentrations that exceed PALs.

D.6.2.3.2 Total Semivolatile Organic Compound Analytical Results for Soil Samples

No total SVOCs analytical results for soil exceeded the PALs established in the SAFER Plan.

D.6.2.3.3 Total Petroleum Hydrocarbon Analytical Results for Soil Samples

Table D.6-3 lists the soil samples that have TPH (DRO and GRO) concentrations above the MRLs established in the Leachfield Work Plan and SAFER Plan. Three samples had results that exceeded PALs.

Table D.6-2
Soil Sample Results for Total VOCs
Detected Above Minimum Reporting Limits

Sample Number	Depth (ft bgs)	Contaminants of Potential Concern (µg/kg)
		Methylene Chloride
Preliminary Action Levels[a]		21,000
356069	0.0 - 0.5	8.2

[a]Based on U.S. Environmental Protection Agency, *Region 9 Preliminary Remediation Goals (PRGs)* (EPA, 2000).

ft bgs = Feet below ground surface
µg/kg = Micrograms per kilogram

Table D.6-3
Soil Sample Results for TPH-DRO
Detected Above Minimum Reporting Limits

Sample Number	Depth (ft bgs)	Contaminants of Potential Concern (mg/kg)
		Diesel-Range Organics, also reported as Extractable Petroleum Hydrocarbon (EPH)
Preliminary Action Levels[a]		100
356050	0.9 - 1.4	160
356051	0.0 - 0.5	170
356069	0.0 - 0.5	200

[a]Based on U.S. Environmental Protection Agency, *Region 9 Preliminary Remediation Goals (PRGs)* (EPA, 2000).

ft bgs = Feet below ground surface
mg/kg = Milligrams per kilogram
EPH = Extractable Petroleum Hydrocarbon

D.6.2.3.4 Total RCRA Metal Results in Soil Samples

The total RCRA metals detected in soil samples at concentrations exceeding PALs are listed in Table D.6-4 and discussed below. Only arsenic exceeded the PALs for RCRA metals established in the SAFER Plan.

Arsenic was detected above the PAL of 2.7 mg/kg in most of the soil samples analyzed. The mean concentration of arsenic in silt from the Nellis Air Force Range is 7 to 8 mg/kg (NBMG, 1998;

Table D.6-4
Soil Sample Results for Total RCRA Metals
Detected Above Minimum Reporting Limits

Sample Number	Depth (ft bgs)	Contaminants of Potential Concern (mg/kg)			
		Arsenic	Barium	Chromium	Lead
Preliminary Action Levels[a]		**2.7**	**100,000**	**450**	**750**
356047	0.8 - 1.3	6.9	216 (J)[b]	8.6	14.6 (J)[c]
356048	0.0 - 0.5	17.9	383 (J)[b]	14.6	16.3 (J)[c]
356050	0.9 - 1.4	8.5	367 (J)[b]	9.7	25.0 (J)[c]
356051	0.0 - 0.5	9.3	325 (J)[b]	8.7	29.1 (J)[c]
356069	0.0 - 0.5	15.1	491 (J)[b]	11.3	68.8 (J)[c]

[a]Based on U.S. Environmental Protection Agency, *Region 9 Preliminary Remediation Goals (PRGs)* (EPA, 2000).
[b]Qualifier added to laboratory data; record accepted. Spike recovery was outside control limits.
[c]Qualifier added to laboratory data; record accepted. Inductively coupled plasma serial dilution recovery was not met. Matrix effects may exist.

ft bgs = Feet below ground surface
mg/kg = Milligrams per kilogram
J = Estimated value

Moore, 1999). Arsenic concentrations presented in Table D.5-3 exceed the PAL, but are considered representative of ambient conditions at the site.

D.6.2.3.5 Polychlorinated Biphenyl Results for Soil Samples

No PCB analytical results for soil exceeded the MRLs or PALs established in the SAFER Plan.

D.6.2.3.6 Gamma Spectrometry Results in Soil Samples

Gamma spectrometry was used to analyze select soil samples in support of only waste management determinations (Table D.6-5). The results did not indicate the presence of man-made radionuclides at concentrations greater than and distinguishable from background concentrations (US Ecology and Atlan-Tech, 1992; McArthur and Miller, 1989).

D.6.2.3.7 Isotopic Results for Soil Samples

No isotopic analytical results for soil exceeded the MRLs or PALs established in the SAFER Plan. The results did not indicate the presence of man-made radionuclides at concentrations greater than

Table D.6-5
Soil Sample Results for Gamma Spectrometry
Detected Above Minimum Reporting Limits

Sample Number	Depth (ft bgs)	Contaminants of Potential Concern (pCi/g)						
		Actinium-228[a]	Bismuth-214[b]	Cesium-137[b]	Lead-212[b]	Lead-214[b]	Potassium-40[a]	Thallium-208[a]
Preliminary Action Levels		**3.64**	**3.47**	**7.033**	**3.64**	**3.47**	**97.7**	**3.38**
356047	0.8 - 1.3	2.25 ± 0.7	--	--	2.45 ± 0.48	1.19 ± 0.4	28 ± 5.1	0.654 ± 0.2
356048	0.0 - 0.5	--	--	0.712 ± 0.25	2.44 ± 0.45	1.81 ± 0.46	18.6 ± 5.1	--
356050	0.9 - 1.4	2.54 ± 0.79	--	--	1.77 ± 0.43	1.43 ± 0.63	25.4 ± 5.4	0.63 ± 0.23
356051	0.0 - 0.5	--	--	--	2.06 ± 0.53	1.2 ± 0.45	21.9 ± 5.5	0.733 ± 0.18
356069	0.0 - 0.5	2.62 ± 0.76	--	0.537 ± 0.16	1.92 ± 0.44	1.6 ± 0.38	18 ± 4.2	0.789 ± 0.21

[a]Background concentration listed in *Environmental Monitoring Report for the Proposed Ward Valley, California, Low-Level Radioactive Waste (LLRW) Facility* (US Ecology and Atlan-Tech, 1992).
[b]Background concentration listed or derived in *Off-Site Radiation Exposure Review Project, Phase II Soil Program* (McArthur and Miller, 1989).

ft bgs = Feet below ground surface
-- = Not detected above minimum reporting limits
pCi/g = Picocuries per gram

and distinguishable from background concentrations (US Ecology and Atlan-Tech, 1992; McArthur and Miller, 1989).

D.6.2.4 Contaminants of Concern

Two samples and the field duplicate exceeded the TPH PAL of 100 mg/kg.

D.6.3 Nature and Extent of Contamination

Total petroleum hydrocarbon was determined to be a COC. The concentration of TPH ranged from 160 to 200 mg/kg.

D.6.4 Revised Conceptual Model

No variations to the conceptual model were identified.

D.7.0 CAS 03-09-05, Mud Pit

Corrective Action Site 03-09-05, Mud Pit, consists of a single pit located northeast of the U3La crater in Area 3. Drilling for the U3La emplacement hole was completed in August 1979, and the corresponding nuclear weapons test was conducted in May 1982. The mud pit may have been used during this time frame.

The mud pit measures approximately 225 by 150 ft and is bermed on three sides. The southern side, located near the crater edge, is not bermed. The elevated sides of the pit are the result of the large excavation rather than engineered berms. The base of the pit is approximately 10 ft beneath the ground surface and contains a thin layer of mud.

Asphalt debris from an old road was located in the northwest area of the mud pit and asphalt fragments range in size up to several feet long and one-inch thick. The area of asphalt debris measured approximately 110 by 6 ft.

D.7.1 SAFER Investigation

Six closure samples were collected during the field activities conducted at CAS 03-09-05 and are listed in Table D.7-1. The planned sample locations at CAS 03-09-05 are shown in Figure A.2-2 of the SAFER Plan. The actual characterization sample locations are shown in Figure D.7-1.

Biased subsurface soil samples were collected from the low point and from the point of maximum mud accumulation in the mud pit. Surface samples were not collected at these locations due to the shallowness of the mud/native soil interface (approximately 0.5 to 0.75 ft bgs). Subsurface samples were collected using Geoprobe® direct-push equipment, mounted on the back of a four-wheel drive vehicle. Soil cores were collected in lexan liners and brought to the sampling table. The site geologist visually inspected the core and selected the sampling interval based on lithology, normally one foot distributed evenly across the mud/native soil interface. The lexan liner was cut open and the selected sample interval was placed in a decontaminated stainless-steel bowl and field screened. Sample aliquots were collected and containerized per the field instruction (FI) and applicable SQPs.

Table D.7-1
Samples Collected from CAS 03-09-05, Mud Pit

Sample Number	Sample Location	Depth (ft bgs)	Sample Matrix	Purpose	Analyses
356029	Mud pit low point	0.25 - 1.25	Soil	SC	Set 1
356080	Mud pit low point	0.25 - 1.25	Soil	Field Duplicate of #356029	Set 1
356030	Center of mud pit	0.0 - 1.0	Soil	SC, MS/MSD	Set 1
356031	Middle of asphalt pile footprint	0.0 - 0.5	Soil	SC	Set 1
356049	North end of asphalt pile footprint	0.0 - 0.5	Soil	SC	Set 1
356212	Middle of asphalt pile footprint	0.0 - 0.25	Soil	SC	Set 5
356213	North end of asphalt pile footprint	0.0 - 0.25	Soil	SC	Set 5
356079	NA	NA	Water	Equipment Rinsate Blank	Set 3
356081	NA	NA	Water	Field Blank	Set 1
356082	NA	NA	Water	Trip Blank	VOC

ft bgs = Feet below ground surface
SC = Site characterization
MS/MSD = Matrix spike/matrix spike duplicate
NA = Not applicable

Set 1: VOC, SVOC, RCRA Metals, TPH (GRO and DRO); Gamma Spectrometry
Set 3: VOC, SVOC, RCRA Metals, TPH (GRO and DRO), Gamma Spectrometry, Isotopic Uranium, Isotopic Plutonium Gross Alpha/Beta, Tritium
Set 5: TPH (DRO), Isotopic Uranium, Isotopic Americium

Surface samples were collected within the footprint of the removed asphalt pile, formerly located in the northwest corner of the pit. Two of these samples (356212 and 356213) were collected at a later date after more of the asphalt-contaminated soil had been removed to confirm the complete removal of asphalt. Surface samples were collected by hand, using the scoop and trowel method, and containerized as described above.

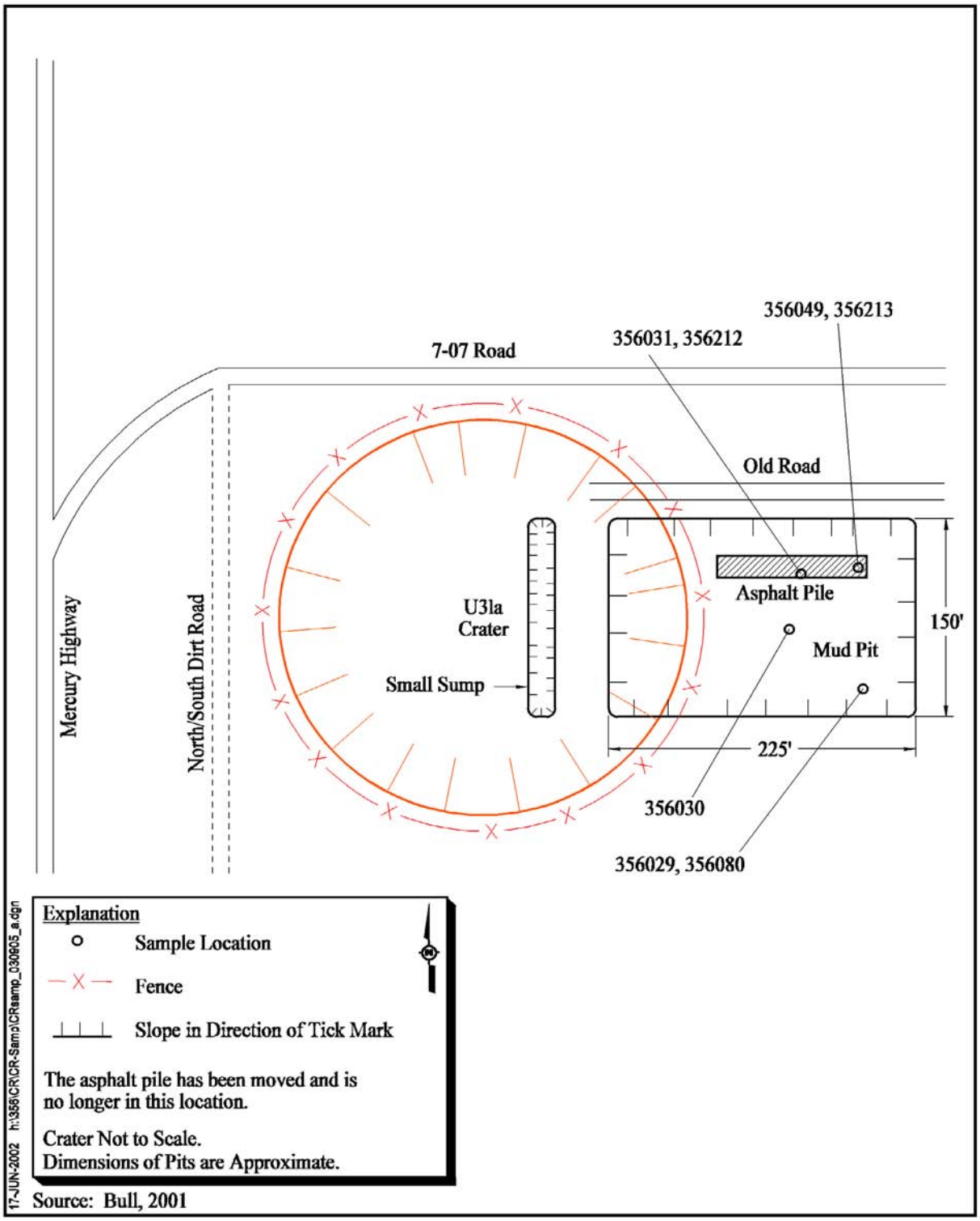

Figure D.7-1
CAS 03-09-05, Mud Pit Sample Locations

D.7.1.1 SAFER Plan Implementation

The following field activities were conducted at CAS 03-09-05 to meet SAFER Plan requirements:

- Collected mud/soil samples at biased locations within the pit.
- Collected surface soil samples from the footprint of the asphalt pile.
- Field screened soil samples for VOCs and alpha and beta/gamma radiation.
- Submitted samples for off-site laboratory analysis.

D.7.1.2 Deviations

There were no deviations from the proposed field activities listed in the SAFER Plan.

D.7.2 Investigation Results

The following subsections provide CAS-specific field screening and sample analysis results.

D.7.2.1 Field-Screening Results

Soil samples were field screened for VOCs and alpha and beta/gamma radiation. The FSRs were compared to FSLs to guide sampling decisions. The FSLs were not exceeded in any of the samples.

D.7.2.2 Sample Analyses

Closure samples were analyzed for the SAFER Plan-specified COPCs which included total VOCs, total SVOCs, total RCRA metals, TPH (DRO and GRO), PCBs (not required by the SAFER Plan), isotopic uranium, isotopic plutonium, and gamma-emitting radionuclides.

The analytical parameters and laboratory analytical methods used to analyze the closure samples are listed in Table D.2-1. Table D.7-1 lists the sample-specific analytical parameters.

D.7.2.3 Analytes Detected Above Minimum Reporting Levels

Samples with results greater than the MRLs and PALs are presented in the following tables.

D.7.2.3.1 Total Volatile Organic Compound Analytical Results for Soil Samples

No total VOC analytical results for soil exceeded the MRLs or PALs established in the SAFER Plan.

D.7.2.3.2 Total Semivolatile Organic Compound Analytical Results for Soil Samples

No total SVOC analytical results for soil exceeded the MRLs or PALs established in the SAFER Plan.

D.7.2.3.3 Total Petroleum Hydrocarbon Analytical Results for Soil Samples

Table D.7-2 lists the soil samples that have TPH (DRO and GRO) concentrations above the MRLs established in the Leachfield Work Plan and SAFER Plan. Two samples had results that exceeded PALs. These samples were from below the asphalt pile. After the asphalt pile was removed, the sample locations were resampled. One resample was above the MRL (356212) and below the PAL, while the second resample (356213) was below the MRL and PAL.

Table D.7-2
Soil Sample Results for TPH-DRO
Detected Above Minimum Reporting Limits

Sample Number	Depth (ft bgs)	Contaminants of Potential Concern (mg/kg)
		Diesel-Range Organics, also reported as Extractable Petroleum Hydrocarbon (EPH)
Preliminary Action Levels[a]		**100**
356031	0.0 - 0.5	1,600 (J)
356049	0.0 - 0.5	3,300
356212	0.0 - 0.25	34 (M)

[a]Based on U.S. Environmental Protection Agency, *Region 9 Preliminary Remediation Goals (PRGs)* (EPA, 2000).

ft bgs = Feet below ground surface
mg/kg = Milligrams per kilogram
M = Motor oil
J = Estimated value. Qualifier added to laboratory data; record accepted. Surrogates diluted out.
EPH = Extractable Petroleum Hydrocarbon

D.7.2.3.4 Total RCRA Metal Results in Soil Samples

The total RCRA metals detected in soil samples at concentrations exceeding PALs are listed in Table D.7-3 and are discussed below. Only arsenic exceeded the PALs for RCRA metals established in the SAFER Plan.

Table D.7-3
Soil Sample Results for Total RCRA Metals
Detected Above Minimum Reporting Limits

Sample Number	Depth (ft bgs)	Contaminants of Potential Concern (mg/kg)			
		Arsenic	Barium	Chromium	Lead
Preliminary Action Levels[a]		**2.7**	**100,000**	**450**	**750**
356029	0.25 - 1.25	4.6	262	49.8	15.4 (J)[b]
356030	0.0 - 1.0	4.0	310	40.7	16.9 (J)[b]
356031	0.0 - 0.5	5.3	109	8.9	15.5 (J)[b]
356049	0.0 - 0.5	4.8	178 (J)[c]	5.9	11.3 (J)[b]
356080	0.25 - 1.25	4.8	259	40.5	14.9 (J)[b]

[a]Based on U.S. Environmental Protection Agency, *Region 9 Preliminary Remediation Goals (PRGs)* (EPA, 2000).
[b]Qualifier added to laboratory data; record accepted. Inductively coupled plasma serial dilution recovery was not met. Matrix effects may exist.
[c]Qualifier added to laboratory data; record accepted. Spike recovery was outside control limits.

ft bgs = Feet below ground surface
mg/kg = Milligrams per kilogram
J = Estimated value

Arsenic was detected above the PAL of 2.7 mg/kg in most of the soil samples analyzed. The mean concentration of arsenic in silt from the Nellis Air Force Range is 7 to 8 mg/kg (NBMG, 1998; Moore, 1999). Arsenic concentrations presented in Table D.5-3 exceed the PAL, but are considered representative of ambient conditions at the site.

D.7.2.3.5 Polychlorinated Biphenyl Results for Soil Samples

No PCB analytical results for soil exceeded the MRLs or PALs established in the SAFER Plan.

D.7.2.3.6 Gamma Spectrometry Results in Soil Samples

Gamma spectrometry was used to analyze select soil samples in support of waste management determinations only (Table D.7-4). The results did not indicate the presence of man-made radionuclides at concentrations greater than and distinguishable from background concentrations (US Ecology and Atlan-Tech, 1992; McArthur and Miller, 1989), except americium-241 in samples 356031 and 356212.

Table D.7-4
Soil Sample Results for Gamma Spectrometry
Detected Above Minimum Reporting Limits

Sample Number	Depth (ft bgs)	Contaminants of Potential Concern (pCi/g)							
		Actinium-228[a]	Americium-241[b]	Cesium-137[b]	Lead-212[a]	Lead-214[b]	Potassium-40[a]	Thallium-208[a]	Thorium-232[b]
Preliminary Action Levels		**3.64**	**0.05**	**7.033**	**3.64**	**3.47**	**97.7**	**3.38**	**3.64**
356212	--	--	0.71 ± 0.13	--	--	--	--	--	--
356029	0.25 - 1.25	3.38 ± 0.99	--	--	2.49 ± 0.5	1.13 ± 0.4	34.3 ± 6.1	0.98 ± 0.26	2.98 ± 1.3
356030	0.0 - 1.0	2.84 ± 0.73	--	--	2.57 ± 0.4	1.56 ± 0.38	31.5 ± 5.6	0.958 ± 0.2	2.43 ± 0.86
356031	0.0 - 0.5	--	1.02 ± 0.51	0.606 ± 0.16	1.31 ± 0.32	1.15 ± 0.31	27.1 ± 4.6	0.442 ± 0.15	--
356049	0.0 - 0.5	--	--	--	1.22 ± 0.29	--	25.2 ± 5.9	--	--
356080	0.25 - 1.25	3.02 ± 0.94	--	--	3.48 ± 0.64	1.6 ± 0.5	31.9 ± 6	0.872 ± 0.23	2.9 ± 1.1

[a]Background concentration listed in *Environmental Monitoring Report for the Proposed Ward Valley, California, Low-Level Radioactive Waste (LLRW) Facility* (US Ecology and Atlan-Tech, 1992).
[b]Background concentration listed or derived in *Off-Site Radiation Exposure Review Project, Phase II Soil Program* (McArthur and Miller, 1989).

ft bgs = Feet below ground surface
-- = Not detected above minimum reporting limits
J = Estimated value
pCi/g = Picocuries per gram

D.7.2.3.7 Isotopic Results for Soil Samples

No isotopic analytical results for soil exceeded the MRLs or PALs established in the SAFER Plan. The results did not indicate the presence of man-made radionuclides at concentrations greater than and distinguishable from background concentrations (US Ecology and Atlan-Tech, 1992; McArthur and Miller, 1989).

D.7.2.4 Contaminants of Concern

Two samples had results that exceeded PALs. These samples were from below the asphalt pile. After the asphalt pile was removed, the sample locations were resampled. One resample was above the MRL and below the PAL, while the second resample was below the MRL and PAL.

Soil with americium-241 concentrations greater than and distinguishable from background were detected in two Phase I samples and one Phase II (post-removal of the asphalt pile) sample.

D.7.3 Nature and Extent of Contamination

Total petroleum hydrocarbon and americium-241 were determined to be COCs. The maximum concentration of TPH was 3,300 mg/kg prior to removal of the asphalt and some soil. After removal of the asphalt and additional soil, the maximum TPH concentration was 34 mg/kg. The maximum concentration of americium-241 prior to asphalt and soil removal was 1.02 pCi/g. The maximum concentration of americium-241 after removal of the asphalt and soil was 0.71 pCi/g.

D.7.4 Revised Conceptual Model

No variations to the conceptual model were identified.

D.8.0 CAS 20-16-01, Landfill, and CAS 20-22-21, Drums (2)

Corrective Action Site 20-16-01, Landfill, occupies the U20b crater in Area 20, and consists of disposed, uncontaminated drilling mud from drilling activities conducted on Pahute Mesa. The U20b crater was created after an underground weapons test in October 1969. Around 1987, the U20b crater was designated as a disposal area for excess, uncontaminated drilling mud from the drilling activities on Pahute Mesa. This location was chosen in lieu of transporting the mud from Pahute Mesa to the Area 3 Mud Disposal Crater. The U20b crater landfill was active until approximately 1992 to 1993, when underground testing ceased.

The U20b crater measures approximately 400 ft in diameter and 48 ft deep based on engineering drawings. Miscellaneous debris, including CAS 20-22-21, Drums (2), was noticed around and within the perimeter of the crater. Mud was observed in the bottom of the crater and appears to be approximately 75 ft to 100 ft in diameter. A berm is located on the west side of the crater and contains miscellaneous debris. A discharge/access point is visible near the entrance of the crater where mud was dumped and allowed to flow to the bottom; therefore, some mud accumulated near the top of the crater.

D.8.1 SAFER Investigation

Six closure samples were collected during the field activities conducted at CAS 20-16-01 and are listed in Table D.8-1. The actual characterization sample locations are shown in Figure D.8-1.

Biased surface and subsurface soil samples were collected from the center of the crater at a point presumed to be the maximum accumulation of mud (assuming a bowl-shaped crater configuration). Surface samples were collected from an area of obvious dried mud along the northwest slope of the crater, from a potential mudflow location along the north flank of the crater, and at the mouth of the flow channel near the bottom of the crater. A subsurface sample was collected adjacent to a home-made “septic system”; a series of 55-gallon drums connected with plumbing hose laying on the ground on the south flank of the crater. Surface samples were collected by hand, using the scoop and trowel method. Subsurface samples were collected using a stainless-steel hand-auger, fitted with a 3-in. diameter, decontaminated, open-ended auger bit.

Table D.8-1
Samples Collected from CAS 20-16-01, Landfill

Sample Number	Sample Location	Depth (ft bgs)	Sample Matrix	Purpose	Analyses
356032	Surface at center of crater	0.0 - 0.5	Soil	SC, MS/MSD	Set 2
356033	Surface at mouth of flow channel	0.0 - 0.75	Soil	SC	Set 1
356077	Surface at mouth of flow channel	0.0 - 0.75	Soil	Field Duplicate of #356033	Set 1
356034	Surface at mud pit area, north slope of crater	0.0 - 0.5	Soil	SC	Set 1
356035	Alongside "septic system drums," south slope of crater	1.0 - 1.5	Soil	SC	Set 1
356036	Surface at potential mudflow, north slope of crater	0.0 - 0.5	Soil	SC	Set 1
356037	Center of crater	2.5 - 3.5	Soil	SC	Set 2
356076	NA	NA	Water	Field Blank	Set 2
356078	NA	NA	Water	Trip Blank	VOC

ft bgs = Feet below ground surface
SC = Site characterization
MS/MSD = Matrix spike/matrix spike duplicate
NA = Not applicable

Set 1: VOC, SVOC, RCRA Metals, TPH (GRO and DRO); Gamma Spectrometry
Set 2: VOC, SVOC, RCRA Metals, TPH (GRO and DRO), Gamma Spectrometry, Isotopic Uranium, Isotopic Plutonium

A pilot hole was augered near the selected sampling location to determine the depth of the mud/native soil interface. The site geologist inspected the lithology of the cuttings to make the determination. Also, differences in ease of augering and the sound of the cutting auger assisted in making the depth determination. Once the sampling interval was established, the auger was advanced to the desired sampling depth. At that point, a decontaminated bit was placed on the auger rod, and the bit advanced through the desired interval. When the bit was full of sample material, it was carefully retrieved from the hole and the contents pushed out into a stainless-steel sampling bowl. Any slough that may have fallen into the sample was discarded. The sample material was field screened, and sample aliquots were collected and containerized per the FI and applicable SQPs.

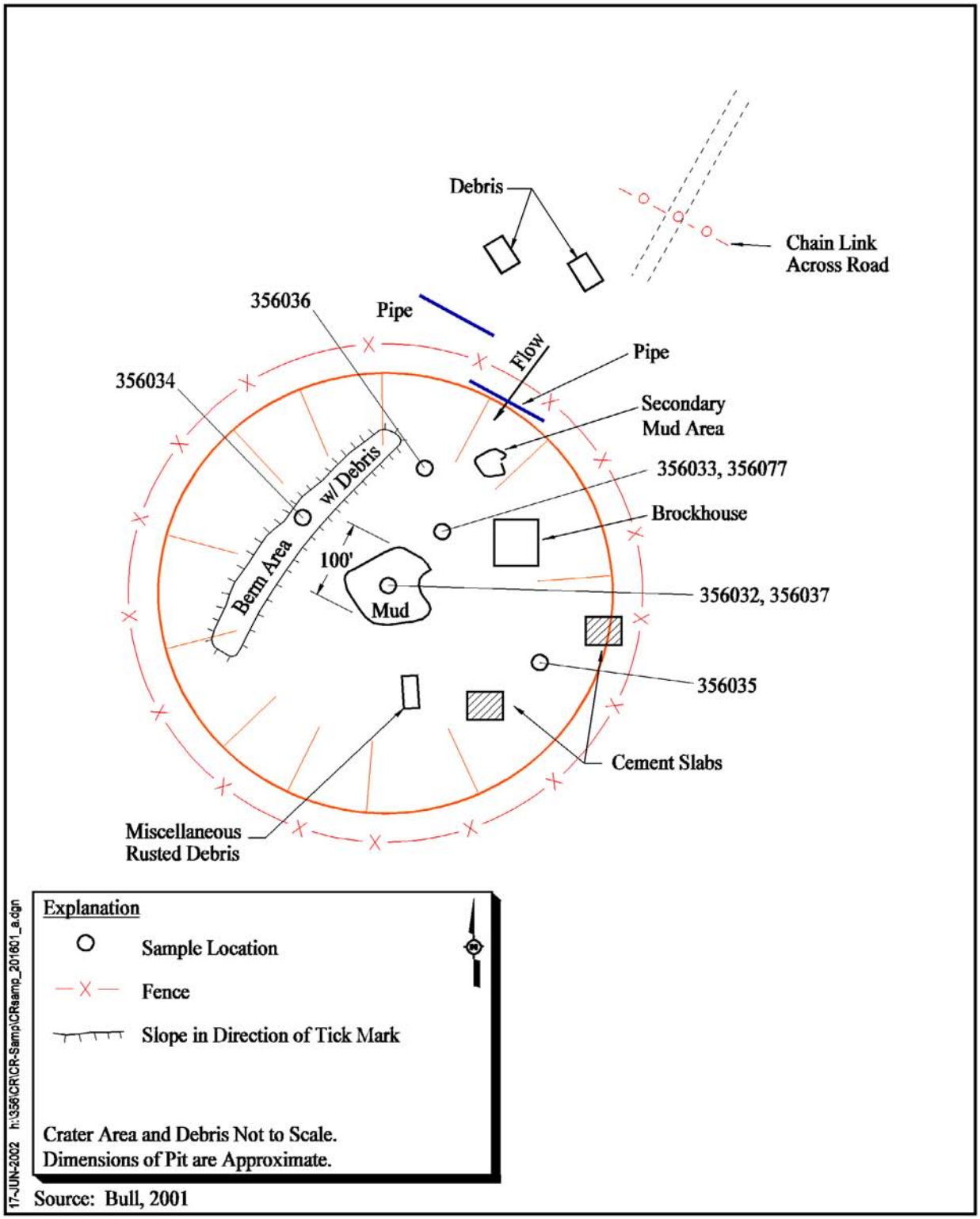

Figure D.8-1
CAS 20-16-01, Landfill Sample Locations

D.8.1.1 SAFER Plan Implementation

The following field activities were conducted at CASs 20-16-01 and 20-22-21 to meet SAFER Plan requirements:

- Collected mud/soil samples at biased locations within and around the crater.
- Field screened soil samples for VOCs and alpha and beta/gamma radiation.
- Submitted samples for off-site laboratory analysis.
- Removed the empty drums (CAS 20-22-21) and other debris during housekeeping activities.

D.8.1.2 Deviations

Areas within the crater requiring housekeeping removal activities identified in the SAFER Plan for CAS 20-16-01 were not completed. A visual inspection of the items was conducted. No evidence of hazardous materials, odor or staining was observed. Therefore, removal of the nonhazardous debris was not completed.

D.8.2 Investigation Results

The following subsections provide CAS-specific field screening and sample analysis results.

D.8.2.1 Field-Screening Results

Soil samples were field screened for VOCs and alpha and beta/gamma radiation. The FSRs were compared to FSLs to guide sampling decisions. The FSLs were not exceeded in any of the samples.

D.8.2.2 Sample Analyses

Closure samples were analyzed for the SAFER Plan-specified COPCs which included total VOCs, total SVOCs, total RCRA metals, TPH (DRO and GRO), PCBs (not required by the SAFER Plan), isotopic uranium, isotopic plutonium, and gamma-emitting radionuclides.

The analytical parameters and laboratory analytical methods used to analyze the closure samples are listed in Table D.2-1. Table D.8-1 lists the sample-specific analytical parameters.

D.8.2.3 Analytes Detected Above Minimum Reporting Levels

Samples with results greater than the MRLs are presented in the following tables. No analytes were detected above the PALs established in the SAFER Plan.

D.8.2.3.1 Total Volatile Organic Compound Analytical Results for Soil Samples

Table D.8-2 lists the sample that had a total VOC concentration above the MRLs established in the SAFER Plan. No samples had concentrations that exceed PALs.

Table D.8-2
Soil Sample Results for Total VOCs
Detected Above Minimum Reporting Limits

Sample Number	Depth (ft bgs)	Contaminants of Potential Concern (µg/kg)
		Acetone
Preliminary Action Levels[a]		6,200,000
356037	2.5 - 3.5	80 (J)

[a]Based on U.S. Environmental Protection Agency, *Region 9 Preliminary Remediation Goals IPRGs)* (EPA, 2000).

ft bgs = Feet below ground surface
µg/kg = Micrograms per kilogram
J = Estimated value. Qualifier added to laboratory data; record accepted. Relative response factor <0.05. Percent relative standard deviation exceeded 30%.

D.8.2.3.2 Total Semivolatile Organic Compound Analytical Results for Soil Samples

No total SVOC analytical results for soil exceeded the MRLs or PALs established in the SAFER Plan.

D.8.2.3.3 Total Petroleum Hydrocarbon Analytical Results for Soil Samples

No TPH (DRO and GRO) analytical results for soil exceeded the MRLs or PALs established in the SAFER Plan.

D.8.2.3.4 Total RCRA Metal Results in Soil Samples

The total RCRA metals detected in soil samples at concentrations exceeding PALs are listed in Table D.8-3 and are discussed below. Only arsenic exceeded the PALs for RCRA metals established in the SAFER Plan.

Table D.8-3
Soil Sample Results for Total RCRA Metals
Detected Above Minimum Reporting Limits

Sample Number	Depth (ft bgs)	Contaminants of Potential Concern (mg/kg)			
		Arsenic	Barium	Chromium	Lead
Preliminary Action Levels[a]		**2.7**	**100,000**	**450**	**750**
356032	0.0 - 0.5	3.5	166	2.4	15.2 (J)
356033	0.0 - 0.75	3.3	161	3.1	17.1 (J)
356034	0.0 - 0.5	3.0	43.4	3.1	62.5 (J)
356035	1.0 - 1.5	9.5	132	8.5	8.7 (J)
356036	0.0 - 0.5	2.8	60.4	--	39.0 (J)
356037	2.5 - 3.5	4.7	83.3	4.3	104 (J)
356077	0.0 - 0.75	3.8	140	3.0	16.2 (J)

[a]Based on U.S. Environmental Protection Agency, *Region 9 Preliminary Remediation Goals (PRGs)* (EPA, 2000).

J = Estimated value. Qualifier added to laboratory data; record accepted. Inductively coupled plasma serial dilution recovery was not met. Matrix effects may exist.

ft bgs = Feet below ground surface
-- = Not detected above minimum reporting limits
mg/kg = Milligrams per kilogram

Arsenic was detected above the PAL of 2.7 mg/kg in most of the soil samples analyzed. The mean concentration of arsenic in silt from the Nellis Air Force Range is 7 to 8 mg/kg (NBMG, 1998; Moore, 1999). Arsenic concentrations presented in Table D.8-3 exceed the PAL, but are considered representative of ambient conditions at the site.

D.8.2.3.5 Polychlorinated Biphenyl Results for Soil Samples

Table D.8-4 lists the sample that had a PCB concentration above the MRLs established in the SAFER Plan. No samples had concentrations that exceed PALs.

Table D.8-4
Soil Sample Results for PCBs Detected
Above Minimum Reporting Limits

Sample Number	Depth (ft bgs)	Contaminants of Potential Concern (µg/kg)
		Aroclor 1254
Preliminary Action Levels[a]		1,000
356034	0.0 - 0.5	82

[a]Based on U.S. Environmental Protection Agency, *Region 9 Preliminary Remediation Goals (PRGs)* (EPA, 2000).

ft bgs = Feet below ground surface
µg/kg = Micrograms per kilogram

D.8.2.3.6 Gamma Spectrometry Results in Soil Samples

Gamma spectrometry was used to analyze select soil samples in support of waste management determinations only. The results did not indicate the presence of man-made radionuclides at concentrations greater than and distinguishable from background concentrations (US Ecology and Atlan-Tech, 1992; McArthur and Miller, 1989). Gamma spectrometry results are presented in Table D.8-5.

Table D.8-5
Soil Sample Results for Gamma Spectrometry
Detected Above Minimum Reporting Limits

Sample Number	Depth (ft bgs)	Contaminants of Potential Concern (pCi/g)							
		Actinium-228[a]	Bismuth-214[b]	Lead-212[a]	Lead-214[b]	Potassium-40[a]	Radium-226[b]	Thallium-208[a]	Thorium-232[b]
Preliminary Action Levels		**3.64**	**3.47**	**3.64**	**3.47**	**97.7**	**3.47**	**3.38**	**3.64**
356032	0.0 - 0.5	3.33 ± 0.81	--	2.73 ± 0.41	1.6 ± 0.43	23.7 ± 4.5	--	0.77 ± 0.23	2.95 ± 0.87
356033	0.0 - 0.75	3.05 ± 0.66	2.67 ± 1.1	2.23 ± 0.4	1.95 ± 0.42	36.5 ± 5.6	1.64 ± 0.36	0.88 ± 0.2	2.89 ± 1.1
356034	0.0 - 0.5	3.5 ± 0.87	--	3.03 ± 0.49	1.81 ± 0.51	39.6 ± 7.1	--	1.1 ± 0.28	3 ± 1.5
356035	1 - 1.5	2.75 ± 0.68	--	1.85 ± 0.34	1.68 ± 0.4	31 ± 5.1	--	0.62 ± 0.15	1.77 ± 1
356036	0.0 - 0.5	2.17 ± 0.7	--	2.28 ± 0.38	1.55 ± 0.35	33.5 ± 5.3	--	0.617 ± 0.21	1.97 ± 0.84
356037	2.5 - 3.5	--	--	2.47 ± 0.41	2.04 ± 0.47	29.4 ± 5	1.82 ± 0.47	0.738 ± 0.24	--
356077	0.0 - 0.75	2.86 ± 0.71	--	2.18 ± 0.45	2.17 ± 0.45	34.4 ± 5.4	--	0.828 ± 0.2	2.96 ± 1.2

[a]Background concentration listed in *Environmental Monitoring Report for the Proposed Ward Valley, California, Low-Level Radioactive Waste (LLRW) Facility* (US Ecology and Atlan-Tech, 1992).
[b]Background concentration listed or derived in *Off-Site Radiation Exposure Review Project, Phase II Soil Program* (McArthur and Miller, 1989).

ft bgs = Feet below ground surface
-- = Not detected above minimum reporting limits
pCi/g = Picocuries per gram

D.8.2.3.7 Isotopic Results for Soil Samples

No isotopic analytical results for soil exceeded the MRLs or PALs established in the SAFER Plan. The results did not indicate the presence of man-made radionuclides at concentrations greater than and distinguishable from background concentrations (US Ecology and Atlan-Tech, 1992; McArthur and Miller, 1989).

D.8.2.4 Contaminants of Concern

Based on the aforementioned analytical results, no COCs are present in the mud or the soil under the mud pit.

D.8.3 Nature and Extent of Contamination

No COCs are present.

D.8.4 Revised Conceptual Model

No variations to the conceptual model were identified.

D.9.0 Quality Assurance

This section contains a summary of the QA/QC process implemented during the CAU 356 SAFER. Laboratory analyses were conducted for samples used in the decision-making process to provide a quantitative measurement of any COPCs present. The QA/QC process was implemented for all laboratory samples including documentation, data verification and validation of analytical results, and affirmation of DQI requirements related to laboratory analyses. Detailed information regarding the QA program is contained in the Industrial Sites QAPP (DOE/NV, 1996). A discussion of the DQIs, including the datasets, is provided in Appendix A.

D.9.1 Data Validation

Data validation was performed in accordance with the Industrial Sites QAPP (DOE/NV, 1996) and approved procedures. Laboratory data from samples collected and analyzed for CAU 356 were evaluated for data quality according to the *EPA Functional Guidelines* (EPA, 1994b and 1999) and method-specific QC requirements. These guidelines are implemented in a tiered process and are presented in Sections D.9.1.1 through D.9.1.3. Data were reviewed to ensure that samples were appropriately processed and analyzed, and the results passed data validation criteria. Documentation of the data qualifications resulting from these reviews is retained in project files as a hard copy and electronic media.

One hundred percent of the data analyzed as part of this closure were subjected to Tier I and Tier II evaluations. A Tier III evaluation was performed on 10 percent of the samples.

D.9.1.1 Tier I Evaluation

Tier I evaluation for both chemical and radiological analysis examined, but was not limited to:

- Sample count/type consistent with chain of custody
- Analysis count/type consistent with chain of custody
- Correct sample matrix
- Significant problems stated in cover letter or case narrative
- Completeness of certificates of analysis
- Completeness of Contract Laboratory Program (CLP) or CLP-like packages
- Completeness of signatures, dates, and times on chain of custody

- Condition-upon-receipt variance form included
- Requested analyses performed on all samples
- Date received/analyzed given for each sample
- Correct concentration units indicated
- Electronic data transfer supplied
- Results reported for field and laboratory QC samples
- Whether or not the deliverable met the overall objectives of the project
- Proper field documentation accompanies project packages

D.9.1.2 Tier II Evaluation

Tier II evaluation for both chemical and radiological analysis examines (but is not limited to):

Chemical:

- Correct detection limits achieved
- Sample date, preparation date, and analysis date for each sample
- Holding time criteria met
- Quality control batch association for each sample
- Cooler temperature upon receipt
- Sample pH for aqueous samples, as required
- Detection limits properly adjusted for dilution, as required
- Blank contamination evaluated and applied to sample results/qualifiers
- MS/MSD, percent recovery (%R), and RPDs evaluated and applied to laboratory results/qualifiers
- Field duplicate RPDs evaluated using professional judgement and applied to laboratory results/qualifiers
- Laboratory duplicate RPDs evaluated and applied to laboratory results/qualifiers
- Surrogate %Rs evaluated and applied to laboratory results/qualifiers
- Laboratory control sample %R evaluated and applied to laboratory results/qualifiers
- Initial and continuing calibration evaluated and applied to laboratory results/qualifiers
- Internal standard evaluated and applied to laboratory results/qualifiers
- Mass spectrometer tuning criteria
- Organic compound quantitation
- Inductively coupled plasma (ICP) interference check sample evaluation
- Graphite furnace atomic absorption quality control
- Inductively coupled plasma serial dilution effects
- Recalculation of 10 percent of laboratory results from raw data

Radioanalytical:

- Correct detection limits achieved
- Blank contamination evaluated and applied to sample results/qualifiers
- Certificate of analysis consistent with data package documentation

- Quality control sample results (duplicates, laboratory control samples, laboratory blanks) evaluated and applied to laboratory result qualifiers
- Sample results, error, and minimum detectable activity evaluated and applied to laboratory result qualifiers
- Detector system calibrated to National Institute for Standards and Technology (NIST)-traceable sources
- Calibration sources preparation was documented, demonstrating proper preparation and appropriateness for sample matrix, emission energies, and concentrations
- Detector system response to daily, weekly, and monthly background and calibration checks, which may include peak energy, peak centroid, peak full-width half-maximum, and peak efficiency, depending on the detection system
- Tracers NIST-traceable, appropriate for the analysis performed, and recoveries that met QC requirements
- Documentation of all QC sample preparation complete and properly performed
- QC sample results (e.g., calibration source concentration, %R, and RPD) verified
- Spectra lines, emissions, particle energies, peak areas, and background peak areas that support the identified radionuclide and its concentration
- Recalculation of 10 percent of laboratory results from raw data

D.9.1.3 Tier III Review

Tier III evaluations examine a limited portion of data reviewed during Tier II validation. The Tier III review includes the additional evaluations.

Chemical:

- Recalculation of laboratory results from raw data

Radioanalytical:

- Radionuclides and their concentration appropriate considering their decay schemes and half-lives
- Each identified line in spectra verified against emission libraries and calibration results
- Independent identification of spectra lines, area under the peaks, and quantification of radionuclide concentration in a random number of sample results
- Recalculation of laboratory results from raw data

A Tier III review of approximately 10 percent of the samples is being conducted. Tier II and Tier III results were compared and, where differences were noted, data was reviewed and changes made accordingly.

D.9.2 Quality Control Samples

There were 14 trip blanks, 6 field blanks, 1 source blank, 3 equipment rinsate blanks, 7 MS/MSD, and 8 field duplicates associated with soil samples collected and submitted for laboratory analysis as shown in Table D.2-1. The quality control samples were assigned individual sample numbers and sent to the laboratory "blind." Additional samples were selected by the laboratory to be analyzed as laboratory duplicates.

D.9.2.1 Field Quality Control Samples

Review of the field-blank analytical data for the CAU 356 soil sampling indicates that cross-contamination from field methods did not occur during sample collection. Field, equipment rinsate, and source blanks were analyzed for the parameters listed in Table D.2-1 and trip blanks were analyzed for VOCs only. Several different contaminants were detected in some of the samples, but they were below or slightly above the contract-required detection limits.

During the sampling events, eight field duplicate soil samples were sent as blind samples to the laboratory to be analyzed for the closure parameters listed in Table D.2-1. For these samples, the duplicate results precision (i.e., RPDs between the environmental sample results and their corresponding field duplicate sample results) were evaluated to the guidelines set forth in *EPA Functional Guidelines* (EPA, 1994b).

D.9.2.2 Laboratory Quality Control Samples

Analysis of method QC blanks were performed on each SDG for inorganics. Analysis for surrogate spikes and preparation blanks (PBs) were performed on each SDG for organics only. Initial and continuing calibration and LCS were performed for each SDG. The results of these analyses were used to qualify associated environmental sample results according to *EPA Functional Guidelines* (EPA, 1994b and 1999). Documentation of data qualifications resulting from the application of these guidelines is retained in project files as both hard copy and electronic media.

D.9.3 Field Nonconformances

No field nonconformances were identified for the SAFER.

D.9.4 Laboratory Nonconformances

Laboratory nonconformances are due to inconsistencies in analytical instrumentation operation, sample preparations, extractions, missed holding times, and fluctuations in internal standard and calibration results. Nonconformances were issued by the laboratory that resulted in qualifying data and have been accounted for during the data qualification process.

D.10.0 Summary

Analysis of the data generated from SAFER activities indicated the following:

Analytes detected in soil samples during the SAFER were evaluated against PALs to determine the nature and extent of contaminants of concern for CAU 356. Assessment of the data generated from closure activities indicates that PALs were only exceeded in the soil of CAU 356 for arsenic, total petroleum hydrocarbons, americium-241, and plutonium-239/240.

The concentrations of arsenic are considered ambient at this site (NMBG, 1998; Moore, 1999). Therefore, no corrective action is necessary for the soil containing arsenic. Soil in CASs containing petroleum hydrocarbons or radionuclides have been closed in place.

The septic tank at CAS 03-04-01 was found to contain media that contained substances regulated by NAC 445A.2272 (NAC, 1996b). This media was removed for disposal. In addition, the structures were closed in accordance with the NAC 444.818 (NAC, 1999).

D.11.0 References

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Appendix E

Waste Disposition Documentation for CAU 356: Mud Pits and Disposal Sites, Nevada Test Site, Nevada

E.1.0 Waste Disposition

The manifests for the disposal of the asphalt pile removed from CAS 03-09-05 and the two drums removed at CAS 20-22-21 are attached.

3.

Bechtel Nevada

NTS Landfill Load Verification

(Waste definitions are available on page 2)

SWO USE (Circle One Area) AREA 23 6 9 LANDFILL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7898.

REQUIRED: WASTE GENERATOR INFORMATION

(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Brad Jackson Phone Number: 5-0331

Location / Origin: CAU 356 Area 20 Mud Pit Disposal Sites

Waste Category: (check one)		☐ Commercial	☒ Industrial ofs 8/14/02	
Waste Type: (check one)	☒ NTS	☐ Putrescible	☐ FFACO-onsite	☐ WAC Exception
	☐ Non-Putrescible	☐ Asbestos Containing Material	☐ FFACO-offsite	☐ Historic DOE/NV
Pollution Prevention Category: (check one)		☒ Environmental management	☐ Defense Projects	
Pollution Prevention Category: (check one)		☒ Clean-Up	☐ Routine	
Method of Characterization: (check one)		☐ Sampling & Analysis	☐ Process Knowledge	☒ Contents

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids, PCBs above TSCA regulatory levels-, and Medical wastes (needles, sharps, bloody clothing).

Additional Prohibited Waste at the Area 9 U10c Landfill: Sewage Sludge; Animal carcasses-, Wet garbage (food waste); and Friable asbestos

REQUIRED: WASTE CONTENTS ALLOWABLE WASTES

Check all allowable wastes that are contained within this load:

NOTE: Waste disposed at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants such as: gasoline (no benzene, lead); jet fuel; diesel fuel; lubricants and hydraulics; kerosene; asphaltic petroleum hydrocarbon; and ethylene glycol.

Acceptable waste at any NTS landfill:

☐ Asphalt	☒ Metal	☐ Wood	☐ Soil	☐ Rocks / unaltered geologic materials	☒ Empty containers	
☒ Plastic	☐ Wire	☐ Cable	☐ Cloth	☐ Rubber (excluding tires)	☐ Demolition debris	
☐ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.)				☐ Insulation (non-Asbestosform)	☐ Cement & concrete	

Additional waste accepted at the Area 23 Mercury Landfill: ☐ Office waste ☐ Food Waste ☐ Animal Carcasses

☐ Asbestos: ☐ Friable ☐ Non-Friable (contact SWO if regulated load) Quantity: _____

Additional waste accepted at the Area 9 U10c Landfill:

☐ Non-friable asbestos	☐ Drained automobiles and military vehicles	☐ Solid fractions from sand/oil/water separators
☐ Light ballasts (contact SWO)	☐ Drained fuel filters (gas & diesel)	☐ Deconned Underground and Above Ground Tanks
☐ Hydrocarbons (contact SWO)		

Additional waste accepted at the Area 6 Hydrocarbon Landfill:

☐ Septic sludge ☐ Rags	☐ Drained fuel filters (gas & diesel)	☐ Crushed non-terne plated oil filters
☐ Plants	☐ Sludge from sand/oil/water separators	☐ PCBs below 50 parts per million

REQUIRED: WASTE GENERATOR SIGNATURE

Initials: _____ *(If initialed, no radiological clearance is necessary.)*

The above mentioned waste was generated outside of a Controlled Waste Management Area (CWMA) and to the best of my knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only those materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above and a review of the above mentioned prohibited and allowable waste items.

Print Name: BRAD JACKSON

Signature: _____ Date: 13 Aug 02

Note: Food waste, office trash and/or animal carcasses are considered not to contain require a radiological clearance.

Radiation Survey Release for Waste Disposal

RCT Initials

MD This container/load is free of external radioactive contamination.

___ This container/load is exempt from survey due to process knowledge and origin.

___ This container/load is free of radioactive contamination based on radiological analysis.

SIGNATURE: _____ DATE: 8/15/02

Waste Management System - [Sanitation Module]

Action Edit Block Field Record Query Window Help

SOLID WASTE TRACKING SYSTEM

Landfill ID	Date Of Receipt	Waste Category	Type Of Waste	EM or DP	Routine or Clean-up	Weight Pounds	Origin Of Waste: Area No.	Origin Of Waste: Building No.	
AREA 9	13-AUG-2002	I	FFACO-ONSITE	EM	CLEAN-UP	3140	20	CAU 356	Comments
									Comments
									Comments
									Comments
									Comments
									Comments
									Comments
									Comments
									Comments
									Comments

If you Save data, a report on records that have been changed today will be printed to your default printer when you Exit.

Bechtel Nevada | << | < | > | >> | Query | Save | Exit | Bechtel Nevada

Count: *1

Bechtel Nevada

LANDFILL DAILY ACCESS REGISTER

(X) 8/14/02

DATE: 8-13-02 (check one) ☑ Area 9 - U10c ☐ Area 6 Hydrocarbon ☐ Area 23 Landfill

WASTE GENERATOR Name, Phone #	WASTE ORIGIN Area, Building	WASTE CODE*	TICKET NUMBER	NET WEIGHT (lbs)	TIME IN	TIME OUT	DRIVER Last Name, Initials
~~P[illegible]~~ DTRA/BN	AREA 12	C	I	41,620	12:45	13:10	Frost K.G. 184935
B/N	U1A	C	II	1880	3:00	3:15	Warburton/Thomas
B/N	A 3C CAU356	C	III	3140	3:10	3:30	[illegible]

*Waste Codes: ASB - Asbestos; C - Construction; H - Hydrocarbon; P - Putrescible; NP - Non-Putrescible; S - Sewage Sludge; F - FFACO

INSPECTION INFORMATION

Site Conditions:

Do berms/walls need repair? ☐ No ☐ Yes

Does cover need repair / evidence of settling? ☐ No ☐ Yes

Does fence need repair? ☐ No ☐ Yes

Does road(s) need repair? ☐ No ☐ Yes

Has litter accumulated? ☐ No ☐ Yes

Has water accumulated? ☐ No ☐ Yes

Corrective Actions Needed:

Corrective Actions Taken: (description, name, date):

INSPECTED BY (date/time):

Random Load Inspection: **Ticket Number:** ____________

☐ No prohibited waste was found

☐ Yes, the prohibited waste(s) identified below were found.

- ☐ Putrescible waste (prohibited in U10c and Area 6 Landfills).
- ☐ Hazardous waste per NAC 444.580
- ☐ PCB waste regulated by TSCA
- ☐ Waste containing free liquids
- ☐ TSCA-regulated
- ☐ Waste failing the "no added radioactivity" per the POC requirement.
- ☐ Friable asbestos (prohibited in U1Oc and Area 6 Landfills)
- ☐ Hydrocarbon soil at >100 ppm TPH (prohibited in 23, allowed in U10c provided less than 50 cubic yards/week are disposed)

Corrective Actions Taken: (description, name, date, who notified):

INSPECTED BY (date/time):

BN-0917 (12/99)

Bechtel Nevada

Solid Waste Operations

Solid Waste Received Between 26-MAR-2002 and 26-MAR-2002
Sorted by Landfill ID, Receipt Date

Prepared on 17-JUL-2002

Landfill Id	Date of Receipt	Type of Waste	Waste Category	Weight in Pounds	Origin of Waste Area No.	Building No.
AREA 23	26-MAR-2002	PUTRESCIBLE	C	580	23	&CP CAF
	Comments:					
		Total for AREA 23		580 Pounds 0.29 Tons		
AREA 23	26-MAR-2002	NTS	I	3,160	23	160
	Comments:	Plastic, wire, wood, paper.				
	26-MAR-2002	NTS	I	5,000	23	150
	Comments:	Plastic. wood, paper, soil, rocks, cement and concrete.				
		Total for AREA 23		8,160 Pounds 4.08 Tons		
AREA 9	26-MAR-2002	NTS	I	25,000	23	500 DOR
	Comments:	Demolition debris.				
	26-MAR-2002	NTS	I	30,000	23	500 DOR
	Comments:	Demolition debris.				
	26-MAR-2002	NTS	I	27,000	23	500 DOR
	Comments:	Demolition debris.				
	26-MAR-2002	NTS	I	26,000	23	500 DOR
	Comments:	Demolition debris.				
	26-MAR-2002	NTS	I	31,500	23	500 DOR
	Comments:	Demolition debris.				
	26-MAR-2002	NTS	I	18,000	23	500 DOR
	Comments:	Demolition debris.				
	26-MAR-2002	NTS	I	25,485	23	500 DOR
	Comments:	Demolition debris.				
	26-MAR-2002	NTS	I	32,860	23	500 DOR
	Comments:	Demolition debris.				
	26-MAR-2002	NTS	I	24,000	23	500 DOR
	Comments:	Demolition debris.				
	26-MAR-2002	NTS	I	22,000	23	500 DOR
	Comments:	Demolition debris.				
		Total for AREA 9		448,045 Pounds		

JUL.17.2002 4:46PM UTILITIES DEPARTMENT NO. 447 P.2

Bechtel Nevada

Bechtel Nevada

Solid Waste Operations

Solid Waste Received Between 26-MAR-2002 and 26-MAR-2002
Sorted by Landfill ID, Receipt Date

Prepared on 17-JUL-2002

Landfill Id	Date of Receipt	Type of Waste	Waste Category	Weight in Pounds	Origin of Waste Area No.	Building No.
AREA 9	26-MAR-2002	NTS	I	17,000	23	500 DOR
	Comments:	Demolition debris.				
	26-MAR-2002	FFACO-ONSITE	I	32,000	27	CAU326
	Comments:	Plastic, soil from site maintenance yard.				
	26-MAR-2002	NTS	I	15,500	23	500 DOR
	Comments:	Demolition debris.				
	26-MAR-2002	FFACO-ONSITE	I	22,000	09	CAU356
	Comments:	Asphalt from old road in A9.				
	26-MAR-2002	NTS	I	33,200	23	500 DOR
	Comments:	Demolition debris.				
	26-MAR-2002	FFACO-ONSITE	I	27,500	09	CAU356
	Comments:	Asphalt from old road in A9.				
	26-MAR-2002	FFACO-ONSITE	I	10,000	09	CAU356
	Comments:	Asphalt from old road in A9.				
	26-MAR-2002	FFACO-ONSITE	I	29,000	27	CAU326
	Comments:	Plastic, soil from site maintenance yard.				
				224.02		
				Tons		

LANDFILL DAILY ACCESS REGISTER

26-02 (check one) ☑ Area 9 - U10c ☐ Area 6 Hydrocarbon ☐ Area 23 Landfill

WASTE GENERATOR Name, Phone #	WASTE ORIGIN Area, Building	WASTE CODE*	TICKET NUMBER	NET WEIGHT (lbs)	TIME IN	TIME OUT	DRIVER Last Name, Initials	
BN	23	C	10	22,000	11:45	12:00	Hegel J	✓
A-23 BN	23	C	11	17000	1:30	1:45	Talladay C	✓
ER Don Cox	A-27 S/M CAU 326	C	12	32,000	1:40	2:10	Kaczay K.	✓
BN	A-23	C	13	15,500	1:45	2:00	Hull P	✓
B/n	A-3	C	14	22000	1:45	2:00	V.Ort	✓
B.N	A-23	C	15	33,200	2:15	2:30	Hollatz S	✓
B/n	A-3	C	16	21,500	2:30	2:40	V.Ort	✓
B/n	A-3	C	17	16,000	3:20	3:35	V.Ort	✓
ER Don Cox	A-27 S/M CAU 326	C	18	29000	3:35	3:55	Kaczay K	✓

*Waste Codes: ASB - Asbestos; C - Construction; H - Hydrocarbon; P - Putrescible; NP - Non-Putrescible; S - Sewage Sludge; F - FFACO

INSPECTION INFORMATION

Site Conditions:

Do berms/walls need repair? ☐ No ☐ Yes
Does cover need repair / evidence of settling? ☐ No ☐ Yes
Does fence need repair? ☐ No ☐ Yes
Does road(s) need repair? ☐ No ☐ Yes
Has litter accumulated? ☐ No ☐ Yes
Has water accumulated? ☐ No ☐ Yes

Corrective Actions Needed:

Corrective Actions Taken: (description, name, date):

INSPECTED BY (date/time):

Random Load Inspection: Ticket Number: _____

☐ No prohibited waste was found
☐ Yes, the prohibited waste(s) identified below were found.
- ☐ Putrescible waste (prohibited in U10c and Area 6 Landfills).
- ☐ Hazardous waste per NAC 444.580
- ☐ PCB waste regulated by TSCA
- ☐ Waste containing free liquids
- ☐ TSCA-regulated
- ☐ Waste failing the "no added radioactivity" per the POC requirement.
- ☐ Friable asbestos (prohibited in U10c and Area 6 Landfills)
- ☐ Hydrocarbon soil at >100 ppm TPH (prohibited in 23, allowed in U10c provided less than 50 cubic yards/week are disposed)

Corrective Actions Taken: (description, name, date, who notified):

INSPECTED BY (date/time):

DN-0917 (12/9

(Waste definitions are available on page 2)

SWO USE (Circle One Area) AREA 23 6 (9) LANDFILL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7856.

REQUIRED: WASTE GENERATOR INFORMATION
(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: [illegible] Phone Number: 3799

Location / Origin: U-9 CAU-356

Waste Category: (check one)	☒ ~~Commercial~~		☒ Industrial	
Waste Type: (check one)	☒ NTS	☐ Putrescible	☒ FFACO-onsite	☐ WAC Exception
	☐ Non-Putrescible	☐ Asbestos Containing Material	☐ FFACO-offsite	☐ Historic DOE/NV
Pollution Prevention Category: (check one)	☒ Environmental management	☐ Defense Projects		
Pollution Prevention Category: (check one)	☒ Clean-Up	☐ Routine		
Method of Characterization: (check one)	☒ Sampling & Analysis	☐ Process Knowledge	☐ Contents	

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids, PCBs above TSCA regulatory levels-, and Medical wastes (needles, sharps, bloody clothing).

Additional Prohibited Waste at the Area 9 U10c Landfill: Sewage Sludge; Animal carcasses-, Wet garbage (food waste); and Friable asbestos

REQUIRED: WASTE CONTENTS ALLOWABLE WASTES
Check all allowable wastes that are contained within this load:

NOTE: Waste disposed at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants such as: gasoline (no benzene, lead); jet fuel; diesel fuel; lubricants and hydraulics; kerosene; asphaltic petroleum hydrocarbon; and ethylene glycol.

Acceptable waste at any NTS landfill:

☒ Asphalt	☐ Metal	☐ Wood	☐ Soil	☐ Rubber (excluding tires)	☐ Empty containers	☐ Paper
☐ Plastic	☐ Wire	☐ Cable	☐ Cloth	☐ Insulation (non-Asbestosform)	☐ Demolition debris	☐ Rocks / unaltered geologic materials
☐ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.)					☐ Cement & concrete	

Additional waste accepted at the Area 23 Mercury Landfill: ☐ Office waste ☐ Food Waste ☐ Animal Carcasses

☐ Asbestos: ☐ Friable ☐ Non-Friable (contact SWO if regulated load) Quantity: _____

Additional waste accepted at the Area 9 U10c Landfill:

☐ Non-friable asbestos	☐ Drained automobiles and military vehicles	☐ Solid fractions from sand/oil/water separators
☐ Light ballasts (contact SWO)	☐ Drained fuel filters (gas & diesel)	☐ Deconned Underground and Above Ground Tanks
☐ Hydrocarbons (contact SWO)		

Additional waste accepted at the Area 6 Hydrocarbon Landfill:

☐ Septic sludge	☐ Rags	☐ Drained fuel filters (gas & diesel)	☐ Crushed non-terne plated oil filters
☐ Plants		☐ Sludge from sand/oil/water separators	☐ PCBs below 50 parts per million

REQUIRED: WASTE GENERATOR SIGNATURE

Initials: [illegible] *(If initialed, no radiological clearance is necessary.)*

The above mentioned waste was generated outside of a Controlled Waste Management Area (CWMA) and to the best of my knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only those materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above and a review of the above-mentioned prohibited and allowable waste items.

Print Name: Kevin Cooke

Signature: [signature] Date: 3/20/02

If applicable, place BN-0646, "Radiological Release Sticker" here. Onsite use only.

Note: Food waste, office trash and/or animal carcasses are considered not to contain added radioactivity, and therefore do not require a radiological clearance.

SWO USE ONLY

Load Weight (net from scale or estimate): 22 000 Signature of Certifier: [signature]

BN-0818 (07/00)

Bechtel Nevada

NTS Landfill Load Verification

(Waste definitions are available on page 2)

SWO USE (Circle One Area) AREA 23 6 9 LANDFILL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7698.

REQUIRED: WASTE GENERATOR INFORMATION
(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: BN Phone Number: 5799

Location / Origin: A-9 CAU-356

Waste Category: (check one) ☐ Commercial ☒ Industrial GS 6/26/02

Waste Type: (check one) ☒ NTS ☐ Non-Putrescible ☐ Putrescible ☐ Asbestos Containing Material ☒ FFACO-onsite ☐ FFACO-offsite ☐ WAC Exception ☐ Historic DOE/NV

Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects

Pollution Prevention Category: (check one) ☒ Clean-Up ☐ Routine

Method of Characterization: (check one) ☒ Sampling & Analysis ☐ Process Knowledge ☐ Contents

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids, PCBs above TSCA regulatory levels-, and Medical wastes (needles, sharps, bloody clothing).

Additional Prohibited Waste at the Area 9 U10c Landfill: Sewage Sludge; Animal carcasses-, Wet garbage (food waste); and Friable asbestos

REQUIRED: WASTE CONTENTS ALLOWABLE WASTES
Check all allowable wastes that are contained within this load:

NOTE: Waste disposed at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants such as: gasoline (no benzene, lead); jet fuel; diesel fuel; lubricants and hydraulics; kerosene; asphaltic petroleum hydrocarbon; and ethylene glycol.

Acceptable waste at any NTS landfill:
☒ Asphalt ☐ Metal ☐ Wood ☐ Paper ☐ Soil ☐ Rocks / unaltered geologic materials ☐ Rubber (excluding tires) ☐ Insulation (non-Asbestosform) ☐ Empty containers ☐ Demolition debris ☐ Cement & concrete
☐ Plastic ☐ Wire ☐ Cable ☐ Cloth
☐ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.)

Additional waste accepted at the Area 23 Mercury Landfill: ☐ Office waste ☐ Food Waste ☐ Animal Carcasses
☐ Asbestos: ☐ Friable ☐ Non-Friable (contact SWO if regulated load) Quantity: _____

Additional waste accepted at the Area 9 U10c Landfill:
☐ Non-friable asbestos ☐ Drained automobiles and military vehicles ☐ Solid fractions from sand/oil/water separators
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks
☐ Hydrocarbons (contact SWO)

Additional waste accepted at the Area 6 Hydrocarbon Landfill:
☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-terne plated oil filters
☐ Plants ☐ Sludge from sand/oil/water separators ☐ PCBs below 50 parts per million

REQUIRED: WASTE GENERATOR SIGNATURE

Initials: KC *(If initialed, no radiological clearance is necessary.)*

The above mentioned waste was generated outside of a Controlled Waste Management Area (CWMA) and to the best of my knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only those materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above and a review of the above-mentioned prohibited and allowable waste items.

If applicable, place BN-0646, "Radiological Release Sticker" here. Onsite use only.

Print Name: Kevin Cooke

Signature: _____ Date: 3/20/02

Note: Food waste, office trash and/or animal carcasses are considered not to contain added radioactivity, and therefore do not require a radiological clearance.

SWO USE ONLY

Load Weight (net from scale or estimate): 27,500 Signature of Certifier: Wayne Lewis

BN-0818 (07/00)

Bechtel Nevada

(Waste definitions are available on page 2)

SWO USE (Circle One Area) AREA 23 6 (9) LANDFIL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7898.

REQUIRED: WASTE GENERATOR INFORMATION
(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: BN   Phone Number: 3799

Location / Origin: A-9 CAU-356

Waste Category: (check one) ~~Commercial~~ ☒ Industrial 6/26/02

Waste Type: (check one) ☒ NTS ☐ Non-Putrescible ☐ Putrescible ☐ Asbestos Containing Material ☒ FFACO-onsite ☐ FFACO-offsite ☐ WAC Exception ☐ Historic DOE/NV

Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects

Pollution Prevention Category: (check one) ☒ Clean-Up ☐ Routine

Method of Characterization: (check one) ☒ Sampling & Analysis ☐ Process Knowledge ☐ Contents

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids, PCBs above TSCA regulatory levels-, and Medical wastes (needles, sharps, bloody clothing).

Additional Prohibited Waste at the Area 9 U10c Landfill: Sewage Sludge; Animal carcasses-, Wet garbage (food waste); and Friable asbestos

REQUIRED: WASTE CONTENTS ALLOWABLE WASTES
Check all allowable wastes that are contained within this load:

NOTE: Waste disposed at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants such as: gasoline (no benzene, lead); jet fuel; diesel fuel; lubricants and hydraulics; kerosene; asphaltic petroleum hydrocarbon; and ethylene glycol.

Acceptable waste at any NTS landfill: ☐ Paper ☐ Rocks / unaltered geologic materials ☐ Empty containers ☐ Demolition debris
☒ Asphalt ☐ Metal ☐ Wood ☐ Soil ☐ Rubber (excluding tires) ☐ Cement & concrete
☐ Plastic ☐ Wire ☐ Cable ☐ Cloth ☐ Insulation (non-Asbestosform)
☐ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.)

Additional waste accepted at the Area 23 Mercury Landfill: ☐ Office waste ☐ Food Waste ☐ Animal Carcasses
☐ Asbestos: ☐ Friable ☐ Non-Friable (contact SWO if regulated load) Quantity: ______

Additional waste accepted at the Area 9 U10c Landfill:
☐ Non-friable asbestos ☐ Drained automobiles and military vehicles ☐ Solid fractions from sand/oil/water separators
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks
☐ Hydrocarbons (contact SWO)

Additional waste accepted at the Area 6 Hydrocarbon Landfill:
☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-terne plated oil filters
☐ Plants ☐ Sludge from sand/oil/water separators ☐ PCBs below 50 parts per million

REQUIRED: WASTE GENERATOR SIGNATURE

Initials: KC (If initialed, no radiological clearance is necessary.)

The above mentioned waste was generated outside of a Controlled Waste Management Area (CWMA) and to the best of my knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only those materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above and a review of the above-mentioned prohibited and allowable waste items.

If applicable, place BN-0646, "Radiological Release Sticker" here. Onsite use only.

Print Name: Kevin Cooke

Signature: [signature] Date: 3/20/02

Note: Food waste, office trash and/or animal carcasses are considered not to contain added radioactivity, and therefore do not require a radiological clearance.

SWO USE ONLY
Load Weight (net from scale or estimate): 10000 Signature of Certifier: [signature]

BN-0916 (07/00)

Appendix F

Modifications to the Post-Closure Plan for CAU 356: Mud Pits and Disposal Sites, Nevada Test Site, Nevada

F.1.0 Modifications to the Post-Closure Plan

There are no modifications to the Post-Closure Plan.

Appendix G

Use Restriction for CAU 356: Mud Pits and Disposal Sites, Nevada Test Site, Nevada

CAU Use Restriction Information

CAU Number/Description: CAU 356, Mud Pits and Disposal Sites

Applicable CAS Numbers/Descriptions: CAS 03-04-01, Area 3 Change House Septic System

Contact (organization/project): DOE/NV Industrial Sites Project Manager

Surveyed Area (UTM, Zone 11, NAD 27, meters):
West Corner: E=586972.9153 N=4098564.5370
South Corner: E=586972.9153 N=4098554.4548
East Corner: E=587004.3335 N=4098554.4548
North Corner: E=587004.3335 N=4098564.5370

Survey Date: 5/16/01 **Survey Method (GPS, etc.):** GPS

Site Monitoring Requirements: None

Required Frequency (quarterly, annually?): Not Applicable

If Monitoring Has Started, Indicate Last Completion Date: Not Applicable

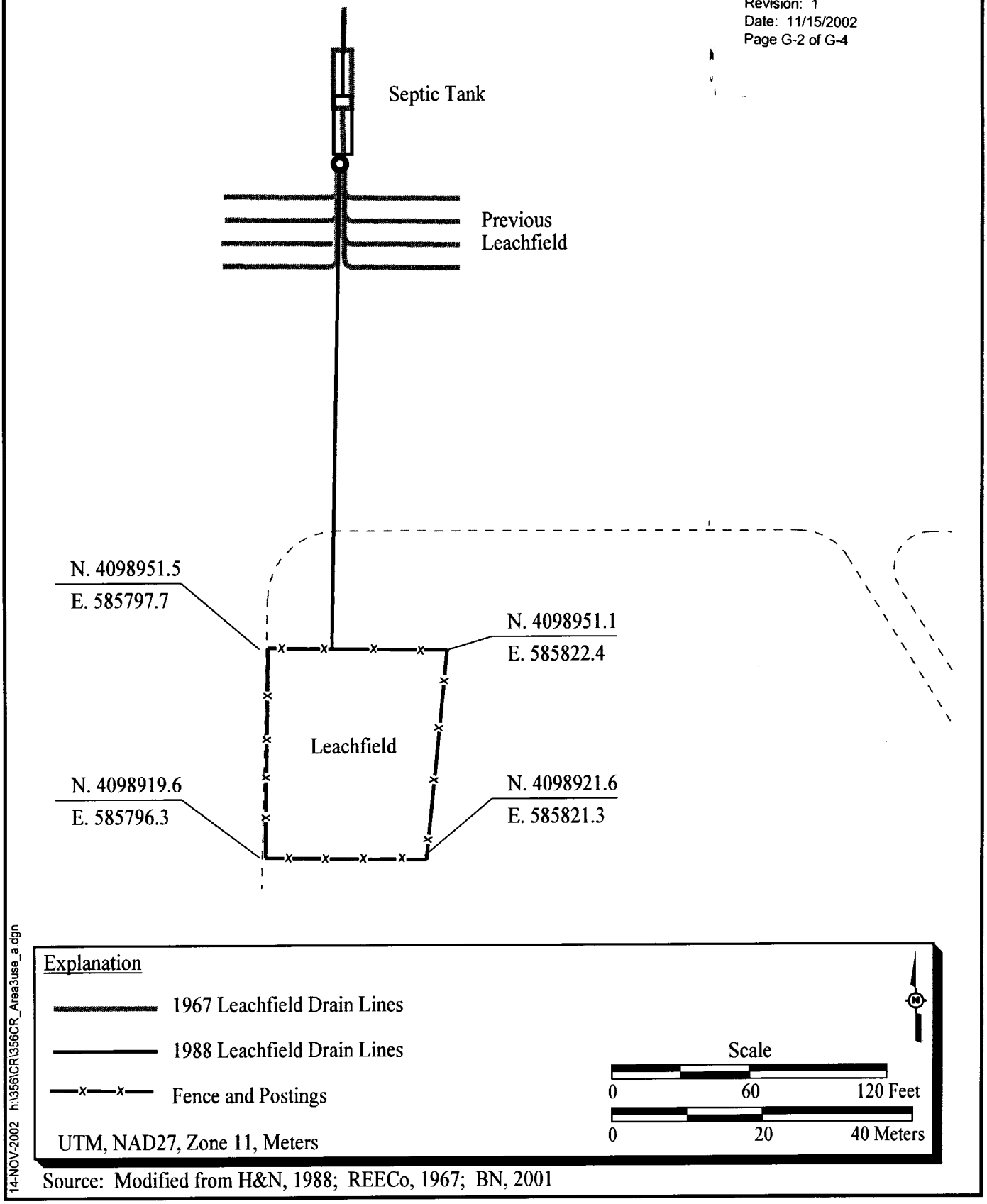
Use Restrictions

The future use of any land related to this Corrective Action Unit (CAU), as described by the above surveyed location, is restricted from any DOE or Air Force activity that may alter or modify the containment control as approved by the state and identified in the CAU Closure Report or other CAU documentation unless appropriate concurrence is obtained in advance.

Comments: The use restriction is for subsurface contamination associated with the leachfield. There are no monitoring or inspection requirements associated with this Use Restriction. See the Closure Report for additional information on the condition of the site. The restricted area is identified by fencing and postings.

Submitted By: Sabine Curtis **Date:** 11/14/02
Sabine Curtis

cc with copy of survey map (paper and digital (.dgn) formats):
CAU Files (2 copies)



Source: Modified from H&N, 1988; REECo, 1967; BN, 2001

CAU 356 Mud Pits and Disposal Sites, CAS 03-04-01,
Area 3 Change House Septic System
Use Restriction

CAU Use Restriction Information

CAU Number/Description: CAU 356, Mud Pits and Disposal Sites

Applicable CAS Numbers/Descriptions: CAS 03-09-04, Mud Pit

Contact (organization/project): DOE/NV Industrial Sites Project Manager

Surveyed Area (UTM, Zone 11, NAD 27, meters):
Northwest Corner: E=585797.7 N=4098951.5
Southwest Corner: E=585796.3 N=4098919.6
Southeast Corner: E=585821.3 N=4098921.6
Northeast Corner: E=585822.4 N=4098951.1

Survey Date: 01/03/02 **Survey Method (GPS, etc.):** GPS

Site Monitoring Requirements: None

Required Frequency (quarterly, annually?): Not Applicable

If Monitoring Has Started, Indicate Last Completion Date: Not Applicable

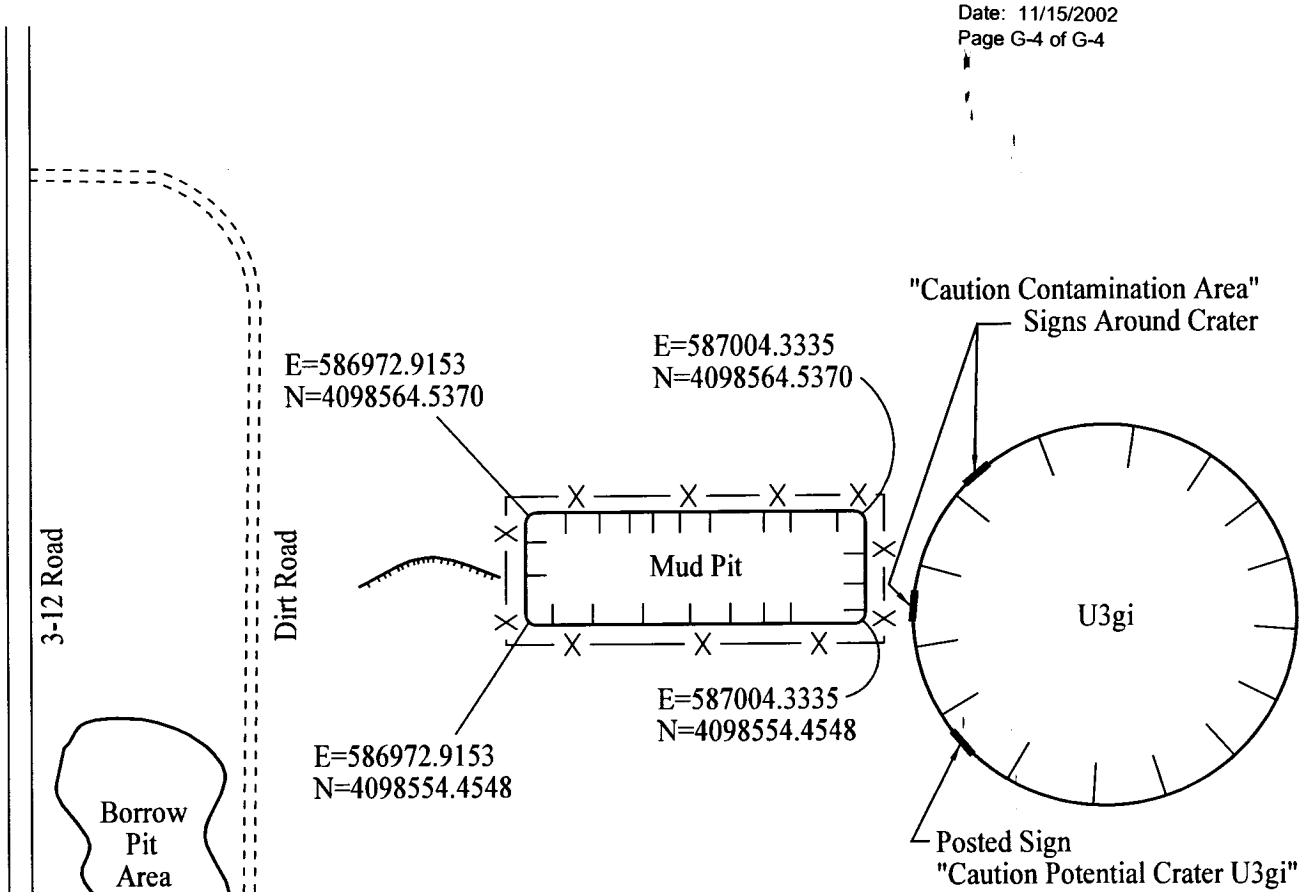
Use Restrictions

The future use of any land related to this Corrective Action Unit (CAU), as described by the above surveyed location, is restricted from any DOE or Air Force activity that may alter or modify the containment control as approved by the state and identified in the CAU Closure Report or other CAU documentation unless appropriate concurrence is obtained in advance.

Comments: The use restriction is for subsurface contamination associated with the mud pit. There are no monitoring or inspection requirements associated with this Use Restriction. See the Closure Report for additional information on the condition of the site. The restricted area is identified by fencing and postings.

Submitted By: Sabine Curtis **Date:** 11/14/02
Sabine Curtis

cc with copy of survey map (paper and digital (.dgn) formats):
CAU Files (2 copies)



Explanation

— X — Fence and Postings

Slope in Direction of Tick Mark

UTM, NAD 27, Zone 11
Crater Not to Scale.
Dimensions of Pit are Approximate.

14-NOV-2002 h:\356\CR\CR-Samp\CRuse_030904_a.dgn

Source: Bull, 2001

CAU 356 Mud Pits and Disposal Sites, CAS 03-09-04
Mud Pit Use Restriction

Appendix H

Evaluation of Risk

H.1.0 Evaluation of Risk

An evaluation of risk for TPH concentrations in drilling mud and soil at CAS 03-09-04 is presented in Section H.1.1. Based on the following factors, TPH concentrations do not pose a risk to human health or the environment.

H.1.1 Total Petroleum Hydrocarbons

The following evaluation of NAC 459.9973 (a-k) (NAC, 2000) supports the corrective action alternative of closure in place at CAU 356 CAS 03-09-04.

a. The depth to groundwater at CAU 356 is approximately 835 to 1,540 feet (ft) below ground surface (bgs), based on monitoring data from four active water-supply wells near the site (DRI, 1996). Activities at this CAS have ceased, eliminating future contributing factors to contamination migration.

b. The closest active water-supply wells to Area 3 include water well 4, 4A, C, and C-1 (DRI, 1996). These wells are located in the southeast corner of Area 6, approximately 13 mi south-southeast of CAU 356. Regional groundwater flow in this area of the NTS is to the south and southwest (Winograd and Thordarson, 1975). Based on depth to groundwater, distance to the wells, direction of regional groundwater flow, and concentrations of the contaminant, the possibility of any impact to these wells is minimal.

c. Soil at CAS 03-09-04 consists of a poorly sorted, medium brown silty sand with gravel and pebbles. The drilling mud is a light to medium brown, silt to sandy clay.

d. Average annual precipitation for valleys in the South-Central Great Basin ranges from 3 to 6 inches (Winograd and Thordarson, 1975). Annual evaporation is roughly 5 to 25 times the annual precipitation (Winograd and Thordarson, 1975). The high evaporation and low precipitation rates create a negative water balance for the area; therefore, precipitation is not available to mobilize COCs vertically. Ponding from localized heavy precipitation is likely at the Mud Pit, however due to the depth of the mud pit, downgradient mobility is not likely and no significant off-site releases of COCs are expected to result from flooding that may occur at the site.

e. The type of regulated substance released is TPH-DRO.

f. The lateral extent of the contamination in the mud pit is confined to the mud within the mud pit and not expected to exceed the boundaries of this CAS based on design and current configuration. The vertical extent of the contamination at CAS 03-09-04 is not expected to extend beyond 2 ft.

g. CAU 356 is located within the NTS, a government-controlled facility. The NTS is a restricted area and unauthorized personnel are not allowed at the facility. The site lies within the Nuclear Test Zone and future use includes dynamic experiments, hydrodynamic tests, and underground nuclear weapons and weapons effect tests. This zone includes compatible defense and nondefense research, development, and testing activities (DOE/NV, 1998).

h. Preferred routes of vertical migration are limited since the release sources have been eliminated and contributing factors are not significant. Vertical migration of the COCs is improbable because this area experiences high evaporation and low precipitation rates which create a negative water balance; therefore, precipitation is not available to mobilize COCs vertically. No significant vertical movement of COCs are expected to occur from ponding or flooding that may occur at the site.

i. Building and facilities located in the vicinity of CAS 03-09-04 include the Mud Plant Buildings and the Area 3 Camp. Both facilities are no longer in operation.

j. The potential for a hazard related to fire, vapor or explosion is virtually nonexistent for the COC at CAU 03-09-04.

k. No other site-specific factors are known at this time.

H.2.0 References

Desert Research Institute. 1996. *Nevada Test Site Water-Supply Wells,* DOE/NV/10845--86, Publication No. 45138. Prepared by D. Gillespie, D, Donithan, and P. Seaber. Reno, NV: Water Resources Center.

DOE/NV, see U.S. Department of Energy, Nevada Operations Office.

DRI, see Desert Research Institute.

NAC, see *Nevada Administrative Code*.

Nevada Administrative Code. 2000. NAC 459.9973, " Presence of excessive petroleum in soil: Evaluation; assessment of risk; corrective action." Carson City, NV.

U.S. Department of Energy, Nevada Operations Office. 1998. *Nevada Test Site Resource Management Plan,* December, DOE/NV--518. Las Vegas, NV.

U.S. Department of Energy, Nevada Operations Office. 2001. *Streamlined Approach for Environmental Restoration Plan for Corrective Action Unit 356: Mud Pits and Disposal Sites, Nevada Test Site, Nevada,* DOE/NV--747. Las Vegas, NV: DOE Nevada Operations Office.

Winograd, I.J., and W. Thordarson. 1975. *Hydrologic and Hydrochemical Framework, South-Central Great Basin, Nevada-California, with Special Reference to the Nevada Test Site,* U.S. Geological Survey Professional Paper 712C. Washington, DC: U.S. Government Printing Office.

Appendix I

NDEP Comment Responses

NEVADA ENVIRONMENTAL RESTORATION PROJECT
DOCUMENT REVIEW SHEET

1. Document Title/Number: Closure Report for Corrective Action Unit 356: Mud Pits and Disposal Sites, Nevada Test Site, Nevada	2. Document Date: August 2002
3. Revision Number: 0	4. Originator/Organization: IT Corporation
5. Responsible DOE/NV ERP Project Mgr.: Janet Appenzeller-Wing	6. Date Comments Due:
7. Review Criteria: Full	
8. Reviewer/Organization/Phone No.: Paul Liebendorfer, NDEP	9. Reviewer's Signature:

10. Comment Number/ Location	11. Type*	12. Comment	13. Comment Response	14. Accept
1) General Comment Section 1.3.1		Confirm/verify the appropriate or applicable Industrial Sites QAPP revision for this investigation.	The 1996b QAPP is applicable to this investigation as specified in accordance with Section 3.0 of the approved SAFER Plan for CAU 356.	Yes
2) General Comment Appendices B & D, Sections 3.2, 3.6, and Sections 4.1.1 - 4.1.7		We cannot distinguish which analytical results provided in Appendices B and D apply to which sites for closure verification purposes. As such, the statements in Sections 4.1.1 - 4.1.7 cannot be fully supported or confirmed. Please provide sample identification numbers when discussing analytical results in Sections 4.1.1 - 4.1.7, as is done to some extent in Appendix A and in Table A.1-11. A suggestion would be to include Tables at the front of Appendices B and D that cross-reference the sample identification numbers with the locations of a given CAS (indicate the corresponding CAS sample ID/location with the "Client Sample ID", as recorded by the laboratory and provided in the data report).	Tables B.1-1 and B.1-2 were added to Appendix B to cross reference sample number with appropriate CAS. Existing tables D.3-1 through D.8-1 cross reference the sample number with the CAS location. The low levels of contamination is confined to the mud within the mud pit. This is supported by data from similar sites (CAU 34).	Yes
3) Section 3.4		Explain or clarify the statement "Direct sampling was not performed, but held as a contingency to confirm the regulatory status of the IDW." Provide references to "media sample association" results/data that were used to make waste determinations, so that waste determinations can be traced to actual media sample results.	Clarification to Section 3.4 was made.	Yes

NEVADA ENVIRONMENTAL RESTORATION PROJECT
DOCUMENT REVIEW SHEET

10. Comment Number/ Location	11. Type*	12. Comment	13. Comment Response	14. Accept
4) Section 4.2, 5.2		For CAS 03-09-04, TPH was detected at concentrations that exceeded PALs. According to Sections 3.2.2.2 and 3.5 of the approved SAFER Plan (DOE/NV, August 2001), "lateral and vertical extent of contamination will be bounded by analytical results that show concentrations of COCs below PALs." and "If closure in place is the preferred corrective action alternative, the appropriate use restrictions will be implemented and documented..." In the closure report, Section 4.2.2 and Section 5.2, justification for closure in place is inappropriate and insufficient. Provide rationale/justification for selecting closure in place as the corrective action alternative, and furthermore, closing CAS 03-09-04 in place without use restrictions. The meaning of "COCs were bounded by sampling and shown to be within conceptual site model boundaries." (Section 5.2) is unclear, and as such, insufficient support for selecting closure in place without use restrictions.	The rationale/justification for close in place was modified by adding a risk assessment (a-k analysis, Appendix H). Also, a use restriction was added to Appendix G.	Yes
5) Section 4.2.1, 5.2		Describe or indicate how the use-restricted area(s) will be designated or distinguished.	A requirement for signage and fencing was added to the use restriction.	Yes
6) Appendix B, Page B-4		This housekeeping closure verification form indicates CAS closure for CAS 03-04-01. The form appears to duplicate that recorded for CAS 20-22-21. Confirm or modify the CAS ID, as this CAS 03-04-01 is the Change House Septic System.	The housekeeping closure verification form was corrected to CAS 20-22-21.	Yes

[a] Comment Types: M = Mandatory, S = Suggested.
Return Document Review Sheets to DOE/NV Environmental Restoration Division, Attn: QAC, M/S 505.

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